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Department of Infrastructure
and Regional Development



Modernising Airspace Protection

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A typographical error on page 16 was identified and corrected on 25 May 2017. The error was technical in nature and does not affect the substance of the consultation paper. Any queries in relation to this amendment can be sent to:
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1. Executive Summary

Given their economic, social and community role it is important that Australia's major airports are protected from intrusions into navigable airspace, which would diminish aviation safety and limit future aviation-related expansion plans, such as building new runways. A critical part of regulating airports is in ensuring obstacle-free airspace is available for aircraft during approach, landing and take-off.

The Aviation Safety Regulation Review (ASRR) Panel reviewed the current regulatory environment in relation to airspace protection in 2014. In its Report, the ASRR Panel recommended the Department of Infrastructure and Regional Development (Infrastructure) "take a policy leadership role to ensure that the future viability of airport infrastructure is not compromised by poor planning and land-use decisions" (page 23).

In response to the ASRR Panel's recommendation, the Australian Government asked Infrastructure to provide policy advice on airspace protection arrangements for leased federal airports, other airports, and for communications, navigation and surveillance (CNS) equipment.

To provide this advice, Infrastructure in consultation with the Australian Government's key aviation agencies, the Civil Aviation Safety Authority (CASA), Airservices Australia (Airservices) and the Department of Defence (Defence), examined the legislative, regulatory and administrative arrangements in relation to:

- Airspace protection under the Airports (Protection of Airspace) Regulations 1996 (APAR) applicable to leased federal airports regulated under the *Airports Act 1996* (the Airports Act);
- Obstacle and hazard mitigation measures under Part 139 of the Civil Aviation Safety Regulations 1998 (CASR) which are applicable to certified and registered aerodromes;
- The Defence (Areas Control) Regulations 1989 which apply to promulgated military airfields;
- Provisions under the *Civil Aviation Act 1988* (the CA Act) and the *Radiocommunications Act 1992* which regulate interference with aeronautical spectrum and associated matters; and
- Regulatory arrangements under the CA Act aimed at protecting the low-flying aviation sector from tall structures beyond aerodromes.

Infrastructure found a number of regulatory gaps ranging from outdated regulatory approaches failing to provide suitable transparency and accountability for Commonwealth decision-making and/or creating uncertainty where regulations were absent or ambiguous, to regulatory overlap due to legacy regulations still being in force, and considerable scope for improvement in regulatory oversight.

The options presented in this consultation paper take advantage of existing measures under the Airports Act and the CA Act and their supporting regulations.

In developing modernisation proposals, Infrastructure has taken the National Airports Safeguarding Framework (NASF) principles into account and researched international

airspace protection regimes. The following international examples provided useful models for the development of the proposals in this paper:

- United States of America's Federal Aviation Administration's Federal Aviation Regulation Part 77 Safe, Efficient Use, and Preservation of the Navigable Airspace;
- New Zealand's Civil Aviation Authority Part 77 Objects and Activities Affecting Navigable Airspace; and
- United Kingdom's Town and Country Planning (Safeguarded Aerodromes, Technical Sites And Military Explosives Storage Areas) Direction 2002.

Overview of the Reform Proposals

The following three reform proposals are contained in this paper:

Reform Proposal 1 – Modernising Airspace Protection under the Airports Act 1996

Policy Objective: To create a modern, nationally consistent and transparent airspace protection regime at our major airports

Key outcomes

1. Prescribe criteria for the establishment of prescribed airspace to clarify what volumes of airspace require protection for the purpose of the safety, efficiency and regularity of aircraft operations;
2. Strengthen the declaration process by establishing a legislative framework to support a transparent and consultative pre-declaration-making process;
3. Streamline the handling of applications for intrusions into prescribed airspace to clarify roles and responsibility and avoid any unnecessary administrative steps; and
4. Avoid regulatory overlap by repealing legacy regulations under the CA Act, given the operation of the APAR and CASR Part 139 'Aerodromes' (CASR Part 139).

Reform Proposal 2 – Protecting the National Communications, Navigation and Surveillance (CNS) Network

Policy Objective: To create a nationally consistent regulatory framework for the protection of the national CNS network

Key outcomes

1. Clarify roles and responsibilities, including the role of the civil Air Navigation Service Provider (ANSP), the owner of a CNS facility (who may not be an ANSP), airport and aerodrome operators, and local building authorities;
2. Improve public awareness of CNS facilities and the protected airspace around them;
3. Provide a mechanism to enable the assessment of a proposed development that may significantly impact on, or require the relocation of, a CNS facility;

4. Where relocation is required, provide a mechanism to enable the owner of the CNS facility to recover costs from the person seeking the relocation; and
5. Authorise, as a measure of last resort, CASA to refuse a request for relocation, or take steps to prevent an unauthorised interference due to a proposed development, on aviation safety grounds.

Reform Proposal 3 – Mitigating Risks to Aircraft Flying Beyond Aerodromes

Policy Objective: To improve safety for the low-flying aviation sector (including commercial operations and aerial emergency search and rescue services) when operating beyond aerodromes

Key outcomes

1. Ensure visual markers are provided on power lines, overhead cables and transmission lines, and other inconspicuous objects. Options include but are not limited to:
 - a. Mandate the Australian Standard for power line marking in the CA Act;
 - b. Develop voluntary guidelines for national adoption;
 - c. Agree to industry self-regulation with relevant peak industry organisations; and
 - d. Develop a model framework for State, Territory or Local government to consider.
2. Provide a nationally consistent approach to the marking and lighting of wind turbines. Options include but are not limited to:
 - a. Mandate marking and lighting of wind turbines under the CA Act in accordance with Annex 14 of the Convention on International Civil Aviation (the Chicago Convention), as endorsed by the International Civil Aviation Organization (ICAO);
 - b. Mandate the provision of a safety case and an aviation impact statement with all wind farm proposals to facilitate assessment by Airservices; and
 - c. Develop a model framework for State, Territory or Local government to consider.
3. Develop location-specific or hazard-specific obstacle charts to assist with pre-flight planning and situational awareness. Options include but are not limited to:
 - a. Peak industry organisations, or individual operators, to commission (and fund) the development of location-specific or hazard-specific obstacle charts for their pilots/members, based on the obstacle data collected by Airservices under CASR Part 175.

2. Background

2014 Aviation Safety Regulation Review

In 2014 the [Aviation Safety Regulation Review](#) (ASRR) Panel considered the current airspace protection arrangements. The ASRR Panel found that in relation to protection of airport flight paths and operations:

“While noting the significant work undertaken in the past four years through the National Airports Safeguarding Framework, the Panel considers that the protection of airport flight paths and operations from the encroachment of on- and off-airport development is becoming an urgent policy issue.

There is an emerging risk to the long-term viability of Australia’s existing infrastructure. The issues are complex, crossing jurisdictions and levels of government, meaning that no single agency is able to deliver the required outcomes.

However, as the agency responsible for on-airport planning issues at the 21 federally leased airports, and as the lead agency on aviation and airport issues, the Department [of Infrastructure and Regional Development] must take a policy leadership role to ensure that the future viability of airport infrastructure is not compromised by poor planning and land use decisions.” (ASRR Report, page 23)

In December 2014 the Australian Government tabled its response to the ASRR Report and requested that the Department of Infrastructure and Regional Development (Infrastructure) provide policy advice on airspace protection arrangements for leased federal airports, other airports, and for communications, navigation and surveillance (CNS) equipment.

2012 National Airports Safeguarding Framework

The [National Airports Safeguarding Framework](#) (NASF) is a national land use planning framework that aims to improve community amenity by minimising aircraft noise-sensitive developments near airports, as well as improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues.

NASF was developed by the National Airports Safeguarding Advisory Group (NASAG), comprising of Commonwealth, State and Territory government planning and transport officials, Defence, CASA, Airservices, and the Australian Local Government Association, and chaired by Infrastructure.

Commonwealth, State and Territory Ministers considered the NASF at the Standing Council on Transport and Infrastructure meeting on 18 May 2012. It is the responsibility of each jurisdiction to implement NASF into their respective planning systems. NASF has implications for anyone working in town planning, residential or commercial development, building construction or related industries.



The NASF comprises the following guidelines:

- Guideline A: Measures for Managing Impacts of Aircraft Noise
- Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports
- Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports
- Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation
- Guideline E: Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports
- Guideline F: Managing the Risk of Intrusions into the Protected Airspace of Airports
- Guideline G: Protecting Aviation Facilities – Communication, Navigation and Surveillance (CNS)

3. Key Findings – Examination of Legislative, Regulatory and Administrative Arrangements

Introduction

Infrastructure, in conjunction with CASA, Airservices and Defence, has reviewed the Commonwealth airspace protection arrangements around the leased federal airports regulated under the Airports Act and aerodromes regulated under the CA Act.

Infrastructure found a number of regulatory gaps mainly associated with outdated regulatory approaches, including regulations which may not provide suitable transparency and accountability for Commonwealth decision-making and/or creating uncertainty where regulations were absent or ambiguous, to regulatory overlap due to legacy regulations still being in force, and considerable scope for improvement in regulatory oversight.

Lack of Transparency and Accountability

The current airspace regulations under the Airports Act need to be modernised and streamlined to enable the future safe and efficient growth of these nationally important transport hubs in conjunction with facilitating appropriate urban density policies of State, Territory and Local governments.

Under the Airports Act, the process for the establishment of prescribed airspace by the operator of a leased federal airport is not clearly defined and should be prescribed in order to provide greater clarity for future land use initiatives on and off airport. Ideally, Infrastructure considers that this process should be led by the airport operator and provide for greater stakeholder engagement with the aviation industry in relation to impacts on flight operations, including, amongst others, with State and Territory urban planners in relation to the potential impact of prescribed airspace on metropolitan building height limits.

Neither the Airports Act nor the CA Act obliges the proponent of an application for intrusion into prescribed airspace to demonstrate an understanding of the implications of the intrusion. The proponent seems to bear a disproportionately small responsibility for introducing a hazard into navigable airspace, whilst the operator of the airport and Commonwealth aviation agencies are expected to undertake detailed and resource intensive assessments of such proposals within short timeframes.

Regulatory Overlap

In some cases, under the Airports Act and the CA Act, there are multiple sets of airspace protection regulations applicable to a single airport. In accordance with best practice regulation, such regulatory overlap should be avoided.



Absent / Ambiguous Legislation

The current legislative arrangement for the protection of the national CNS network under the CA Act should be improved to better protect against non-spectrum related interference. The CNS network can be at risk from ‘tall structure’ interference or requests for unscheduled (and usually unfunded) relocation of CNS facilities for non-aviation purposes at, around or beyond an airport.

Scope for Improvement in Regulatory Oversight

While the main object of the CA Act is to establish a regulatory framework for maintaining, enhancing and promoting the safety of civil aviation with particular emphasis on preventing aviation accidents and incidents, there are areas for improvement in relation to reducing further the risk from hazards beyond aerodromes, such as overhead wires and wind turbines.

4. Reform Proposal 1 – Modernising Airspace Protection under the Airports Act 1996

Introduction

Infrastructure proposes modernising the Airports (Protection of Airspace) Regulations 1996 (APAR) which are made under the Airports Act.

The existing regulations are based on a reactive regulatory model, driven largely by applications from non-airport stakeholders seeking approval for temporary or permanent intrusions into prescribed airspace around an airport.

The proposed changes seek to provide a more transparent and proactive regulatory model, where consultation with aviation and non-aviation stakeholders, including the community around the airport, becomes a key feature.

The new approach proposed below seeks to safeguard the growth of the aviation industry in Australia based on aviation safety imperatives, ensure the future efficiency and regularity of aircraft operations at our major airports, and facilitate appropriate land use planning in the vicinity of, and away from, these airports.

Current Regulatory Powers

Establishment of Prescribed Airspace

Part 12 of the Airports Act provides for the protection of ‘prescribed airspace’, as specified in, or ascertained in accordance with, the regulations, where it is in the interests of the safety, efficiency or regularity of existing or future air transport operations in or out of an airport for that airspace to be protected from intrusions.

The APAR provide that an Obstacle Limitation Surface (OLS) for an airport is a surface ascertained in accordance with the procedures in Annex 14 to the Convention on International Civil Aviation (the Chicago Convention), signed on 7 December 1944.

The APAR also provide that surfaces for ‘Procedures for Air Navigation Systems Operations’ for an airport are surfaces ascertained in accordance with the procedures in document number 8168 OPS-611, Procedures for Air Navigation Services-Aircraft Operations (PANS-OPS), published by ICAO on 11 November 1993.

Regulation 6(1) of the APAR provides that for section 181 of the Airports Act, prescribed airspace is:

- (a) the airspace above any part of either an OLS or a PANS-OPS surface for the airport; and
- (b) airspace declared in a declaration under regulation 5 of the APAR relating to an airport.

Regulation 5(1) of the APAR provides that the Secretary may declare, in writing, that specified airspace around an airport should, in the interests of the safety, efficiency or regularity of future air transport operations in to or out of the airport, be prescribed airspace. In making a declaration the Secretary must have regard to a range of matters outlined under regulation 5(2) of the APAR.

The declaration must specify the lower boundary of the airspace that should be prescribed.

Intrusion Management Process

Applications for approval of temporary or permanent intrusions into prescribed airspace

Activities that result in intrusions into prescribed airspace are called 'controlled activities'. Controlled activities require approval under the APAR.

Under the regulation 7(2) of the APAR, a proponent must provide details about the proposed controlled activity in an application 28 days before the proponent's intended commencement of the activity.

Section 182 of the Airports Act prescribes what a controlled activity is, and it relevantly includes:

- Constructing a building, or other structure, that intrudes into the prescribed airspace;
- Altering a building or other structure so as to cause the building or structure to intrude into the prescribed airspace;
- Any other activity that causes a thing attached to, or in physical contact with, the ground to intrude into the prescribed airspace; and
- An activity that results in air turbulence, where the level of the turbulence exceeds the level ascertained in accordance with the regulations (regulation 6A of the APAR refers) and the turbulence is capable of affecting the normal flight of aircraft operating in the prescribed airspace.

The following assessment process applies to applications for intrusions into prescribed airspace (except for intrusions into PANS-OPS surfaces):

Short-term intrusions (under three (3) months)

- On receipt of an application, the airport operator (or Secretary if there is no airport operator company for the airport concerned) must give written notice of the intrusion and invite submissions from CASA and Airservices.
- The Secretary (or delegate if the Secretary has delegated relevant powers to an officer or employee of an airport operator company) may approve or refuse the application within 28 days (if received from one or more airport operator company) or 49 days (if received from the proponent) (unless further information is requested).

Long-term intrusion (over three (3) months)

- On receipt of an application, the airport operator (or Secretary if there is no airport operator company for the airport concerned) must give written notice of the intrusion

and invite submissions from CASA, Airservices, Defence (if joint user airport), and the building authority.

- The airport operator must forward the application to the Secretary within 21 days of receipt, including any submissions received, and the Secretary may approve or refuse the application within 28 days (if received from one or more airport operator company) or 49 days (if received from the proponent).

In both cases, there is discretion to obtain further information from the proponent (stop-clock applies) and/or CASA and Airservices (stop-clock does not apply).

A different assessment process applies to applications seeking approval for intrusions into PANS-OPS surfaces (Regulation 9 and Regulation 14(5) of the APAR refer).

Decision-making

A decision-maker for an application to carry out a controlled activity under the APAR must:

- Consider the effect the activity will have on the efficiency and regularity of existing or future air transport operations and consider the opinion of the proponent, the airport operator, CASA, Airservices, Defence (if the airport is a joint user airport), the building authority, and any other matters the decision-maker considers relevant (regulation 13 of the APAR);
- Approve or refuse an application (regulation 14 of the APAR), noting that the decision-maker must not approve an application if CASA has advised that carrying out the controlled activity would have an unacceptable effect on the safety of existing or future air transport operations into or out of the airport concerned; and
- Give notice of the decision within 28 days from receipt of the application (regulation 15 of the APAR), unless stop-clock provisions have been applied.

Reform Proposal 1 – Modernising Airspace Protection under the Airports Act 1996

Policy Objective: To create a modern, nationally consistent and transparent airspace protection regime at our major airports

Key outcomes

1. Prescribe criteria for the establishment of prescribed airspace to clarify what volumes of airspace require protection for the purpose of the safety, efficiency and regularity of aircraft operations;
2. Strengthen the declaration process by establishing a legislative framework to support a transparent and consultative pre-declaration-making process;
3. Streamline the handling of applications for intrusions into prescribed airspace to clarify roles and responsibility and avoid any unnecessary administrative steps; and
4. Avoid regulatory overlap by repealing legacy regulations under the CA Act, given the operation of the APAR and CASR Part 139.

Prescribing Criteria for the Establishment of Prescribed Airspace

The proposed amended regulations would prescribe criteria for the establishment of prescribed airspace for the purpose of the safety, efficiency and regularity of current and future aircraft operations, including but not restricted to:

- Obstacle Limitation Surfaces, established in accordance with CASR Part 139 based on applicable ICAO standards and recommended practices;
- PANS-OPS surfaces and Required Navigation Performance (RNP) procedures (which are separate to PANS-OPS), as endorsed by ICAO;
- Radar Terrain Clearance Charts (RTCC); and
- Building Restricted Areas associated with CNS facilities on and off airport.

CASA would provide guidance to the airport operator when establishing draft volumes of airspace to be protected, taking into account aviation safety requirements under the CA Act.

Airservices would provide guidance to the airport operator when establishing draft volumes of airspace to be protected, taking into account Airservices expertise in air traffic management, provision of CNS facilities, and the development of instrument flight procedures.

The airport operator would be responsible for collating this information in electronic form in charts and/or maps and provide associated Geographic Information System (GIS) data.

Strengthening the Declaration Process

The regulations would require major airports to apply for a Declaration of Designated Prescribed Airspace (the Declaration) for approval by the Minister for Infrastructure and Transport (or by the Secretary if the responsibility has been delegated).

The airport operator would benefit from having operation-critical airspace protected through a Commonwealth declaration instrument. The purpose of the declaration instrument would be to enhance accountability and transparency by formally associating volumes of airspace around an airport with the airspace protection regulations, including clearly identifying the lowest boundary of the prescribed airspace.

The prescribed airspace in the Declaration must be established in accordance with prescribed criteria (as discussed above).

Airport operators would be required to identify the lowest boundary of the prescribed airspace in terms that are easy to translate into allowable building height limits for State and Local government planning and building agencies. This would provide greater clarity and certainty for other non-aviation stakeholders, such as communities around the airport and developers.

Prior to submitting the application for a Declaration, airport operators would undertake a comprehensive consultation process, including with relevant planning authorities. During the consultation process any issues raised about the impacts of the draft prescribed airspace on existing State or Territory land-use planning and building instruments must be fully examined. This would include proposed building height limits and how to manage development on land which would intrude into prescribed airspace following the Declaration.

It would be essential for airlines to participate in the consultation process, as the airport operator would provide invaluable advice to airline operators on whether the proposed volume of airspace to be declared would suit their current and proposed schedules. Airlines are best placed to comment on aircraft efficiency and regularity matters in the context of their current and future air transport operations at individual airports.

In their application for a Declaration, airport operators would summarise issues raised during the consultation process and how these have been addressed, similar to existing statutory obligations on airport operators during the consultation process associated with the development of a draft airport master plan.

CASA would provide advice to Infrastructure on aviation safety matters during the formal assessment stage of the proposed Declaration.

Airservices would provide advice, consistent with its role as civil Air Navigation Service Provider, which would inform consideration of efficiency and regularity matters in relation to air traffic management at the airport in question.

Once the Declaration has been made the airport operator would publish the details online free of charge and provide the data to relevant government agencies. This must be in GIS data format and may include charts, maps and building height limits.

The Declaration would be reviewed once every five years or earlier if the airport is proposing a significant change to its operations, such as building a new runway or major alterations to the configuration of existing runways.

Streamlining the Handling of Applications for Intrusions

Proponent's obligation

Infrastructure proposes that the regulations be amended to require the proponent of an application for a controlled activity to provide a safety case (based on ISO 31000) and an aviation impact statement (based on an Airservices template).

The intention is to put the onus on the proponent to carefully consider whether an intrusion into prescribed airspace is necessary. If so, the proponent would need to demonstrate why the proposed intrusion would not negatively affect the safety, efficiency and regularity of existing and future air transport operations into the airport during the period of the intrusion.

Submission timeframe

The timeframe for submission of an application for a controlled activity would be 90 days prior to lodgement of a Development Application (DA).

The DA should include the approval of the application for intrusion, which should expedite the State, Territory or Local government approval process.

This is particularly important for multi-storey residential developments, and such applications for intrusion must include cranes.

Temporary intrusion permit

The existing process of delegating the Secretary's decision-making authority to the airport operator for short-term intrusions would remain. The airport operator must consult with CASA and Airservices prior to making a decision.

However, the regulations should be amended to prevent applications for short-term intrusions from being 'rolled-over', and a proponent should not be able to reapply for consecutive temporary intrusion permits.

Permanent intrusion permit

Once the Declaration has been made, permanent intrusions would only be considered by Infrastructure under exceptional circumstances.

It is proposed that Infrastructure consider these applications in the first instance and consult with the airport operator, CASA and Airservices as well as Defence in the case of joint-user airports.

Avoiding Regulatory Overlap

Infrastructure recommends repealing the following two legacy regulations, as far as they pertain to leased federal airports, to avoid regulatory overlap:

Civil Aviation (Buildings Control) Regulations 1988

Construction above a certain height is prohibited around the following airports:

- Adelaide;
- Bankstown;
- Essendon;
- Melbourne;
- Moorabbin; and
- Sydney (Kingsford Smith)

unless an approval is given under these regulations.

A proponent must apply to CASA for approval to build above a prescribed building height and CASA may approve, approve with or without conditions, or refuse the application.

If a building, structure or object existed in the areas with prescribed building height limitations under these regulations, and that building, structure or object was deemed a hazard to aircraft flying in the vicinity of the airport, CASA may direct the removal, marking or lighting of the building, structure or object. These powers may be exercised regardless of whether an approval was given under these regulations for the construction.

Reasonable compensation may be payable to a person who suffers a loss or damage or incurs expenses in relation to the direction from CASA to remove a building, structure or object.

Regulation 95 of the Civil Aviation Regulations 1988

Under regulation 95 of these regulations, CASA can, in certain circumstances, require the removal or marking of objects which constitute obstructions or potential hazards to air navigation near certain aerodromes, i.e. those open to public use by aircraft engaged in international air navigation or air navigation within a Territory.

All reasonable expenses and the amount of any actual loss or damage incurred and suffered by any person in complying with a direction to remove or mark objects may be recovered from CASA.¹

Conclusion

The Australian Government considers the safety, efficiency and regularity of existing and future aircraft operations at our major airports a key policy objective in sustaining economic growth.

In addition, through the NASF, all levels of government have recognised that harmonisation, as far as practicable, between State and Territory land use planning and building regimes and Commonwealth airport and aviation policy, planning and regulations, will assist in improving planning outcomes near airports and under flight paths.

Reform Proposal 1 aims to provide certainty and clarity for proponents and State, Territory and Local governments in dealing with off airport development proposals, and reduce unnecessary delays in development processes.

¹ Previously this sentence read: 'All reasonable expenses [...] by CASA'. 'By' is incorrect and was changed to 'from' on 25 May 2017.

5. Reform Proposal 2 – Protecting the National Communications, Navigation and Surveillance Network

Introduction

Existing powers under section 21 of the CA Act provide limited protection for individual CNS facilities from physical interference caused by nearby permanent or temporary objects, which can hinder the safe and effective operation of the CNS network.

As the owner of the nationally significant CNS network, Airservices is seeking a regulatory framework within which to administratively assess requests for relocations, including authority to negotiate relocation with a proponent.

The proposed CNS protection regime would be developed along with processes and procedures already being trialled by Airservices with stakeholders and developed through NASAG.

Airservices Role as the Civil Air Navigation Service Provider

Airservices provides safe, efficient and regular civil air traffic services (ATS) in accordance with its functions under the *Air Services Act 1995* (the Air Services Act) and in compliance with CASR Part 172 'Air Traffic Service Providers' and the CA Act.

CASR Part 172 establishes the regulatory framework for the approval of civil ATS providers. It includes standards for air traffic facilities, safety management and the provision of air traffic services.

Airservices provides CNS infrastructure in accordance with CASR Part 171 'Aeronautical Telecommunications Service and Radionavigation Service Providers' and the applicable Manual of Standards. In some instances, CNS facilities used by civil aviation are provided by Defence or an aerodrome operator.

Supporting Airservices with its role as civil Air Navigation Service Provider (ANSP) is a complex national network of interconnected CNS facilities, comprising a range of High Frequency and Very High Frequency voice communications stations, satellite ground stations, primary and secondary radar and numerous ground-based surveillance stations located on and off aerodrome.

While the most distinctive CNS facilities are usually located at an airport, such as the air traffic control tower and large scale radar and communications equipment, there are numerous often subtly located CNS facilities situated around the country.

However, any CNS facility contributes to aviation safety and, whether on or off airport, can be vulnerable to interference from tall permanent physical structures, such as buildings or wind turbines, or temporary mobile structures, such as container ships.

Relocations of CNS facilities can be very expensive and more importantly may not guarantee as good a safety outcome as the existing location of a facility. A single relocation can cost up to \$3 million or more, depending on the type of facility, whether land acquisition is necessary, the remoteness of the location, and ease of access to power and communications networks.

It is important that the Commonwealth has a legislative framework in place to protect these national infrastructure assets from physical interference, regardless of whether the CNS facility is located on or off airport.

Current Regulatory Powers

Under section 21 of the CA Act CASA can take certain actions if it believes on reasonable grounds that an installation is or may be causing active or passive interference with:

- (a) communications to or from aircraft; or
- (b) communications to or from centres established for air traffic control; or
- (c) with navigational aids; or
- (d) with surveillance systems

in circumstances that are likely to endanger the safety of aircraft engaged in interstate or international air navigation or air navigation within, to or from a Territory.

The actions CASA can take include serving notices to have certain equipment tested, and if necessary, modified to eliminate interference.

However, if an installation has been installed correctly and in accordance with applicable laws, section 21(7) enables the proprietor of the installation to seek reimbursement for expenses incurred due to a direction from CASA to eliminate the cause of the interference.

In addition, under the *Radiocommunications Act 1992* (the Radiocommunications Act) there are certain regulatory controls in place to remediate interference with the aeronautical radiocommunications spectrum affecting CNS facilities at or beyond airports and aerodromes. The Australian Communications and Media Authority (ACMA) is responsible for managing and regulating radiofrequency spectrum under the Radiocommunications Act.

Reform Proposal 2 – Protecting the National Communications, Navigation and Surveillance (CNS) Network

Policy Objective: To create a nationally consistent regulatory framework for the protection of the national CNS network

Key outcomes

1. Clarify roles and responsibilities, including the role of the civil Air Navigation Service Provider (ANSP), the owner of a CNS facility (who may not be an ANSP), airport and aerodrome operators, and local building authorities;
2. Improve public awareness of CNS facilities and the protected airspace around them;

3. Provide a mechanism to enable the assessment of a proposed development that may significantly impact on, or require the relocation of, a CNS facility;
4. Where relocation is required, provide a mechanism to enable the owner of the CNS facility to recover costs from the person seeking the relocation; and
5. Authorise, as a measure of last resort, CASA to refuse a request for relocation, or take steps to prevent an unauthorised interference due to a proposed development, on aviation safety grounds.

Conclusion

The Australian Government has a role in protecting the national CNS network from degradation due to interference from permanent or temporary structures.

The current provisions under the CA Act are no longer fit-for-purpose, and a fresh approach would aim to share responsibility between, and facilitate engagement amongst, the CNS facility owner, the civil ANSP, the relevant airport or aerodrome operator, CASA and the proponent of a potentially interfering development.

Key to the success of this new approach would be better promulgation of the location of CNS facilities and provision of public information about the need for intrusion-free airspace around each facility as well as better integration of CNS facilities and applicable Building Restricted Areas in State, Territory and Local government land use planning instruments.

In this regard NASAG has recently adopted a new [NASF Guideline G: Protecting Aviation Facilities – Communication, Navigation and Surveillance \(CNS\)](#). The guideline will assist land-use planners, building surveyors and the development industry to better consider CNS facilities when assessing development proposals and rezoning requests and when developing strategic land-use plans. It will guide their interactions with Airservices and Defence in terms of gaining up-to-date geographical locations of CNS facilities and when to consult on development proposals.

6. Reform Proposal 3 – Mitigating Risks to Aircraft Flying Beyond Aerodromes

Introduction

The main object of the CA Act is to establish a regulatory framework for maintaining, enhancing and promoting the safety of civil aviation, with particular emphasis on preventing aviation accidents and incidents. Currently the CA Act does not provide a formal mechanism for CASA to review or prohibit hazards beyond aerodromes and these hazards can cause aviation fatalities.

Known Hazards to Aircraft Flying Beyond Aerodromes

In 2014 CASA and the Aerial Agricultural Association of Australia (AAAA) issued a Sector Risk Profile based on AS/NZS ISO 31000-2009 'Risk Management – Principles and Guidelines'.

The Sector Risk Profile confirms that wire strikes are the most common form of accidents (26 per cent), with the second highest incident occurrence being collision with terrain (13.69 per cent).

It includes a risk register for the aerial application sector (see table below).

Collision with obstacles leads to an aircraft safety incident	
Risk Owner – Primary: AOC Holder	
Current Rating: Medium	
Treatment Description	Treatment Owner
Power line marking (in accordance with AS 3891)	Energy Network Association
Mapping of network (register) / GPS plotting	Energy Network Association
Energy Network Association letter from CASA	CASA
Management of wind monitoring towers	Relevant government authorities

The Foreword to the Sector Risk Profile advises that it “provides the sector participants and CASA with an opportunity to understand the effects of aviation related risks on the sector and how the level of risks can be reduced and managed utilising an approach that monitors the implementation of risk treatments by sector stakeholders, including CASA, as well as evaluating the effectiveness of the risk treatment through a set of safety performance indicators.”

Wire Strikes

The Australian Transport Safety Bureau (ATSB) has data spanning the last two decades about accidents and incidents involving low-flying operations, such as crop dusting and aerial mustering, as well as general aviation operations, including helicopters.

In [Wire-strike Accidents in General Aviation: Data Analysis 1994 to 2004](#) the ATSB reported “[t]he majority of wire-strike accidents involved aerial agriculture operations, accounting for 74 accidents or 62 per cent” (page vii). According to the ATSB publication, pilots often knew about the wires but due to human factors like stress, fatigue, workload and visibility, failed to take them into account during low-flying operations (page 51).

In 2013 the ATSB reprinted [Avoidable Accidents No. 2 – Wirestrikes involving known wires: A manageable aerial agriculture hazard](#), reporting that of the 180 wire strike accidents in Australia between 2001 and 2010, 100 involved agricultural flying and “63 per cent of pilots were aware of the position of the wire before they struck it” (page 1).

In this publication the ATSB refers to the Australian Standard 3891.2-2008 ‘Marking of overhead cables for planned low level flying operations’ (AS 3891.2), according to which:

- markers should be installed where regular low-level flying operations take place;
- a person requesting planned low-level flying operations (for example, the land owner) is responsible for requesting installation of markers; and
- the pilot or the pilot’s delegate should be satisfied as to the need for and effectiveness of the marker prior to commencing low-level operations.

According to AS 3891.1-2008 wires must be marked if the cable is higher than 90 metres and has a continuous span of 50 metres (pages 6-7).

The ATSB advises that even where the criteria of AS 3891.1 do not apply, there may be an obligation on the owner of the wire to mark the wire if there is a high level of risk associated with the visibility of the wire (page 7).

Some power line companies are aware of their duty of care towards the low-flying aviation sector and provide maps of power lines to pilots.

The ATSB encourages pilots to discuss known hazards with the property manager, local residents or other operators with experience in the area.

Wind Turbines

[NASF Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation](#) provides advice to State, Territory and Local government decision makers, airport operators and developers of wind farms on the risk to civil aviation arising from the development, presence and use of wind farms and wind monitoring towers.

Wind farms can be hazardous to aviation as they are tall structures with the potential to come into conflict with low-flying aircraft.

Temporary and permanent wind monitoring towers can be erected in anticipation of, or in association with, wind farms and can also be hazardous to aviation, particularly given their low visibility.

These structures can also affect the performance of CNS facilities operated by ANSPs.

The NASF Guideline is voluntary and suggests that wind farm proponents undertake an aeronautical risk assessment to identify hazard mitigation measures, including marking and lighting, if the proposed wind turbines are deemed hazardous to aviation safety.

To date the ATSB has not investigated incidents involving wind monitoring towers or wind turbines.

Current Regulatory Powers

Civil Aviation Regulations 1988 (CAR)

Regulation 94 of the CAR – Dangerous Lights

Regulation 94 of the CAR provides CASA with the power to authorise a notice to be served upon the owner of a place where light is exhibited at or in the neighbourhood of an aerodrome, air route or airway facility and require dangerous lights to be extinguished or screened.

CASA can authorise officers to carry this out if the relevant person fails to do so, and CASA may recover the costs of carrying out the direction from the person.

CARs – Flight Planning

Under regulation 233(1)(h) of the CAR, the pilot in command (PIC) must not commence a flight unless the latest editions of the aeronautical maps, charts and other aeronautical information and instructions that are applicable to the route to be flown, and any alternative route that may be flown, are carried in the aircraft and are readily accessible to the flight crew.

Under regulation 239(1) of the CAR, before beginning a flight the pilot shall study all available information appropriate to the intended operation.

In the cases of flights away from the vicinity of an aerodrome and all Instrument Flight Rules flights, the PIC shall study current weather reports, airways facilities available on the route to be followed and the condition of those facilities, the conditions of aerodromes to be used and their suitability for the aircraft to be used, and air traffic control rules and procedures applicable to the particular flight.

In relation to low-flying operations (excluding aerial application operations regulated under CASR Part 137), regulation 157(1)(b) of the CAR provides that a PIC must not fly the aircraft over any non-populous area at a height lower than 500 feet (152 metres), which is the height above the highest point of the terrain, and any object on it, within a radius of 600 metres.

However, regulation 157(4)(b) of the CAR provides that regulation 157(1) does not apply if the aircraft is engaged in aerial work operations, i.e. operations that require low-flying, and the owner or operator of the aircraft has received from CASA either a general permit for all flights or a specific permit for the particular flight to be made at a lower height while engaged in such operations.

Civil Aviation Safety Regulations 1998 (CASR)

CASR Part 137 'Aerial Application Operations'

Aerial application operations, such as agricultural operations that require low flying, are regulated under CASR Part 137.

If flying over a populous area, under regulation 137.145 of the CASR the operator, i.e. the person that holds the required Air Operators Certificate (AOC), must, before conducting the operation, make a plan for the operation that identifies any obstructions to flight and sets out how these will be avoided.

Under regulation 137.120, the pilot undertaking aerial application operations must have a copy of the aeroplane's flight manual, flight and maintenance records, aeroplane's certificate of registration and certificate of airworthiness, and current medical certificate for, and licence of, the pilot on board.

While this regulation does not specifically refer to obstacle and terrain charts and maps, it appears that regulation 233(1)(h) and regulation 239(1) of the CAR also applies to pilots undertaking aerial application operations.

CASR Part 175 'Collection of Obstacle Data'

Subpart 175.E authorises Airservices to collect data about an object or other structure that affects aviation safety from a person who owns, controls or operates the structure.

Subpart 175.E does not explicitly require that the structure or object have a connection with aerodromes and it is arguable that the structure or object could be located anywhere in Australia.

Reform Proposal 3 – Mitigating Risks to Aircraft Flying Beyond Aerodromes

Policy Objective: To improve safety for the low-flying aviation sector (including commercial operations and aerial emergency search and rescue services) when operating beyond aerodromes

Key outcomes

1. Ensure visual markers are provided on power lines, overhead cables and transmission lines, and other inconspicuous objects. Options include but are not limited to:
 - a. Mandate the Australian Standard for power line marking in the CA Act;
 - b. Develop voluntary guidelines for national adoption;
 - c. Agree to industry self-regulation with relevant peak industry organisations; and
 - d. Develop a model framework for State, Territory or Local government to consider.

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2. Provide a nationally consistent approach to the marking and lighting of wind turbines. Options include but are not limited to:
 - a. Mandate marking and lighting of wind turbines under the CA Act in accordance with Annex 14 of the Convention on International Civil Aviation (the Chicago Convention), as endorsed by the International Civil Aviation Organization (ICAO);
 - b. Mandate the provision of a safety case and an aviation impact statement with all wind farm proposals to facilitate assessment by Airservices; and
 - c. Develop a model framework for State, Territory or Local government to consider.
 3. Develop location-specific or hazard-specific obstacle charts to assist with pre-flight planning and situational awareness. Options include but are not limited to:
 - a. Peak industry organisations, or individual operators, to commission (and fund) the development of location-specific or hazard-specific obstacle charts for their pilots/members, based on the obstacle data collected by Airservices under CASR Part 175.

Conclusion

The Australian Government is well aware that the most effective measures to reduce the risks to low-flying aircraft operations beyond the vicinity of airports will involve coordination by aviation agencies, State, Territory and Local government agencies and industry. Therefore, the options outlined in Reform Proposal 3 will be considered and developed as appropriate in consultation with these key stakeholders.

7. Feedback

The proposals in this paper address three broad areas of modernisation of the airspace protection regulatory framework: major airports, CNS facilities and risks to low-flying aircraft beyond airports.

The proposals will be of interest to a wide range of stakeholders including:

- airport and aerodrome operators;
- airlines, in particular major Regular Public Transport operators;
- State, Territory and Local government agencies;
- off airport developers;
- low-flying aviation sector;
- wind farm operators;
- utility companies;
- power lines and telecommunications tower owners; and
- the community.

The reform proposals have been kept at a high level to encourage stakeholders to fully explore one or more of the options in their submissions.

Your feedback by **28 February 2017** on the proposals raised in the paper is welcome.

At this stage Infrastructure intends to make all feedback public unless marked as in-confidence by the author.



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