ANNEXURE 19: NOISE MITIGATION AND MANAGEMENT PLAN

CAPE WINELANDS AIRPORT

NOISE MITIGATION AND MANAGEMENT PLAN

FINAL DRAFT

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EXECUTIVE SUMMARY

1 Background

Cape Winelands Airport (CWA), formerly known as Fisantekraal Airfield, is located approximately 13 km north-east of Durbanville and approximately 25 km north-east of Cape Town International Airport. The airport currently supports general aviation activities including flight training, aircraft maintenance, private charter operations, hangar facilities and aviation fuel sales. The proposed development includes the expansion of the airport to accommodate domestic, regional and international aviation operations.

As part of the Environmental Impact Assessment process, DDA Environmental Engineers undertook a comprehensive Noise Impact Assessment (NIA) to evaluate the potential aircraft noise impacts associated with the proposed development. The assessment utilised the Aviation Environmental Design Tool (AEDT) and considered existing operations, initial operation of the new runway and future full-capacity airport operations.

The NIA identified surrounding communities and noise-sensitive receptors potentially affected by aircraft noise including Klipheuwel, Fisantekraal, Greenville Garden City, Bella Riva Mixed-Use Development, educational facilities, farmhouses and agricultural properties.

2 Purpose of the NMMP

Environmental Authorisation Condition 46 requires the preparation and implementation of a Noise Mitigation and Management Plan (NMMP) for the operational phase of the airport. The NMMP establishes the framework through which aircraft noise will be monitored, managed, reviewed and continually improved throughout the operational life of the airport.

The Plan incorporates comments and requirements received from the City of Cape Town, DEA&DP, SACAA, Western Cape Minister of Local Government, Environmental Affairs And Development Planning and other stakeholders and provides a mechanism through which compliance with applicable approval conditions can be demonstrated.

3 Noise Management Approach

The NMMP adopts the International Civil Aviation Organisation (ICAO) Balanced Approach to Aircraft Noise Management as the overarching management framework for aircraft noise associated with airport operations.

The NMMP is structured around five key management pillars:

- Aircraft noise monitoring.
- Complaints management.
- Stakeholder engagement.
- Adaptive management.
- Future technical review and modelling.

4 Aircraft Noise Monitoring Programme

A permanent aircraft noise monitoring network will be established and maintained during airport operations. The monitoring network will initially comprise four permanent monitoring stations located at:

- Klipheuwel.
- Greenville Garden City.
- Bella Riva Mixed-Use Development.
- Fisantekraal High School.

Monitoring results will be utilised to:

- Quantify aircraft noise exposure.
- Investigate complaints.
- Identify trends.
- Support adaptive management.
- Inform future technical studies.

The monitoring programme will record:

- $L_{Aeq,T}$
- L_{Rdn}
- L_{Rd}
- L_{Rn}
- L_{Amax}
- SEL
- Statistical noise indicators.
- Aircraft noise event exceedances.

5 Complaints Management

The airport will maintain a formal aircraft noise complaints management system linked to aircraft noise monitoring information and aircraft operational data.

The complaints system will:

- Record all aircraft noise complaints.
- Investigate complaints.
- Correlate complaints with monitoring results.
- Identify complaint trends.
- Support corrective action processes.

6 Stakeholder Engagement

A Noise Monitoring Committee will be established to provide a formal platform for communication between:

- Airport management.
- Regulatory authorities.
- Aviation stakeholders.
- Community representatives.
- Interested and affected parties.

The Committee will review:

- Monitoring results.
- Complaint trends.
- Corrective actions.
- Future studies.
- Aircraft noise management performance.

7 Reporting

The airport will prepare:

7.1 Quarterly Aircraft Noise Monitoring Reports

These reports will include:

- Monitoring results.
- Aircraft operational information.
- Complaint statistics.
- Exceedance information.
- Corrective actions.

7.2 Annual Aircraft Noise Management Reports

These reports will provide:

- Long-term trend analysis.
- Performance reviews.
- Stakeholder engagement outcomes.
- Adaptive management reviews.
- Recommendations for improvement.

8 Continual Improvement

The NMMP adopts an adaptive management approach whereby monitoring results, stakeholder feedback, operational information and complaint trends are periodically reviewed to identify opportunities for improving aircraft noise management performance.

Future technical studies, including additional AEDT aircraft noise modelling, may be undertaken where justified by operational changes, monitoring results, authority requests or stakeholder concerns.

9 Key Commitments

The Airport Operator commits to:

- Implementing the approved NMMP.
- Maintaining the aircraft noise monitoring network.
- Maintaining the complaints management system.
- Convening the Noise Monitoring Committee.
- Reporting aircraft noise management performance.
- Reviewing the NMMP annually.
- Applying the ICAO Balanced Approach.
- Promoting continual improvement in aircraft noise management.

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TERMINOLOGY, ACRONYMS AND DEFINITIONS

Acronym	Description
AEDT	Aviation Environmental Design Tool
AOPA-SA	Aircraft Owners and Pilots Association South Africa
ATNS	Air Traffic and Navigation Services
CAASA	Commercial Aviation Association of Southern Africa
CWA	Cape Winelands Airport
DEA&DP	Department of Environmental Affairs and Development Planning
DDA	DDA Environmental Engineers
EA	Environmental Authorisation
ICAO	International Civil Aviation Organisation
$L_{Aeq,T}$	Equivalent Continuous A-Weighted Sound Pressure Level
L_{Amax}	Maximum A-Weighted Sound Pressure Level
L_{Rd}	Day Rating Level
L_{Rdn}	Day-Night Rating Level
L_{Rn}	Night Rating Level
LRn	Statistical percentile levels
NIA	Noise Impact Assessment
NMC	Noise Monitoring Committee
NMMP	Noise Mitigation and Management Plan
SACAA	South African Civil Aviation Authority
SEL	Sound Exposure Level
SANS	South African National Standards

DEFINITIONS

Aircraft Noise Event: A noise event attributable to the operation of an aircraft including take-off, landing, overflight or ground operations.

Corrective Action: An action implemented to address an identified issue, trend, complaint or monitoring outcome.

Noise Monitoring Committee: A stakeholder forum established to review aircraft noise monitoring results, complaints and aircraft noise management performance.

Noise-Sensitive Receptor: A land use or activity potentially sensitive to aircraft noise including residential areas, educational facilities, healthcare facilities and places of worship.

Permanent Monitoring Station: A fixed aircraft noise monitoring location established for long-term monitoring purposes.

1 INTRODUCTION

1.1 Background

Cape Winelands Airport (CWA), formerly known as Fisantekraal Airfield, is located approximately 13 km north-east of Durbanville and approximately 25 km north-east of Cape Town International Airport (refer to Figure 1-1). The airport currently functions as a general aviation airfield supporting flight training, aircraft maintenance, private charter operations, hangar facilities and aviation fuel sales.

The proposed development includes the expansion and upgrading of the existing airport infrastructure to accommodate domestic, regional and international aviation operations. The proposed development comprises a new runway and associated aviation infrastructure intended to support increased aircraft movements and future growth in airport operations.

As part of the Environmental Impact Assessment process, DDA Environmental Engineers undertook a comprehensive Noise Impact Assessment (NIA) to evaluate the potential aircraft noise impacts associated with the proposed airport expansion. Aircraft noise modelling was undertaken using the Aviation Environmental Design Tool (AEDT), which is the successor to the Integrated Noise Model (INM) specified in SANS 10117 for aircraft noise calculations in South Africa. The assessment considered the existing airport operations, the operational year of the proposed new runway and future full-capacity operations.

The NIA considered existing airport operations, the operational year associated with the introduction of the proposed new runway and future full-capacity airport operations. The assessment evaluated the potential aircraft noise exposure affecting surrounding communities and identified the areas most likely to experience aircraft noise impacts as a result of airport operations.

The assessment identified a number of surrounding noise-sensitive receptors including residential communities, educational facilities, farmhouses and agricultural activities. Particular attention was given to the communities of Klipheuwel, Fisantekraal, Greenville Garden City and Bella Riva Mixed-Use Development, as well as other surrounding receptors located within the airport study area.

The findings of the NIA form the technical basis upon which this Noise Mitigation and Management Plan (NMMP) has been developed.

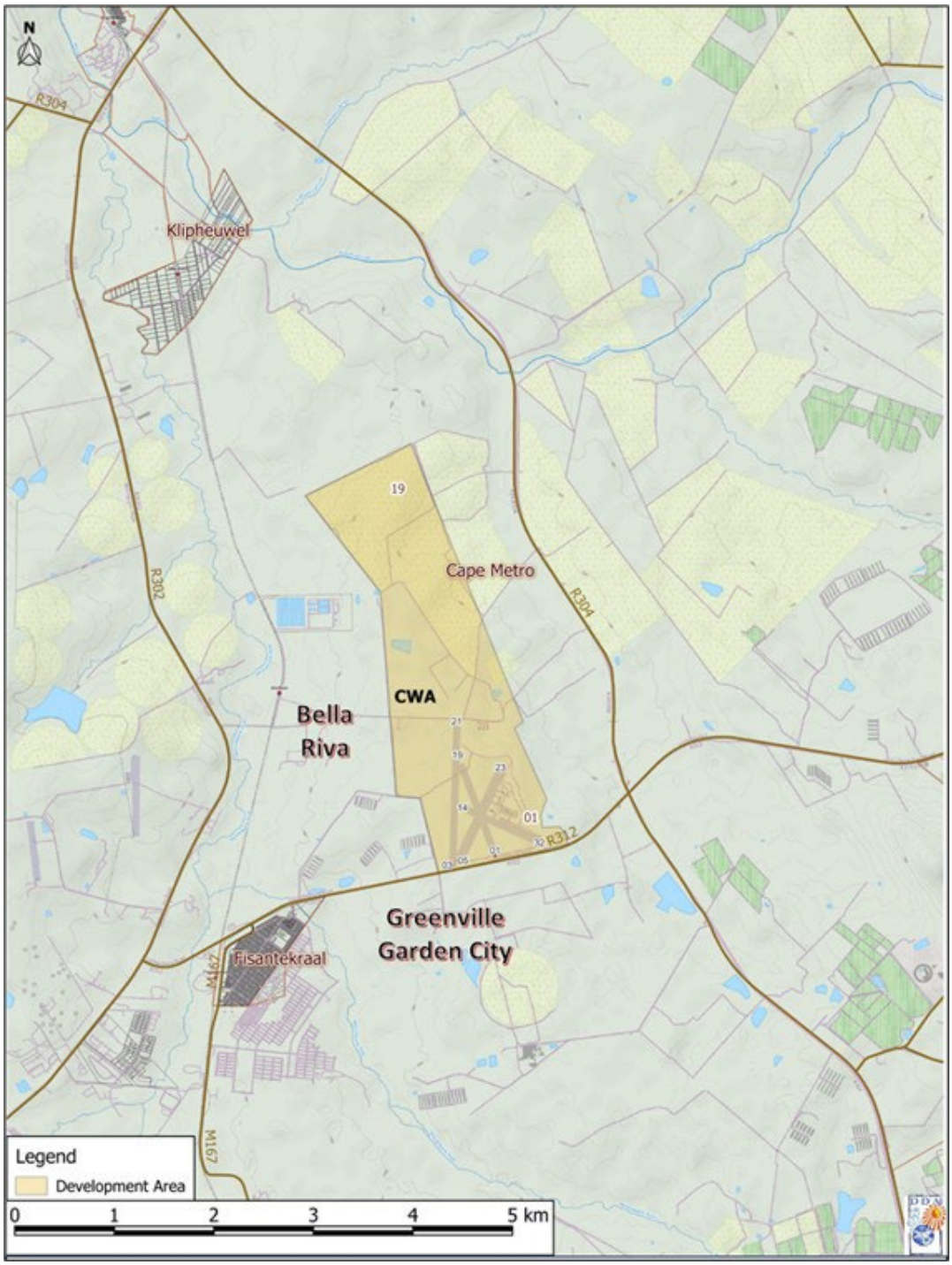


Figure 1-1. Cape Winelands Airport (CWA) Locality Map

1.2 Purpose of the NMMP

Environmental Authorisation Condition 46 requires that a Noise Mitigation and Management Plan (NMMP) be prepared and implemented for the operational phase of Cape Winelands Airport. The Appeal decision by the Western Cape Minister of Local Government, Environmental Affairs and Development Planning require an additional monitoring station. The EA and Appeal conditions further require that the NMMP incorporate comments from relevant authorities, including the Department of Environmental Affairs and Development Planning (DEA&DP), the City of Cape Town (CoCT), the South African Civil Aviation Authority (SACAA), Interested and Affected Parties and Appellants, and that the

NMMP be submitted to the relevant authorities prior to the commencement of earthworks or construction activities.

The purpose of this NMMP is therefore to establish a structured and transparent framework through which aircraft noise associated with airport operations will be monitored, managed, reviewed and continually improved throughout the operational life of the airport. The NMMP provides the mechanisms through which aircraft noise monitoring, complaints management, stakeholder engagement, reporting, corrective actions and continual improvement will be undertaken.

The NMMP has been informed by the findings and recommendations contained within the DDA Noise Impact Assessment, applicable legislative requirements, authority comments and recognised international best practice relating to airport noise management.

1.3 Scope of the NMMP

This NMMP applies to the operational phase of Cape Winelands Airport and addresses aircraft noise associated with airport activities and aircraft operations. The Plan does not address construction-related noise impacts, which are managed separately through the Environmental Management Programme (EMPr), contractor method statements and associated environmental compliance procedures.

The NMMP addresses the following key components:

- Aircraft noise monitoring.
- Aircraft noise complaints management.
- Stakeholder engagement and communication.
- Noise Monitoring Committee governance.
- Reporting and performance assessment.
- Corrective actions and adaptive management.
- Future technical reviews and aircraft noise modelling.
- Continual improvement of aircraft noise management.

1.4 Objectives of the NMMP

The primary objectives of this NMMP are to:

- Ensure compliance with Environmental Authorisation Condition 46 and other applicable approval conditions.
- Establish a long-term framework for aircraft noise management.
- Protect surrounding noise-sensitive receptors, where reasonably practicable.
- Implement the recommendations contained within the approved Noise Impact Assessment.
- Establish a transparent aircraft noise monitoring programme.
- Establish a structured complaints management system.
- Facilitate stakeholder engagement and participation.

- Implement the principles of the ICAO Balanced Approach to Aircraft Noise Management.
- Establish mechanisms for continual improvement and adaptive management.

1.5 Relationship to the Noise Impact Assessment

This NMMP has been developed directly from the findings, conclusions and recommendations of the DDA Noise Impact Assessment. The NIA provides the technical assessment of aircraft noise impacts and identifies the potential extent of aircraft noise exposure associated with airport operations.

The NMMP does not replace the NIA but rather provides the management framework through which the recommendations of the NIA will be implemented, monitored and reviewed throughout the operational life of the airport.

Future monitoring results, operational changes, stakeholder feedback and technical investigations may identify opportunities for refinement of management measures. Such refinements shall be undertaken in accordance with the adaptive management framework established within this Plan.

1.6 Implementation Framework

Implementation of this NMMP will be achieved through a series of management actions designed to ensure the effective monitoring, management and continual improvement of aircraft noise associated with Cape Winelands Airport operations. The implementation framework translates the objectives and commitments contained within each section of the NMMP into specific management actions that can be assigned, monitored, verified and reported on throughout the operational life of the airport. These actions establish clear accountability and provide a practical mechanism for demonstrating implementation of the NMMP and compliance with approval requirements.

For consistency throughout this Plan, each section concludes with an Implementation Framework table that summarises the principal management commitments applicable to that section. The tables identify the management actions to be undertaken, the party responsible for implementation, the means by which implementation will be verified and the reporting mechanisms through which progress and performance will be communicated. Collectively, the Implementation Framework tables provide an auditable record of the commitments contained within this NMMP and support the monitoring, reporting, corrective action and continual improvement processes established throughout the Plan. Table 1-1. provides the overarching implementation framework for the NMMP.

Table 1-1. Introduction Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Implement recommendations of the approved DDA Noise Impact Assessment	Airport Operator	Review of implementation records and operational procedures	Annual Aircraft Noise Management Report
Fulfil Environmental Authorisation Condition 46 and Appeal Decision Condition E9 & E50	Airport Operator	Compliance audits and authority review	Annual Aircraft Noise Management Report
Fulfil Municipal Planning Tribunal approval requirements	Airport Operator	Compliance verification records	Annual Aircraft Noise Management Report

Management Action	Responsibility	Verification	Reporting Mechanism
Establish long-term aircraft noise management procedures	Airport Operator	Approved NMMP and management system documentation	Annual Aircraft Noise Management Report
Establish monitoring, reporting and adaptive management mechanisms	Airport Operator	Monitoring records and review documentation	Quarterly Monitoring Reports and Annual Aircraft Noise Management Report

2 LEGISLATIVE AND APPROVAL FRAMEWORK

2.1 General

This Noise Mitigation and Management Plan (NMMP) has been prepared to satisfy the aircraft noise management requirements associated with the proposed expansion and operation of Cape Winelands Airport. The NMMP provides the framework through which aircraft noise impacts associated with airport operations will be monitored, managed, reviewed and continually improved throughout the operational life of the airport.

The Plan has been informed by the findings of the DDA Noise Impact Assessment (NIA), Environmental Authorisation requirements, Municipal Planning Tribunal requirements, comments received from the City of Cape Town and other relevant authorities and internationally recognised airport noise management principles.

This NMMP has been developed to ensure that aircraft noise management is implemented in a transparent, auditable and adaptive manner and that airport operations remain aligned with applicable environmental approval requirements.

2.2 Legislative Context

Aircraft noise management in South Africa is governed through a combination of environmental legislation, planning approvals, aviation legislation and technical standards. These instruments collectively establish the framework within which airport-related aircraft noise must be assessed, monitored and managed (refer to Table 2-1).

The National Environmental Management Act (NEMA) provides the overarching environmental management framework applicable to the proposed airport development. Environmental Authorisation issued in terms of NEMA includes specific conditions relating to aircraft noise management and requires the preparation and implementation of an operational Noise Mitigation and Management Plan.

In addition, environmental noise management is regulated through the Western Cape Noise Control Regulations and supported by relevant South African National Standards relating to environmental noise assessment and aircraft noise evaluation.

The airport will also operate within the broader aviation regulatory environment administered by the South African Civil Aviation Authority (SACAA), Air Traffic and Navigation Services (ATNS) and other aviation stakeholders.

Table 2-1. Legislative and Regulatory Framework

Applicable Requirement	Relevance to NMMP
National Environmental Management Act (Act 107 of 1998)	Provides the environmental management framework under which the airport development was authorised.
Environmental Authorisation and Appeal Decision	Establishes legally binding conditions relating to aircraft noise management.
Western Cape Noise Control Regulations (PN 200 of 2013)	Provides the regulatory framework for environmental noise management within the Western Cape Province.
Municipal Planning Tribunal Approval	Requires implementation of aircraft noise management measures and NIA recommendations.

Applicable Requirement	Relevance to NMMP
SACAA Regulatory Framework	Provides aviation regulatory oversight relevant to operational procedures and aviation safety.
ATNS Operational Framework	Provides airspace management and air traffic procedure requirements.
ICAO Balanced Approach	Provides internationally recognised aircraft noise management principles.

2.3 Environmental Authorisation Requirements

Environmental Authorisation Condition 46 requires the preparation and implementation of a Noise Mitigation and Management Plan for the operational phase of the airport. The condition specifically requires that measurable goals be established to prevent and manage operational noise emissions and that the NMMP be submitted to the relevant authorities prior to commencement of earthworks or construction activities. This compliance framework is outlined in Table 2-2.

The condition further requires that comments received from relevant authorities be incorporated into the NMMP prior to submission and implementation.

The NMMP therefore serves as the primary management mechanism through which the aircraft noise requirements of the Environmental Authorisation will be implemented and maintained throughout airport operations.

Table 2-2. Environmental Authorisation Condition 46 Compliance Framework

Condition Requirement	NMMP Response
Preparation of an operational NMMP	This document fulfils this requirement.
Incorporation of authority comments	Addressed through the consultation and review process.
Submission prior to construction	Addressed through the implementation schedule.
Establish measurable goals	Addressed in Section 14.
Manage operational aircraft noise	Addressed throughout the NMMP.
Implement continual improvement measures	Addressed through the adaptive management framework.

2.4 Appeal Decision Requirements

Subsequent to the Environmental Authorisation (EA), the Appeal Decision introduced additional requirements relevant to the preparation and implementation of this NMMP. Of particular relevance to aircraft noise management are Conditions E9.2 and E50.

Condition E9.2 requires the establishment of an additional permanent noise monitoring terminal at or close to Fisantekraal High School, in addition to the three permanent noise monitoring terminals required for the operational year of the new airport and runway. Accordingly, this NMMP provides for a minimum network of four permanent aircraft noise monitoring terminals, including a terminal at or close to Fisantekraal High School. The monitoring network and proposed monitoring locations are addressed further in Section 7.

Condition E50 requires registered Interested and Affected Parties (I&APs), including the Appellants, to be afforded an opportunity to comment on specified post-authorisation documents. As this NMMP is prepared in terms of Condition 46 of the EA, it is subject to this consultation requirement. The NMMP

shall therefore be made available to registered I&APs for comment as part of the applicable post-authorisation consultation process.

The manner in which these Appeal Decision requirements are addressed within the NMMP is summarised in Table 2-3.

Table 2-3. Appeal Decision Compliance Framework

Condition Requirement	NMMP Response
Establish an additional permanent noise monitoring terminal at or close to Fisantekraal High School.	Incorporated into the permanent aircraft noise monitoring network provided for under Section 7.
Provide registered I&APs, including the Appellants, an opportunity to comment on the NMMP.	Addressed through the post-authorisation consultation process applicable to this NMMP.

2.5 Municipal Planning Tribunal Requirements

Comments received through the Municipal Planning Tribunal review process indicated that the recommendations contained within the DDA Noise Impact Assessment and a comprehensive aircraft noise management strategy should be incorporated into the land-use approval process and submitted to the relevant City of Cape Town departments for consideration.

This NMMP has therefore been developed to provide the comprehensive aircraft noise management framework requested by the City and incorporates the recommendations of the DDA Noise Impact Assessment, the Environmental Authorisation requirements and comments received from the relevant authorities.

The NMMP also provides the long-term management framework through which aircraft noise management commitments can be implemented and audited throughout the operational life of the airport.

2.6 DDA Noise Impact Assessment Recommendations

The DDA Noise Impact Assessment forms the technical foundation of this NMMP. The NIA evaluated aircraft noise exposure associated with the proposed airport development and identified the potential impacts on surrounding communities and other noise-sensitive receptors.

The NIA further identified a range of recommendations relating to aircraft noise management, monitoring, stakeholder engagement and future review processes. These recommendations have been incorporated into this NMMP and form the basis for the management measures described throughout the document (refer to Table 2-4).

The airport shall implement the relevant recommendations contained within the approved DDA Noise Impact Assessment and utilise the findings of future monitoring and review processes to support continual improvement of aircraft noise management.

Table 2-4. NIA Recommendation Implementation Framework

Recommendation Category	NMMP Section
Aircraft noise monitoring	Section 10
Complaints management	Section 12
Stakeholder engagement	Section 13

Recommendation Category	NMMP Section
Noise Monitoring Committee	Section 8
Future technical review and modelling	Section 11
Reporting requirements	Section 16
Adaptive management	Section 15

2.7 City of Cape Town Requirements

Comments received from the City of Cape Town identified the need for a structured aircraft noise management framework capable of supporting long-term operational noise management and compliance monitoring.

The City further indicated the need for ongoing monitoring, reporting, complaints management and stakeholder engagement processes capable of demonstrating compliance with approval requirements and supporting future review processes.

The NMMP therefore incorporates provisions for aircraft noise monitoring, complaints management, authority participation, stakeholder engagement, reporting and adaptive management.

The City of Cape Town Air Quality Management Directorate will be invited to participate in the Noise Monitoring Committee and will receive the reports required under this NMMP.

2.8 ICAO Balanced Approach

The International Civil Aviation Organisation (ICAO) Balanced Approach to Aircraft Noise Management has been adopted as the overarching aircraft noise management philosophy for Cape Winelands Airport.

The Balanced Approach promotes a coordinated strategy based on:

- Reduction of noise at source.
- Land-use planning and management.
- Noise abatement operational procedures.
- Operating restrictions where justified.

The application of the ICAO Balanced Approach to Cape Winelands Airport is summarised in Table 2-5. The corresponding implementation framework, including responsibilities, verification methods and reporting requirements, is presented in Table 2-6 further below.

The airport shall utilise these principles when reviewing future operational changes, aircraft noise mitigation opportunities and future technical studies.

Table 2-5. ICAO Balanced Approach Application

ICAO Element	Application at Cape Winelands Airport
Reduction at Source	Encourage utilisation of modern aircraft, where reasonably practicable.
Land Use Planning	Support compatible land-use planning around the airport.
Noise Abatement Operational Procedures	Review opportunities with ATNS, SACAA and operators where appropriate.

Operating Restrictions	Consider only where justified through technical review and consultation processes.

2.9 Implementation Framework

The legislative requirements, approval conditions and aircraft noise management principles described in this section establish the regulatory and policy framework within which the NMMP will be implemented. To ensure that these requirements are translated into practical management actions, Table 2-6 summarises the principal commitments arising from the Environmental Authorisation, Municipal Planning Tribunal approval, DDA Noise Impact Assessment recommendations and the ICAO Balanced Approach to Aircraft Noise Management. The table identifies the key actions required to maintain compliance, the party responsible for implementation, the method by which implementation will be verified and the reporting mechanisms through which compliance and performance will be demonstrated.

Table 2-6. Legislative and Approval Framework Implementation Table

Management Action	Responsibility	Verification	Reporting Mechanism
Maintain compliance with Environmental Authorisation and Appeal Decision requirements	Airport Operator	Compliance audits and authority reviews	Annual Aircraft Noise Management Report
Implement recommendations contained within the DDA Noise Impact Assessment	Airport Operator	Implementation review	Annual Aircraft Noise Management Report
Maintain compliance with Municipal Planning Tribunal requirements	Airport Operator	Compliance records	Annual Aircraft Noise Management Report
Facilitate authority participation in aircraft noise management processes	Airport Operator	Committee records and consultation register	Annual Aircraft Noise Management Report
Apply ICAO Balanced Approach principles	Airport Operator	Operational reviews and management records	Annual Aircraft Noise Management Report
Review legislative and approval requirements periodically	Airport Operator	Annual review documentation	Annual Aircraft Noise Management Report

3 ROLES AND RESPONSIBILITIES

3.1 General

Effective implementation of this Noise Mitigation and Management Plan (NMMP) requires cooperation between the Airport Operator, regulatory authorities, aviation stakeholders, specialist advisors and surrounding communities. While the Airport Operator retains primary responsibility for implementation of the NMMP, successful aircraft noise management depends upon coordinated participation by a range of organisations and interested parties.

This section identifies the roles and responsibilities associated with implementation of the NMMP and establishes the governance framework through which aircraft noise management activities will be undertaken throughout the operational life of Cape Winelands Airport.

The responsibilities described in this section should be read in conjunction with the implementation measures contained throughout the remainder of this Plan.

3.2 Airport Operator

The Airport Operator shall be responsible for implementing the recommendations of the DDA Noise Impact Assessment, establishing and maintaining the aircraft noise monitoring network, maintaining the aircraft noise complaints management system and establishing and administering the Noise Monitoring Committee. The Airport Operator shall further coordinate stakeholder engagement activities, maintain aircraft operational information required for complaint investigations and prepare the reports required under this NMMP.

The Airport Operator shall also be responsible for implementing corrective actions where required, maintaining appropriate records relating to aircraft noise management activities and undertaking periodic reviews of the NMMP to ensure that the Plan remains effective, relevant and aligned with operational requirements and approval conditions.

The principal responsibilities of the Airport Operator include:

- Implement and maintain the NMMP.
- Establish and maintain the aircraft noise monitoring network.
- Establish and maintain the aircraft noise complaints management system.
- Establish and maintain the Noise Monitoring Committee.
- Coordinate stakeholder engagement activities.
- Maintain aircraft operational data required for complaint investigations.
- Undertake reporting required by the NMMP.
- Implement corrective actions where required.
- Undertake periodic NMMP reviews.

3.3 Airport Environmental Manager

The Airport Environmental Manager shall be responsible for the day-to-day administration and coordination of the NMMP and shall act as the primary point of contact for aircraft noise management activities at Cape Winelands Airport.

The Environmental Manager shall oversee the operation of the aircraft noise monitoring programme, manage the aircraft noise complaints management system, coordinate complaint investigations and maintain the records and registers required under this NMMP. The Environmental Manager shall further coordinate stakeholder engagement activities, prepare quarterly and annual aircraft noise management reports and support the implementation and tracking of corrective actions.

The Environmental Manager shall also act as the primary liaison between the Airport Operator, regulatory authorities, technical specialists, aviation stakeholders and the Noise Monitoring Committee and shall assist in ensuring that the requirements of this NMMP are effectively implemented and maintained.

The principal responsibilities of the Airport Environmental Manager include:

- Coordinate implementation of the NMMP.
- Manage aircraft noise monitoring activities.
- Coordinate complaint investigations.
- Maintain management records and registers.
- Coordinate stakeholder engagement.
- Prepare quarterly and annual reports.
- Support Noise Monitoring Committee activities.

3.4 Noise Monitoring Committee

The Noise Monitoring Committee (NMC) shall serve as the primary stakeholder forum through which aircraft noise management performance is reviewed and discussed. The Committee will provide a structured platform for communication between airport management, regulatory authorities, aviation stakeholders, community representatives and other interested and affected parties.

The NMC will review aircraft noise monitoring results, complaint trends, corrective actions, investigation outcomes and future aircraft noise management initiatives and will provide recommendations regarding aircraft noise management matters. The Committee shall function in an advisory capacity and shall not assume operational control over airport activities nor make decisions relating to aviation safety matters.

The principal responsibilities of the Noise Monitoring Committee include:

- Review aircraft noise monitoring results.
- Review aircraft noise complaints and trends.
- Review corrective actions and investigations.
- Review annual aircraft noise management performance.
- Provide recommendations regarding aircraft noise management.

- Facilitate communication between stakeholders.

3.5 Department of Environmental Affairs and Development Planning (DEA&DP)

DEA&DP serves as the competent environmental authority responsible for administration of the Environmental Authorisation issued for the airport development.

DEA&DP may review aircraft noise monitoring information, annual reports, future NMMP revisions and other information submitted in accordance with approval requirements. DEA&DP may also participate in the Noise Monitoring Committee and provide input regarding aircraft noise management matters. The principal responsibilities of DEA&DP include:

- Regulatory oversight of Environmental Authorisation requirements.
- Review reports submitted in accordance with approval conditions.
- Participate in future review processes where appropriate.
- Provide guidance regarding environmental compliance matters.

3.6 City of Cape Town

The City of Cape Town has an ongoing interest in aircraft noise management due to the potential influence of airport operations on surrounding communities and future land-use planning considerations.

Representatives of the City of Cape Town Air Quality Management Directorate, Noise Control Unit and Planning Directorate may participate in the Noise Monitoring Committee and provide technical input regarding aircraft noise management matters. The City may also review aircraft noise monitoring information, complaint trends and future aircraft noise management initiatives where relevant to municipal planning and environmental management responsibilities.

The principal responsibilities of the City of Cape Town include:

- Review aircraft noise monitoring information.
- Review complaint trends and management responses.
- Participate in stakeholder engagement processes.
- Provide input regarding future land-use compatibility matters.
- Participate in review of future aircraft noise management initiatives.

3.7 South African Civil Aviation Authority (SACAA)

The South African Civil Aviation Authority is responsible for aviation safety oversight and may provide technical input where aircraft noise management initiatives have the potential to influence aviation operations or safety considerations.

SACAA may participate in reviews of operational procedures, future aircraft noise mitigation initiatives and future technical investigations where appropriate and may provide aviation regulatory input during reviews of proposed aircraft noise management measures.

The principal responsibilities of SACAA include:

- Provide aviation regulatory input.

- Participate in operational reviews where required.
- Review aviation safety implications of proposed initiatives.
- Participate in future aircraft noise management studies where appropriate.

3.8 Air Traffic and Navigation Services (ATNS)

ATNS is responsible for air traffic management and airspace design within South African airspace and may provide input regarding operational procedures relevant to aircraft noise management.

ATNS may participate in reviews of operational procedures, flight paths, airspace considerations and future aircraft noise management studies where appropriate and may provide technical input regarding the operational feasibility of proposed aircraft noise management measures. The principal responsibilities of ATNS include:

- Provide air traffic management input.
- Participate in operational procedure reviews.
- Review airspace implications of proposed initiatives.
- Support future technical investigations where required.

3.9 Aircraft Operators

Aircraft operators play an important role in aircraft noise management through compliance with operational procedures and participation in future aircraft noise reviews.

Aircraft operators may provide operational information required for complaint investigations, monitoring reviews and future technical studies and may participate in discussions regarding opportunities to improve aircraft noise management performance, where reasonably practicable. The principal responsibilities of aircraft operators include:

- Comply with applicable operational procedures.
- Participate in aircraft noise reviews where appropriate.
- Provide operational information where required.
- Support aircraft noise management initiatives where practicable.

3.10 Acoustic Specialists

Acoustic specialists may be appointed by the Airport Operator from time to time to undertake technical investigations, aircraft noise monitoring reviews, specialist assessments or future AEDT modelling studies.

Specialists shall provide independent technical advice and assist the Airport Operator in evaluating aircraft noise management performance, interpreting monitoring results, investigating complaints and identifying opportunities for future aircraft noise mitigation and management improvements. The principal responsibilities of acoustic specialists include:

- Provide specialist acoustic advice.
- Undertake technical investigations.

- Conduct future aircraft noise modelling studies where required.
- Support NMMP review processes.

3.11 Community Representatives

Community representatives provide an important link between airport management and surrounding communities. Representatives may communicate community concerns, provide local knowledge and assist in identifying emerging aircraft noise issues and trends affecting their communities.

Community representatives participating in the Noise Monitoring Committee shall be encouraged to communicate information received through the Committee to the communities they represent and to facilitate constructive engagement between the airport and surrounding stakeholders. The principal responsibilities of community representatives include:

- Participate in stakeholder engagement activities.
- Communicate community concerns.
- Review aircraft noise management information.
- Provide input during Noise Monitoring Committee meetings.

3.12 Roles and Responsibilities Matrix

The roles and responsibilities described in the sections above, as well as the implementation framework are summarised in Table 3-1 and Table 3-2 respectively.

Effective implementation of the NMMP requires clear allocation of responsibilities between the Airport Operator, regulatory authorities, technical specialists, aviation stakeholders and community representatives. The governance structure established within this section is intended to ensure that aircraft noise management activities are appropriately coordinated, monitored and reviewed throughout the operational life of Cape Winelands Airport.

The roles and responsibilities assigned to each stakeholder group are summarised in Table 3-1, while Table 3-2 presents the implementation framework through which the governance arrangements established under this NMMP will be maintained, reviewed and updated. Together, these tables provide a consolidated overview of the accountability, oversight and stakeholder participation mechanisms that support implementation of the NMMP.

Table 3-1. Roles and Responsibilities Matrix

Organisation / Stakeholder	Primary Responsibilities
Airport Operator	Overall implementation of the NMMP, monitoring, reporting, complaints management, stakeholder engagement and continual improvement.
Airport Environmental Manager	Day-to-day administration and coordination of aircraft noise management activities.
Noise Monitoring Committee	Review monitoring results, complaints and management performance and provide recommendations.
DEA&DP	Regulatory oversight and review of approval condition compliance.
City of Cape Town	Technical input regarding aircraft noise management and land-use planning matters.

Organisation / Stakeholder	Primary Responsibilities
SACAA	Aviation regulatory and safety input.
ATNS	Airspace and operational procedure input.
Aircraft Operators	Operational participation and provision of operational information.
Acoustic Specialists	Technical investigations and specialist assessments.
Community Representatives	Stakeholder participation and communication of community concerns.

Table 3-2. Roles and Responsibilities Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Establish governance framework for implementation of the NMMP	Airport Operator	Approved NMMP	Annual Aircraft Noise Management Report
Maintain clearly defined roles and responsibilities	Airport Operator	Organisational records	Annual Aircraft Noise Management Report
Facilitate participation by authorities and stakeholders	Airport Operator	Committee records and consultation register	Annual Aircraft Noise Management Report
Review governance arrangements periodically	Airport Operator	Annual review records	Annual Aircraft Noise Management Report
Update responsibilities where organisational changes occur	Airport Operator	Updated NMMP documentation	As Required

4 ICAO BALANCED APPROACH FRAMEWORK

4.1 General

The International Civil Aviation Organisation (ICAO) Balanced Approach to Aircraft Noise Management has been adopted internationally as the preferred framework for managing aircraft noise at airports. The Balanced Approach recognises that effective aircraft noise management requires a combination of technical, operational, planning and management measures rather than reliance upon a single mitigation strategy.

Cape Winelands Airport has adopted the ICAO Balanced Approach as the overarching philosophy underpinning this Noise Mitigation and Management Plan (NMMP). The Balanced Approach provides a structured framework through which aircraft noise can be managed while maintaining aviation safety, operational efficiency and long-term airport sustainability.

The Balanced Approach consists of four principal elements:

- Reduction of noise at source.
- Land-use planning and management.
- Noise abatement operational procedures.
- Operating restrictions where justified.

The four elements of the ICAO Balanced Approach and their relationship to aircraft noise management at Cape Winelands Airport are illustrated in Figure 4-1.

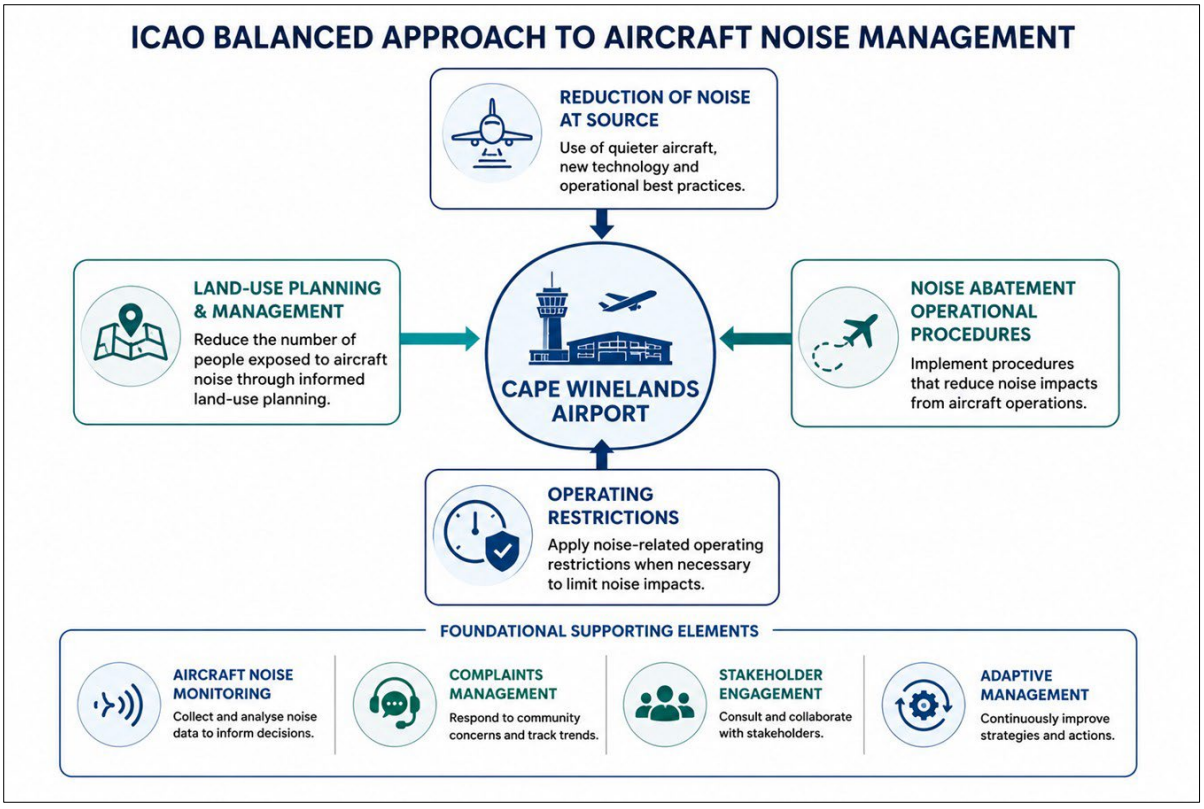


Figure 4-1. ICAO Balanced Approach for the Cape Winelands Airport

These four elements collectively inform the monitoring, stakeholder engagement, reporting and adaptive management processes established within this NMMP.

4.2 Application at Cape Winelands Airport

The proposed expansion of Cape Winelands Airport will support a range of aviation activities including general aviation, charter services, scheduled passenger services and other aviation-related operations. The airport therefore requires a noise management framework capable of responding to changing operational conditions throughout its operational life.

The Balanced Approach provides an appropriate framework through which aircraft noise management can evolve over time while remaining aligned with operational requirements and regulatory obligations.

The airport acknowledges that not all elements of the Balanced Approach will necessarily be implemented immediately. Rather, the framework establishes a hierarchy of potential management responses that may be considered where monitoring results, stakeholder concerns, future modelling or operational reviews indicate that additional management measures are warranted.

4.3 Reduction of Noise at Source

Reduction of noise at source refers to efforts aimed at reducing aircraft noise emissions through the use of quieter aircraft technology and improved aircraft design.

The Airport Operator does not directly control aircraft design or certification standards. However, the airport may encourage the utilisation of modern aircraft where reasonably practicable and may monitor changes in aircraft fleet composition over time. Future reviews of aircraft operations may consider trends in aircraft technology and opportunities associated with quieter aircraft types operating at the airport.

The airport recognises that advances in aircraft technology have historically resulted in significant reductions in aircraft noise emissions and that continued technological improvements are likely to contribute positively to long-term aircraft noise management.

The following measures will support implementation of the reduction at source element of the ICAO Balanced Approach:

- Monitor changes in aircraft fleet composition.
- Encourage the utilisation of modern aircraft, where reasonably practicable.
- Consider aircraft technology trends during future reviews.
- Incorporate aircraft type information into operational reporting.
- Evaluate the influence of fleet changes during future modelling studies.

The implementation framework for reduction of noise at source is summarised in Table 4-1.

Table 4-1. Reduction at Source Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Review aircraft fleet composition periodically	Airport Operator	Operational records	Annual Aircraft Noise Management Report
Monitor aircraft technology trends	Airport Operator	Review records	Annual Aircraft Noise Management Report
Consider quieter aircraft technologies during future reviews	Airport Operator	Technical review documentation	Annual Aircraft Noise Management Report

4.4 Land-Use Planning and Management

Land-use planning and management is widely recognised as one of the most effective long-term aircraft noise management measures available to airports. Appropriate land-use planning assists in reducing the potential for future incompatibilities between airport operations and surrounding noise-sensitive developments.

The DDA Noise Impact Assessment identified a range of surrounding noise-sensitive receptors and evaluated aircraft noise exposure associated with future airport operations. The findings of the assessment provide important information that may assist planning authorities when considering future development proposals within the broader airport environment.

While responsibility for land-use planning ultimately rests with the relevant planning authorities, the airport will continue to support informed planning decisions through the provision of aircraft noise information and participation in stakeholder engagement processes where appropriate.

The following measures will support the land-use planning and management element of the ICAO Balanced Approach:

- Maintain awareness of proposed developments within the airport influence area.
- Participate in planning discussions where appropriate.
- Make aircraft noise information available to relevant authorities.
- Utilise aircraft noise monitoring information to support planning reviews.
- Consider future development trends during NMMP reviews.

The implementation framework for land-use planning and management is summarised in Table 4-2.

Table 4-2. Land-Use Planning Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Review future land-use developments periodically	Airport Operator	Review records	Annual Aircraft Noise Management Report
Provide aircraft noise information to authorities, where requested	Airport Operator	Correspondence records	Annual Aircraft Noise Management Report
Consider land-use changes during NMMP reviews	Airport Operator	Review documentation	Annual Aircraft Noise Management Report

4.5 Noise Abatement Operational Procedures

Noise abatement operational procedures comprise operational techniques intended to minimise aircraft noise exposure while maintaining aviation safety and operational efficiency.

Examples may include noise preferential routes, climb procedures, descent procedures, runway utilisation strategies and other operational measures designed to reduce aircraft noise impacts.

The airport recognises that operational procedures are subject to aviation safety requirements and that any future consideration of operational noise mitigation measures must be undertaken in consultation with SACAA, ATNS and affected aircraft operators.

The airport does not propose specific operational restrictions through this NMMP. However, future monitoring results, complaint trends, stakeholder concerns or technical investigations may identify opportunities for reviewing operational procedures. The following measures may be considered where operational reviews are undertaken:

- Review operational procedures, where justified.
- Consult with SACAA, ATNS and operators regarding operational reviews.
- Consider aircraft noise implications during operational planning.
- Evaluate opportunities for operational improvements where practicable.
- Utilise monitoring data to support future reviews.

The implementation framework for operational procedure reviews is summarised in Table 4-3.

Table 4-3. Noise Abatement Operational Procedures Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Review operational procedures where required	Airport Operator	Review reports	Annual Aircraft Noise Management Report
Consult aviation stakeholders during reviews	Airport Operator	Consultation records	Annual Aircraft Noise Management Report
Evaluate aircraft noise implications of operational changes	Airport Operator	Technical assessments	Annual Aircraft Noise Management Report

4.6 Operating Restrictions

Operating restrictions represent the most restrictive component of the ICAO Balanced Approach and are generally considered only after the potential benefits of the other three elements have been evaluated.

Operating restrictions may include limitations on aircraft types, operating hours or other operational activities. Such measures can have significant operational, economic and aviation implications and therefore require detailed technical evaluation and stakeholder consultation.

The airport does not propose operating restrictions as part of this NMMP. However, future reviews may consider whether further investigation of operational limitations is warranted based on monitoring results, technical studies, stakeholder concerns or regulatory requirements.

Consistent with the framework illustrated in Figure 4-1, aircraft noise management measures should first consider source reduction and operational improvements before more restrictive management interventions are evaluated.

Any consideration of operating restrictions would require consultation with relevant authorities, aviation stakeholders and affected operators and would remain subject to aviation regulatory requirements. The following principles shall apply should operating restrictions ever be considered:

- Do not implement operating restrictions without technical justification.
- Consider operating restrictions only after evaluating other management options.
- Undertake stakeholder consultation before consideration of restrictions.
- Maintain alignment with ICAO Balanced Approach principles.

The implementation framework for operating restrictions is summarised in Table 4-4.

Table 4-4. Operating Restrictions Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Evaluate operating restrictions only where justified	Airport Operator	Technical review records	As Required
Consult stakeholders before considering restrictions	Airport Operator	Consultation records	As Required
Apply ICAO Balanced Approach principles during reviews	Airport Operator	Review documentation	Annual Aircraft Noise Management Report

4.7 Integration with the NMMP

The ICAO Balanced Approach provides the strategic framework within which all aircraft noise management activities undertaken under this NMMP will be evaluated.

Aircraft noise monitoring, complaints management, stakeholder engagement, operational reviews, future modelling studies and adaptive management activities will collectively support implementation of the Balanced Approach and assist the airport in identifying opportunities for continual improvement over time.

The airport will utilise monitoring data, operational information, stakeholder feedback and future technical investigations to periodically review the effectiveness of aircraft noise management measures and identify opportunities for refinement where appropriate.

The implementation framework presented in Table 4-5 summarises how the principles of the ICAO Balanced Approach will be incorporated into the monitoring, reporting, stakeholder engagement and continual improvement processes established throughout this NMMP.

Table 4-5. ICAO Balanced Approach Integration Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Apply ICAO Balanced Approach principles throughout implementation of the NMMP	Airport Operator	Annual review documentation	Annual Aircraft Noise Management Report

Consider Balanced Approach elements during future reviews	Airport Operator	Technical review records	Annual Aircraft Noise Management Report
Utilise monitoring and stakeholder information to support aircraft noise management decisions	Airport Operator	Review records	Annual Aircraft Noise Management Report
Review aircraft noise management opportunities periodically	Airport Operator and NMC	Review documentation	Annual Aircraft Noise Management Report

5 NOISE MANAGEMENT OBJECTIVES

5.1 General

The purpose of this Noise Mitigation and Management Plan (NMMP) is to establish a structured framework through which aircraft noise associated with Cape Winelands Airport can be monitored, managed, reviewed and continually improved throughout the operational life of the airport.

The objectives presented in this section have been informed by the findings and recommendations of the DDA Noise Impact Assessment, Environmental Authorisation requirements, comments received from relevant authorities and internationally recognised aircraft noise management principles. Collectively, these objectives provide the basis upon which the monitoring, reporting, stakeholder engagement, complaints management and adaptive management components of the NMMP have been developed.

The objectives should be read in conjunction with the ICAO Balanced Approach to Aircraft Noise Management described in Section 4 and shall guide implementation of aircraft noise management activities throughout the operational life of the airport.

5.2 Primary Objective

The primary objective of this NMMP is to establish and maintain an effective aircraft noise management system that promotes regulatory compliance, protects surrounding noise-sensitive receptors where reasonably practicable and supports the sustainable operation of Cape Winelands Airport.

This objective will be achieved through implementation of a comprehensive aircraft noise monitoring programme, a structured complaints management system, stakeholder engagement processes, reporting mechanisms and an adaptive management framework.

5.3 Regulatory Compliance Objective

The airport shall ensure ongoing compliance with applicable aircraft noise management requirements contained within the Environmental Authorisation, Municipal Planning Tribunal approvals and other applicable regulatory instruments. Compliance with these requirements forms a fundamental component of the airport's environmental management responsibilities and provides the basis upon which the effectiveness of the NMMP will be assessed.

The airport shall maintain systems and procedures capable of demonstrating compliance with approval conditions and shall retain records necessary to support future audits and authority reviews.

The regulatory compliance objective will be achieved through the following measures:

- Fulfil Environmental Authorisation Condition 46.
- Fulfil Appeal Decision Condition E9 & E50.
- Fulfil Municipal Planning Tribunal approval requirements.
- Implement applicable recommendations of the DDA Noise Impact Assessment.
- Maintain compliance with applicable environmental legislation.
- Maintain compliance with applicable aviation requirements.

5.4 Aircraft Noise Monitoring Objective

The airport shall establish and maintain a long-term aircraft noise monitoring programme capable of quantifying aircraft noise exposure within representative noise-sensitive receptor areas surrounding the airport.

The monitoring programme shall provide objective information regarding aircraft noise exposure and shall support complaint investigations, trend analysis, stakeholder engagement, future technical reviews and adaptive management. Monitoring information shall form the primary technical basis for aircraft noise management decision-making throughout the operational life of the airport.

The aircraft noise monitoring objective will be achieved through the following measures:

- Establish and maintain a permanent aircraft noise monitoring network.
- Measure aircraft noise exposure within representative receptor areas.
- Monitor long-term aircraft noise trends.
- Support complaint investigations.
- Support future technical reviews and modelling studies.

5.5 Community Protection Objective

The airport recognises that surrounding residential communities, educational facilities, farmhouses and other noise-sensitive receptors may experience aircraft noise associated with airport operations.

The airport therefore seeks to manage aircraft noise responsibly and identify opportunities for reducing adverse impacts, where reasonably practicable and consistent with aviation safety requirements. This objective does not imply elimination of aircraft noise but rather implementation of a structured management framework through which aircraft noise impacts can be monitored, assessed and managed.

The community protection objective will be achieved through the following measures:

- Protect surrounding noise-sensitive receptors, where reasonably practicable.
- Monitor aircraft noise exposure in receptor areas.
- Investigate aircraft noise complaints.
- Identify emerging aircraft noise concerns.
- Support informed stakeholder participation.

5.6 Stakeholder Engagement Objective

Meaningful stakeholder engagement is an important component of responsible aircraft noise management. The airport therefore seeks to maintain transparent communication with authorities, aviation stakeholders, surrounding communities and other interested and affected parties.

Stakeholder engagement activities will be undertaken through the complaints management system, Noise Monitoring Committee, consultation processes and reporting framework established under this NMMP.

The stakeholder engagement objective will be achieved through the following measures:

- Promote transparency in aircraft noise management.
- Facilitate stakeholder participation.
- Provide opportunities for stakeholder feedback.
- Communicate monitoring results and trends.
- Support constructive engagement between stakeholders.

5.7 Complaints Management Objective

The airport shall establish and maintain a structured aircraft noise complaints management system through which complaints can be received, recorded, investigated and responded to in a consistent and transparent manner.

The complaints management system shall be integrated with aircraft noise monitoring information and operational data to facilitate effective complaint investigations and support identification of recurring issues and trends.

The complaints management objective will be achieved through the following measures:

- Maintain an aircraft noise complaints management system.
- Investigate aircraft noise complaints.
- Correlate complaints with monitoring and operational information.
- Identify recurring issues and trends.
- Support continual improvement.

5.8 Adaptive Management Objective

Aircraft noise management is an ongoing process that must respond to changing operational conditions, stakeholder expectations and technological developments.

The airport shall therefore implement an adaptive management approach whereby monitoring results, complaints information, stakeholder feedback and operational information are reviewed periodically to identify opportunities for improvement. The adaptive management framework established under this NMMP will assist in ensuring that aircraft noise management remains effective and responsive throughout the operational life of the airport.

The adaptive management objective will be achieved through the following measures:

- Review aircraft noise management performance periodically.
- Identify opportunities for improvement.
- Implement corrective actions where required.
- Review future aircraft noise management opportunities.
- Promote continual improvement.

5.9 ICAO Balanced Approach Objective

The airport shall apply the principles of the ICAO Balanced Approach to Aircraft Noise Management when considering future aircraft noise management initiatives, operational reviews, technical investigations and mitigation opportunities.

Application of the Balanced Approach will assist in ensuring that future aircraft noise management decisions are informed by internationally recognised best practice and supported by technical evidence.

The ICAO Balanced Approach objective will be achieved through the following measures:

- Apply ICAO principles to aircraft noise management decisions.
- Consider all elements of the Balanced Approach during reviews.
- Support evidence-based decision-making.
- Maintain consistency with international best practice.

5.10 Summary of Objectives

The objectives established in this section collectively provide the framework through which aircraft noise management will be implemented, monitored and reviewed throughout the operational life of Cape Winelands Airport. Achievement of these objectives will be supported through implementation of the monitoring, stakeholder engagement, reporting, complaints management and adaptive management processes described in the remainder of this NMMP.

Table 5-1 summarises the principal management commitments associated with each objective and identifies the responsibility for implementation, the method by which implementation will be verified and the reporting mechanisms through which compliance and performance will be demonstrated. The table provides a consolidated reference for evaluating achievement of the objectives and supports the continual improvement processes established elsewhere within this NMMP.

Table 5-1. Noise Management Objectives Implementation Framework

Objective	Responsibility	Verification	Reporting Mechanism
Regulatory compliance	Airport Operator	Compliance audits and records	Annual Aircraft Noise Management Report
Aircraft noise monitoring	Airport Operator	Monitoring records and trend reviews	Quarterly Monitoring Reports and Annual Aircraft Noise Management Report
Community protection	Airport Operator	Monitoring results and complaints investigations	Quarterly Monitoring Reports and Annual Aircraft Noise Management Report
Stakeholder engagement	Airport Operator	Stakeholder engagement records and NMC records	Annual Aircraft Noise Management Report
Complaints management	Airport Operator	Complaints Register and investigation records	Quarterly Monitoring Reports

Objective	Responsibility	Verification	Reporting Mechanism
Adaptive management	Airport Operator and NMC	Annual reviews and corrective action records	Annual Aircraft Noise Management Report
ICAO Balanced Approach implementation	Airport Operator	Technical reviews and management records	Annual Aircraft Noise Management Report

6 IMPLEMENTATION SCHEDULE

6.1 General

The implementation of this Noise Mitigation and Management Plan (NMMP) will occur progressively throughout the planning, pre-operational and operational phases of Cape Winelands Airport. Certain activities are required prior to the commencement of construction in accordance with Environmental Authorisation Condition 46 and the Appeal Decision, while other activities are required prior to the commencement of airport operations and throughout the operational life of the airport.

This implementation schedule establishes the timing of the principal commitments contained within the NMMP and provides a framework through which implementation can be tracked, audited and reviewed.

The schedule is intended to ensure that aircraft noise management systems are established before airport operations commence and that sufficient monitoring, reporting and stakeholder engagement mechanisms are in place from the outset of airport operations.

6.2 Pre-Construction Phase

Environmental Authorisation Condition 46 and the Appeal Decision requires that the NMMP be prepared, reviewed and submitted to the relevant authorities, Interested and Affected Parties and Appellants prior to the commencement of earthworks or construction activities.

During this phase, the NMMP will be finalised, authority and public comments will be incorporated and the final approved version will be submitted to the competent authorities. The purpose of the pre-construction phase is to ensure that a formal aircraft noise management framework is established prior to commencement of the development.

The principal activities during the pre-construction phase include:

- Finalise the NMMP.
- Incorporate comments received from relevant authorities, registered Interested and Affected Parties and Appellants, where applicable.
- Submit the NMMP to DEA&DP and relevant authorities.
- Establish implementation responsibilities.
- Prepare for future operational implementation.

6.3 Pre-Operational Phase

The pre-operational phase refers to the period immediately preceding commencement of airport operations. During this period, the operational systems required to support aircraft noise management shall be established and tested.

The airport shall establish the aircraft noise monitoring network, complaints management system, stakeholder engagement framework and Noise Monitoring Committee prior to commencement of operations. This phase is intended to ensure that the airport is fully prepared to implement the NMMP from the first day of operation.

The principal activities during the pre-operational phase include:

- Install permanent aircraft noise monitoring stations.
- Establish aircraft noise monitoring systems.
- Establish complaints management procedures.
- Establish stakeholder engagement procedures.
- Establish the Noise Monitoring Committee.
- Establish aircraft operational data management systems.
- Establish reporting systems and templates.

6.4 Operational Commencement Phase

Aircraft noise monitoring and management activities shall commence immediately upon commencement of airport operations.

Monitoring data shall begin to be collected from all operational monitoring stations and the complaints management system shall become fully operational. Initial monitoring results will provide the baseline dataset against which future operational performance can be evaluated.

The Noise Monitoring Committee shall be convened during the initial operational period and quarterly reporting shall commence in accordance with the reporting framework established in this NMMP.

The principal activities during operational commencement include:

- Commence aircraft noise monitoring.
- Activate complaints management system.
- Collect baseline operational monitoring information.
- Convene initial Noise Monitoring Committee meeting.
- Initiate quarterly reporting programme.

6.5 Ongoing Operational Phase

Aircraft noise management activities will continue throughout the operational life of the airport. Monitoring results, complaint information, stakeholder feedback and operational information will be reviewed regularly to support adaptive management and continual improvement.

Quarterly monitoring reports and annual aircraft noise management reports will be prepared and submitted in accordance with the requirements of this NMMP. The Noise Monitoring Committee will continue to provide a structured forum through which aircraft noise management performance can be reviewed and discussed.

The principal ongoing operational activities include:

- Maintain monitoring network.
- Maintain complaints management system.
- Convene Noise Monitoring Committee meetings.
- Undertake stakeholder engagement activities.

- Prepare quarterly monitoring reports.
- Prepare annual aircraft noise management reports.
- Maintain corrective action register.
- Undertake annual NMMP reviews.

6.6 Periodic Review Phase

The airport shall periodically review the effectiveness of the NMMP to ensure that it remains aligned with operational requirements, stakeholder expectations and regulatory obligations.

Annual reviews shall be undertaken to evaluate aircraft noise management performance and identify opportunities for improvement. In addition, a strategic review shall be undertaken at intervals not exceeding five years.

Future reviews may also be triggered by significant operational changes, substantial changes in aircraft movements, significant complaint trends, authority requests or future aircraft noise investigations.

The primary review activities include:

- Undertake annual reviews.
- Review monitoring trends.
- Review complaint trends.
- Review effectiveness of management measures.
- Review future modelling requirements.
- Undertake strategic reviews at five-year intervals.

6.7 NMMP Implementation Programme

The implementation schedule described above establishes the timing and sequencing of the principal aircraft noise management activities required throughout the life of the airport. Table 6-1 consolidates the key implementation commitments contained within this NMMP and provides a practical framework through which implementation progress can be monitored, reviewed and reported. The implementation programme further serves as a reference for future audits, management reviews and authority reporting processes.

Table 6-1. NMMP Implementation Programme

Ref	Management Action	Timing	Responsibility
IMP-01	Finalise NMMP	Prior to construction	Airport Op.
IMP-02	Obtain authority and public review comments	Prior to construction	Airport Op.
IMP-03	Submit final NMMP to authorities	Prior to construction	Airport Op.
IMP-04	Establish Noise Monitoring Committee	Prior to operations	Airport Op.
IMP-05	Install monitoring stations	Prior to operations	Airport Op.
IMP-06	Establish complaints management system	Prior to operations	Airport Op.

Ref	Management Action	Timing	Responsibility
IMP-07	Establish stakeholder register	Prior to operations	Airport Op.
IMP-08	Commence aircraft noise monitoring	Commencement of operations	Airport Op.
IMP-09	Commence quarterly reporting	First operational quarter	Airport Op.
IMP-10	Convene Noise Monitoring Committee meetings	Quarterly	Airport Op.
IMP-11	Undertake annual NMMP review	Annually	Airport Op.
IMP-12	Review monitoring network adequacy	Annually	Airport Op.
IMP-13	Review future modelling requirements	Annually	Airport Op.
IMP-14	Undertake strategic NMMP review	Every 5 years	Airport Op.

6.8 Summary

The implementation schedule establishes a structured pathway for the introduction and ongoing implementation of aircraft noise management activities at Cape Winelands Airport. The schedule ensures that monitoring, reporting, complaints management and stakeholder engagement mechanisms are established before airport operations commence and remain active throughout the operational life of the airport.

Implementation of the schedule will support compliance with Environmental Authorisation requirements, facilitate transparency and accountability and provide the foundation for continual improvement of aircraft noise management performance.

7 NOISE MANAGEMENT STRATEGY

7.1 General

The overall objective of this Noise Mitigation and Management Plan (NMMP) is to establish a structured framework through which aircraft noise associated with Cape Winelands Airport can be monitored, managed, reviewed and continually improved throughout the operational life of the airport.

The strategy presented in this section has been informed by the findings of the DDA Noise Impact Assessment, Environmental Authorisation requirements, authority comments and internationally recognised aircraft noise management principles. The strategy is based on the premise that effective aircraft noise management requires a combination of technical monitoring, stakeholder engagement, complaints management, reporting and continual improvement rather than reliance on a single management measure.

The airport has adopted an adaptive management approach whereby aircraft noise management activities will evolve over time in response to monitoring results, stakeholder feedback, complaint trends, operational changes and future technical investigations.

The strategy is founded upon five integrated management pillars:

- Aircraft noise monitoring.
- Aircraft noise complaints management.
- Stakeholder engagement and communication.
- Adaptive management and continual improvement.
- Future technical review and aircraft noise modelling.

Together, these pillars provide the framework through which aircraft noise management will be implemented and maintained throughout airport operations (refer to Table 7-1).

Table 7-1. Aircraft Noise Management Strategy

Strategic Pillar	Objective	Primary Management Tool
Aircraft Noise Monitoring	Quantify aircraft noise exposure	Permanent monitoring network
Complaints Management	Identify and investigate concerns	Complaints management system
Stakeholder Engagement	Promote transparency and participation	Noise Monitoring Committee
Adaptive Management	Respond to emerging issues	Corrective action process
Future Technical Review	Evaluate future scenarios and opportunities	Technical investigations and modelling

7.2 Aircraft Noise Monitoring Strategy

Aircraft noise monitoring forms the technical foundation of this NMMP and provides the primary source of information regarding aircraft noise exposure within surrounding receptor areas.

The monitoring programme will be implemented through a network of permanent aircraft noise monitoring stations located within representative receptor areas identified through the DDA Noise Impact Assessment, Appeal Decision and authority review processes. Monitoring information will be utilised to quantify aircraft noise exposure, support complaint investigations, identify long-term trends and provide technical information for future reviews and reporting.

Monitoring data will provide an objective basis for aircraft noise management decisions and will assist in ensuring that discussions regarding aircraft noise management are informed by measured information rather than perception alone.

The aircraft noise monitoring strategy will be implemented through the following measures:

- Establish and maintain a permanent monitoring network.
- Monitor aircraft noise exposure continuously.
- Utilise monitoring information to support complaint investigations.
- Utilise monitoring information to support reporting.
- Review monitoring trends periodically.
- Utilise monitoring results to support future technical studies.

7.3 Aircraft Noise Complaints Management Strategy

Aircraft noise complaints provide valuable information regarding community concerns and may assist in identifying recurring aircraft noise issues that warrant further investigation.

The airport shall establish and maintain a formal aircraft noise complaints management system through which complaints can be received, recorded, investigated and responded to in a consistent and transparent manner.

The complaints management system shall be integrated with aircraft noise monitoring information and aircraft operational information to facilitate objective investigation of concerns raised by stakeholders.

The objective of the complaints management strategy is not only to respond to individual complaints but also to identify recurring concerns, trends and opportunities for improving aircraft noise management performance. The complaints management strategy will be implemented through the following measures:

- Maintain a formal complaints management system.
- Record all complaints received.
- Investigate complaints using monitoring and operational information.
- Identify complaint trends and recurring issues.
- Maintain complaint response records.
- Report complaint trends and outcomes.

7.4 Stakeholder Engagement Strategy

Meaningful stakeholder engagement is an essential component of responsible aircraft noise management. Aircraft noise can affect a wide range of stakeholders including surrounding

communities, educational facilities, agricultural landowners, aviation operators and regulatory authorities.

The airport therefore seeks to maintain transparent communication regarding aircraft noise management and to provide opportunities for stakeholder participation through the Noise Monitoring Committee, complaints management system and stakeholder engagement processes established under this NMMP.

Stakeholder engagement will assist in promoting transparency, improving understanding of aircraft noise issues and supporting constructive dialogue between affected parties.

The stakeholder engagement strategy will be implemented through the following measures:

- Maintain stakeholder engagement processes.
- Establish and maintain the Noise Monitoring Committee.
- Facilitate participation by authorities and communities.
- Communicate aircraft noise management information.
- Provide opportunities for stakeholder feedback.
- Maintain records of engagement activities.

7.5 Adaptive Management Strategy

Aircraft noise management is an ongoing process that must remain responsive to changing operational conditions, community expectations and technological developments.

The airport shall therefore implement an adaptive management framework through which monitoring results, complaint information, stakeholder feedback and operational information are periodically reviewed to identify opportunities for improvement.

Adaptive management enables the NMMP to remain relevant throughout the operational life of the airport and provides a structured mechanism through which management measures can be refined where appropriate.

The adaptive management strategy will be achieved through the following measures:

- Review aircraft noise management performance periodically.
- Maintain corrective action processes.
- Identify emerging aircraft noise issues.
- Review effectiveness of management measures.
- Implement improvements where appropriate.
- Promote continual improvement.

7.6 Future Technical Review and Modelling Strategy

The DDA Noise Impact Assessment provides the approved technical assessment upon which this NMMP is based. However, future airport operations, monitoring results, stakeholder concerns and

regulatory requirements may indicate the need for additional technical investigations or updated aircraft noise modelling.

Future technical reviews may include supplementary monitoring investigations, operational reviews, specialist acoustic studies or additional AEDT modelling.

Additional modelling is not proposed as part of the current NMMP implementation programme. Future modelling requirements will be evaluated periodically and may be commissioned where justified by operational changes, monitoring results, authority requests or significant stakeholder concerns.

The future technical review strategy will be facilitated through the following measures:

- Review future modelling requirements periodically.
- Review operational changes.
- Undertake technical investigations where required.
- Undertake future AEDT modelling where justified.
- Review potential aircraft noise mitigation opportunities.
- Utilise technical information to support decision-making.

7.7 Integrated Aircraft Noise Management System

The five management pillars described above are intended to function as an integrated aircraft noise management system. Monitoring information, complaints management activities, stakeholder engagement processes, reporting activities and technical reviews are interconnected and collectively support the adaptive management framework established under this NMMP.

Information generated through monitoring and stakeholder engagement will be used to inform management decisions, while reporting and review processes will provide opportunities to evaluate performance and identify areas for improvement.

This integrated approach will assist Cape Winelands Airport in maintaining a transparent, evidence-based and continually improving aircraft noise management programme throughout the operational life of the airport.

7.8 Strategy Implementation Framework

The aircraft noise management strategy established in this section provides the overarching management approach through which the objectives of the NMMP will be achieved. The strategy integrates monitoring, complaints management, stakeholder engagement, adaptive management and future technical review processes into a coordinated aircraft noise management system.

Table 7-2 summarises the principal management commitments associated with each strategic pillar and identifies the responsibility for implementation, the method by which implementation will be verified and the reporting mechanisms through which implementation and performance will be demonstrated.

Table 7-2. Noise Management Strategy Implementation Framework

Strategic Pillar	Responsibility	Verification	Reporting Mechanism
Aircraft Noise Monitoring	Airport Operator	Monitoring records and trend reviews	Quarterly Monitoring Reports and Annual Aircraft Noise Management Report
Complaints Management	Airport Operator	Complaints Register and investigation records	Quarterly Monitoring Reports
Stakeholder Engagement	Airport Operator	Stakeholder Register, engagement records and NMC records	Annual Aircraft Noise Management Report
Adaptive Management	Airport Operator and NMC	Annual reviews, corrective action records and recommendations	Annual Aircraft Noise Management Report
Future Technical Review and Modelling	Airport Operator	Technical reviews, investigations and modelling studies	Annual Aircraft Noise Management Report and Technical Reports

8 NOISE MONITORING COMMITTEE

8.1 General

The Noise Monitoring Committee (NMC) shall serve as the primary stakeholder engagement and governance mechanism for aircraft noise management associated with Cape Winelands Airport. The Committee will provide a structured forum through which aircraft noise monitoring results, complaint trends, management actions, operational developments and future aircraft noise management initiatives can be reviewed and discussed.

The NMC is intended to promote transparency, accountability and constructive engagement between the Airport Operator, regulatory authorities, aviation stakeholders, community representatives and other interested and affected parties.

The Committee will function in an advisory capacity and will provide recommendations regarding aircraft noise management matters. The NMC shall not assume operational control over airport activities, nor shall it make decisions relating to aviation safety, air traffic management or regulatory compliance functions assigned to other authorities.

The NMC will support the continual improvement objectives of this NMMP by providing a mechanism through which monitoring results and stakeholder concerns can be considered within a structured and transparent management framework.

8.2 Objectives of the Noise Monitoring Committee

The primary objective of the NMC is to facilitate ongoing communication and cooperation between stakeholders regarding aircraft noise management matters associated with airport operations.

The Committee will assist the Airport Operator in identifying emerging aircraft noise issues, reviewing management performance and considering opportunities for continual improvement. The Committee will further provide a forum through which stakeholders can receive information regarding aircraft noise management activities and provide input into future management initiatives.

The objectives of the NMC are to:

- Promote transparency in aircraft noise management.
- Facilitate stakeholder participation.
- Review aircraft noise monitoring results.
- Review aircraft noise complaint trends.
- Review aircraft noise management performance.
- Identify opportunities for continual improvement.
- Provide recommendations regarding aircraft noise management.
- Facilitate communication between stakeholders.

8.3 Membership

The NMC should comprise representatives from organisations and stakeholder groups with an interest in aircraft noise management and airport operations.

Membership should remain sufficiently broad to ensure balanced representation while remaining manageable and effective for decision-making and consultation purposes.

Membership may be revised periodically as airport operations evolve and as stakeholder requirements change.

The following organisations and stakeholder groups should be invited to participate:

Airport Operator

- Airport Operator representatives.
- Airport Environmental Manager.

The Airport Operator shall chair the Committee and provide administrative support.

City of Cape Town

- Air Quality Management Directorate.
- Environmental Health and Noise Control.
- Planning and Development Management.

Provincial Authorities

- DEA&DP.

Aviation Authorities

- South African Civil Aviation Authority (SACAA).
- Air Traffic and Navigation Services (ATNS).

Aviation Industry Representatives

- Aircraft Owners and Pilots Association South Africa (AOPA-SA).
- Commercial Aviation Association of Southern Africa (CAASA).
- Airport-based operators.
- Flight training organisations.
- Charter operators.

Community Representatives

- Klipheuwel.
- Fisantekraal.
- Greenville Garden City.
- Bella Riva Mixed-Use Development.
- Other affected communities where appropriate.

Technical Advisors

- Acoustic specialists.
- Environmental consultants.
- Other specialists as required.

8.4 Terms of Reference

Detailed Terms of Reference for the NMC are provided in Appendix B.

The Terms of Reference shall define:

- Purpose of the Committee.
- Membership requirements.
- Meeting procedures.
- Roles and responsibilities.
- Reporting requirements.
- Record keeping requirements.
- Procedures for reviewing recommendations.
- Review and amendment procedures.

The Terms of Reference shall be reviewed periodically to ensure continued effectiveness.

8.5 Meeting Frequency

The NMC shall meet on a regular basis to review aircraft noise management matters.

During the first two years of operation, meetings should be convened on a quarterly basis to facilitate close monitoring of aircraft noise management performance during the initial operational period. Thereafter, meeting frequency may be reviewed by the Committee. However, at least two meetings should be held annually unless otherwise agreed by the Committee and relevant authorities.

Additional meetings may be convened where significant aircraft noise issues arise or where requested by the Airport Operator or relevant authorities. Meeting frequency should generally comprise:

- Quarterly during the first two operational years.
- Thereafter at least biannually.
- Additional meetings as required.
- Extraordinary meetings where justified.

8.6 Agenda Items

The NMC shall review matters relevant to aircraft noise management and airport operations. Typical agenda items may include:

- Aircraft noise monitoring results.
- Monitoring station performance.

- Aircraft operational statistics.
- Aircraft noise complaints.
- Complaint investigations.
- Corrective actions.
- Authority comments.
- Stakeholder concerns.
- Future airport developments.
- Future technical studies.
- Future modelling requirements.
- Annual performance reviews.

Agenda items may be amended to reflect evolving operational and stakeholder requirements.

8.7 Review of Monitoring and Complaints Information

One of the primary functions of the NMC shall be the review of aircraft noise monitoring information and aircraft noise complaints.

Monitoring information presented to the Committee should include:

- $L_{Aeq,T}$.
- L_{Rdn}.
- L_{Rd}.
- L_{Rn}.
- L_{Amax}.
- Statistical noise indicators.
- Aircraft noise exceedance events.
- Monitoring trends.
- Monitoring station performance.

Complaint information presented to the Committee should include:

- Number of complaints received.
- Complaint locations.
- Nature of complaints.
- Investigation outcomes.
- Trends and recurring issues.

- Corrective actions implemented.

The purpose of these reviews is to identify recurring issues, assess management performance and determine whether further investigation or management intervention may be warranted.

8.8 Recommendations Register

The Airport Operator shall maintain a Recommendations Register to record recommendations arising from NMC meetings.

The register shall include:

- Recommendation reference number.
- Date raised.
- Description of recommendation.
- Responsible party.
- Target completion date.
- Current status.
- Close-out date.

The Recommendations Register shall be reviewed at each NMC meeting.

8.9 Reporting and Record Keeping

Minutes shall be prepared for all NMC meetings and retained as part of the airport's aircraft noise management documentation. Records should include:

- Attendance register.
- Meeting agenda.
- Presentations.
- Minutes.
- Recommendations Register updates.
- Action items.

These records will provide an auditable record of stakeholder engagement and Committee activities.

8.10 Review of Committee Effectiveness

The effectiveness of the NMC shall be reviewed periodically as part of the NMMP review process.

The review should consider:

- Stakeholder participation.
- Meeting attendance.
- Quality of discussions.

- Implementation of recommendations.
- Stakeholder satisfaction.
- Contribution to aircraft noise management outcomes.

The review may identify opportunities for improving the operation of the Committee.

8.11 Noise Monitoring Committee Implementation Framework

The governance arrangements established in this section are intended to ensure that the Noise Monitoring Committee remains an effective mechanism for stakeholder participation, information sharing and continual improvement of aircraft noise management. Table 8-1 summarises the principal commitments relating to establishment, operation, review and administration of the Committee and identifies the responsibilities, verification methods and reporting mechanisms applicable to these activities.

Table 8-1. Noise Monitoring Committee Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Establish and maintain the NMC	Airport Operator	Approved Terms of Reference and membership records	Annual Aircraft Noise Management Report
Maintain representative stakeholder participation	Airport Operator	Membership Register and attendance records	Annual Aircraft Noise Management Report
Convene NMC meetings	Airport Operator	Meeting notices, agendas and minutes	Quarterly Monitoring Reports
Review monitoring results and complaint trends	NMC and Airport Operator	Meeting records and presentations	Quarterly Monitoring Reports
Maintain Recommendations Register	Airport Operator	Recommendations Register	Quarterly Monitoring Reports
Maintain NMC records and documentation	Airport Operator	Records audit	Annual Aircraft Noise Management Report
Review effectiveness of the Committee	Airport Operator and NMC	Annual review records	Annual Aircraft Noise Management Report
Update Terms of Reference where required	Airport Operator	Revised Terms of Reference	As Required

8.12 Summary

The Noise Monitoring Committee represents the primary stakeholder governance mechanism established under this NMMP. Through regular review of monitoring results, complaint trends, corrective actions and management performance, the Committee will assist the Airport Operator in maintaining a transparent, evidence-based and adaptive aircraft noise management programme.

The Committee will provide an important platform for communication between airport management, authorities, aviation stakeholders and surrounding communities and will contribute to the continual improvement of aircraft noise management throughout the operational life of Cape Winelands Airport.

9 NOISE-SENSITIVE RECEPTORS

9.1 General

The identification and consideration of noise-sensitive receptors is a fundamental component of aircraft noise management. Noise-sensitive receptors are land uses, activities or facilities that may be adversely affected by aircraft noise and therefore require consideration during monitoring, assessment and management activities.

The DDA Noise Impact Assessment and the Appeal Decision identified a number of existing and future receptors that may experience aircraft noise associated with airport operations. These receptors include residential communities, educational facilities, farmsteads, agricultural activities and future residential developments located within the broader airport influence area.

The receptor assessment undertaken as part of the DDA Noise Impact Assessment forms the basis for the monitoring network established under this NMMP and provides the framework through which monitoring results and complaints will be interpreted.

The receptor locations identified within this section may be reviewed periodically as surrounding land uses evolve and as additional information becomes available through monitoring and stakeholder engagement processes.

9.2 Receptor Identification Methodology

Noise-sensitive receptors identified within the DDA Noise Impact Assessment were selected based on their proximity to airport operations, potential aircraft overflight exposure and sensitivity to aircraft noise.

Particular consideration was given to:

- Existing residential communities.
- Future residential developments.
- Educational facilities.
- Farmhouses and agricultural activities.
- Community facilities.
- Areas identified through authority consultation.
- Areas located within significant aircraft noise contours.

The receptor locations identified within the NIA informed both the aircraft noise assessment and the proposed aircraft noise monitoring programme.

9.2.1 Klipheuwel

Klipheuwel is located to the north-west of the airport and was identified during the DDA Noise Impact Assessment as one of the principal receptor areas potentially affected by aircraft operations.

The area comprises a mixture of residential properties, rural smallholdings and community facilities. Due to its location relative to airport operations, Klipheuwel has been identified as a priority monitoring location and one of the permanent aircraft noise monitoring stations will be established within or adjacent to this area.

The monitoring station will provide long-term information regarding aircraft noise exposure and will assist in evaluating operational trends and community concerns over time. The area and receptor characteristics of this location are:

- Residential properties.
- Rural smallholdings.
- Community facilities.
- Existing established community.
- Selected for permanent monitoring station.

9.2.2 Fisantekraal

Fisantekraal is located in close proximity to the airport and represents one of the nearest established residential communities to airport operations.

Given its proximity to airport activities, the area will remain an important receptor location for ongoing aircraft noise management purposes. Monitoring information from surrounding stations and complaint investigations will assist in evaluating aircraft noise exposure affecting the community.

The airport recognises the importance of maintaining effective communication with Fisantekraal residents through the stakeholder engagement and complaints management processes established under this NMMP. The area and receptor characteristics for the Fisantekraal area are:

- Established residential community.
- Community facilities.
- Educational facilities.
- Existing residential receptors.
- Stakeholder engagement priority area.
- Selected for additional permanent monitoring station.

9.2.3 Greenville Garden City

Greenville Garden City is a significant residential development located within the airport study area and was identified within the DDA Noise Impact Assessment as a key receptor requiring ongoing consideration.

Approval conditions require that one of the permanent aircraft noise monitoring stations be established within the Greenville Garden City development area in alignment with the new runway configuration.

The monitoring station will provide important information regarding aircraft noise exposure affecting future residents and will support both regulatory reporting and long-term aircraft noise management activities. The receptor characteristics are:

- Large residential development.
- Future residential population.
- Authority-designated monitoring location.

- Selected for permanent monitoring station.
- Strategic receptor area.

9.2.4 Bella Riva Mixed-Use Development

Bella Riva Mixed-Use Development represents another significant residential receptor identified during the DDA Noise Impact Assessment.

Approval conditions require the establishment of a permanent monitoring station on the eastern side of the development to facilitate ongoing assessment of aircraft noise exposure associated with airport operations.

The monitoring information collected at this location will contribute to the overall aircraft noise management programme and provide an objective basis for evaluating aircraft noise exposure affecting the development. The area's receptor characteristics are:

- Residential estate.
- Authority-designated monitoring location.
- Selected for permanent monitoring station.
- Existing and future residential receptors.

9.2.5 Educational Facilities

The DDA Noise Impact Assessment identified educational facilities within the broader airport influence area. Schools and educational facilities are generally regarded as noise-sensitive receptors due to the potential influence of environmental noise on learning environments and outdoor activities.

While not all educational facilities require dedicated monitoring locations the Western Cape Minister of Local Government, Environmental Affairs and Development Planning decided that "*A permanent noise monitoring terminal is also established at/close to the Fisantekraal High School"*. Complaint investigations and future reviews should consider educational facilities where aircraft noise concerns are raised.

9.2.6 Farmhouses and Agricultural Receptors

The airport study area contains numerous farmhouses, agricultural operations and rural activities. Although agricultural activities are generally less sensitive to aircraft noise than residential areas, farmhouses and associated residential uses may experience aircraft noise exposure depending on their location relative to airport operations.

The airport shall continue to consider rural receptors during monitoring reviews, complaint investigations and future technical studies.

9.2.7 Additional Authority-Requested Monitoring Area

During the authority review process, an additional aircraft noise monitoring location was recommended to supplement the three monitoring locations identified within the DDA Noise Impact Assessment.

The final location of this monitoring station shall be determined in consultation with the relevant authorities and shall be selected to improve the representativeness of the monitoring network and strengthen long-term aircraft noise management.

The airport shall review the suitability of the selected location periodically and may refine monitoring locations, where justified by operational experience, stakeholder concerns or future technical investigations.

9.3 Receptor Review Process

The receptor environment surrounding Cape Winelands Airport is expected to evolve over time as development occurs and land uses change.

The airport shall therefore periodically review the receptor inventory to ensure that the aircraft noise monitoring programme and stakeholder engagement activities remain representative of the surrounding environment. The reviews should consider:

- New residential developments.
- Changes in community demographics.
- New educational facilities.
- New community facilities.
- Future planning approvals.
- Stakeholder concerns.
- Monitoring results.

The implementation framework for the review process, including the relevant responsible entities and reporting requirements are outlined in Table 9-1.

Table 9-1. Receptor Review Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Review receptor inventory periodically	Airport Operator	Review records	Annual Aircraft Noise Management Report
Consider future developments	Airport Operator	Planning review records	Annual Aircraft Noise Management Report
Update receptor information where required	Airport Operator	Updated receptor database	As Required

9.4 Summary

The receptors identified within this section form the foundation of the aircraft noise monitoring programme and stakeholder engagement framework established under this NMMP. Monitoring, reporting, complaints management and future technical reviews will utilise these receptor areas as the primary basis for evaluating aircraft noise management performance.

Continual review of receptor locations and surrounding land uses will ensure that the NMMP remains responsive to future development and changing community circumstances throughout the operational life of Cape Winelands Airport.

10 AIRCRAFT NOISE MONITORING PROGRAMME

10.1 General

Aircraft noise monitoring forms the technical foundation of the Noise Mitigation and Management Plan (NMMP) and provides the primary mechanism through which aircraft noise exposure associated with airport operations can be quantified, assessed and managed over time.

The monitoring programme established under this NMMP has been developed with reference to the findings of the DDA Noise Impact Assessment, Environmental Authorisation requirements, City of Cape Town comments and applicable South African standards and guidelines relating to environmental noise assessment.

The programme is intended to provide objective and reliable information regarding aircraft noise exposure affecting surrounding receptor areas and to support complaints investigations, stakeholder engagement, regulatory reporting, future technical reviews and adaptive management.

Monitoring results shall be interpreted together with aircraft operational information and stakeholder feedback to provide a comprehensive understanding of aircraft noise performance throughout the operational life of the airport.

10.2 Objectives of the Monitoring Programme

The monitoring programme has been developed to achieve several interrelated objectives.

Firstly, the programme provides a mechanism through which actual aircraft noise exposure can be quantified and compared with the assumptions and findings contained within the DDA Noise Impact Assessment.

Secondly, monitoring information supports the investigation of aircraft noise complaints and assists in identifying recurring concerns and trends.

Thirdly, monitoring results provide an objective basis for stakeholder engagement, regulatory reporting and future technical reviews.

Finally, the monitoring programme supports the adaptive management framework established under this NMMP by providing the information necessary to evaluate aircraft noise management performance and identify opportunities for improvement. The objectives of the programme are to:

- Quantify aircraft noise exposure.
- Verify aircraft noise trends over time.
- Support complaint investigations.
- Support regulatory reporting.
- Support stakeholder engagement.
- Support future technical reviews.
- Support adaptive management and continual improvement.

The overall aircraft noise monitoring and reporting process established under this NMMP is illustrated in Figure 10-1.

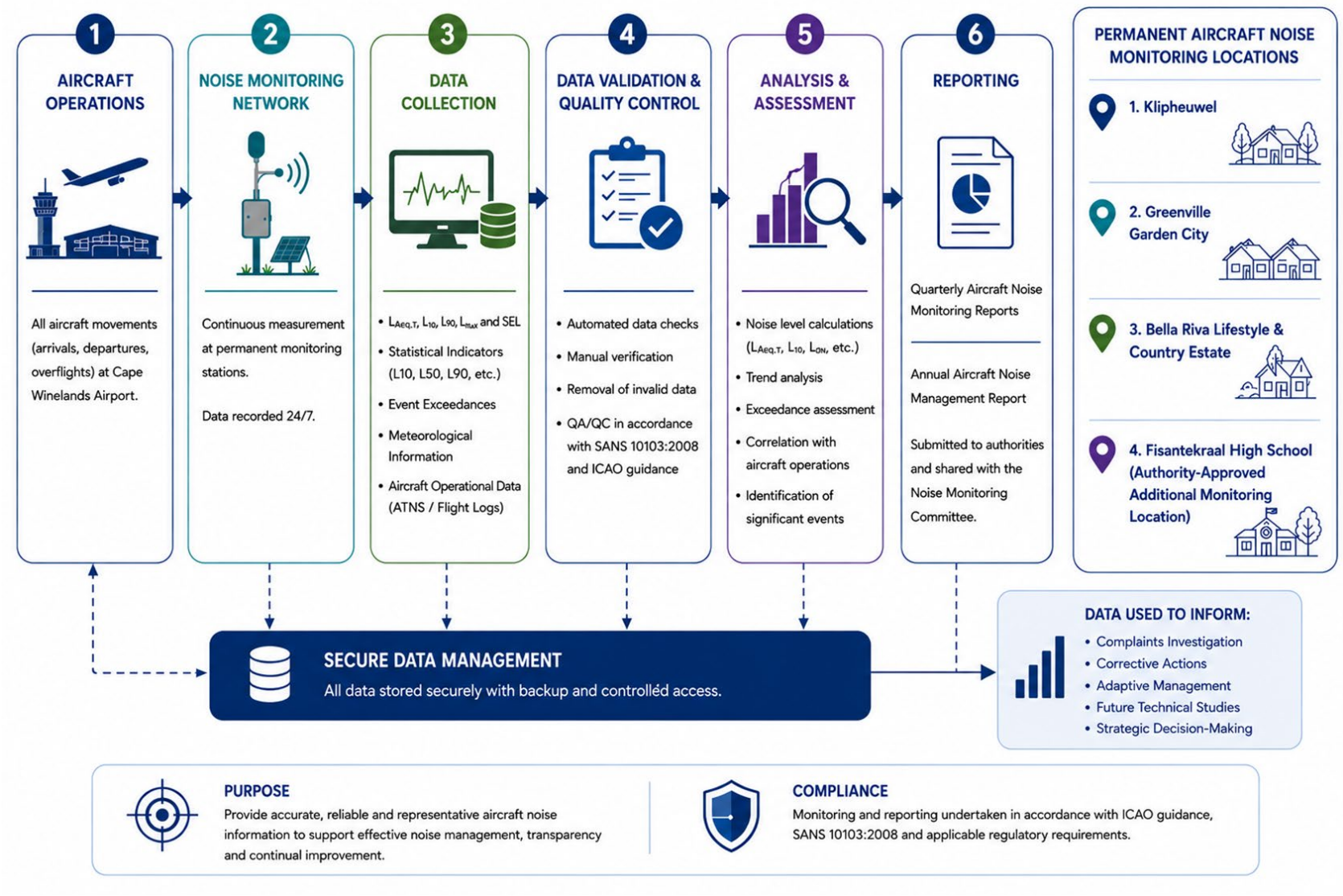


Figure 10-1. Noise Monitoring Framework

10.3 Monitoring Network

The airport shall establish and maintain a permanent aircraft noise monitoring network comprising strategically located monitoring stations within representative noise-sensitive receptor areas.

The monitoring network has been informed by the DDA Noise Impact Assessment, approval conditions and authority recommendations and is intended to provide representative coverage of key receptor areas while supporting long-term evaluation of aircraft noise exposure.

The monitoring network shall initially comprise four permanent monitoring stations. The locations of the stations can be seen in Table 10-1.

Table 10-1. Permanent Aircraft Noise Monitoring Locations

Monitoring Station	General Location	Purpose
NM01	Klipheuwel Area	Monitoring of residential and rural receptor exposure
NM02	Greenville Garden City	Monitoring of future residential receptor exposure
NM03	Bella Riva Mixed-Use Development	Monitoring of residential receptor exposure
NM04	Fisantekraal High School (Authority-approved monitoring location)	Supplementary monitoring and verification at the Fisantekraal High School location

Detailed descriptions of the monitoring locations are provided in Appendix L.

The final positioning of each station shall be confirmed during implementation and may be refined following consultation with relevant authorities and technical specialists.

As illustrated in Figure 10-1, monitoring data will be collected, validated, analysed and reported through a structured monitoring framework.

10.4 Monitoring Station Selection Criteria

Monitoring station locations shall be selected to ensure representative measurement of aircraft noise exposure affecting surrounding receptor areas.

The following factors shall be considered when selecting monitoring locations:

- Proximity to receptor areas.
- Representative aircraft overflight exposure.
- Security and accessibility.
- Availability of power and communications.
- Ability to minimise interference from local noise sources.
- Long-term suitability.
- Compliance with relevant monitoring standards.

Where practical constraints arise, the Airport Operator may adjust monitoring locations provided that the representativeness of the monitoring network is maintained.

10.5 Monitoring Equipment and Calibration

Aircraft noise monitoring shall be undertaken using equipment suitable for long-term environmental noise monitoring applications and compliant with internationally recognised standards applicable to environmental noise monitoring.

Monitoring equipment should be capable of:

- Continuous unattended operation.
- Event detection.
- Audio recording where appropriate.
- Meteorological integration where required.
- Remote data transmission.
- Long-term data storage.
- Aircraft event identification support.

Monitoring equipment shall comply with internationally recognised standards applicable to environmental noise monitoring.

The monitoring equipment will meet the following requirements:

- Type 1 sound level monitoring capability.
- Continuous monitoring functionality.
- Event logging functionality.
- Remote access capability.
- Secure data storage.
- Weather-resistant installation.

Monitoring equipment shall be calibrated and maintained to ensure the reliability and accuracy of monitoring results. Field calibration checks shall be undertaken at appropriate intervals and full laboratory calibration shall be conducted in accordance with manufacturer recommendations and applicable standards. Maintenance activities shall be documented and calibration certificates retained for audit purposes.

The calibration and maintenance will fulfil the following requirements:

- Routine field calibration checks.
- Scheduled maintenance inspections.
- Accredited laboratory calibration.
- Equipment fault logging.

- Maintenance record retention.

Detailed equipment specifications are provided in Appendix J.

10.6 Aircraft Noise Metrics

Monitoring shall record and report the aircraft noise indicators required by approval conditions and recognised noise assessment methodologies.

The following indicators shall be reported:

- $L_{Aeq,T}$
- L_{Rdn}
- L_{Rd}
- L_{Rn}
- L_{Amax}
- L_n percentile levels
- Number of exceedances above specified thresholds
- Aircraft noise event counts

Definitions of these metrics are provided in Appendix M.

10.7 Aircraft Operational Data Integration

Aircraft noise monitoring data shall be integrated with airport operational information to facilitate interpretation of monitoring results and investigation of aircraft noise complaints.

The Airport Operator shall maintain an aircraft operational database containing information such as:

- Aircraft type.
- Flight number where available.
- Date and time.
- Runway utilised.
- Aircraft movement type.
- Flight track information where available.

The operational database shall be utilised to correlate aircraft movements with monitoring results and complaints and to support technical investigations and reporting activities.

10.8 Data Management and Validation

Monitoring information shall be reviewed and validated prior to reporting. Data management procedures described below form part of the monitoring framework presented in Figure 10-1.

Data validation procedures should identify:

- Equipment faults.
- Missing data.
- Non-aircraft noise influences.
- Communication failures.
- Abnormal results.

Validated data shall be retained within the airport aircraft noise management database. The validation measures will include:

- Routine data review.
- Validation procedures.
- Data quality checks.
- Equipment performance reviews.
- Record retention.

10.9 Exceedance Assessment

Monitoring results shall be reviewed to identify aircraft noise events exceeding reporting thresholds specified by approval conditions. The following information shall be reported, where required:

- Number of exceedances above 70 dB(A).
- Number of exceedances above 60 dB(A).
- Associated L_{Amax} values.
- Relevant operational information.

Exceedance information shall be evaluated together with aircraft operational information and complaint data to support interpretation and investigation.

10.10 Reporting Requirements

Aircraft noise monitoring information shall be reported through quarterly monitoring reports and annual aircraft noise management reports.

Quarterly reports should include:

- Monitoring results.
- Exceedance information.
- Complaint statistics.
- Operational information.
- Monitoring station performance.

Annual reports should include:

- Trend analyses.

- Performance reviews.
- Stakeholder engagement outcomes.
- Corrective actions.
- Recommendations.

Detailed reporting templates are provided in Appendices G and H.

10.11 Quality Assurance and Auditing

Quality assurance measures shall be implemented to ensure the reliability and integrity of monitoring information.

Periodic audits may be undertaken to verify:

- Equipment performance.
- Calibration records.
- Data management procedures.
- Reporting procedures.
- Compliance with NMMP requirements.

Audit findings shall be considered during future management reviews and continual improvement processes.

10.12 Monitoring Programme Implementation Framework

The aircraft noise monitoring programme provides the technical basis upon which aircraft noise management decisions, complaint investigations, stakeholder engagement activities and future technical reviews will be undertaken. The programme establishes the systems necessary to quantify aircraft noise exposure and evaluate aircraft noise trends throughout the operational life of the airport.

Table 10-2 summarises the principal commitments associated with operation of the monitoring programme and identifies the responsibilities, verification methods and reporting mechanisms through which performance and compliance will be demonstrated.

Table 10-2. Aircraft Noise Monitoring Programme Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Establish and maintain aircraft noise monitoring network	Airport Operator	Monitoring records and station inspections	Quarterly Monitoring Reports and Annual Aircraft Noise Management Report
Install and maintain compliant monitoring equipment	Airport Operator	Equipment specifications and maintenance records	Annual Aircraft Noise Management Report
Undertake calibration and maintenance activities	Airport Operator	Calibration certificates and maintenance records	Annual Aircraft Noise Management Report
Maintain aircraft operational database	Airport Operator	Operational records	Quarterly Monitoring Reports

Management Action	Responsibility	Verification	Reporting Mechanism
Correlate monitoring and operational information	Airport Operator	Investigation and review records	Quarterly Monitoring Reports
Validate and manage monitoring data	Airport Operator	Data validation records	Quarterly Monitoring Reports and Annual Aircraft Noise Management Report
Report monitoring results and trends	Airport Operator	Quarterly and annual reports	Quarterly Monitoring Reports and Annual Aircraft Noise Management Report

10.13 Summary

The aircraft noise monitoring programme provides the technical basis for the NMMP and supports monitoring, reporting, complaints management, stakeholder engagement and adaptive management activities. Through the establishment of a permanent monitoring network and integration of monitoring information with operational and complaint data, the programme provides a robust and transparent framework for long-term aircraft noise management at Cape Winelands Airport.

11 AIRCRAFT NOISE MODELLING REVIEW FRAMEWORK

11.1 General

The DDA Noise Impact Assessment (NIA) provides the approved baseline assessment of aircraft noise associated with the proposed Cape Winelands Airport development. The assessment utilised the Aviation Environmental Design Tool (AEDT) to predict aircraft noise exposure associated with existing operations, operation of the proposed new runway and future full-capacity airport operations.

The NIA therefore represents the primary technical assessment upon which this Noise Mitigation and Management Plan (NMMP) has been developed.

While the approved NIA provides the baseline aircraft noise assessment, airport operations, aircraft fleets, airspace procedures, surrounding land uses and stakeholder expectations may change over time. Consequently, periodic technical reviews may be required to determine whether additional aircraft noise investigations or updated modelling studies are warranted.

This section establishes the framework through which future aircraft noise modelling requirements will be evaluated and managed throughout the operational life of the airport.

11.2 Purpose of Future Aircraft Noise Modelling

Future aircraft noise modelling may be required to evaluate significant operational changes, investigate aircraft noise concerns, support planning decisions or assess potential aircraft noise mitigation opportunities.

The purpose of future modelling is not to replace the approved DDA Noise Impact Assessment but rather to supplement the existing assessment where new information, operational changes or emerging issues justify further investigation.

Future modelling may also assist in evaluating the effectiveness of management measures implemented under this NMMP and may support long-term planning and adaptive management processes. The modelling objectives will be:

- Support evidence-based decision-making.
- Evaluate significant operational changes.
- Investigate emerging aircraft noise issues.
- Assess potential mitigation opportunities.
- Support future planning decisions.
- Support continual improvement.

11.3 Modelling Review Process

The requirement for future aircraft noise modelling shall be reviewed periodically as part of the NMMP review process. The review shall consider:

- Monitoring results.
- Aircraft operational trends.
- Aircraft fleet changes.

- Complaint trends.
- Stakeholder concerns.
- Regulatory requirements.
- Proposed airport developments.
- Changes in surrounding land use.

The review process shall determine whether sufficient justification exists for additional technical investigations or updated aircraft noise modelling.

Future modelling shall only be undertaken where a clear technical need has been identified.

11.4 Potential Modelling Triggers

Additional aircraft noise modelling may be warranted where significant changes occur that have the potential to influence aircraft noise exposure. The following operational, community and planning circumstances may trigger consideration of updated modelling:

Operational Change Triggers

- Significant increase in annual aircraft movements.
- Introduction of new categories of aircraft.
- Introduction of scheduled commercial services beyond assessed scenarios.
- Significant changes in runway utilisation patterns.
- Significant changes in flight procedures.
- Airspace redesign initiatives.
- Changes in operating hours.

Community and Monitoring Triggers

- Significant increase in aircraft noise complaints.
- Persistent complaint trends.
- Monitoring results that differ substantially from predicted outcomes.
- Identification of new receptor areas.
- Authority requests for additional investigations.

Planning and Development Triggers

- Significant airport infrastructure expansion.
- New runway developments.
- Major terminal expansions.
- New surrounding residential developments.

- Changes in land-use planning assumptions.

The occurrence of one or more triggers does not automatically require new modelling but will initiate a technical review to determine whether modelling is justified.

11.5 Future Modelling Methodology

Where future aircraft noise modelling is deemed necessary, modelling should be undertaken using the most appropriate and internationally recognised aircraft noise modelling software available at the time of assessment.

At present, AEDT remains the preferred aircraft noise modelling platform and is recognised internationally for airport noise assessments. Future modelling studies should utilise:

- Updated aircraft movement information.
- Updated fleet mix information.
- Updated runway utilisation data.
- Updated flight procedure information.
- Current receptor information.
- Current land-use information.

Future modelling assumptions should be clearly documented and subject to technical review.

Table 11-1. Future Modelling Methodology Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Utilise appropriate modelling software	Acoustic Specialist	Modelling reports	As Required
Maintain transparency of assumptions	Acoustic Specialist	Technical review	As Required
Document modelling inputs and outputs	Acoustic Specialist	Modelling reports	As Required

11.6 Integration of Monitoring and Modelling

Aircraft noise monitoring and aircraft noise modelling provide complementary information and should be considered together when evaluating aircraft noise management performance.

Monitoring provides information regarding actual measured aircraft noise exposure, while modelling provides a mechanism for evaluating future scenarios and operational changes.

Future modelling studies should utilise available monitoring information where appropriate to assist in interpreting results and refining assumptions.

Similarly, monitoring trends may assist in identifying circumstances where additional modelling investigations may be warranted.

11.7 Technical Review by Specialists

Where future modelling studies are undertaken, appropriately qualified acoustic specialists should be appointed to perform the work. Specialists should have demonstrated experience in:

- Aircraft noise assessment.
- AEDT modelling.
- Environmental acoustics.
- Airport environmental management.
- Regulatory compliance assessments.

The specialist review should include an evaluation of assumptions, methodology, results and implications for aircraft noise management.

11.8 Authority and Stakeholder Consultation

Where future modelling studies are undertaken, the Airport Operator should consider whether consultation with authorities and stakeholders is appropriate. Consultation may be undertaken through:

- Noise Monitoring Committee meetings.
- Authority liaison processes.
- Stakeholder engagement processes.
- Technical workshops where appropriate.

The extent of consultation should be commensurate with the nature and significance of the matter being investigated.

11.9 Incorporation into the NMMP

Where future modelling studies identify material findings relevant to aircraft noise management, the outcomes should be considered during future NMMP reviews. Potential outcomes may include:

- Refinement of monitoring programmes.
- Refinement of stakeholder engagement activities.
- Revision of management objectives.
- Revision of mitigation measures.
- Revision of reporting requirements.
- Additional technical investigations.

The adaptive management framework established under this NMMP provides the mechanism through which future modelling outcomes may be incorporated into aircraft noise management activities.

11.10 Summary

The DDA Noise Impact Assessment provides the approved baseline aircraft noise assessment for Cape Winelands Airport and forms the technical foundation of this NMMP. Future aircraft noise modelling is not currently proposed as part of routine NMMP implementation but may be undertaken where justified by operational changes, monitoring results, complaint trends, stakeholder concerns or authority requirements.

The modelling review framework established within this section ensures that future technical investigations can be undertaken in a structured, transparent and evidence-based manner and that the outcomes of such investigations can be integrated into the continual improvement processes established under this NMMP.

12 AIRCRAFT NOISE COMPLAINTS MANAGEMENT

12.1 General

An effective aircraft noise complaints management system forms an important component of responsible airport noise management. While aircraft noise monitoring provides objective information regarding aircraft noise exposure, complaints provide valuable insight into community perceptions, concerns and experiences relating to airport operations.

The purpose of the complaints management system is to ensure that aircraft noise complaints are received, recorded, investigated and responded to in a consistent, transparent and auditable manner. The system also provides a mechanism through which recurring concerns and trends can be identified and incorporated into the airport's adaptive management framework.

The complaints management system established under this NMMP shall be integrated with aircraft noise monitoring information, aircraft operational data and stakeholder engagement processes to ensure that complaint investigations are supported by objective information wherever possible.

All complaints shall be managed in a professional and respectful manner and complainants shall be provided with feedback regarding the outcome of investigations where appropriate.

12.2 Objectives

The objectives of the aircraft noise complaints management system are to:

- Provide an accessible mechanism through which stakeholders can raise concerns regarding aircraft noise.
- Ensure complaints are recorded and investigated consistently.
- Facilitate objective assessment of aircraft noise concerns.
- Correlate complaints with monitoring and operational information where available.
- Identify recurring concerns and trends.
- Support continual improvement of aircraft noise management.
- Facilitate transparent communication with stakeholders.
- Support regulatory reporting requirements.

12.3 Complaint Submission Mechanisms

The Airport Operator shall provide stakeholders with reasonable opportunities to submit aircraft noise complaints. Complaints may be submitted through one or more of the following mechanisms:

- Dedicated email address.
- Dedicated telephone number.
- Online complaint submission portal.
- Written correspondence.
- Stakeholder engagement meetings.

- Noise Monitoring Committee referrals.

Details regarding complaint submission procedures shall be made available through airport communication channels and stakeholder engagement activities.

12.4 Complaint Registration

All aircraft noise complaints received by the Airport Operator shall be recorded within a formal Aircraft Noise Complaints Register.

Each complaint shall be assigned a unique reference number to facilitate tracking and investigation.

The complaint registration process shall capture sufficient information to support investigation and reporting activities. Information recorded should include:

- Complaint reference number.
- Time received.
- Location of complainant.
- Date and time of occurrence.
- Investigation status.
- Corrective actions where applicable.
- Date received.
- Complainant details.
- Nature of complaint.
- Description of concern.
- Outcome of investigation.
- Date of closure.

An example Aircraft Noise Complaint Registration Form is provided in Appendix C and a Complaints Register Template is provided in Appendix D.

12.5 Complaint Investigation Process

All complaints shall be reviewed to determine whether an investigation is warranted. The scope and complexity of the investigation shall be commensurate with the nature of the complaint and the information available. Investigations should consider:

- Aircraft noise monitoring information.
- Aircraft operational information.
- Aircraft movement records.
- Flight track information where available.
- Meteorological conditions where relevant.
- Previous complaints from the area.
- Monitoring station data.
- Other relevant information.

The aircraft noise complaints management and investigation process adopted for Cape Winelands Airport is presented in Figure 12-1.



Figure 12-1. Noise Monitoring Framework

The objective of the investigation is to establish whether aircraft operations were likely to have contributed to the concern raised and to determine whether any further action may be warranted. The complaints investigation process will adhere to the following steps:

1. Complaint received.
2. Complaint registered.
3. Preliminary review undertaken.
4. Monitoring information reviewed.
5. Aircraft operational information reviewed.

6. Investigation findings documented.
7. Response provided to complainant.
8. Complaint closed or escalated.

12.6 Correlation with Monitoring and Operational Data

Approval conditions require that complaints be linked to aircraft noise monitoring information and aircraft operational data wherever practicable. The Airport Operator shall therefore utilise available monitoring information and operational records to support complaint investigations. Where sufficient information exists, investigations should seek to identify:

- Relevant aircraft movements.
- Relevant aircraft types.
- Relevant flight tracks.
- Monitoring station observations.
- Measured aircraft noise events.
- Applicable weather conditions.

Following receipt of a complaint, investigations shall be undertaken in accordance with the process outlined in Figure 12-1.

Correlation of complaints with objective information assists in ensuring consistency and transparency during investigations.

12.7 Complaint Response Procedures

The Airport Operator shall acknowledge complaints and provide responses within a reasonable timeframe. Responses should include:

- Confirmation of complaint receipt.
- Summary of investigation undertaken.
- Summary of findings.
- Explanation of available monitoring information.
- Description of any actions taken.
- Explanation where no action is warranted.

Responses should be factual, objective and respectful.

12.8 Escalation Process

Certain complaints may require escalation due to their complexity, significance or recurrence. Escalation may be appropriate where:

- Significant community concerns arise.
- Multiple complaints relate to the same issue.

- Monitoring results indicate unusual trends.
- Technical investigations are required.
- Authority involvement is warranted.

Escalated matters may be referred to:

- Airport Management.
- Noise Monitoring Committee.
- Acoustic Specialists.
- Relevant authorities where appropriate.

12.9 Complaint Trend Analysis

Individual complaints provide useful information. However, analysis of complaint trends is often more valuable for aircraft noise management purposes. The Airport Operator shall periodically review:

- Number of complaints received.
- Geographic distribution of complaints.
- Time of occurrence.
- Nature of complaints.
- Repeat complainants.
- Aircraft operational information.
- Monitoring information.

Trend analysis shall be used to identify recurring issues and support adaptive management activities.

12.10 Reporting Requirements

Complaint information shall be reported through the quarterly monitoring reports and annual aircraft noise management reports. Quarterly reports should include:

- Number of complaints received.
- Complaint locations.
- Nature of complaints.
- Investigation outcomes.
- Complaint trends.
- Corrective actions.
- Relevant operational information.

Annual reports should include:

- Long-term complaint trends.

- Significant issues identified.
- Management responses.
- Recommendations for improvement.

Information generated through the Figure 12-1 process shall be used to support complaint trend analysis and continual improvement.

12.11 Complaints Register Review

The Complaints Register shall be reviewed periodically to ensure that information remains complete, accurate and current. The review should verify:

- Complaint status.
- Investigation completion.
- Corrective action implementation.
- Closure records.
- Reporting consistency.

The review process shall support the continual improvement objectives of the NMMP.

12.12 Summary

The aircraft noise complaints management system provides a structured and transparent mechanism through which community concerns relating to aircraft noise can be received, investigated and addressed. Integration of complaint information with aircraft noise monitoring data and operational information will support objective investigations, facilitate identification of recurring concerns and contribute to the continual improvement of aircraft noise management at Cape Winelands Airport.

Table 12-1. Complaints Management Summary Implementation Framework

Management Action	Responsibility	Verification	Reporting Mechanism
Maintain complaints management programme	Airport Operator	Complaints records	Annual Aircraft Noise Management Report
Integrate complaints information into adaptive management processes	Airport Operator	Review records	Annual Aircraft Noise Management Report
Review effectiveness of complaints management system	Airport Operator and NMC	Annual review	Annual Aircraft Noise Management Report

13 COMMUNITY ENGAGEMENT AND COMMUNICATION

13.1 General

Effective aircraft noise management requires ongoing communication and engagement between the Airport Operator, regulatory authorities, aviation stakeholders, surrounding communities and other interested and affected parties. While aircraft noise monitoring provides objective information regarding aircraft noise exposure, stakeholder engagement provides an important mechanism through which concerns, expectations and local knowledge can be incorporated into the aircraft noise management process.

The purpose of this section is to establish a structured stakeholder engagement and communication framework that promotes transparency, accountability and constructive participation in aircraft noise management activities.

Community engagement forms an important component of the adaptive management framework established under this NMMP and supports the objectives of the Noise Monitoring Committee, complaints management system and aircraft noise monitoring programme.

13.2 Objectives

The objectives of the stakeholder engagement and communication programme are to:

- Promote transparency in aircraft noise management.
- Facilitate meaningful stakeholder participation.
- Improve communication between the airport and surrounding communities.
- Provide access to aircraft noise management information.
- Support effective complaints management.
- Facilitate authority participation.
- Support continual improvement of aircraft noise management.
- Promote informed decision-making.

13.3 Stakeholder Identification

The Airport Operator shall maintain a Stakeholder Register containing the details of organisations and individuals with an interest in aircraft noise management matters associated with airport operations.

The register shall support communication activities, stakeholder engagement processes and consultation initiatives undertaken under this NMMP. The Stakeholder Register shall be reviewed and updated periodically. The stakeholders may include authorities, aviation organisations, community representatives, educational institutions, agricultural stakeholders, neighbouring landowners and other interested parties. These may be:

Regulatory Authorities

- DEA&DP.
- City of Cape Town.

- SACAA.
- Other relevant government departments.

Aviation Stakeholders

- ATNS.
- AOPA-SA.
- CAASA.
- Airport-based operators.
- Flight schools.
- Charter operators.

Community Stakeholders

- Klipheuwel representatives.
- Fisantekraal representatives.
- Greenville Garden City representatives.
- Bella Riva Mixed-Use Development representatives.
- Other affected communities.

Other Interested Parties

- Educational institutions.
- Agricultural landowners.
- Environmental organisations.
- Interested and affected parties.

13.4 Stakeholder Engagement Methods

The Airport Operator shall utilise a range of engagement mechanisms to facilitate communication and participation. The nature and frequency of engagement activities may vary depending on operational requirements, stakeholder interests and emerging aircraft noise management issues. Engagement mechanisms may include:

- Noise Monitoring Committee meetings.
- Stakeholder meetings.
- Public information sessions.
- Written correspondence.
- Electronic communications.
- Airport website updates.

- Complaint management processes.
- Technical workshops where required.

The engagement programme shall remain sufficiently flexible to respond to evolving stakeholder needs.

13.5 Communication of Monitoring Information

The Airport Operator shall make aircraft noise management information available to stakeholders through appropriate communication channels. Information communicated may include:

- Aircraft noise monitoring results.
- Monitoring trends.
- Aircraft noise complaints statistics.
- Noise Monitoring Committee outcomes.
- Annual aircraft noise management reports.
- Significant aircraft noise management initiatives.

The level of detail communicated shall be appropriate to the intended audience while ensuring transparency regarding aircraft noise management performance.

13.6 Airport Website Information

The Airport Operator should maintain a dedicated aircraft noise management section on the airport website. The website may provide:

- Overview of the NMMP.
- Aircraft noise complaints contact details.
- Noise Monitoring Committee information.
- Monitoring programme information.
- Aircraft noise management reports.
- Frequently asked questions.
- Stakeholder engagement information.

The website shall provide an accessible source of information regarding aircraft noise management activities.

13.7 Authority Consultation

Relevant authorities play an important role in aircraft noise management and shall be provided with opportunities to participate in review and consultation processes. Authority engagement may occur through:

- Noise Monitoring Committee meetings.
- Technical review meetings.

- Consultation workshops.
- Reporting processes.
- Regulatory review processes.

Authorities may also be consulted regarding future technical investigations, aircraft noise modelling studies and proposed amendments to the NMMP.

13.8 Community Awareness and Education

Community understanding of aircraft noise issues can contribute significantly to effective stakeholder engagement. The Airport Operator may undertake awareness initiatives to improve understanding of:

- Airport operations.
- Aircraft noise monitoring.
- Aircraft noise metrics.
- Complaints management procedures.
- Aircraft noise management processes.

These initiatives may assist in improving communication and supporting informed stakeholder participation.

13.9 Stakeholder Feedback

Stakeholder feedback provides valuable information regarding aircraft noise management performance and community expectations.

The feedback should be reviewed periodically and considered during NMMP reviews and adaptive management processes.

13.10 Stakeholder Engagement Records

Records of stakeholder engagement activities shall be maintained as part of the airport's aircraft noise management documentation. These Records may include:

- Stakeholder Register.
- Meeting agendas.
- Meeting minutes.
- Attendance registers.
- Correspondence.
- Consultation records.
- Presentation materials.
- Feedback records.

These records shall support reporting, auditing and future review activities.

13.11 Review of Engagement Programme

The stakeholder engagement programme shall be reviewed periodically to ensure that it remains effective and responsive to stakeholder needs. Recommendations arising from the review shall be incorporated into the adaptive management framework where appropriate.

13.12 Summary

The stakeholder engagement and communication framework established under this NMMP provides a structured mechanism through which authorities, aviation stakeholders, communities and other interested parties can participate in aircraft noise management activities. Through ongoing communication, transparent reporting and meaningful stakeholder engagement, the Airport Operator aims to promote trust, improve understanding of aircraft noise issues and support the continual improvement of aircraft noise management at Cape Winelands Airport.

14 PERFORMANCE INDICATORS AND MEASURABLE GOALS

14.1 General

Environmental Authorisation Condition 46 requires that measurable goals be established to prevent and manage operational noise emissions associated with the airport development. The purpose of this section is therefore to establish a set of performance indicators and measurable goals through which implementation of this Noise Mitigation and Management Plan (NMMP) can be evaluated and reported.

The performance indicators are intended to measure the effectiveness of the aircraft noise management system rather than establish absolute aircraft noise limits. Aircraft noise levels are influenced by a range of factors including aircraft type, operational procedures, weather conditions, runway utilisation and air traffic requirements, many of which fall outside the direct control of the Airport Operator.

The indicators therefore focus on the effectiveness of monitoring, reporting, complaints management, stakeholder engagement, corrective actions and continual improvement processes.

Performance indicators shall be reviewed periodically and may be refined during future NMMP reviews, where justified by operational experience, monitoring results or authority requirements.

14.2 Objectives of the Performance Measurement Framework

The performance measurement framework has been developed to:

- Demonstrate implementation of the NMMP.
- Measure achievement of management objectives.
- Support regulatory compliance.
- Facilitate continual improvement.
- Support transparent reporting.
- Provide accountability.
- Identify areas requiring corrective action.
- Support adaptive management.

Table 14-1. Performance Framework Objectives

Objective	Purpose
Regulatory Compliance	Demonstrate compliance with approval requirements
Monitoring Performance	Verify effectiveness of monitoring programme
Complaints Management	Measure responsiveness and effectiveness
Stakeholder Engagement	Measure participation and transparency
Adaptive Management	Measure continual improvement performance
Reporting Compliance	Measure reporting performance

14.3 Aircraft Noise Monitoring Performance Indicators

T The aircraft noise monitoring programme forms the technical foundation of the NMMP and therefore requires measurable performance indicators to ensure reliability and continuity of monitoring information.

Monitoring indicators focus on operational availability, calibration compliance, data completeness and reporting performance. The Airport Operator shall seek to achieve the performance targets presented in Table 14-2.

Table 14-2. Aircraft Noise Monitoring Performance Indicators

Performance Indicator	Target
Monitoring station operational availability	≥ 90%
Annual monitoring data capture rate	≥ 95%
Calibration compliance	100%
Maintenance completion rate	100%
Quarterly monitoring report submission	100%

14.4 Complaints Management Performance Indicators

The effectiveness of the complaints management system will be evaluated through indicators relating to complaint registration, investigation and response.

These indicators are intended to demonstrate responsiveness and accountability rather than limit the number of complaints received. The Airport Operator shall seek to achieve the performance targets presented in Table 14-3.

Table 14-3. Complaints Management Performance Indicators

Performance Indicator	Target
Complaints recorded	100%
Complaint acknowledgement	≤ 5 working days
Investigation completion	≤ 20 working days
Complaint reporting compliance	100%
Annual complaint trend review	100%

14.5 Stakeholder Engagement Performance Indicators

Stakeholder engagement performance indicators are intended to measure implementation of communication and consultation processes established under this NMMP. The Airport Operator shall seek to achieve the following goals and achieve the performance targets indicated in Table 14-4 further below:

- Convene all scheduled Noise Monitoring Committee meetings.
- Maintain an up-to-date Stakeholder Register.
- Provide stakeholders with access to aircraft noise management information.
- Respond to stakeholder correspondence within reasonable timeframes.
- Undertake annual review of stakeholder engagement activities.

Table 14-4. Stakeholder Engagement Performance Indicators

Performance Indicator	Target
Scheduled NMC meetings held	100%
Stakeholder Register maintained	100%
Stakeholder engagement records maintained	100%
Annual stakeholder review completed	100%

14.6 Reporting Performance Indicators

Reporting forms an important component of transparency, regulatory compliance and continual improvement. The Airport Operator shall establish measurable reporting objectives and achieve the following reporting goals:

- Submission of all quarterly monitoring reports.
- Submission of annual aircraft noise management reports.
- Inclusion of all required monitoring and complaints information.
- Maintenance of supporting records and documentation.

The associated performance targets are presented in Table 14-5.

Table 14-5. Reporting Performance Indicators

Performance Indicator	Target
Quarterly reports submitted	100%
Annual reports submitted	100%
Reporting completeness	100%
Record retention compliance	100%

14.7 Corrective Action Performance Indicators

The corrective action process established under this NMMP provides the primary mechanism through which identified issues can be addressed. The corrective action performance indicators are intended to measure the effectiveness of this process (refer to Table 14-6), and seek to achieve:

- Registration of all corrective actions.
- Allocation of responsibilities for all corrective actions.
- Closure of corrective actions within agreed timeframes where practicable.
- Annual review of corrective action effectiveness.

Table 14-6. Corrective Action Performance Indicators

Performance Indicator	Target
Corrective actions recorded	100%
Responsible party assigned	100%
Corrective action review completed	100%

Performance Indicator	Target
Annual corrective action assessment	100%

14.8 Adaptive Management Performance Indicators

Adaptive management is a key objective of this NMMP and requires periodic review of management performance and opportunities for improvement. The main adaptive management goals to achieve are:

- Annual review of NMMP implementation.
- Periodic review of monitoring data.
- Periodic review of complaint trends.
- Review of aircraft noise management opportunities.
- Identification and implementation of improvement measures where appropriate.

The associated performance targets are presented in Table 14-7.

Table 14-7. Adaptive Management Performance Indicators

Performance Indicator	Target
Annual NMMP review completed	100%
Monitoring trend review completed	100%
Complaint trend review completed	100%
Improvement opportunities assessed	100%

14.9 Review of Performance Indicators

The performance indicators and measurable goals established in this section shall be reviewed periodically as part of the NMMP review process. Where appropriate, indicators and targets may be refined to ensure continued relevance and effectiveness. The review may consider:

- Operational experience.
- Monitoring results.
- Complaint trends.
- Stakeholder feedback.
- Authority recommendations.
- Regulatory changes.
- Future technical investigations.

Where appropriate, indicators and targets may be refined through future revisions of the NMMP.

14.10 Performance Measurement Framework Implementation

The performance indicators and measurable goals established in this section provide the mechanism through which achievement of the NMMP objectives can be assessed, reviewed and reported. Collectively, these indicators satisfy the measurable goals requirement contained within Environmental Authorisation Condition 46 and provide a structured basis for evaluating aircraft noise management performance throughout the operational life of the airport.

Table 14-8 summarises the principal performance measurement commitments established under this NMMP and identifies the responsibilities, verification methods and reporting mechanisms applicable to the performance measurement framework.

Table 14-8. Performance Measurement Framework Implementation

Management Action	Responsibility	Verification	Reporting Mechanism
Monitor achievement of performance indicators	Airport Operator	Performance assessment records	Annual Aircraft Noise Management Report
Maintain monitoring programme performance	Airport Operator	Monitoring records and audits	Quarterly Monitoring Reports and Annual Aircraft Noise Management Report
Maintain complaints management performance	Airport Operator	Complaints Register and investigation records	Quarterly Monitoring Reports
Maintain stakeholder engagement performance	Airport Operator	Stakeholder records and NMC records	Annual Aircraft Noise Management Report
Maintain reporting compliance	Airport Operator	Submitted reports and records audits	Annual Aircraft Noise Management Report
Maintain corrective action performance	Airport Operator	Corrective Action Register and review records	Quarterly Monitoring Reports and Annual Aircraft Noise Management Report
Review adaptive management performance	Airport Operator and NMC	Annual review records	Annual Aircraft Noise Management Report
Review and update performance indicators where required	Airport Operator	NMMP review records	As Required

14.11 Summary

The performance indicators and measurable goals established within this section provide the mechanism through which implementation of the NMMP can be objectively assessed and reported. Through periodic measurement, review and reporting of performance indicators, Cape Winelands Airport will be able to demonstrate compliance with Environmental Authorisation requirements, evaluate the effectiveness of aircraft noise management measures and identify opportunities for continual improvement throughout the operational life of the airport.

15 CORRECTIVE ACTIONS AND ADAPTIVE MANAGEMENT

15.1 General

Aircraft noise management is an ongoing process that requires periodic review and refinement throughout the operational life of Cape Winelands Airport. While the monitoring, reporting, complaints management and stakeholder engagement systems established under this NMMP provide the mechanisms through which aircraft noise information is collected and evaluated, a structured process is required to ensure that emerging issues are appropriately addressed and that opportunities for improvement are identified and acted upon.

The purpose of this section is to establish the corrective action and adaptive management framework through which aircraft noise management performance will be reviewed and continually improved. The framework is intended to ensure that aircraft noise management remains responsive to operational changes, monitoring results, stakeholder concerns, authority comments and future technical investigations.

Corrective actions may be initiated in response to monitoring results, complaint trends, stakeholder concerns, authority recommendations, technical investigations or operational reviews. The adaptive management process further recognises that airport operations and surrounding receptor environments may evolve over time and that management measures should therefore be reviewed periodically to ensure continued effectiveness.

The corrective action and adaptive management framework seek to:

- Identify aircraft noise management issues requiring intervention.
- Investigate identified issues.
- Implement appropriate corrective actions.
- Review effectiveness of corrective actions.
- Promote continual improvement.
- Support evidence-based decision-making.
- Support compliance with approval requirements.
- Facilitate transparent reporting.

15.2 Corrective Action Triggers

Corrective actions may be initiated when monitoring results, stakeholder concerns or operational reviews indicate that further investigation or management intervention may be warranted.

A corrective action trigger does not necessarily indicate non-compliance or unacceptable aircraft noise conditions. Rather, it serves as a mechanism through which issues can be investigated and evaluated in a structured manner. The corrective action triggers considered are shown in the Table 15-1.

Table 15-1. Corrective Action Triggers

Trigger Category	Examples
Monitoring	Significant trend changes, exceedances
Complaints	Increased complaints, complaint clusters
Stakeholder	NMC concerns, authority recommendations
Operational	Operational changes, fleet changes
Technical	Future investigations and modelling outcomes

Monitoring Triggers

Monitoring information provides the primary technical basis for evaluating aircraft noise management performance and identifying emerging issues that may require further investigation. Corrective action may therefore be triggered where monitoring data indicates significant changes in aircraft noise trends, unusual or unexpected monitoring results, repeated exceedance events, monitoring equipment failures that compromise data quality or programme performance, or significant differences between predicted aircraft noise levels and measured monitoring outcomes. These triggers assist in identifying potential operational, technical or management issues and ensure that aircraft noise management remains responsive to changing conditions. The principal triggers include:

- Significant changes in aircraft noise trends.
- Unusual monitoring results.
- Repeated exceedance events.
- Monitoring equipment failures affecting programme performance.
- Significant differences between predicted and measured outcomes.

Complaints Management Triggers

Aircraft noise complaints provide valuable insight into community perceptions and concerns regarding airport operations. Corrective action may be triggered where complaint information indicates a significant increase in complaints, repeated complaints originating from the same area, recurring complaints associated with specific aircraft operations, complaint clusters identified through trend analysis or complaints that raise new or previously unidentified aircraft noise concerns. These triggers assist in identifying potential community impacts and ensure that stakeholder concerns are investigated in a structured and transparent manner, and can be summarised as:

- Significant increase in complaints.
- Repeated complaints from the same area.
- Repeated complaints associated with specific operations.
- Complaint clusters identified through trend analysis.
- Complaints raising new aircraft noise concerns.

Stakeholder Triggers

Stakeholder engagement processes provide an important mechanism for identifying aircraft noise management issues that may not be evident through monitoring or complaints data alone. Corrective action may therefore be triggered by issues raised during Noise Monitoring Committee meetings, community concerns requiring further investigation, recommendations from regulatory authorities or requests for technical review. These triggers ensure that stakeholder input is actively considered within the adaptive management framework and that concerns are addressed through appropriate review and response processes. The main stakeholder-related triggers are:

- Issues raised during Noise Monitoring Committee meetings.
- Community concerns requiring further investigation.
- Authority recommendations.
- Requests for technical review.

Operational Triggers

Changes in airport operations can influence aircraft noise exposure patterns and may necessitate further assessment or review of management measures. Corrective action may therefore be triggered by significant changes in aircraft movement numbers, changes in aircraft fleet composition, modifications to flight procedures, changes in runway utilisation patterns or future airport development initiatives. These triggers ensure that aircraft noise management remains aligned with airport operations and that potential changes in aircraft noise exposure are appropriately evaluated and managed. The main operational triggers are:

- Significant changes in aircraft movements.
- Significant changes in aircraft fleet composition.
- Changes in flight procedures.
- Changes in runway utilisation.
- Future airport development initiatives.

15.3 Corrective Action Process

Where a trigger is identified, the Airport Operator shall undertake a structured review process to determine whether corrective action is warranted. The process is intended to ensure that issues are investigated consistently and that corrective actions are appropriately documented, implemented and reviewed.

The corrective action process comprises the following stages (also refer to Figure 15-1):

Stage 1 – Issue Identification: Identification through monitoring, complaints management, stakeholder engagement or operational reviews.

Stage 2 – Preliminary Assessment: Evaluation of the nature, significance and potential causes of the issue.

Stage 3 – Investigation: Review of monitoring information, operational information and stakeholder feedback.

Stage 4 – Action Identification: Identification and allocation of appropriate corrective actions.

Stage 5 – Action Implementation: Completion of approved corrective actions.

Stage 6 – Verification: Assessment of the effectiveness of implemented actions.

Stage 7 – Close-Out: Formal closure once implementation and effectiveness have been verified.

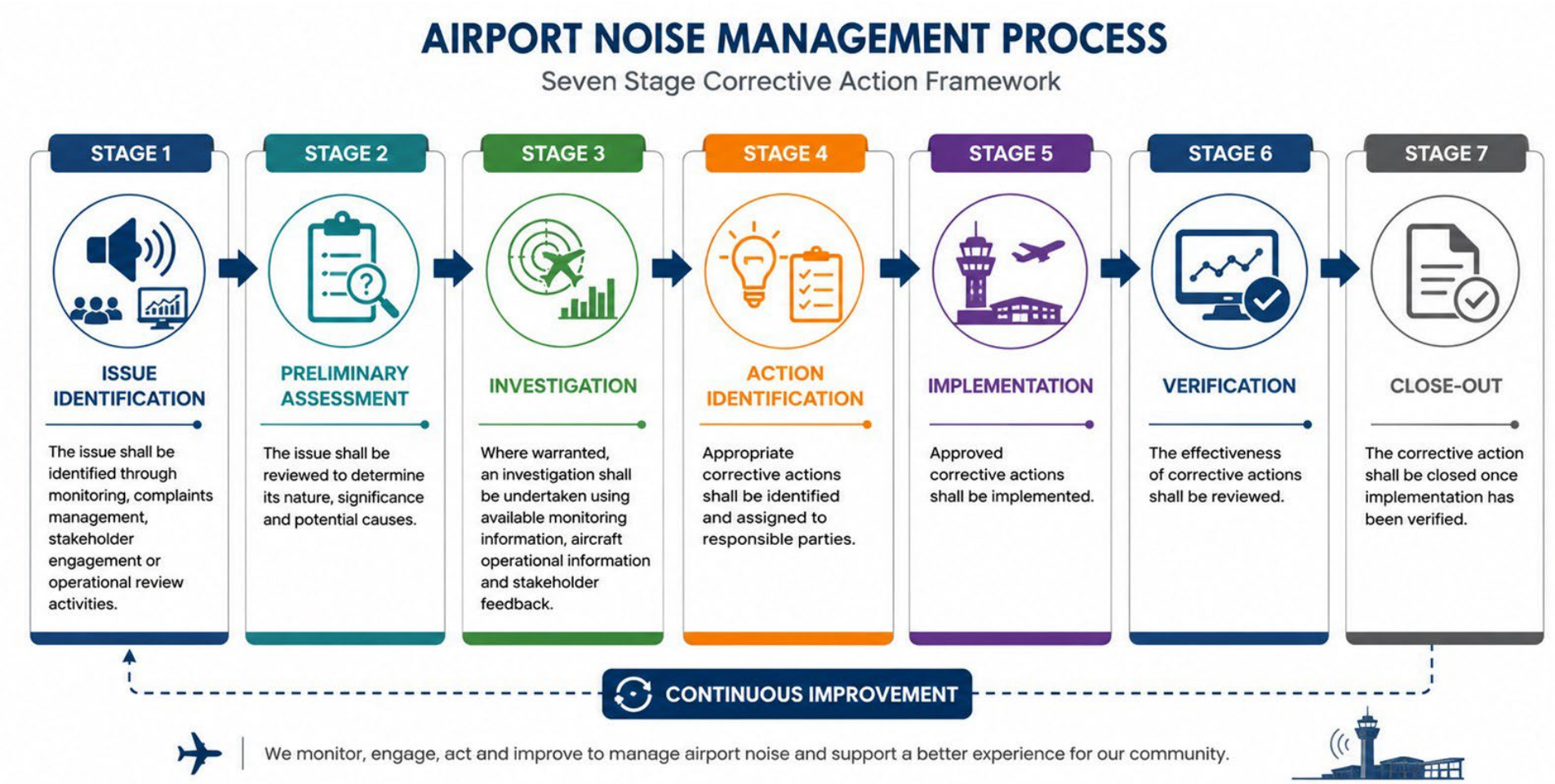


Figure 15-1. Corrective Action Process

15.4 Corrective Action Register

The Airport Operator shall maintain a Corrective Action Register to record issues requiring management intervention and to track corrective actions from identification through to closure. The register shall include the date raised, source of the issue, investigation undertaken, corrective action required, responsible person, target completion date, implementation status, verification method and close-out date. An example Corrective Action Register is provided in Appendix E.

15.5 Investigation and Corrective Actions

Where a corrective action trigger is identified, an investigation shall be undertaken that is appropriate to the nature and significance of the issue. Investigations may include review of aircraft noise monitoring results, aircraft operational information, complaints data, stakeholder feedback, site inspections, specialist acoustic investigations and previous corrective actions. The purpose of the investigation is to identify the underlying cause of the issue and determine whether management intervention is warranted.

Corrective actions shall be selected based on the findings of the investigation and may include maintenance or relocation of monitoring equipment, additional monitoring studies, reviews of operational procedures or runway utilisation, consultation with aviation stakeholders and authorities, enhanced stakeholder engagement activities, specialist acoustic investigations, additional aircraft noise assessments or future AEDT modelling, where justified.

15.6 Adaptive Management

Adaptive management is a continual improvement process through which monitoring results, complaint trends, stakeholder feedback, authority comments, technical investigations and operational changes are periodically reviewed to identify opportunities for improving aircraft noise management performance.

The Airport Operator shall undertake annual reviews of aircraft noise management performance, including review of the monitoring programme, complaint trends, stakeholder engagement outcomes, corrective actions and performance indicators. The findings of these reviews shall be used to identify improvement measures and refine management procedures, where necessary.

The Noise Monitoring Committee shall support the adaptive management process by reviewing monitoring results, complaint trends and corrective actions and by making recommendations regarding further investigations, stakeholder engagement initiatives and future technical reviews. Recommendations arising from the Committee shall be recorded within the Recommendations Register and considered by the Airport Operator.

15.7 Review of Effectiveness

The effectiveness of corrective actions shall be reviewed following implementation to determine whether the issue has been adequately addressed, whether additional actions are required and whether further investigation is warranted.

The findings of effectiveness reviews shall be incorporated into future management reviews and continual improvement initiatives and shall assist in evaluating the effectiveness of the broader aircraft noise management programme.

15.8 Corrective Actions and Adaptive Management Framework

The corrective action and adaptive management framework established in this section provides the mechanism through which aircraft noise management performance can be reviewed, refined and continually improved. Through systematic review of monitoring information, complaints data, stakeholder feedback and operational changes, the Airport Operator will maintain a responsive and evidence-based approach to aircraft noise management throughout the operational life of the airport.

Corrective actions shall be investigated, implemented and verified in accordance with the process shown in Figure 15-1.

Table 15-1 summarises the principal commitments associated with the corrective action and adaptive management process and identifies the responsibilities, verification methods and reporting mechanisms applicable to these activities. Verification activities represent the final review stage of the corrective action process illustrated in Figure 15-1.

Table 15-2. Corrective Actions and Adaptive Management Framework

Activity	Responsibility	Verification	Reporting
Maintain Corrective Action Register	Airport Operator	Register audit	Quarterly Monitoring Reports
Undertake investigations and corrective actions	Airport Operator	Investigation and implementation records	Quarterly Monitoring Reports
Review effectiveness of corrective actions	Airport Operator	Verification records	Annual Aircraft Noise Management Report
Undertake annual adaptive management review	Airport Operator	Review report	Annual Aircraft Noise Management Report
Review management performance and provide recommendations	Noise Monitoring Committee	Meeting minutes and Recommendations Register	Annual Aircraft Noise Management Report

16 REPORTING REQUIREMENTS

16.1 General

Reporting provides the mechanism through which aircraft noise management performance, monitoring results, complaint trends and management actions are communicated to authorities, stakeholders and the Noise Monitoring Committee. The reporting framework established under this NMMP supports regulatory compliance, stakeholder engagement, transparency and continual improvement throughout the operational life of Cape Winelands Airport.

The Airport Operator shall be responsible for preparing, maintaining and distributing reports required under this NMMP and for retaining supporting records generated through implementation of the monitoring, complaints management and stakeholder engagement programmes.

16.2 Reporting Requirements

The Airport Operator shall maintain routine records relating to implementation of the NMMP, including monitoring data, calibration and maintenance records, complaints records, corrective action records, stakeholder engagement records, Noise Monitoring Committee records and relevant aircraft operational information.

Quarterly Aircraft Noise Monitoring Reports shall be prepared to summarise aircraft noise monitoring results, exceedance statistics, complaint trends, aircraft operational information, stakeholder engagement activities and corrective actions implemented during the reporting period.

An Annual Aircraft Noise Management Report shall be prepared to provide a comprehensive review of aircraft noise management performance. The annual report should include an assessment of monitoring trends, complaint trends, monitoring network performance, Noise Monitoring Committee activities, corrective actions, stakeholder engagement outcomes, performance indicators and future management requirements.

Where required, additional reports may be prepared in response to authority requests, significant complaint investigations, technical studies, future aircraft noise modelling exercises or major operational changes.

16.3 Authority and Stakeholder Reporting

Quarterly and annual reports shall be made available to the relevant authorities in accordance with approval requirements and shall be presented to the Noise Monitoring Committee for review. Information communicated to stakeholders should include aircraft noise monitoring results, complaint trends, corrective actions and significant aircraft noise management initiatives.

Meeting minutes and recommendations arising from Noise Monitoring Committee meetings shall be recorded and retained as part of the airport's aircraft noise management records.

16.4 Record Retention and Report Review

Records generated through implementation of this NMMP shall be retained in accordance with the airport's document management procedures and should generally be retained for a minimum period of five years unless otherwise required by legislation or approval conditions.

All reports shall be reviewed prior to issue to verify data quality, reporting completeness, accuracy of information and consistency with the requirements of this NMMP.

Table 16-1. Aircraft Noise Reporting Schedule

Report / Record	Frequency	Responsibility	Primary Contents
Monitoring Data and Operational Records	Continuous	Airport Operator	Monitoring results, aircraft operations, calibration and maintenance records
Aircraft Noise Complaints Register	Continuous	Airport Operator	Complaints received, investigations and outcomes
Corrective Action Register	Continuous	Airport Operator	Corrective actions, implementation status and close-out records
Quarterly Aircraft Noise Monitoring Report	Quarterly	Airport Operator	Monitoring results, exceedances, complaints, operational information and corrective actions
Annual Aircraft Noise Management Report	Annually	Airport Operator	Annual performance review, trends, stakeholder engagement, corrective actions and improvement measures
Technical Investigation Reports	As Required	Airport Operator	Investigation findings and recommendations
Aircraft Noise Modelling Reports	As Required	Airport Operator	Future AEDT modelling studies and outcomes

17 NMMP REVIEW AND CONTINUAL IMPROVEMENT

17.1 General

The Noise Mitigation and Management Plan (NMMP) has been developed to provide a structured and adaptive framework for the long-term management of aircraft noise associated with Cape Winelands Airport. Aircraft operations, airport infrastructure, surrounding land uses, stakeholder expectations and regulatory requirements may evolve over time and it is therefore necessary that the NMMP remains a living management document capable of responding to changing circumstances.

The purpose of this section is to establish the review and continual improvement process through which the NMMP will be periodically evaluated, updated and refined throughout the operational life of the airport.

The review process will utilise information obtained from aircraft noise monitoring, complaints management, stakeholder engagement, authority consultation, technical investigations and operational reviews to evaluate the effectiveness of the NMMP and identify opportunities for improvement.

The continual improvement framework is consistent with the adaptive management principles established elsewhere within this NMMP and supports the long-term objective of maintaining an effective and responsive aircraft noise management programme. The objectives of the NMMP review and continual improvement process are to:

- Ensure the continued effectiveness of the NMMP.
- Ensure ongoing compliance with approval requirements.
- Review aircraft noise management performance.
- Identify opportunities for improvement.
- Incorporate lessons learned.
- Incorporate stakeholder feedback.
- Incorporate authority recommendations.
- Facilitate adaptive management.

17.2 Annual Review

The Airport Operator shall undertake an annual review of the NMMP and associated aircraft noise management activities. The review shall evaluate monitoring results, complaint trends, stakeholder engagement activities, corrective actions, Noise Monitoring Committee recommendations and compliance with approval requirements.

The annual review shall identify any deficiencies, emerging issues or opportunities for improvement and shall determine whether amendments to management measures or monitoring programmes are required.

17.3 Five-Year Strategic Review

In addition to the annual review process, the Airport Operator shall undertake a comprehensive strategic review of the NMMP at intervals not exceeding five years.

The strategic review shall evaluate long-term monitoring trends, complaint trends, operational changes, changes in aircraft fleet composition, surrounding land-use changes, stakeholder expectations, regulatory requirements and future airport development initiatives. The review may result in recommendations for amendments to the NMMP, monitoring network or aircraft noise management procedures.

17.4 Review Triggers

While annual and five-year reviews provide the primary review mechanisms, interim reviews may be undertaken where significant changes occur. Potential review triggers include significant changes in aircraft operations, aircraft fleet composition, runway utilisation, monitoring results, complaint trends, authority requirements, technical investigations or future aircraft noise modelling studies.

17.5 Continual Improvement

The Airport Operator shall implement a continual improvement process through which monitoring information, complaint data, stakeholder feedback, authority comments and operational experience are periodically reviewed to identify opportunities for improving aircraft noise management performance. The adaptive management cycle adopted under this NMMP is illustrated in Figure 17-1.

The continual improvement process shall generally comprise monitoring, evaluation, implementation of improvement measures, verification of effectiveness and review of outcomes. This process shall be integrated with the corrective action framework established in Section 15.

The Noise Monitoring Committee shall support the continual improvement process through review of monitoring results, complaint trends, corrective actions and proposed revisions to the NMMP. Recommendations arising from the Committee shall be recorded and considered during future reviews.



Figure 17-1. Adaptive Management Cycle

17.6 Authority Consultation and Revision Control

Where significant amendments to the NMMP are proposed, the Airport Operator shall consult with relevant authorities and consider any comments received during the review process.

The Airport Operator shall maintain a revision history for the NMMP, including revision numbers, dates, descriptions of amendments and approval details. A revision history table shall be maintained within the document control section of the Plan.

17.7 Monitoring Network Review

As part of the review process, the aircraft noise monitoring network shall be periodically evaluated to ensure that monitoring locations remain representative of surrounding noise-sensitive receptors and operational conditions. Additional monitoring locations or revisions to the monitoring network may be considered where justified by operational experience, monitoring results, authority recommendations or future development patterns.

Monitoring results, complaint trends and stakeholder feedback will be reviewed through the adaptive management cycle shown in Figure 17-1.

Table 17-1. NMMP Review and Continual Improvement Schedule

Review Activity	Frequency	Responsibility	Output
NMMP Performance Review	Annually	Airport Operator	Annual Aircraft Noise Management Report
Review of Monitoring Results and Complaint Trends	Annually	Airport Operator	Annual Aircraft Noise Management Report
Review of Corrective Actions and NMC Recommendations	Annually	Airport Operator	Annual Aircraft Noise Management Report
Monitoring Network Review	Annually	Airport Operator	Annual Aircraft Noise Management Report
Strategic Review of NMMP	Every 5 Years	Airport Operator	Strategic Review Report
Review Following Significant Operational or Regulatory Changes	As Required	Airport Operator	Updated NMMP where required
Review Following Technical Investigations or Future Modelling Studies	As Required	Airport Operator	Technical Review Report
NMMP Revision and Update	As Required	Airport Operator	Revised NMMP

17.8 Summary

The review and continual improvement process established under this NMMP provides a structured mechanism through which aircraft noise management performance can be periodically assessed and refined. Through annual reviews, strategic reviews, stakeholder participation and adaptive management processes, the Airport Operator will maintain an effective and responsive aircraft noise management programme throughout the operational life of Cape Winelands Airport.

18 CONCLUSION

18.1 General

This Noise Mitigation and Management Plan (NMMP) has been developed to provide a structured, transparent and adaptive framework for the long-term management of aircraft noise associated with Cape Winelands Airport.

The NMMP has been informed by the findings and recommendations of the DDA Noise Impact Assessment, Environmental Authorisation requirements, comments received from relevant authorities and internationally recognised best practice relating to aircraft noise management.

The Plan establishes the management systems, monitoring requirements, stakeholder engagement mechanisms and continual improvement processes necessary to support responsible aircraft noise management throughout the operational life of the airport.

18.2 Achievement of NMMP Objectives

The NMMP has been developed to fulfil the objectives established in Section 5 and to satisfy Environmental Authorisation Condition 46, which requires the implementation of measurable goals to prevent and manage operational aircraft noise emissions. The Plan establishes:

- A permanent aircraft noise monitoring programme.
- A structured aircraft noise complaints management system.
- A stakeholder engagement and communication framework.
- A Noise Monitoring Committee.
- A corrective action and adaptive management framework.
- A reporting and review programme.
- A future aircraft noise modelling review framework.
- A continual improvement process.

Collectively, these elements provide the framework through which aircraft noise associated with airport operations can be monitored, assessed and managed throughout the operational life of the airport.

18.3 Monitoring and Reporting Commitments

A key component of the NMMP is the establishment of a permanent aircraft noise monitoring network capable of providing objective information regarding aircraft noise exposure affecting surrounding receptor areas. Monitoring results will support:

- Aircraft noise management.
- Complaints investigations.
- Stakeholder engagement.
- Authority reporting.

- Future technical investigations.
- Continual improvement activities.

The monitoring programme will be supported by quarterly monitoring reports and annual aircraft noise management reports to ensure that aircraft noise management performance remains transparent and auditable.

18.4 Stakeholder Participation

The Airport Operator recognises the importance of meaningful stakeholder participation in aircraft noise management.

The Noise Monitoring Committee, stakeholder engagement programme and complaints management system established under this NMMP will provide structured opportunities for communication and participation by:

- DEA&DP.
- City of Cape Town.
- SACAA.
- ATNS.
- Aviation organisations.
- Aircraft operators.
- Community representatives.
- Interested and affected parties.

These mechanisms will assist in ensuring that aircraft noise management remains transparent and responsive to stakeholder concerns.

18.5 Adaptive Management and Continual Improvement

Aircraft noise management is an ongoing process that must respond to changing operational conditions, evolving stakeholder expectations and future technical information.

The NMMP therefore adopts an adaptive management approach whereby monitoring results, complaint trends, stakeholder feedback and future technical investigations are used to identify opportunities for continual improvement.

This approach will assist the Airport Operator in maintaining an effective and responsive aircraft noise management programme throughout the operational life of the airport. The continual improvement philosophy underpinning this NMMP is based on the adaptive management cycle presented in Figure 17-1.

18.6 Commitment to Aircraft Noise Management

Cape Winelands Airport is committed to implementing the measures contained within this NMMP and maintaining a proactive approach to aircraft noise management.

Through implementation of the monitoring, reporting, stakeholder engagement and adaptive management measures established within this Plan, the Airport Operator seeks to:

- Promote regulatory compliance.
- Protect surrounding noise-sensitive receptors, where reasonably practicable.
- Maintain transparent communication with stakeholders.
- Support informed decision-making.
- Facilitate continual improvement of aircraft noise management.

The NMMP therefore provides the framework through which aircraft noise management will be implemented, monitored, reviewed and continually improved throughout the operational life of Cape Winelands Airport.

Table 18-1. Conclusion Implementation Framework

Management Action	Responsibility	Verification Method	Reporting Mechanism
Implement the NMMP	Airport Operator	Compliance reviews	Annual Aircraft Noise Management Report
Maintain aircraft noise management systems	Airport Operator	Monitoring and management records	Annual Aircraft Noise Management Report
Undertake continual improvement	Airport Operator	Annual review records	Annual Aircraft Noise Management Report
Review NMMP effectiveness	Airport Operator and NMC	Strategic reviews	Annual Aircraft Noise Management Report

19 NMMP COMMITMENTS REGISTER

19.1 General

The purpose of the NMMP Commitments Register is to consolidate the principal commitments contained throughout this Plan into a single auditable implementation schedule. The Commitments Register provides a mechanism through which implementation of the NMMP can be tracked, reviewed and verified throughout the operational life of Cape Winelands Airport.

The register consolidates the key commitments associated with aircraft noise monitoring, complaints management, stakeholder engagement, reporting, corrective actions, adaptive management and regulatory compliance and provides a central reference for evaluating implementation of the NMMP.

Table 19-1 presents the NMMP Commitments Register and identifies the principal commitments, implementation timing, responsible parties, verification methods and reporting mechanisms applicable to each commitment.

Table 19-1. NMMP Commitments Register

Ref	Commitment	Timing	Responsibility	Verification	Reporting
NMMP-01	Implement approved NMMP	Ongoing	Airport Oper.	Compliance audit	Annual
NMMP-02	Maintain aircraft noise monitoring programme	Ongoing	Airport Oper.	Monitoring records	Quarterly
NMMP-03	Maintain minimum four permanent monitoring stations	Ongoing	Airport Oper.	Monitoring station inspections	Quarterly
NMMP-04	Maintain monitoring equipment calibration programme	Ongoing	Airport Oper.	Calibration certificates	Annual
NMMP-05	Record LAeq,T, LRdn, LRd, LRn, LAmax, SEL and Ln metrics	Ongoing	Airport Oper.	Monitoring database	Quarterly
NMMP-06	Correlate monitoring information with aircraft operational data	Ongoing	Airport Oper.	Investigation records	Quarterly
NMMP-07	Maintain Aircraft Noise Complaints Register	Ongoing	Airport Oper.	Register audit	Quarterly
NMMP-08	Investigate aircraft noise complaints	As Required	Airport Oper.	Investigation reports	Quarterly
NMMP-09	Maintain Stakeholder Register	Ongoing	Airport Oper.	Register audit	Annual Report
NMMP-10	Convene Noise Monitoring Committee meetings	Quarterly (first two years)	Airport Oper.	Meeting records	Quarterly
NMMP-11	Maintain Recommendations Register	Ongoing	Airport Oper.	Register audit	Quarterly
NMMP-12	Maintain Corrective Action Register	Ongoing	Airport Oper.	Register audit	Quarterly
NMMP-13	Undertake corrective actions where required	As Required	Airport Oper.	Corrective Action Register	Quarterly
NMMP-14	Prepare Quarterly Aircraft Noise Monitoring Reports	Quarterly	Airport Oper.	Submitted reports	Quarterly
NMMP-15	Prepare Annual Aircraft Noise Management Report	Annually	Airport Oper.	Submitted report	Annual
NMMP-16	Submit reports to relevant authorities	As Required	Airport Oper.	Submission records	Annual
NMMP-17	Facilitate authority participation in NMC	Ongoing	Airport Oper.	Attendance records	Annual
NMMP-18	Undertake annual NMMP review	Annually	Airport Oper.	Review report	Annual

Ref	Commitment	Timing	Responsibility	Verification	Reporting
NMMP-19	Undertake five-year strategic review	Every five years	Airport Oper.	Strategic Review Report	Strategic Review
NMMP-20	Review monitoring network adequacy	Annually	Airport Oper.	Technical review	Annual
NMMP-21	Review future modelling requirements	Annually	Airport Oper.	Technical review	Annual
NMMP-22	Undertake future AEDT modelling where justified	As Required	Airport Oper.	Modelling report	Special
NMMP-23	Review aircraft noise trends	Annually	Airport Oper.	Trend analysis	Annual
NMMP-24	Review complaint trends	Annually	Airport Oper.	Trend analysis	Annual
NMMP-25	Maintain document control and record retention system	Ongoing	Airport Oper.	Records audit	Annual
NMMP-26	Review effectiveness of stakeholder engagement programme	Annually	Airport Oper.	Review records	Annual
NMMP-27	Review effectiveness of complaints management programme	Annually	Airport Oper.	Review records	Annual
NMMP-28	Review effectiveness of monitoring programme	Annually	Airport Oper.	Review records	Annual
NMMP-29	Implement continual improvement measures	Ongoing	Airport Oper.	Review records	Annual
NMMP-30	Maintain compliance with Environmental Authorisation Condition 46	Ongoing	Airport Oper.	Compliance review	Annual

19.2 Register Review

The NMMP Commitments Register shall be reviewed annually as part of the NMMP review process to confirm that commitments remain current, relevant and aligned with airport operations and approval requirements.

New commitments arising from authority requirements, stakeholder engagement processes, technical investigations, corrective actions or revisions to the NMMP shall be incorporated into the register where appropriate. Similarly, commitments that are no longer applicable may be amended or removed following review.

The annual review shall verify the implementation status of commitments contained within the register and identify any outstanding actions requiring further attention. Findings of the review shall be incorporated into the Annual Aircraft Noise Management Report and considered during future NMMP reviews and continual improvement processes.

19.3 Summary

The NMMP Commitments Register provides a consolidated record of the principal commitments contained within this Plan and serves as the primary mechanism for tracking implementation of aircraft noise management obligations throughout the operational life of Cape Winelands Airport. Through periodic review and updating of the register, the Airport Operator will maintain an auditable record of implementation progress and support transparency, accountability and continual improvement of aircraft noise management performance.

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APPENDICES (INDICATION, NOT FINALISED YET)

Appendix A – Aircraft Noise Monitoring Location Plan (NM01–NM04)

Appendix B – Noise Monitoring Committee Terms of Reference

Appendix C – Aircraft Noise Complaint Registration Form

Appendix D – Aircraft Noise Complaints Register Template

Appendix E – Corrective Action Register Template

Appendix F – Roles and Responsibilities Matrix

Appendix G – Quarterly Aircraft Noise Monitoring Report Template

Appendix H – Annual Aircraft Noise Management Report Template

Appendix I – Stakeholder Register Template

Appendix J – Aircraft Noise Monitoring Equipment Specifications and Calibration Requirements