# HOOD AERODROME
# HANGAR DESIGN GUIDELINES

*Masterton District Council - Assets & Operations*

# HOOD AERODROME HANGAR DESIGN GUIDELINES

## FORWARD

This document is a guide for developers to understand 'Best Practice' Hangar design as specifically required by Masterton District Council (MDC) for Hood Aerodrome projects. It is intended to provide guidance on information and standards required so that projects can be consistently delivered to a high standard.

The "Guide" is a controlled document and will be added to or amended, by MDC, via issue of updates and recorded below:

| Date | Update description | Comment |
|---|---|---|
| May 2010 | 1st draft | For client comment |
| Aug 2010 | For Council Approval | Following MDC review |
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# Contents

# 1. Introduction

Hood Aerodrome lies within the Masterton District Council (MDC) jurisdiction and the MDC administer the Aerodrome on behalf of the community and the Hood User Group (HUG).

The aerodrome houses a wide variety of aircraft and users with a strong focus on extremely rare vintage aircraft and facilities to view these. There is a variety of other aviation based activities that include gliding and fixed wing, both private and commercial.

A regularly scheduled public flight service is also provided.

A full description of the statutory framework, specific issues pertaining to Hood and its development plan can be viewed in the Hood Aerodrome Management Plan (HAMP).

# 2. Discussion /Background

Hood Aerodrome is like many other regional airfields around New Zealand and has a proud background in early New Zealand aviation. As the airfield has developed and use has changed over the years, many hangars have changed hands or changed use completely from their original intent.

With growth in all forms of aviation and corresponding growth in a need for aircraft storage of all types, Council has implemented development plans as referenced in the HAMP.

Integrating any development within the airfield statutory framework, protecting the aesthetics of the airfield and also providing potential developers a degree of design freedom so that a viable economic activity can be made are often conflicting ideals. The developer is requested to read this design guide with the view that hangar development is encouraged. Reasonable requests for minor variations to the guide, particularly to staged development and any multi-unit hangars may be considered.

## 2.1 Strategic Guidance documents

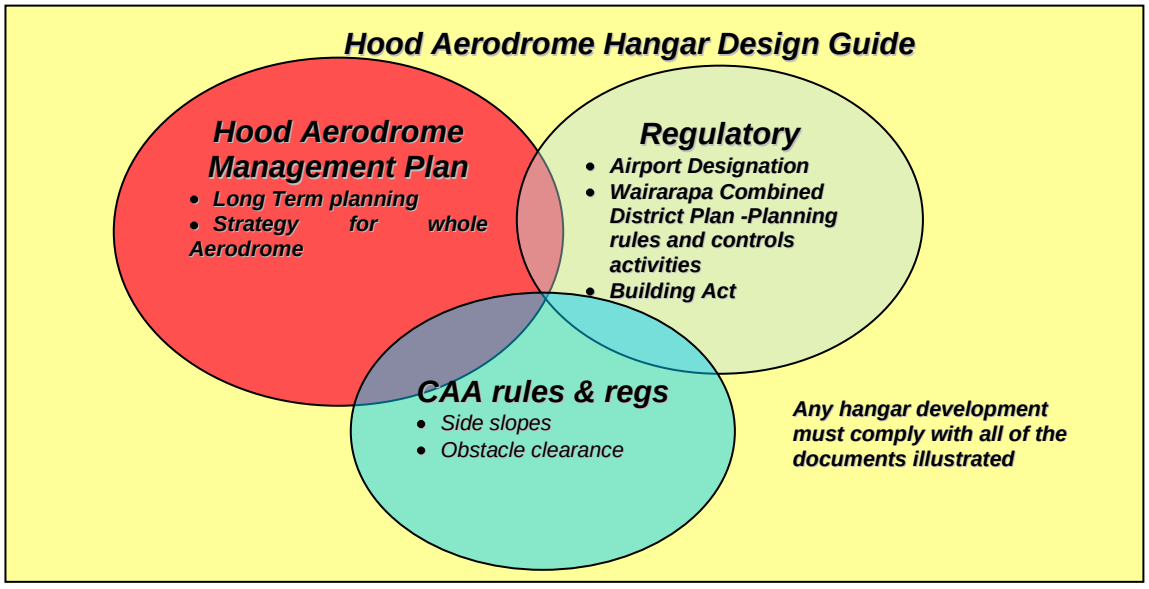


**Fig 1: The interaction of regulatory requirements for all Hood Aerodrome developments**

This guide is subject to a number of other strategic documents that all form part of the process that any hangar development must comply with. These need to be read in conjunction with this guide and are considered part of this overall design guide manual:

a) *Hood Aerodrome Management Plan:* this strategic document safeguards the future opportunity of the Aerodrome for all activities. Infrastructure, hangars, land and development plans are discussed in detail.

b) *Regulatory:*

*Wairarapa Combined District Plan:* the District Plan is the tool that all building developments must comply with. This also governs the type of activity that can be carried out at Hood Aerodrome. No provision is currently made for any hangar development wishing to provide any level of short or longer term accommodation. All developments of that type are excluded from this guide and any approval will be subject to separate specific conditions.

*Designation:* the airport designation details what is allowed to occur on the site of the airport

*Building Act:* all buildings must comply with the Building Act.

c) *CAA Regulations:* with respect to hangar developments CAA regulations include details on adherence to obstacle restrictions, side slopes from runways and taxiways and other details pertinent to any building proposal. These will all need to be carefully considered on a case by case basis depending on location of any hangar development. Any proposal submitted for development must have these aspects carefully considered by professional persons knowledgeable on this topic so that an accurate assessment of the application can be made.

## 3. Objectives of this Guide

The objective of these building design guidelines is to ensure that new hangar development at Hood Aerodrome is consistent in all aspects of design and aesthetics.

The objectives for these guidelines are:
1) that Hangars are located in such a manner that is consistent with the Aerodrome Master plan, all CAA restrictions and requirements and also positively contributes to Aerodrome amenity values;
2) that hangars are located where they are best served by infrastructure and access;
3) To avoid any negative impacts on other Aerodrome users and to ensure that any built development is sensitive to the other users;
4) To enhance the character of buildings and development of the Aerodrome by controlling the height, scale, appearance and location of buildings to ensure that the functionality of the area is maintained and enhanced;
5) To promote built form that recognises and responds to the physical characteristics of the site;
6) To ensure that the visual amenity of the Aerodrome is safeguarded;
7) To minimise the future maintenance costs of the Aerodrome;

# 4. Hangar Design guide

## 4.1 DISCUSSION ON PRINCIPLES

Consideration needs to be given to the following for any new aerodrome development:

(i) integrating the new development into its landscape and setting
(ii) building lines, styles and features
(iii) honest materials and local colours
(iv) scale, massing and height

### *i) INTEGRATING THE NEW DEVELOPMENT INTO ITS LANDSCAPE AND SETTING*

Designing places that fit into and complement the landscape helps create a uniqueness and character, providing a balance between nature, people and functionality. This means taking into account landform, views, aspect, microclimate and ecology.

#### *Landform*

Consider the visual impact of the development on the surrounding environment and how it could best fit into the landscape to define and enhance the unique character of the Aerodrome. Use of landscaping strips is encouraged.

Identify low areas which will need special design consideration for finished floor levels and drainage.

#### *Views*

Some hangars may provide for office use and linking with the aspect, the specific topography and location of a site can be used to offer views and vistas. New development and landscaping can emphasise these views by providing frames, view lines and direction.

#### *Aspect*

When positioning the development of the proposed site take into consideration the sun and its movement to allow for the optimal design for solar efficiency. Consider how the development can receive adequate sunshine while at the same time not reducing the amount of sunlight received by neighbouring hangars, buildings and other users.

Also consider the existing features on site eg. road accessways and access to taxiways. Have special regard to positioning the development in a way that best reduces the affect on the use of the hangar from the prevailing wind (ie providing shelter and the least “blow through” effect as possible).

#### *Microclimate and Ecology*

When positioning the development consider any existing microclimate and ecology and the changes that the proposed development may initiate (including shading and/or wind funnel effects).

### *ii) BUILDING LINES, STYLES AND FEATURES*

Buildings should be designed to reflect the current character to retain the identity and local distinctiveness. This can be done by combining innovation with existing local elements and practices.

This means taking into account rooflines, architectural styles, architectural features and position of openings.

### *iii) HONEST MATERIALS AND LOCAL COLOURS*

Honest materials are materials that are local to the region. The use of these materials is considered complimentary to sustainable development. It also ensures that the development is sympathetic to the existing landscape and character and consistent with others.

The use of local colours is choosing colours that currently exist in the landscape, are sensitive to the setting of the place and most importantly provide the least reflectivity possible in order to not conflict with aircraft operations.

### *iv) SCALE, MASSING AND HEIGHT*

Scale is the size of a building in relation to its surroundings particularly in relation to the size of a person. Scale refers to a buildings' overall size, height, bulk, shape and proportions.

#### *Height*

Height determines the impact of a development on views, vistas and skylines. Most hangars whether for commercial or small private use should be either one or two storied.

#### *Proportional scale*

Buildings that are out of proportion to existing buildings/structures can detract visually from those around them. Each proposal will be assessed on its own merits and due to any hangar development being either individual or multi-unit options, these criteria will have a lesser importance than others.

#### *Shape and Scale*

The shape of a building and the size of its surfaces can affect its apparent scale. Each proposal will be assessed on its own merits and due to any hangar development being either individual or multi-unit options, these criteria will have a lesser importance than others.

# 5. Principles to be applied for hangar developments

## 5.1 INTEGRATING THE NEW DEVELOPMENT INTO ITS LANDSCAPE AND SETTING

***PERMANENT STRUCTURE***

The Tenant shall not:

Place or build on the land any building or part of a building relocated from any other land without the consent in writing from the MDC. For the purpose of this clause a building shall include any structure, dwelling, garage, shed, or other ancillary building other than:

a) a temporary shed located on the land solely for the purpose of use during the construction of any permanent building on the land; or

b) new prefabricated buildings as permanent structures.

Any application for relocated buildings will require building consent and in addition a bond covering some parts of the external works (if deemed non-compliant at time of application) will be required prior to issue of consent.

***SITING***

When siting a development consideration shall be given to the finished levels required for adequate stormwater drainage and operational use (ie also not too high that would make pushing aircraft difficult from the surrounding land but not too low so as to be a flood risk). The hangar development shall note how future expansion and access will be catered for and also take into account site coverage details of services, parking, and landscaping interrelate as in the following sections. Integrating the hangar proposal with the objectives of the Management Plan is therefore critical.

***LANDSCAPING***

Landscaping is encouraged to mediate the impacts buildings will have visually and ecologically on the immediate area. Landscaping shall use localised vegetation and planting species common to the Masterton District. Low maintenance species that do not drop leaves or other matter shall be selected along with a preference for a low growing height (<5m).

Landscaping strips shall be a minimum of 1m width to allow adequate growing conditions and sighted so not to restrict vehicle sight distances on adjacent access ways or in any manner around the hangars.

***SET BACKS***

Set backs for the building lines from the boundaries of the allotted land shall be:

a) Front Boundary – 10 metres minimum (or more for larger aircraft)– where the front boundary is the boundary principally used for aircraft access to taxiways.

b) Rear Boundary – 7 metres– where the rear boundary is the boundary principally used for vehicular access to the allotment. (refer to parking requirements separately).

c) Side Boundary – 3 metres minimum (or more as required by the Building Act to comply with fire requirements) – the boundary other than the front or rear provided that where any total amalgamation between allotments has been effected the boundaries shall be the total boundaries and not those specified on the deposited plans. Similarly this applies to any multi- unit constructions.

Refer to the diagram in the Appendices indicating example set backs, parking and access

***PARKING & ACCESS***

A minimum 5.4m deep parking strip shall be provided for vehicle parking at the rear of the hangar (landside) if parking is orientated 90° to the building. For all other orientations a minimum of 6m will be required. While there is no current requirement to provide a sealed parking surface for parking, the Principal reserves the right to require a sealed surface and adequate drainage to be installed, at the lessees cost, should the parking area either become a maintenance issue (such as dust and loss of grass), if total vehicle movements become the cause of maintenance issues or through any other need that is identified.

The parking strip can be included within the 7m set back area.

Vehicle access to developments will typically require a 5.5m wide easement strip alongside allotments to provide for adequate use. This strip will be maintained by Council but developers need to consider access in any development plan proposed.

## 5.2 BUILDING LINES, STYLES AND FEATURES

***ARCHITECTURAL STYLE***

The architectural style of the hangars considered acceptable will be a simple 1-2 storied equivalent height development with predominantly clean lines. Larger developments however will be considered on a case by case basis outside this guide.

The exact style of hangar can include either freestanding individual units or multi-units. Staging of development will be permitted.

All roof surfaces are to drain to gutters and stormwater downpipes shall be vertical wherever possible.

### *ROOFLINES*

Rooflines for all new hangar developments shall be curved or have either single slope or a pitched roof with a maximum of 40 degrees.

*Example of pitched roof hangar design*

### *OPENINGS (doors etc.)*

The majority of openings and glazing shall preferably have a vertical orientation.

No restrictions on hangar doors styles are placed (either aircraft or personnel). These can be to any desired type if they conform to all other aspects of this guide and other codes. Preference will be for aluminium framed windows for meeting low maintenance criteria. Care must be taken that the design allows for wind loadings and how the size and orientation of the hangar door impacts on this.

### *FENCING*

Where any of the land bounds in the Aviation Operational Area the tenant shall be responsible for, and all costs associated with, the installation and erection of security fencing to the approved CAA standard at the time.

Current fencing requirements are illustrated by the examples adjacent to the public car park area and the public terminal.

### *LIGHTING*

Each tenant shall be responsible for providing adequate lighting to their own allotment and hangar. No lighting is provided at all.

All lights shall be designed as a downwards directional light to prevent light spill and only as approved security type lighting to doors, access points and approved signs.

*Example of acceptable lighting at public terminal (downwards directional)*

Fluorescent light tubes are not permitted.

***SIGNS***

The tenant shall at all times comply with the rules as they relate to permitted signage on the land as specified in the District Plan. Signs on hangar frontages may be permitted up to a maximum 3 square metres. Colour palettes shall conform generally with the approved exterior colours as specified.

***FURNITURE***

All other street furniture, including seats and hand rails shall conform to all relevant MDC building codes and the requirements of this guide. The developer shall fully specify all items to be installed as part of their application.

## 5.3 HONEST MATERIALS AND LOCAL COLOURS

***EXTERIOR CLADDING MATERIALS***

The cladding material shall be colorsteel or other similar branded material. Unpainted Zincalume or unpainted galvanised materials are not permitted due to their reflective properties not being consistent with aircraft operations.

Exterior cladding can also include the following materials:

- Painted timber weatherboards that fit the approved colour palette

- Schist, boulders or rocks that form part of either architectural building features or landscaping

***EXTERIOR COLOURS***

These colours have been chosen from the British Standards framework and are the approved colour palette:

Roofs, Walls and Trim:

08B17, 08B19, 08B21, 08B23, 08B25, 08B27, 08B29,

10C37, 10B25, 10C39, 12B21, 12B23, 12C39, 12B29, 08C33, 08C35,

08C37, 06D44, 18B21, 18B23, 18B25, 18B27, 16C33, 16C35, 20C37,

20C39, 20C40

Walls and Trim Only (Reflectivity value too high for roofs)

00A01, 00A03, 02A03, 10A01, 08B15, 12B15, 18B15, 22C31, 10C31,

08C31, 10B15

Trim and Accents (Only to be used in small proportions to add visual interest at close range.)

06D43, 08E51, 08E53, 08E55, 08E56, 22D41, 22C37, 20C40, 04E53,

04E55, 04E56, 04D43, 04D44, 04D45, 04D39, 16C37

Refer to the appendices for example colour charts

## 5.4 SCALE, MASSING AND HEIGHT

### *HEIGHT*

The height restrictions of buildings within the Aerodrome zones are set out within the District Plan. Maximum building height will most likely be governed by the specific location and the respective CAA Runway Side Slope Airspace Clearance requirements (Obstacles and side slope clear distances). All buildings shall comply fully with these.

### *ACCESSORY BUILDINGS AND SERVICES*

All accessory buildings are to use the same exterior cladding as the main hangar building. The height shall be below 3.5 metres and the roof pitch will be a shallow angle, no more than 40 degrees and generally consistent with the main hangar pitch. The accessory building can be located to the rear or side of the hangar and shall not dominate the development in any form. No outdoor storage is permitted within the minimum set back areas.

### *SERVICE FEATURES*

Consideration should also be given to what should not be features and how these structures can be made to be less obtrusive. Satellite dishes, aerials, air conditioning units, extraction units and all other necessary services should be placed in non prominent places and be of a colour that is visually unobtrusive against the backdrop. For example grey/white if set back against the skyline or the colour of the building if set back against the building.

*Example of roof services requiring specific design (colour and location). Note unacceptable storage alongside building)*

All services (including Telecom and any other utility service boxes) shall be screened from view with either planting and/or a single enclosure to house all in one place subject to hazardous materials which may require separation. Minimum height for screening 1.8m.

Particular design details need to address any gas bottle enclosures that allow functional use but are also out of sight.

Rubbish bins, recycling bins or any other refuse collection units are permitted to be located outside but if so shall have lids that firmly lock in place or have a means from preventing rubbish blowing from them. Open drums will not be permitted.

Where provided, hangars shall connect to available infrastructure services. This may require pumping and allowance of other infrastructure at the developers cost. All water tanks shall be internal; either enclosed within the hangar structure, placed underground, or within the designated screened service area.

## 5.5 MISCELLANEOUS

### *FIRE FIGHTING WATER SUPPLIES*

The Tenant shall at all times comply with the Fire Service Code of Practise for Fire Fighting Water Supplies.

*Weeds requiring maintenance (Issue: aesthetics and weed propagation)*

### *MAINTENANCE*

The tenant agrees to keep the land clear of all noxious plants and to maintain the land (including grass and mowing) in a neat and tidy condition to the satisfaction of the Principal.

The Aerodrome operates service contracts for mowing and tenants are encouraged to take advantage of this availability under their own separate contract.

Hangars are also required to be kept to an acceptable condition, free of rust and paint blemishes. Panels not fixed or of damaged appearance shall be repaired within 2 months of formal written notification.

*Example area requiring maintenance due to high traffic use (Issue: dust and drainage)*

*Example maintenance required (Issue: paint deteriorated)*

In the event that the tenant does not, the Principal shall carry out the required maintenance and charge the cost to the tenant.

## APPENDIX 1

Photographs of acceptable examples

Example pitched roof hangars: Omarama

Example pitched roof hangars: Rangiora

Example pitched roof hangars: Rangiora

Example multi-hangar development in foreground: Tauranga

**APPENDIX 2**

Sample Colour charts (British Standards)

**APPENDIX 3**

Example plan of typical set backs

# BS5252 - COLOUR CHART

The colours shown below should be used as a guide only due to variations in monitor colour calibration.


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00A03


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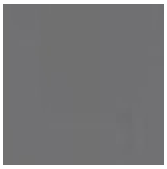
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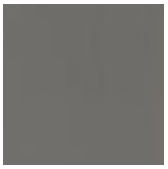
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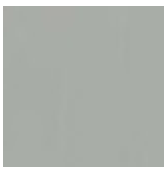
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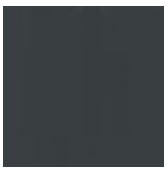
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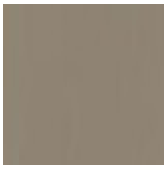
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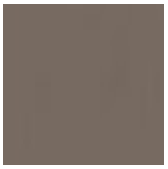
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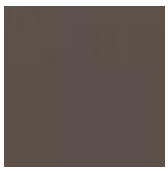
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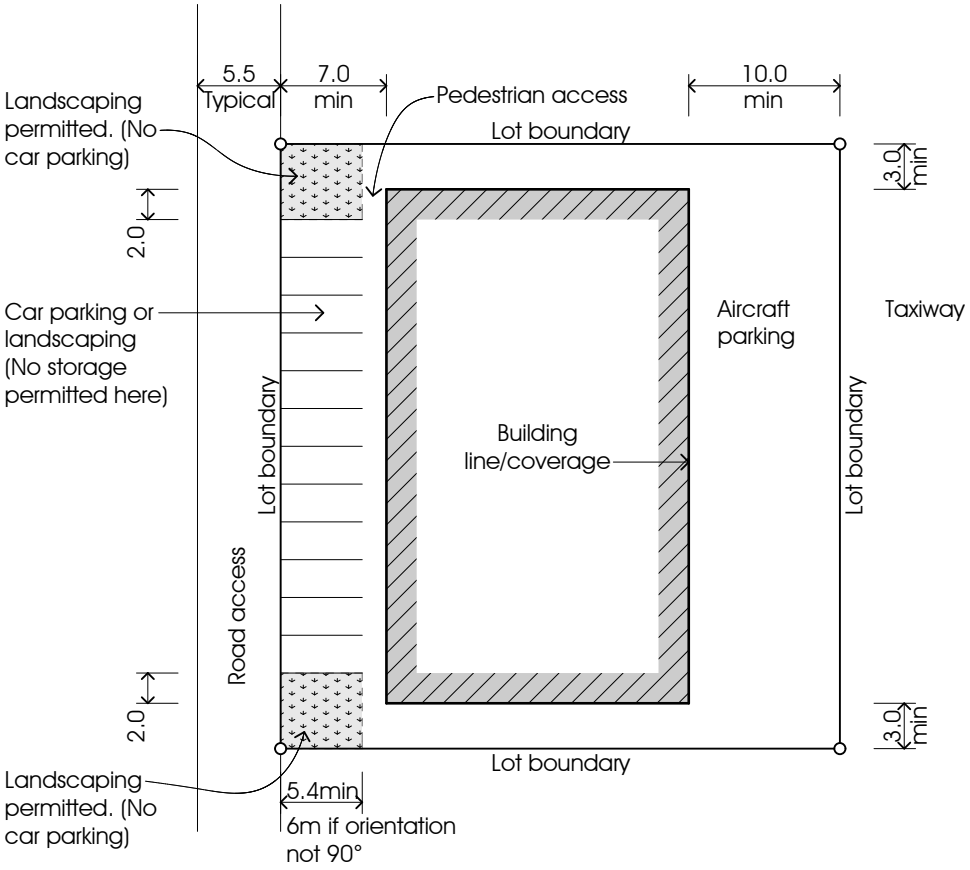


Set Backs and Typical Acceptable Solution