



MINISTRY OF DEFENCE

Defence Infrastructure Organisation

SUBJECT: Structural Appraisal and Certification of Proposed, Historic and Existing Hangar Structures and Other Wide Span Building Structures

Practitioner Guide 04/11

**Estate
Management**

Document Aim:

The aim of this Practitioner's Guide is to set out the requirements to be adopted for the Structural Appraisal and Certification of proposed, historic and existing hangar structures and other wide span building structures on the MOD estate

Document Synopsis:

This document details the procedures to be adopted during the Structural Appraisal of proposed, historic and existing hangar structures on the MOD estate. The policy also assists the Appraiser in determining the remaining effective life of a historic or existing structure and to ensure the safest environment as far as reasonably practicable for all those using the building.



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<p>Who should read this:</p> <p>All stakeholders involved in the whole life management of Proposed, Historic and Existing Hangar Structures and Other Wide Span Building Structures on the defence estate, i.e. CEStOs, Top Level Budget Holders, Project Sponsors, MOD Project Managers and others within the IPT (for both Prime, PFI/PPP and traditionally procured contracts), Defence Infrastructure Organisation Advisors and Site Estate Representatives with responsibility for MOD projects.</p>	
<p>When it takes effect: Immediate</p>	<p>When it is due to expire: when rescinded</p>
<p><u>Equality And Diversity Impact Assessment</u></p> <p>This policy has been Equality and Diversity Impact Assessed in accordance with the Department's Equality and Diversity Impact Assessment Tool against:</p> <p>Part 1 Assessment Only (no diversity impact found)</p>	

Document Control

Distribution

Document Name:	Structural Appraisal and Certification of Proposed, Historic and Existing Hangar Structures and Other Wide Span Building Structures
Version No:	1.0
Version Date:	2011
Author:	Jogi Hoonjan/David Wheeler
Reviewed By:	Jogi Hoonjan
Review Date:	

Version Control

Date Issued	Version	Author	Reason for Change

KEY POINTS TO NOTE:

- This Practitioner Guide (PG) updates and supersedes Technical Bulletin 02/04 “Professional Appraisal and certification of World War II Hangar Structures”.
- The term “Structural Appraisal” (SA) used in this PG has replaced the term “Professional Appraisal” used in previous documents. Similarly the term “Condition Inspection” (CI) used in this PG has replaced the term “Technical Inspection”.
- The term “hangar structures” in this PG is deemed to include “Other Wide Span Building Structures exceeding 12m”.
- This PG shall be used in conjunction with PG 05/11 “Condition Inspection and Certification of Proposed, Historic and Existing Hangar Structures and Other Wide Span Building Structures”.

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1.0 INTRODUCTION

- 1.1 The contents of this Practitioner Guide (PG) are mandatory. No work involving expenditure on any Ministry of Defence (MOD) account is to be entered into without authority from the appropriate MOD officer for that location or facility.
- 1.2 This PG is to be brought to the attention of all CEStOs, Top Level Budget Holders, Project Sponsors, MOD Project Managers and others within the IPT (for both Prime, PFI/PPP and traditionally procured contracts), Defence Infrastructure Organisation (DIO) Advisors and Site Estate Representatives with responsibility for MOD projects.
- 1.3 Compliance with this PG is required to meet the MOD's Statutory Duties under the Health and Safety at Work etc Act 1974, in particular:

The Workplace (Health, Safety and Welfare) Regulations;
The Construction (Design and Management) Regulations;
Management of Health and Safety at Work Regulations; and
The Work at Height Regulations.

- 1.4 This PG details the requirements and procedures to be adopted during the Structural Appraisal (SA) of proposed, historic and existing hangar structures on the MOD estate. They also assist the Appraiser in determining the remaining effective life of a historic or existing structure and ensure the safest environment as far as reasonably practicable for all those using the building.
- 1.5 Procedures for the CI of hangar structures are provided in PG 05/11. Upon completion of building works a full Condition Inspection is to be completed to ensure the works have been carried out to a satisfactory standard and is compliant with the agreed design and drawings.
- 1.6 The primary deliverables of the SA are:
 - a. to confirm that the proposed new hangar structure has been designed to current standards and is fit for its intended purpose;
 - b. to confirm the continued ability of a historic or existing hangar structure to perform its function adequately and safely until the next SA (maximum 5 years frequency);
 - c. to verify the hangar structure and fabric (including the doors and supports) have adequate capacity to withstand all the loads applied;
 - d. to verify that all the fixed access systems are fit for purpose;
 - e. for historic and existing hangar structures, to make suitable recommendations on how to overcome structural or access deficiencies, and to provide risk management in respect of such deficiencies where they cannot be reasonably overcome;
 - f. to provide documentation and certification of the SA i.e. Forms R100, R101 and R102; **or** Form R103 as explained in 3.7.

2.0 APPLICATION OF PRACTITIONER GUIDE

2.1 In this PG reference to a hangar structure generally refers to building structures on the MoD estate used for the purposes of:

- a. storing and servicing of aircraft
- b. bulk vehicle storage
- c. bulk equipment and spares storage
- d. workshops
- e. military working spaces
- f. sports halls and recreation facilities
- g. exhibition halls
- h. offices.

The aforementioned examples are not exhaustive and the hangar structure may be used for other purposes not listed above. These types of structure are generally characterised by having clear internal spaces of similar magnitude and dimensions to the overall building footprint. They are composed of slender members or latticework spanning lengths greater than 12m. Other structures with spans of less than 12m may also be subject to the provisions of this PG, see 2.2(d) below.

Often on the MoD estate structures originally designed as aircraft hangars have been re-utilised for other purposes such as those listed above and although there has been a change in use, structural deficiencies that can be present may not have been adequately addressed or risk assessed.

2.2 The structures covered under this PG are as follows.

a. Proposed New Hangar Structures

These structures are generally new steel lattice or steel beam portal framed structures but may occasionally be built using concrete portal frames or composite construction. All proposed hangar structures are to have a SA completed before any site work begins. This is to confirm that the building has been designed to the correct standards and correct design factors commensurate with the type of structure have been applied. The term 'proposed new hangar' is deemed to include any type of pre-fabricated proprietary structural system or building.

b. Historic and Existing Hangar Structures

A large proportion of the historic steel hangar structures covered by this PG were built in the period leading up to and during the Second World War (WW II era). With the war looming, hangars were constructed hastily and as a consequence, normal steel and material quality checks were often not rigid and structural designs allowed for shorter design life and smaller loadings. The SA however is to assess the hangar to current design codes including applying long term design loads commensurate with the expected in-service life of the building, to be agreed with the client organisation, and to make recommendations for works where deficiencies are noted.

Design guides for the four most common WW II hangar types on the MOD estate (types Bellman, T2, C, and J/K) have been produced by Defence Infrastructure Organisation. Copies of the guides are available on the DIO Intranet and the DIO external web page, in the download area at the following address:

www.mod.uk/defenceestates

The design guides contain valuable information on several topics including hangar identification and typical loadings. It is recommended that these are studied prior to the appraisal process.

For existing WW II era hangars it is important to identify each structure type correctly, as some have only minor distinctions between them. Reference should be made to Technical Bulletin (TB) 02/02, World War II Hangars – Guide to Hangar Identification. Any doubts about identification of the structure can be clarified with the Subject Contact Point.

c. Other Wide Span Building Structures

These include all structures with clear spans of 12m or greater. The majority of these structures are fabricated from steel or reinforced concrete but may include glue laminated timber or composite construction.

d. Structures of less than 12m Span

Depending on the type and use of the building, those structures with clear spans of less than 12 metre width may also be susceptible to sway-effects and second-order instability. In these circumstances they shall be appraised as per the requirements of this PG, dependent upon risk assessment, to ensure that the integrity of the structure is not compromised by the activities carried out in or on it, for example, structures with gantry cranes, structures subject to dynamic or non-static loads, structures with activities that are sensitive to building movement, etc. Further advice may be sought from the Subject Contact Point.

3.0 REQUIREMENT

3.1 General

All hangar structures because of their span, overall size and sensitivity to sway effects and second-order deflection, require SAs to be carried out. The consequences of a failure of the structure, or elements of the structure, are significant both in terms of injury to those working within, to members of the public and in terms of the replacement costs of the structure and the goods stored within which may be of strategic importance and operationally sensitive in nature.

It is required that an SA shall be undertaken on the following occasions:

- a. prior to the construction of any proposed new hangar structure;
- b. prior to a major refurbishment of an existing hangar structure or change of use;
- c. at the expiry of the latest SA;
- d. where sufficient SA records for the structure are not available or none exist;
- e. following an incident during which significant damage or structural distress has been noted by a Competent Person;
- f. by referral following a CI.

3.2 Proposed New Hangars

For proposed new hangars the SA is to be a numerical assessment and review of the design including the calculations and drawings. The purpose is to determine if the design complies with all relevant legislation, current design standards and it is fit for its intended purpose.

The output of the SA is the DIO Forms R100, R101 and R102 certifying that the proposed structure is either;

- a. fit for purpose or,
- b. has design deficiencies resulting in restrictions on its future use including use during adverse weather.

3.3 Refurbishment and Change of use

Whenever refurbishment of any existing hangar structure occurs that may either alter the loading or load paths on the structure or, by change of use cause the same to occur, then the design shall undergo a similar SA as that for a proposed new hangar.

3.4 Historic and Existing Hangars

For historic and existing hangars the SA is required to be a physical inspection and numerical assessment of the whole structure. The depth of the SA is to be sufficient to identify any significant structural weaknesses and areas of concern. It is also required to report in-depth conclusions, and make recommendations on strengthening works if necessary. If ALL of the relevant information from a previous SA including the signed forms above are available, then the appraisal process shall initially involve an inspection of the structure followed by a comparison of this information against the previous SA information.

The SA is to be conducted in two steps:

- a. a physical inspection of the structure to determine its condition and,
- b. an assessment of the effect on the intended performance of the structure due to any noted damage. One of the following two Approaches shall be taken by the Appraiser:

Approach (A)

If there has been no significant deterioration, damage or other defects that could compromise the safety of the structure then no further numerical analysis is necessary and the Appraiser shall complete DE Form R103 – Structural Appraisal Statement. Any existing restrictions on the use of the hangar still extant from the last SA shall be clearly identified on the Form R103.

Approach (B)

If significant deterioration, damage or other defects that could compromise the safety of the structure are noted then the Appraiser shall conduct a numerical analysis of the entire building structure. The analysis shall explicitly take into account the effect(s) of the defect(s) on the strength and stability of the affected members and determine the actual load capacity of the entire structure.

The maximum load capacity including environmental loads on the structure shall be clearly stated including any restrictions on its use e.g. during adverse weather. If the load capacity is based upon combination values, the relevant combinations are to be clearly stated. All values shall be explicitly recorded in the report and entered onto DE Forms R100, R101 and R102.

Where deterioration, damage or other defects are noted the report is to make recommendations for all remedial works necessary to reinstate the structure to a safe condition.

3.5 Incomplete or Missing Structural Appraisals

When an existing or historic hangar does not have a current SA, the SA does not contain the required information or has not been completed, then a full SA including the required numerical analysis shall be completed as described in 3.4 Approach B.

3.6 Pre-fabricated Buildings, Modular Buildings, Pre-engineered Buildings and Temporary Structures.

When it is proposed to use a Pre-fabricated, Modular, Pre-engineered or Temporary structure then the design of these shall be subject to the SA process outlined in 3.2 above.

The SA is to determine if the structure has been designed to or is compliant with current design standards, can sustain the expected loading caused by its actual use and from the environment it is expected to operate in.

The output of the SA shall be the report as outlined in Annex A along with the completed DIO Forms R100, R101 and R102. Any restrictions on the use of the hangar *inter alia* due to adverse weather conditions or maximum load capacity shall be clearly stated. The report shall also state if the proposed structure has the required CE marking.

3.7 Function of the Forms

Every SA shall be checked and certified by the completion of the following DIO issued R series of forms. The function of each of these is as below:

a. Form R100 - Design Information Summary

This form is to be completed each time an SA is conducted under this PG. It is to provide a concise statement of the intended function and capacity of the structure in order to provide a benchmark for all subsequent assessments and analyses including change of use.

It is also a statement of the limiting loading and structural parameters that form the basis of any Emergency Action Plan that may arise out of the SA process. Consequently this form will be necessary for compliance with CDM and other statutory requirements.

When conducting compliance checks for re-locatable and demountable structures this form is to be used to state the parameters under which the structure has been designed to operate. Any limiting conditions for its future use and location shall be clearly stated.

The Form R100 is to be completed and signed by the Competent Person within the appraisal team organisation conducting the physical inspection (if applicable) and the numerical assessment of the structure.

b. Form R101 - Appraisal Certificate

This form is to be completed each time a numerical assessment and a physical inspection of the structure is carried out.

The purpose of Form R101 is to summarise the results of the SA and certify if the structure is fit for purpose or has design deficiencies, and give details of the operational restrictions that are to be placed on the use of the building.

Similar to Form R100, the R101 form also provides the basis of any Emergency Action Plan and is necessary to ensure compliance with CDM and other statutory requirements.

The Form R101 is to state the required frequency of CIs.

The Form R101 is to be completed and signed by the Competent Person within the appraisal team organisation conducting the physical inspection and the numerical assessment of the structure.

c. Form R102 - Appraisal Check Certificate

This form is to be completed each time an SA is conducted under this PG. Its purpose is to provide an independent check of the SA including the numerical analysis and the conclusions that have been drawn. Any restrictions that are required to be placed upon the use of the hangar shall be stated.

The Form R102 is to state the required frequency of CIs.

The Form R102 is to be completed and signed by a Competent Person independent of the appraisal team, either from within or outside the appraisal team organisation.

d. Form R103 - Appraisal Statement

This form is to be completed each time an SA is conducted under 3.4 Approach A. The form is a statement confirming that structural calculations and drawings have been reviewed and that an inspection of the hangar has been carried out. It will also confirm the existing restrictions placed upon the use of the hangar.

The Form R103 is to state the required frequency of CIs.

The Form R103 is to be completed and signed by the Competent Person making the SA statement within the appraisal team organisation.

3.8 Frequency of Inspections

An SA is to be conducted nominally every 5 years while a CI (see PG 05/11) is to be conducted nominally at the mid point between SAs i.e. every 2½ years.

Where there are significant defects in the structure and operational restrictions are being placed on the use of the hangar, the frequencies between CIs may be increased (i.e. the period between inspections to decrease) in order to actively monitor the deterioration and prevent this from causing a dangerous structure. Increasing the frequencies between CIs is not a substitute for conducting a SA when deterioration is noted that is compromising the structural strength and stability. The aim is that all identified deterioration, defects and damage are rectified in a timely manner.

Where it has been determined that an increase in the frequency of CIs is warranted then the inspection period shall be stated on the relevant R series of Forms as described above.

Where during a CI the level of deterioration ascertained since the last CI is such that the integrity, strength, stability and/or the safety of the structure is compromised, then a full SA is to be carried out. The purpose of the SA shall be to determine the actual capacity of the structure and the necessary works that are needed to reinstate the strength and stability commensurate with current design standards. See 3.9 below.

3.9 Structural Appraisal Methodology

For structures where inadequate records are available, a programme must be established for the undertaking of the SAs.

A thorough review of all existing information contained in previous CIs, SAs, and other available reports, is to be carried out in order to ascertain the condition of the structure. All information, as far as reasonably practicable, is to be made available to the Appraiser before the appraisal begins.

The SA is to verify the condition of all areas of the structure, including but not limited to, structural frame members, doors, door outrigger frames/supports, wall/roof cladding, rainwater systems, etc. Further details on areas to be covered in the appraisal are given in Annex A.

Where the properties of the structural elements are not known, the appraisal calculations may be based on assumed material grades. See guidance contained in the Design Guides referred to in 2.2b. Where no information on material grades exists the Appraiser should, in advance of the appraisal analysis, be given the opportunity to arrange for materials testing. If tests to assess material properties are required, the results should be included in an annex of the appraisal report and if appropriate highlighted where they are used in the calculations.

Where the SA concludes the hangar to be structurally inadequate when subject to self weight plus imposed and/or wind loads, then 'qualified' certification shall be provided. Such certification is to be completed using a risk based approach in that the risk could be mitigated, controlled and managed in order to allow continued use of the hangar. The certification is to define restrictions on hangar use during periods of structural inadequacy e.g. such as when snowfall reaches a specified depth and/or wind speeds reach a specific strength or velocity. The determination of such results may require an iterative analysis approach.

The existence of some Priority 2 defects may also necessitate the issue of 'qualified' certification until remedial works have been undertaken. The identified restrictions are to be

explained in the Statements by the Appraisal and Appraisal Check Engineers on the R101, R102 and R103 forms. Such operating restrictions are also to be entered on the R100 form. The building custodian is to update the Emergency Action Plan as per TB 99/29 "Hangars - Safety of Structure - Recommendations for Users During Adverse Weather Conditions" and TB 99/32 "Hangars - Bellman Type - Structural Safety During Adverse Weather Conditions" as appropriate to allow safe use of the hangar.

Where recommendations are made to carry out major refurbishment works to a structure, then the report should state the extent of the refurbishment that will be sufficient to enable lifting of all existing operational restrictions, as outlined in any extant Emergency Action Plan or SA.

When conducting an SA the Appraiser is to note in his report any unsafe occurrence whether this is a defect of the structure or otherwise.

3.10 Access Requirements

It is the responsibility of the Appraiser, before the inspection date, to establish his access requirements and locate concealed areas which may need to be exposed. Where necessary, obstructions (including false ceilings and wall panelling) shall be removed to gain sufficient access to carry out a thorough inspection.

3.11 Competent Persons

The SA is to be completed under the guidance of a Competent Person. All forms associated with the Appraisal are to be signed and dated by the Competent Person. A Competent Person must:

- be a Chartered Engineer (Corporate Member of the Institutions of Civil or Structural Engineers, registered with the Engineering Council) and;

- have a minimum of six years relevant experience in the design and construction of the type and complexity of the structure appraised.

4.0 REFERENCES

Related DIO Publications

Defence Functional Standard 15 – Guide to World War II hangars 01 – Bellman hangar.

Defence Functional Standard 16 – Guide to World War II hangars 02 – Type T2 hangar.

Design and Maintenance Guide 13 – Mechanical Transport Facilities.

Design and Maintenance Guide 24 - The design and maintenance guide for the Type 'C' hangar structure.

Design and Maintenance Guide 25 - The design and maintenance guide for the Type J/K hangar structure.

TB 99/29 – Hangars - Safety of structure - Recommendations for users during adverse weather conditions.

TB 99/30 – Hangars and industrial buildings - Inspection, maintenance, adjustment and use of large sliding and folding doors.

TB 99/31 – Hangars – Guidance on works during hangar refurbishment.

TB 99/32 – Hangars - Bellman Type - Structural safety during adverse weather conditions.

TB 01/45 - Design and Maintenance Guides: Guide to World War II Hangars. DMG 24 - 03 Type C Hangar, DMG 25 - 04 Type J/K Hangar.

TB02/02 - Hangar Identification.

HSWN 01/02 – Inspection of hangar doors, Door Top Guides, Type C Hangars.

HSWN 02/08 - Inspection of Hangar Doors, Door Tops Guides, Supports and Door Stops. Type C and other similar Hangars.

Safety Alert 01/11 – Reminder – Inspection of Hangar Doors, Door Top Guides, Supports and Door Stops.

Safety Alert 02/11 – Structural Inspections of Hangars During Adverse Weather

Practitioner Guide PG 03/10 – Fixed Access Systems

Practitioner Guide PG 05/11- Condition Inspection and Certification of Proposed, Historic and Existing Hangar Structures and Other Wide Span Building Structures

5.0 ANNEXES

STRUCTURAL APPRAISAL REPORT CONTENTS

- A.1. If, within a SA report, any reference is made to another report, then the appropriate section of that report may, if practicable, be reproduced within the SA report with the source acknowledged. Alternatively it should be listed in an annex.
- A.2. The SA shall consider the following aspects:
- a. the site;
 - b. the structure geometry, including the main and secondary structural frames/members and the material grades;
 - c. surface protection system;
 - d. where relevant, crane gantries, lifting beams and other fixed lifting points, including supports to these items;
 - e. where applicable annex structures, including load bearing masonry structures;
 - f. floor slab areas;
 - g. walls i.e. masonry/concrete or other;
 - h. hangar doors and outrigger support frames, including guides, tracks and stops;
 - i. foundations, including strip footings and surface slabs;
 - j. lightning protection system;
 - k. fixed high level access systems, including any fall arrest systems and anchor points.
- A.3. The contents of the report shall be set out as follows:

Introduction	including a general description of the location of the structure and contact details of relevant parties
Inspection Summary	for historic and existing hangars, details of inspection teams including names of inspectors, dates and equipment used
Structural Design Philosophy	establish or confirm the structural design philosophy of the structure, and the method of maintaining structural stability, ensure that the load path to the foundations are fully understood and recorded in the report
Structure Condition	for historic and existing hangars, give a description and general condition of the structure, noting any signs of distress, damage or visual defects
Structural Analysis	sources of data, the basis of the applied loading, analysis approach and definition of how the capacities of structural members and connections are expressed
Analysis Results	overall summary, in tabular format, of Usage Factors for the principal structural components, primary connections and foundations
Conclusions	outline the status of the existing structure to perform its function adequately for the next 5 years
Recommendations	provide recommendations for strengthening works where necessary based on 'good engineering judgement' and 'risk management'
Costs	approximate costs to carry out each of the recommendations

A.4. Annexes to the report shall include the following:

References	all source documents and codes used in the structural appraisal process
Design certification	completed Forms R100, R101 and R102; or Form R103.
Drawings	copies of all existing drawings referred to (where practicable), and any record drawings produced
Calculations	indexed, numbered and signed by the Checking Engineer
Computer output	indexed, numbered and referenced to the relevant calculation sheets
Access systems	the Structural Appraisal shall describe what access system is provided, refer to PG 03/10 Fixed Access Systems
Standards and codes	in the appraisal of existing structures, both the derivation of environmental loading conditions, and the determination of structural response shall be undertaken in accordance with the relevant “current” and appropriate British Standards, and in line with industry best practice. A large number of the WW II era structures are known to have inherent structural weaknesses, therefore any recommendations provided are to be based on good engineering judgement and where necessary coupled with practical risk management of such weaknesses, to enable continued use of the hangar. Where it is considered appropriate by the Appraiser to use an alternative standard, prior agreement shall be reached with the Subject Contact Point. For structures located overseas, the design standards of the host country shall apply, except where the structure is to be used by MOD personnel; in which case, the structure shall also be verified against the requirements of the British Standards and appraised to comply with both.
Calculation results	<p>the results of all calculations shall be presented in the form of a Usage Factor for the principal structural components, primary connections and foundations, defined as follows:</p> $\text{Usage Factor (UF)} = \frac{\text{Applied}}{\text{Capacity}}$ <p>calculations shall address deflections, performance and where appropriate dynamic behaviour.</p> <p>calculations associated with the stability of the structure’s foundations against overturning, sliding, uplift or bearing shall also be presented in terms of a Usage Factor. An appropriate factor of safety, as proposed by the Appraiser, shall be applied to the nominal capacity.</p>

A.5. Availability of information for existing structures

Many existing structures on the MOD estate do not have full information concerning the type and depth of foundations, ground conditions or structural component material properties. The Competent Person undertaking the SA shall make an assessment of the need to undertake site investigations such as trial pits or the testing of material samples. The main criteria used in this assessment are as follows:

During a site inspection, no indication of distress is apparent;

When structures have stood for a considerable time;

When a conservative assumption of the foundation type, ground conditions and material properties indicates that structural stability, ground bearing and section capacities are within acceptable limits.

If the conditions outlined above are considered to apply, then the SA deliverable will be the standard R101 and R102 forms, and a statement in the report that the structure and foundation are considered adequate and that special attention is made to examining for any signs of distress during subsequent CIs.

If however, having made these assumptions, inadequate Usage Factors are found to exist, then site excavation or material testing may be necessary. If the site investigation or test results indicate that there is still a problem, then outline remedial works are to be considered.

DEFENCE INFRASTRUCTURE ORGANISATION FORMS

Form R100 – Design Information Summary

Form R101 – Appraisal Certificate

Form R102 – Appraisal Check Certificate

Form R103 – Appraisal Statement



Please Tick

Is the hangar (a) A Proposed New Build or
(b) An Existing Structure

Structure information:

Establishment name	
Type of structure	
Structure/Hangar reference	
Location of structure	
Date of last Structural Appraisal (SA)	
Date of last Condition Inspection (CI)	

Structural Design Information:

Description of structural frame	
Relevant design standards	
Roof dead loading (kN/m ²)	
Roof imposed loading (kN/m ²)	
Wind loading (kN/m ²)	
Fixed access system description	
Sub-soil conditions	
Foundation type	
Special precautions/operating restrictions	
Condition Inspection frequency	

List of Calculations

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List of Drawings

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Statement of design principles, assumptions and other relevant information:

Please include as much detail as possible:

Certified by:

Name of Appraisal Engineer	
Professional Qualification(s)	
Organisation (name and address)	
Signature	
Date	

Structure information:

Establishment name	
Type of structure	
Structure/Hangar reference	
Location of structure	

For PROPOSED STRUCTURE: Statement by Appraisal Engineer:

Please Tick ONE Box

It is my opinion that the structure has been designed to comply with all current and appropriate design standards and will, if maintained to an adequate standard, provide resistance to collapse and has the capability to carry the specified design loading safely and within permissible deflection limits, until the next Appraisal.

OR

It is my opinion that the structure has not been designed to comply with all current and appropriate design standards and restrictions are to be placed upon its use. These are:

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.....

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.....

.....

.....(continue on separate sheet if necessary).

For EXISTING STRUCTURES: Statement by Appraisal Engineer

I confirm that I have conducted a physical examination and numerical analysis of the structure and that:

Please Tick ONE Box

It is my opinion that the structure will, if maintained to an adequate standard, provide resistance to collapse and has the capability to carry the specified design loading safely and within permissible deflection limits, until the next Appraisal.

OR

It is my opinion that the structure is defective and restrictions are to be placed upon its use. These are:

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.....(continue on separate sheet if necessary).


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Next Condition Inspection

Recommended date of next Condition Inspection (dd/mm/yy)	
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Certified by:

Name of Appraisal Engineer	
Professional Qualification(s)	
Organisation (name and address)	
Signature	
Date	

DEFENCE INFRASTRUCTURE ORGANISATION 	HANGAR STRUCTURE STRUCTURAL APPRAISAL APPRAISAL STATEMENT (Page 1 of 1)	R103 Aug 2011
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Structure information:

Establishment name	
Type of structure	
Structure/Hangar reference	
Location of structure	

Statement by Appraisal Engineer:

I confirm to the best of my knowledge and belief, that as part of the Structural Appraisal, I have carried out an inspection of the above structure and a thorough review of the structural calculations and drawings associated with the Structural Appraisal report referenced below, with a view to the verification of the strength of the structure.

Structural Appraisal Report Reference:

Dated:

Please Tick ONE Box

It is my opinion that the structure will, if maintained to an adequate standard, provide resistance to collapse and has the capability to carry the design loading safely and within permissible deflection limits, until the next Appraisal.

OR

Existing restrictions on the use of the hangar are as follows:

.....
.....
.....
.....
.....
.....
.....(continue on separate sheet if necessary).

Please Tick ONE Box

The Condition Inspection frequency as stated on the Form R100 is to continue.

OR

The Condition Inspection frequency as stated on the Form R100 is to be changed to months.

Statement by:

Name of Appraisal Engineer	
Professional Qualification(s)	
Organisation (name and address)	
Signature	
Date	