

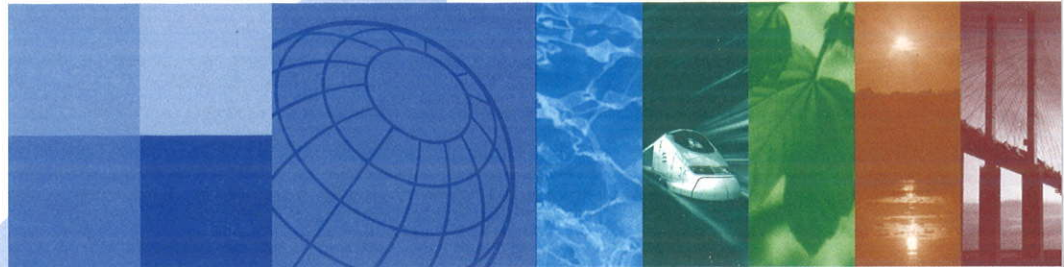
**Epping Forest District Council**

North Weald Airfield

Runway 02-20 Condition Study

Final Report

March 2013



**Halcrow Group Limited**

**Halcrow**

## Glossary

AAL	Above aerodrome level
ACN	Aircraft Classification Number – A number expressing the relative effect of an aircraft on a pavement for a specified standard subgrade strength. A component of the ICAO ACN-PCN method.
AFIS	Aerodrome Flight Information Services
AGL	Aeronautical Ground Lighting
ATC	Air Traffic Control
ATM	Air Transport Movement
CAA	Civil Aviation Authority
DME	Distance Measuring Equipment
EFDC	Epping Forest District Council
FBO	Fixed Base Operator
FOD	Foreign Object Debris
GA	General Aviation
ILS	Instrument Landing System
ICAO	International Civil Aviation Organisation
LDA	Landing Distance Available
MoD	Ministry of Defence
MTWA	Maximum Total Weight Authorised
MTOW	Maximum Take-off Weight
NWA	North Weald Airfield
OLS	Obstacle Limitation Surface
PAPI	Precision Approach Path Indicator
PCN	Pavement Classification Number – A number expressing the bearing strength of a pavement for unrestricted operations by an aircraft with a classification (ACN) of the same number. A component of the ICAO ACN-PCN method.
PQC	Pavement Quality Concrete
TODA	Take-off Distance Available
TORA	Take-off Runway Available
WAS	Weald Aviation Services

# Executive Summary

## 1.1 General

To assess the potential for increasing aviation and related activity and enhancing the airfield's economic viability, Epping Forest District Council (EFDC) commissioned Halcrow Group Ltd to undertake this study into the condition of the existing Runway 02 / 20. The primary purpose of this study has been to assess the runway's suitability for accommodating present and potential future aircraft traffic and outline any rehabilitation works that may be required for each of these scenarios.

## 1.2 Visual Inspection

A visual inspection of the surface condition of Runway 02 / 20 was carried out on 30 October 2012 by Ian Blackwell escorted by Colin I'anson of NWA.

The findings of the visual inspection are in broad agreement with those reported in the 2011 Halcrow Group Ltd report albeit a number of additional repairs have been undertaken by NWA in the intervening period.

The defects observed on the runway primarily relate to the condition of the surfacing and there is no evidence of major structural failure and as such it can be concluded that the underlying pavement structure remains intact.

Given the above it can therefore be reasonably assumed that the strength of the runway reported in the Pavement Evaluation Report undertaken by Scott Wilson in March 1998 remains appropriate for the purposes of this study, and no further pavement testing and evaluation is required at this stage.

## 1.3 Existing Runway – Suitability for Present and Potential Future Aircraft Traffic

The pavement strength of the existing runway 02 / 20 was evaluated as PCN 6/F/D/Y/T (Pavement Evaluation Report: Scott Wilson: March 1998). This PCN value is considered to remain appropriate given the low level of aircraft operations at NWA since 1998. It should be noted, however, that the ACN – PCN method used in the runway evaluation is not intended for reporting the strength of pavements meant for light aircraft use only i.e. those with a weight less than 5,700kg.

Given the size and loadings of the aircraft currently using NWA it is considered that the strength of the existing runway pavement is adequate to support the present level of operations, provided that movements by heavier aircraft are restricted to occasional use only and standard pavement maintenance procedures are adopted.

Typically, the life of an asphalt surfacing material is in the region of 15 years before major resurfacing works are required. This level of pavement maintenance has clearly not been undertaken at NWA and despite recent efforts at minor renovation (i.e. localised patch repairs etc) the pavement surface is approaching the time where it will become unacceptable for use by jet powered aircraft which are particularly at risk from FOD.

Albeit the runway surface is considered to be in a poor condition, provided it is maintained in an intact condition and kept clear of FOD it should remain serviceable for use by the current level of recreational light aircraft using NWA. However, although propeller powered light aircraft are less at risk from the effects of FOD and poor surface conditions than jet aircraft, consideration should be given to the consequences of any accidents, and the attendant insurance claims, that may be attributable to the poor surface condition of the runway.

To mitigate the risk to aircraft from the effects of FOD, consideration should be given to establishing a regular pavement inspection programme at NWA. It should, however, be noted that FOD can be generated at very short notice, particularly upon aged and poorly maintained surfaces, and regular inspections cannot guarantee a perfectly serviceable operational pavement at all times.

Due to the poor surface condition it is considered highly unlikely that a corporate aviation operator will utilise NWA without significant rehabilitation works being undertaken to the runway.

## 1.4

### **Runway Maintenance Options**

The maintenance options available to NWA to enable the runway to continue to operate safely and maintain the current level of airfield activity are defined below. It should be noted that the following maintenance options will not (or only marginally) increase the pavement strength (PCN) and addresses the surface condition and FOD generation issues only.

The primary purposes of all the maintenance options considered will be to:

- Arrest deterioration of the runway surface and restrict the generation of FOD over the specified design life of the rehabilitation.
- Seal the runway surface from water ingress and mitigate the effects of damage from frost action.
- Reduce substantially the levels of emergency surface repair works currently being undertaken by NWA.
- Have the potential to attract a low level of corporate aviation activity (aircraft types restricted to existing runway strength classification).

The aim of the proposals contained in this section of the report is to provide all the above benefits from a relatively low level of capital expenditure.

#### 1.4.1

The maintenance options considered most appropriate for the rehabilitation of the asphalt section of the runway are:

- Continue existing maintenance programme
- Patch repair and apply slurry seal surface treatment
- Overlay with nominal 30mm thick Stone Mastic Asphalt
- Re-cycle / rejuvenate the existing bituminous surfacing
- Overlay with proprietary bituminous thin surfacing

#### 1.4.2

The maintenance options considered for the rehabilitation of the concrete section of the runway are:

- Continue existing maintenance programme and re-texture concrete surface
- Overlay with nominal 50mm thick bituminous material