



A6 to Manchester Airport Relief Road

Aerodrome Safeguarding, Manchester
International Airport
1007/11.01/165



September 2013

SEMMMS

A6 to Manchester Airport Relief Road

Aerodrome Safeguarding, Manchester International Airport

Issue No	Current Status	Date	Prepared By	Reviewed By	Approved By
2	Draft	September 2013	N Huda/ S Clarkson		

Status Code	Description
D	Draft
P	Preliminary
A	Submitted for Review
C	For Construction

Designer
SEMMMS Project Team
Stockport MBC
Fred Perry House
Stockport
SK1 3EX



SCHEDULE OF REVISIONS

Revisions Issued Since Publication#

Report Issue Number	Revision Date	Details
1	12.09.13 – NH	Issue to MAG/URS planning for comment
2	23.09.13 – SC	Incorporated MAG/URS planning comments

Airport Safeguarding

The proposed A6MARR travels from Hazel Grove at the east to Manchester Airport to the west. The SEMMMS Project Team (SPT) has therefore engaged with this key stakeholder, Manchester Airport Group (MAG), on various aspects including proposed highway layout, reference to the Airport City development site and Aerodrome Safeguarding.

The safeguarded area for Obstacle Limitation Surfaces extends to a distance of approximately 13km from the aerodrome. Furthermore, the contract documents for the A6MARR construction works sets out the *Contractor's obligations*; "he shall, when considering 'aerodrome safeguarding' issues, ensure that the interests of Manchester Airport are maintained by ensuring that the obstacle environment at the end of Runway 23R-05L is unaffected by the scheme. This applies to the section of the proposed highway between Ringway Road West and Styal Road."

Furthermore, the preliminary design of that section of the highway between Ringway Road West and Styal Road has considered, and the detailed design of the scheme will continue to ensure that:

- There will be no penetration of the 1:50 (or, 2%) Take Off Climb Surface (TOCS) for Runway 05L, by either the road, or associated infrastructure such as lighting and road signs. Protection of the 1 :50 TOCS is a condition of the Aerodrome Licence, and any new development must comply with the requirement of the Civil Aviation Authority as set out in their publication CAP 168 (available at www.caa.co.uk/docs/33/CAP168). In addition to the TOCS, other obstacle limitation surfaces must be not be breached, which are the Approach Surface, the Transitional Surface, the Inner Horizontal Surface, the Conical Surface and the Outer Horizontal Surface, which in their entirety span a distance of several kilometres (up to 13km) from the airport. However, the lowest obstacle limitation surface, being the only one at risk of being breached by the proposed scheme, is the TOCS and therefore is the only surface considered.
- The height of vehicles transiting along the road is also taken into account when aircraft performance is calculated and they are treated as obstacles. The design must therefore take into account the maximum height of vehicles that will use the road; 4.8 metres above the crown.
- The design of the road must take into account regulations (DfT Circular *01/2010*) that control development within the Runway 23R-05L Public Safety Zone. The basic policy objective governing the restriction on development near civil airports is that there should be no increase in the number of people living, working or congregating in Public Safety Zones

and that, over time; the number is reduced as circumstances allow. The highway layout and any signalling arrangement must therefore take into account these restrictions.

- The landscape design for the road scheme near the airfield must be designed to reduce the potential attractiveness to birds that are hazardous to aircraft. In particular, efforts must be taken to reduce bird feeding, nesting and roosting opportunities. Guidance on planting regimes that minimise risks to aircraft from bird strike is to found in the Civil Aviation Authority publication (CAP 772 available at www.caa.co.uk/docs/33/CAP772).
- Further to the above, the drainage design for the road scheme within the specified vicinity of 13km of the airport, must be designed to reduce the potential attractiveness to birds. The preliminary drainage design utilises the installation of Attenuation Ponds, with a view to the inclusion of Sustainable Urban Drainage Systems (SUDS) within the scheme. These ponds will require the approval of Manchester Airport prior to construction and mitigation measures introduced as required.
- To ensure that the safe operation of aircraft is not inhibited, the lighting elements of the road scheme must be designed to avoid distracting pilots or causing dangerous and confusing patterns of lighting. Lanterns fitted to columns must ensure light does not shine upwards or in the direction of approaching aircraft. Typically, around the airport flat glass luminaries are in use to direct light downwards and to reduce light spill.
- A stipulation was made such that excavated topsoil is to be stored on site and not removed off-site unless required for off-site planting. It shall be re-used solely on the construction works side slopes, verges and landscaped areas or as specified in the Environmental Design. Stored topsoil within the vicinity of Manchester Airport will require the approval of Manchester Airport Safeguarding Team due to potential bird issues.

Although the points above refer directly to the section of the proposed scheme between Ringway Road West and Styal Road, the points will also apply to all areas of the proposed scheme that fall within the 13km "Safeguarding Zone" for Manchester Airport.

CAP 168 sets out the standards that are required at licensed aerodromes in order for the CAA to grant continuation of an aerodrome licence, of which aerodrome safeguarding forms a key part. Various chapters focus on the assessment and treatment of obstacles, and birdstrike risk management. The purpose of the document is to give guidance to applicants and licence holders on the procedure for the issue and continuation of or variation to an aerodrome licence.

CAP 772 deals specifically with birdstrike risk, including a description of various bird attractants and how these can be mitigated. An extract is provided below:

1. *The UK, as a signatory to the Convention on International Civil Aviation, Chicago 1944, has adopted many of the provisions specified in Annex 14 to the Convention. Annex 14, published by the International Civil Aviation Organization (ICAO), includes standards and recommended practices (SARPs) that address the risk of a birdstrike and a potential increase of the birdstrike risk due to the presence or development of bird-attractant features on, or in the vicinity of, an aerodrome.*
2. *Under the heading "birdstrike hazard reduction", Annex 14 Volume 1 (4th Edition Amendment 9) states that "the birdstrike hazard on, or in the vicinity of, an aerodrome shall be assessed through:*
 - a) the establishment of a national procedure for recording and reporting bird strikes to aircraft; and*
 - b) the collection of information from aircraft operators, airport personnel, etc. on the presence of birds on or around the aerodrome constituting a potential hazard to aircraft operations."*
3. *Annex 14 also states that "when a birdstrike hazard is identified at an aerodrome, the appropriate authority shall take action to decrease the number of birds constituting a potential hazard to aircraft operations by adopting measures for discouraging their presence on, or in the vicinity of, an aerodrome." Annex 14 goes further by stating that "the appropriate authority shall take action to eliminate or to prevent the establishment of garbage disposal dumps or any such other source attracting bird activity on, or in the vicinity of, an aerodrome unless an appropriate aeronautical study indicates that they are unlikely to create conditions conducive to a bird hazard problem."*
4. *The term "in the vicinity" is taken to be land or water within 13 km of the aerodrome reference point, and "garbage disposal dumps" refers to landfill sites (i.e. the disposal of waste by landfill) as defined under relevant UK legislation. An "appropriate aeronautical study" is taken to be a study that focuses on the potential flight safety implications at the relevant aerodrome(s) that an existing or proposed bird attractant development may cause. Such a study should consist of the overall assessment of the ambient birdstrike risk at the aerodrome and a site-specific risk assessment relating to any development or site in the vicinity. An "appropriate authority" is deemed to be an authority that has the power to take action in a particular situation. A further explanation of risk assessment factors is detailed in Chapter 3.*
5. *In the UK, the aerodrome licence holder shall take all reasonable steps to secure that the aerodrome and the airspace within which its visual traffic pattern is normally contained are safe at all times for use by aircraft (Article 128(5) of the Air Navigation Order (ANO) 2005). The licence holder is therefore responsible for the development and implementation of birdstrike risk control measures. This document provides guidance on how the risk of a birdstrike at, or in the vicinity of, an aerodrome may be assessed and what risk reduction measures may be taken to comply with the licensing criteria specified in CAP 168, Licensing of Aerodromes, which are based on*

ICAO Annex 14 SARPs. Birdstrike risk management is an integral part of the aerodrome operator's safety management culture and its safety management system (SMS).

- 6. The reporting of birdstrikes in the UK is mandated by Article 143 of the ANO, and is described in Chapter 5.*

All of the above constraints have been taken into consideration by the SEMMMS Project Team in developing the preferred scheme layout. This development of the highway vertical and horizontal alignment, street lighting, landscape and drainage design has also taken cognisance of the matters relating to aerodrome safeguarding. Continuing liaison with the Manchester Airport Group throughout the design to date of the scheme, and the future design refinement of the scheme is to be carried forward by the Principal Contractor. This will contribute to the safe process of construction and operation of the scheme with consideration to the above constraints, with particular attention to the risk of bird hazard associated with the proposed scheme.