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Target Audience:
FOD Inspectors
SG Inspectors
HSL

DESIGNING IN HEALTH AND SAFETY AT AIRPORTS: PROJECT FOR 2004/05

This SIM outlines a project to run in 2004/05 with follow up to 2006/07. The project seeks to improve 'end-user' health and safety at new buildings and facilities at airports. This work forms part of the Commercial and Consumers Services, Transportation and Utilities Sector (CACTUS) contribution to the Sector Strategic Programme, and is being co-ordinated by CACTUS Transportation Section (TS).

INTRODUCTION

1 The Construction Design and Management Regulations (CDM) require designers to consider the health and safety of construction and maintenance workers. The regulations have had some success in this regard. However, CACTUS TS and the field have extensive experience of inadequate consideration by designers and their clients of the health and safety of 'end-users', i.e. those employers and staff who work in the buildings or facilities once they become operational.

2 There are very real consequences: higher residual risks of Musculo Skeletal Disorders (MSDs), slips and trips, workplace transport accidents and falls, as well as potential inefficiencies. For example, studies indicated that poor design is, directly or indirectly, the cause of over 40% of workplace accidents¹.

¹ Issues Paper - Eliminating Hazards at the Design Stage (Safe Design) – Options to Improve Occupational Health and Safety Outcomes in Australia, National Occupational Health and Safety Commission, Australia 2003

3 Once design reaches an advanced stage, or construction work has commenced, it may not be reasonably practicable to take remedial action. This means that employers, workers and HSE are effectively 'stuck' with problems for some 30 years or more. Intervention early in the design stage offers a one-off opportunity to address problems before they become insoluble features of the facilities.

4 This project may feed into a Construction Division Project on similar issues and it is envisaged that liaison with CD will be an element of the work. However, the degree and mechanism for liaison should be determined locally, and on an intervention-by-intervention basis.

5 Given the lead times for airport projects, there are unlikely to be immediate effects on

Public Service Agreement (PSA) targets, though some effect may be forthcoming towards the end of the decade.

6 A working group is currently considering whether the CDM Regulations should include requirements relating to end-user health and safety.

DESCRIPTION OF WORK ACTIVITY

7 At least one field project per division in 04/05. CACTUS TS does not expect input from those divisions that do not have any suitable developments within their boundaries. However, these divisions may wish to consider cross-boundary working ([paragraph 10](#)). Due to the ongoing input into Terminal 5 Heathrow, no work is expected from London Division.

8 The projects should consist of interventions with airports and designers, candidates to be selected based on local intelligence (such as Airport Development Plans) and national intelligence, including the White Paper *The Future of Air Transport*. CACTUS TS envisages some follow-up (monitoring) work in 05/06 and 06/07 depending on the nature of the airport development.

9 Possible candidates identified by the sector are outlined below. In order to demonstrate consistency of approach, CACTUS TS is seeking interventions at a minimum of one project from each of the major airport groups. Local knowledge may suggest alternate or additional candidates (e.g. smaller scale projects such as the refurbishment of a check in area).

- Stansted (new runway) [BAA PLC Group]
- London Luton (work connected with "Phase 2" expansion, likely to include expanded terminal and hard standing) [TBI Group]
- Manchester (extension of terminals and supporting facilities) [MAPLC Group]
- Doncaster Finningley (conversion of RAF base to commercial airport) [Peel Airports Ltd]
- Edinburgh (additional terminal capacity and new aircraft stands) [BAA PLC Group]

10 There is scope for cross-divisional working. For example, divisions without major airport development proposals within their boundary might be able to assist other divisions. Alternatively, where a client company operates more than one airport, or designers are involved with more than one airport, duplication of effort and inconsistency may be prevented by cross-boundary approaches.

11 Each project should involve interventions on some or all of the topics below (selected locally and related to the nature of the proposed airport development):

- Slips and trips
- Falls
- MSDs (including baggage handling and ergonomics of check-in facilities²)
- Workplace transport

² Preventing violence to staff might also be considered in relation to check-in areas

12 Interventions should consist of meetings with key personnel from the designers and their clients at the early stages of the concept/design process. Visits to the actual or proposed sites for development are not mandatory, but may be wise in some circumstances. Inspectors should consider using support from SG/HSL/CACTUS TS, where appropriate. Joint work with CD inspectors may be appropriate for certain topics (for example, falls from heights).

13 The meetings should seek to establish the depth of consideration in the design of end-use health and safety. In particular, whether the client and designer have:

- Undertaken assessment of the risks to health and safety at the design stage (the [Appendix](#), based on an aide memoir for construction inspectors, includes some issues for consideration);
- Secured competent advice where necessary (e.g. an ergonomist to advise on baggage handling facilities);
- Consulted end-users;
- Considered the hierarchy of control (from the Management Regulations), industry best practice (including best practice overseas) and best practice from other industries where applicable;
- Taken a holistic approach to ensure risks are not simply transferred to other facilities or processes;
- Proposed control measures to ensure end-user health and safety; and
- Have management systems in place to ensure those control measures feature in the final building or facilities.

14 Inspectors should remember that any design issues that impact on the safety of aircraft may need to be discussed by the client and designer with the Civil Aviation Authority (CAA).

15 Inspectors may wish to explore different aspects of this list through different priority topics, generating an overall impression of how the airport is approaching end-user health and safety. However, CACTUS TS recommends that each topic should include consideration of risk assessment and control measures as a minimum.

16 Inspectors should avoid becoming involved in the detail of the proposals, or the design processes. It is important that airports and designers understand that we are not approving their work. Rather, we are seeking to satisfy ourselves that they are giving structured and adequate consideration to the health and safety of end-users.

17 CACTUS TS encourages divisions to appoint a project manager to liaise with us, and a stable project team to carry forward the interventions. Divisions should make arrangements to ensure the continuity of the project manager and team, including the skills and experience necessary to deal effectively with the air transport industry (with assistance from the Transportation Section where required).

18 CACTUS TS staff will support interventions, for example through joint visits on particular topics, subject to resource constraints.

RESOURCE REQUIREMENTS

19 Not more than 3 days at B3 for each topic selected for the intervention. Sector/SG/HSL

time is not included but should not exceed 3 days per topic and may not be required for every topic. Depending on the nature of the development(s) should presume a further 1 to 2 days per topic on follow-up work in 05/06 and 06/07.

20 Although this work is focused on the priority hazards, resources should be allocated from those set aside for the Sector Strategic Programme.

RECORDING REQUIREMENTS

21 Visits should be recorded on FOCUS (or COIN as appropriate). To ease tracking by CACTUS TS, the keyword AIRPORT DESIGN should be placed at the start of the contact report.

ENFORCEMENT

22 This initiative aims to build a partnership between local HSE offices and airports and designers, to encourage them to adopt best practice. It should not be seen as an enforcement initiative. Clearly, airports and designers that fail to consider end-user issues at the design stage may face enforcement action once those facilities come into operation, or are close to being ready. Correcting the problems at this stage would be very expensive.

23 There may also be practical difficulties with enforcement – for example the Management Regulations require dutyholders to assess risks, but they are not currently **obliged** to do so at the design stage.

24 Nevertheless, there are issues on which inspectors may consider it appropriate to take action, in line with the criteria set out in the EMM:

- The project does not have access to competent advice, and there is no willingness to seek it; or
- There is a clear breach of the CDM Regulations (CD should lead on such issues).

EVALUATION

25 CACTUS TS will evaluate the overall impact of this work through a number of indicators. Divisions may wish to evaluate individual interventions. For information, CACTUS TS proposes to evaluate:

- Feedback from Revitalising Health and Safety in Air Transport Industry Steering Group Team in 04/05 to 06/07 (counterfactual of concerns or complaints from external team members regarding HSE's interventions)
- Any feedback from individual airports and designers and their parent groups in 04/05 to 06/07 (counterfactual as above), e.g. feedback gathered by divisions.
- Reductions in accident number in air transport in later years (2008 onwards) [Baseline of 2003/04 figures], (counterfactual that accidents show no reduction, or increase)
- Reductions in complaints from workers and TU reps, or inspector contacts referring to health and safety issues resulting from the design of new/refurbished buildings and facilities at airports (2008 onwards) [Baseline of 15% of contacts derived from a sample of FOCUS Reports from 1996 to 2003], (counterfactual as above).

Date first issued: 6 April 2004

APPENDIX ([Para 13](#))

SOME ISSUES TO CONSIDER

KEY REFERENCE FOR ALL TOPICS:

Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992). Approved Code of Practice and guidance. L24, ISBN 0717604136 (WSHWR)

[Airside Safety Management \(CAP642\) Civil Aviation Authority \(revised 2003\).](#)

WORKPLACE TRANSPORT

- Does the design keep pedestrians segregated as much as possible from any areas where vehicles work/move? If segregation is not possible (e.g. at aircraft stands) are steps proposed that will reduce pedestrian/vehicle interaction, e.g. permanent provision of some services at the head of stand?
- Has consideration been given to the effect of different types of aircraft on the movement of vehicles and their positioning (e.g. an Airbus 380 compared to a Boeing 737)?
- Does the “flow” through the building/apron area minimise vehicular movement around the site?
- Have the proposed traffic flows been modelled, including consideration of the knock-on effects on other parts of the airport?
- Do the buildings incorporate features to safely accommodate the numbers, types and sizes of any vehicles likely to use the facility? Have expected vehicle dimensions been established to enable sufficient room through openings and under canopies? Is there sufficient room to enable the vehicle to carry out tasks such as offloading or turning into stands? Does the layout allow adequate control of passengers who might be crossing the apron?
- Can the workers safely gain access/egress to the building(s) and to their individual place(s) of work from e.g. from airside offices, workshops and other areas?
- Does the design eliminate/minimise the need for vehicles to reverse?
- Are “trapping points” (between vehicles and fixed structure) eliminated as far as is possible, e.g. in baggage halls? Are any remaining trapping points provided with escape routes where elimination is impossible e.g. inset steps in loading docks?
- Does the design incorporate features to enable any loading or unloading of vehicles to be carried out in a controlled area?
- Are road surfaces adequate and sufficiently robust? (Poor roads may break up and become a source of foreign object debris that can damage aircraft, as well as increasing problems with whole body vibration for drivers).
- Is adequate internal and external lighting provided?
- Will the layout accommodate the knock-on effects of other proposed developments?

Priced Publications

HSG 136 "Workplace Transport Safety - guidance for employers"

Freight Transport Association "Designing for Deliveries"

Approved Code of Practice L24 "Workplace health, safety & welfare". (Especially Regs 8,12,17)

Free Publications

[HSE leaflet INDG199 "Managing vehicle safety at the workplace - leaflet for employers"](#) 

SLIPS, TRIPS AND FALLS ON THE SAME LEVEL

- What floor contamination is likely, where and what effect does this have on the users? This consideration is particularly important in areas where aircraft de-icing takes place, as the fluid can be very slippery.
- Can contamination be contained so that it will not affect internal or external work areas or pedestrian traffic routes?
- Where contamination is unavoidable have gradients and drainage channels been designed to allow removal?
- Does the choice of floor material have the correct level of surface roughness to counter the level and type of expected contamination? Has the flooring material been tested for slip resistance and by what testing methodology?
- Are there sufficient areas provided for storing unused items?
- Are electrical and IT sockets positioned to reduce the need for trailing cables (e.g. behind check-in desks)?
- Is there adequate lighting at work stations to carry out the work task or along circulation routes especially e.g. at stairs and landings?

Priced Publications:

Slips and trips, guidance for the food processing industry, HSG156, ISBN 0717608328

Slips and trips. Guidance for employers on identifying hazards and controlling risks, HGS155, ISBN 0717611450


Stop Slips. Managing slips to reduce injuries and costs - HSE video

Free Publications

[Preventing slips in the food and drink industries - technical update on floor specifications. Food sheet No. 22](#) 

[Slips and Trips, Food Sheet No 6.](#) 

[Preventing Slips & Trips at Work, IND 225](#) 

[Health services sector information summary sheet slips and trips in the health services industry](#) 

FALLS FROM HEIGHT (This topic only deals with the permanent arrangements and not temporary arrangements that may be required during construction).

- Can access at height be eliminated? Is it necessary to install plant and equipment at roof level? E.g. can equipment be installed at ground level or be capable of being lowered to a suitable permanent area that has sufficient load carrying capacity, adequate access and edge protection? Can light fittings be specified which can be changed from floor level?
- Is there proper access to deal with foreseeable events, such as bags falling from conveyors as they pass through the building?
- Do mezzanine levels have adequate access and edge protection?
- Do “over-office” storage areas have sufficient load capacity, adequate access and edge protection?
- Is there a suitable route (with adequate space, load capacity and edge protection) to any plant/ machinery located at height?
- Is there proper access, or means to attach PPE, at areas requiring more frequent maintenance (this includes glazing that might need cleaning, and vertical service ducts and shafts within the building)?
- At airbridges: is there proper access from the stand for airport personnel (e.g. steps) and means to protect the open front when aircraft are not on stand (e.g. lockable doors)?

Priced Publications

Health and Safety in roof work, HSG33, ISBN, 0717614255

Advisory committee for roof work, materials standard, ACR[M]001:2000 Test for fragility of roofing assemblies

Free Publications

Working on roofs, INDG284

[Preventing falls from height in the food and drink industries, Food Information Sheet No 30](#)



MUSCULOSKELETAL DISORDERS

- Will the check in desks and chairs be adjustable (whilst still reducing the risk of violence to staff). Will there be sufficient room for IT and other equipment, including future needs.
- Will check in conveyors alert operators to overweight bags?
- Are storage and security areas sited and designed to reduce handling needs (e.g. close to point of use and laid out to eliminate double handling)?
- Have ergonomists been involved in the design of the interface between the workers

and the baggage handling system? Does the design include handling aids for bags where available? Are the conveyors to be set at an ergonomic height?

- Will ventilation and heating be adequate to enable comfort and minimise draughts (these factors can effect grip strength, dexterity etc.)?
- Will the arrangements for lighting be sufficient and appropriate? E.g. Prevent / reduce glare - poor vision often results in bad posture when working at display screen equipment, and good lighting eases baggage handling and checking.
- Is there sufficient 'slack' in the design to accommodate proposed expansion in the airport, or the number or type of aircraft it handles?

Priced Publications

Manual handling solutions you can handle, HSG115, ISBN, 0717606937

Upper limb disorders in the workplace, HSG60 rev, ISBN 0717619788

VDUs an easy guide to the Regulations, HSG90, ISBN 0717607356

Lighting at Work, HSG38, ISBN 0717612325

Thermal comfort in the workplace, HSG194, ISBN 0717624684

Moving food and drink, HSG 196, ISBN 0717617319

Manual handling in the health services, ISBN 0 7176 1248 1

Free Publications

[Upper limb disorders INDG171L](#) 

[Getting to grips with manual handling INDG143L](#) 

[Manual Handling Assessment Charts INDG383L](#) 

[Manual handling operations: Baggage handling at airports](#)

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