# GRANTS TO REGIONAL AIRPORTS
# ARE THEY BEING SPENT EFFECTIVELY?

Since leaving CASA in 1998 I have held an approval to flight test and commission aerodrome lighting systems. That work, in conjunction with an aerodrome inspector and an aerodrome electrician includes the periodic inspection of regional aerodromes. As a result of personal experience and conversations with my colleagues I have formed the opinion that much of the money granted to regional aerodrome operators is being miss-spent and not returning value to the taxpayer. I am not alleging fraud but a failure of project management and a manifest failure of government to supervise the expenditure of scarce funds.

## The Current Process.

Funds are given to aerodrome operators by the Commonwealth and States under a number of programs. The successful applicant (often a Regional Council) then puts the work out to tender and engages a contractor. That contractor and subcontractors are required by CASA regulations to have 'appropriate experience' in the specialised area of aerodrome construction and lighting. At the conclusion of the work CASA requires certification and commissioning inspections performed by persons with 'appropriate experience' or in some cases by persons approved by CASA. There is no provision for an independent inspection of the work to ensure that it meets the required standards as is the case for domestic or commercial construction. There is no register or panel of persons and companies with 'appropriate experience' in aerodrome works.

Although CASA has statutory responsibility for the certification and standards of aerodromes, there is an obvious lack of expertise and resources to properly fulfil that role and ensure that the requirements of CASR Part 139 Manual of Standards are met. What is happening in many cases is that, at the first annual inspection of the aerodrome after completion of the project, the shortcomings of the work become evident. Rectification often requires significant work and expense as the problems are usually fundamental, not marginal.

## Some Examples

1. An inspection of the lighting system at a regional airport revealed dangerous leaking of current to ground. The wiring was buried directly in the ground, not in conduit. The inspector recommended that the system be turned off and isolated. In discussion with the operator (Local Council) they said that they had recently had the cabling replaced by a local electrician who was later found not to hold any electrical licences. Cost of the job was about $.5m: rectification – a total rewiring.

2. A major regional airport let a contract for a new parking apron to relieve congestion on the main apron. The work was carried out by a civil contractor and on completion it was found that no target aircraft had been specified (this defines the pavement strength parameters) and the parking area exceeded the maximum of 1% slope (any slope can result in aircraft fuel tanks not filling to capacity). The area was designed to move the freight aircraft off the main apron, but testing showed that it was rated for aircraft not exceeding 12000kg – too low to be used for most freighters. Cost of construction and rectification is unknown.

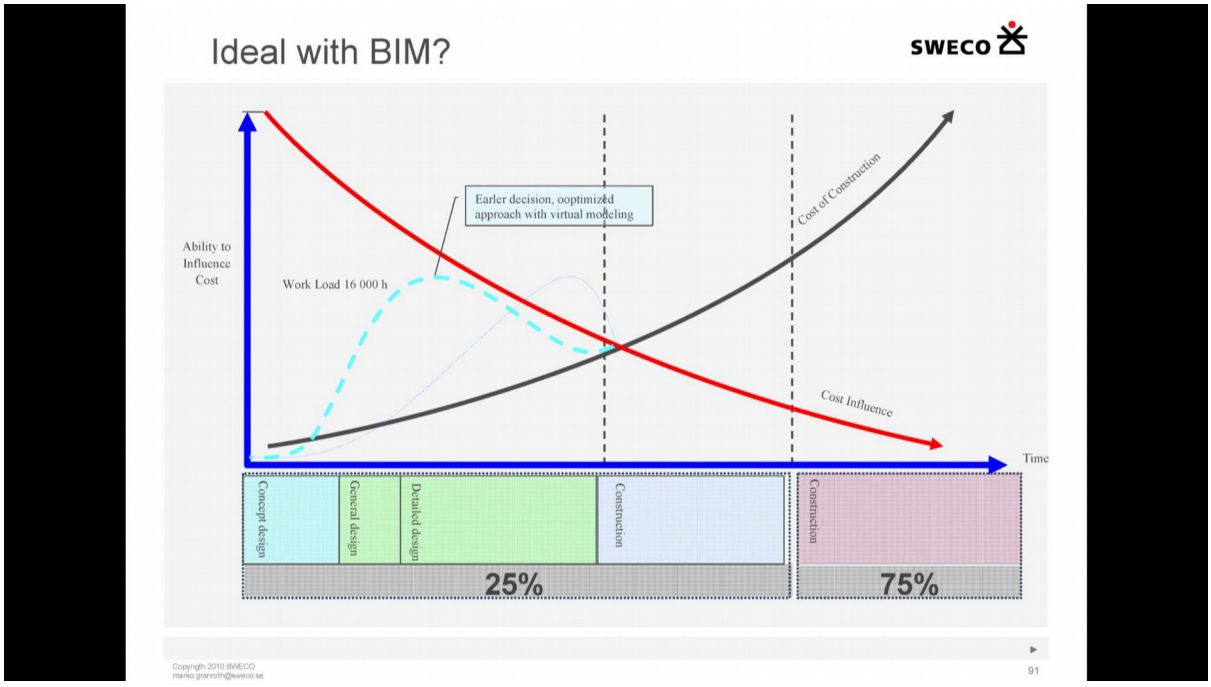
3. A regional airport. Recently the operator (local council) engaged a civil construction firm with an electrical contractor subsidiary to perform civil and lighting works. The value of the lighting contract was about $.75m and involved the installation of Precision Approach Lighting (PAPI - mandatory for jet airliners). At the first independent inspection after installation the PAPI glideslope was found to 2.8 degrees vice the design requirement of 3 degrees. THIS SYSTEM HAD BEEN APPROVED BY CASA ON THE BASIS OF REPORTS

SUBMITTED BY THE CONTRACTOR. The PAPI has been taken out of service pending rectification. Other faults recorded included: apron floodlighting - lacking documentation of ground certification, towers exceeding maximum height; electrical circuits not meeting CASA specifications; wiring pit and conduit design not to CASA standard; and no documentation of wiring changes. Total cost of rectification is estimated to exceed $.7m.

4. An aboriginal community aerodrome. To meet a CASA requirement the airport manager arranged through an aviation consultant to have an illuminated windsock manufactured and shipped in. He used local staff to erect the windsock and run wiring for the lights. An independent approved person was employed to conduct the commissioning flight check where it was found that the structure did not meet the MOS requirements and the wiring for the lighting was not to standard. Some $20k of grant money had been spent on a sub-standard system.

These examples are drawn from relatively few aerodromes and indicate that aerodrome lighting is the main area of concern. The main driver is cost – acceptance of the cheapest quote with little attention to quality - particularly when the operator is a local council. The lack of supervision and audit by the 'financier' (usually government) and the lack of aerodrome technical expertise in the contract administrator and contractor creates an environment in which poor planning and design lead to a result which does not meet the specifications laid out by the Australian Government. As much of the work is buried (deep foundations for runways, underground wiring) rectification is expensive and often requires starting again and redoing almost all the work.

## Cost Influence Curve




This is the standard cost influence curve for a Project when a competent design (drawings and specification) has been provided by a competent designer. It shows that the ability of the project manager to influence the total cost of the project decreases exponentially as the project moves from conception through general design and detailed design to the start of construction. To illustrate – a decision made at the concept stage which would result in a saving of $1000.00 to the overall cost would only save $460.00 if the same decision was made at the start of construction. This emphasises that competent design has more influence on total cost than efficient construction. It is at that stage that many government funded projects set a course for the rocks as the 'design team' lacks the specific technical skills for the task.

Not all projects fail to deliver. Some aerodrome operators employ consultants and contractors with a proven record in aerodrome works and accept that quality will cost in the short term, but deliver dividends in the long term. Unfortunately the lack of any accreditation framework allows the inexperienced and ambitious to undercut the quality contractors. Systems which should have a design life of 20-25 years are failing within a year. The critical failure of an aerodrome lighting system or section of pavement could have fatal consequences.

## What is the Solution?

**Airport Management**

The aviation industry has four main components: aircraft and their operators; the engineering organisations that maintain the aircraft; the airways system (which includes Air Traffic Control), and the aerodromes from which the aircraft operate. All essential personnel involved in aircraft operation, aircraft maintenance and air traffic control are licensed by CASA. None of the essential personnel who operate aerodromes are licensed or approved by CASA, with the exception of the Safety Officers who work on the runways and taxiways who must complete an approved course. *More formal qualifications are required to work in a hairdressing salon than to manage an aerodrome!* This lack of qualification and experience leads to situations where executives make decisions based on advice that they do not understand – *they do not know what they do not know.*

One partial solution would be to require aerodrome management to hold some sort of a licence, or to be approved by CASA after demonstrating appropriate knowledge and experience. Potential managers should be required to demonstrate that they understood the regulations and standards that apply to the operations and facilities that they intend to manage. This should improve initial decision making but it would not address the problem of sub-standard or non-standard work by ignorant or devious contractors.

**Project Management**

The United States Federal Aviation Administration (FAA) regulates some of the busiest airports in the world and on behalf of the US government administers grants to aerodromes. The 'Aerodrome Improvement Program' (AIP) is well documented on the FAA website and ties the grant of funds to a set of conditions and obligations. These start at the application stage (see the following extract from the FAA website):

# *What Are the Obligations for Accepting AIP Funds?(in USA)*

*Airports sponsors who accept a grant offer are also accepting conditions and obligations associated with the grant assurances. These include obligations to operate and maintain the airport in a safe and serviceable condition, not grant exclusive rights, mitigate hazards to airspace, and use airport revenue properly.*

*The 'GRANT ASSURANCES'* include obligations to undergo reviews by the FAA at critical stages of the project (including a full review at the planning and specification stage) and I understand that funding is staged and is tied to a successful review of each stage. Through these processes the FAA maintains oversight of the expenditure and ensures that the scarce funds are spent wisely. Part of the process is the 'approval' of contractors and consultants by the FAA (see extract at Appendix A), and of the plans and specifications (see Appendix B). Again from the FAA website:

*The objectives of the Plans & Specifications review by the FAA are to:*

- *Verify conformance to the approved scope of work;*
- *Verify the work meets AIP eligibility requirements;*
- *Verify conformance to FAA design and construction standards (including terms that are either deficient or exceed design standards);*
- *Verify that required Federal terms are included; and*
- *Verify that Construction Safety and Phasing Plan developed are in conformance with FAA standards.*

The adoption of a similar review process by the Commonwealth would put the project under expert scrutiny before the plans are completed. I note that the FAA process includes scrutiny of the contractors BEFORE THEY START WORK.

## CONCLUSION

Many government funded aerodrome projects are not delivering value for money in that more funds are often required to achieve compliance.

Some government funded aerodrome systems are failing after a year when they should have a life in excess of 20 years.

Aerodrome management often lacks the skills to make the technical and regulatory decisions required.

Government funded aerodrome projects are not subject to staged evaluation and approval by the funding authority.

Aerodrome works are not required to be independently inspected on completion to ensure compliance with CASA standards.

### RECOMMENDATIONS

The Commonwealth should ensure that aerodrome managers who have responsibilities that impinge on aviation safety are qualified and certified as competent before taking up their appointment.

The Commonwealth should place processes and procedures in place to ensure that aerodrome projects using Commonwealth funds are administered and managed by persons and organisations who have demonstrated and documented competence in aerodrome construction.

The Commonwealth should set up a system of staged evaluation of projects using Commonwealth funds which includes an independent certification at each critical stage *(before the mistakes are buried)* and on completion, using the FAA process as a model.

Peter Ware Mackay 10 October 2016 [redacted] [redacted]

Appendices: A. Improving the Quality of Airport Projects ACC/FAA Best Practises
B. FAA Policy: Review of Plans and Specifications