Editorial

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Economic development is driven by the global trade of products and services. Being the only mode of transportation capable of moving goods and people large distances around the world, aviation is fundamental to the success of countries and industries. Airports are therefore central to a nation's sustainable economic growth and the need to maintain global aviation links is still as important as digital communication.

According to the International Civil Aviation Organisation (ICAO), global aviation traffic is once again on an upward trajectory with growth recorded in 2013 and 2014. Airports need to develop to drive economic growth, although a balance must be achieved between the economic benefits, the cost of construction and the environmental effects: this is currently evident in the UK where we are awaiting the outcome of the Davies Commission Report into resolving airport capacity constraints and the long-term needs of the UK economy, where connectivity by air is a crucial factor.

The civil engineer has an important role in the development of airports and this themed issue provides excellent examples on how this has been achieved around the world – from the construction of new airports to some of the individual engineering components that are required throughout an airport.

The first two papers relate to the development of airports. The first paper (Green, 2015) describes the work undertaken to rehabilitate the airfield pavements at Guernsey Airport in the Channel Islands and in particular a key airport asset – the runway. It describes the technical issues during the design and construction stages and how the engineering challenges were resolved by collaborative working. The resultant upgrade secured the integrity of the island's lifeline and the project received a highly commended award at the British Construction Industry Awards in 2014. The second paper (Chalk and Beare, 2015) provides an excellent description on the process and challenges involved in building a new airport at Quito, the capital of the Republic of Ecuador. The authors describe their involvement throughout the planning, design and development of the new airport and provides important reference material for the particular benefit of those engineers involved in transport concession projects.

The rise of the climate change agenda has increased the pressure on airport operators and airlines to improve environmentally. Technological advancements, especially in aircraft performance, mean that airports are actively protecting the environment. The third paper (Budd *et al.*, 2015b) describes environmentally sustainable practices that are being undertaken at UK airports. The paper examines the way in which UK airports have

responded to the challenge of reducing their environmental impact by implementing green and sustainable energy and associated working practices.

Our fourth paper (Budd *et al.*, 2015a) looks at the development of air cargo operations at a regional airport in the UK – East Midlands Airport. It describes how a combination of airport planning decisions and strategic management interventions have enabled the airport to diversify its operations and develop an operating strategy that successfully serves both passenger and cargo operations.

Moving to a particular area of airport infrastructure, the next two papers describe aspects of airfield pavements. The paper by Widyatmoko *et al.* (2015) looks at a viable alternative to grooved asphalt concrete. It provides an insight into the stages adopted, main challenges and achievements of the project team in addition to technical data relating to the design, specification and performance monitoring that has taken place. The paper includes a case study of a recent runway resurfacing project at Manchester Airport where the material was used. The paper by Park *et al.* (2015) presents a method for calculating the environmental load of airport concrete pavements. Current multi-layer elastic analysis designs do not take into account this load and the paper explains the analysis used to develop a multiple regression model that can be applied worldwide. Further studies are continuing on a design model capable of simultaneously considering environmental and aircraft traffic loads.

From aircraft pavements we now move to the airport terminal, and the next paper by Ronzani and Correia (2015) analyses the impact on the level of service provided to passengers at baggage claim areas. Data collection was carried out at Terminal 1 of São Paulo/Guarulhos International Airport and the paper describes the multiple scenarios and sensitivity analysis that was undertaken. The paper details some interesting conclusions on the baggage process and airport management practices.

The last two papers consider transportation issues in Greece and Turkey. Yannis *et al.* (2015) provides some interesting data on mobile phone usage. The last paper (Bolat and Guler, 2015) analyses data to assess if a series of ports within Turkey have the potential to be hub ports by reviewing the port connectivity index.

The papers in this themed issue demonstrate how the civil engineering profession is actively contributing to sustainable aviation across the world. I trust that you will find the papers in this theme issued informative and the editorial advisory panel would be pleased to receive further details on how civil engineers

are contributing to developing a successful, sustainable aviation industry in the UK and worldwide.

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