

Environmental Assessment

ASSESS ENVIRONMENTAL IMPACTS AND DESIGN OUT
IMPACTS – BRISTOL AIRPORT

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Introduction

In November 2006, Bristol International Airport produced its master plan for development with a design horizon to 2030. Within the master plan, it anticipated expanding the Airport capacity from 6.5 million passengers per year to 12 million passengers per year by 2030. This follows a trend decade by decade that has seen increase travel 5-fold (Graham and Guyer., 2000).

Alongside passenger increase, air travel to accommodate industry and consumer needs is increasing year on year (Higham, *et al.*, 2016).

In December 2003, the UK Government undertook an exercise to understand the current capacity at all UK airports and the future of the airports. This published paper 'The Future of Air Transport'. In this paper the Government defined the balanced approach to development versus environmental impacts. From this report, the UK Government supported the approach of Bristol International Airport development and required a master plan that engaged with local stakeholders whilst achieving the Government's vision (Rawson and Hooper., 2012).

Master Plan – Government Guidelines

As part of the future of UK airports, it is forecast that UK airports will have a minimum of 20,000 flights per year by 2030 (Rawson and Hooper., 2012). Table 1 indicates Bristol International Airport's understanding of the guidance:

Table 1: Guidance for Bristol International Airport Master Plan

Bristol Airport Master Plan Guidance	
1.	To provide an indication of Bristol International Airport's plans for infrastructure development in the light of the high-level strategic policy framework for the airport in the White Paper, and therefore bring greater clarity and certainty for all those affected or with an interest;
2.	To inform long-term resource planning for local and regional players, particularly in the preparation of strategies and plans;
3.	To provide a useful tool for communicating to a range of stakeholders, including airlines, funding institutions, local authorities and other local interests, to allow them to make a well-informed investment decision;
4.	To help Bristol International Airport make clear at an early stage the key milestones of airport development such as the submission of a planning application, construction and operational opening;
5.	To provide a consistent and publicly recognised vehicle for the Government, Devolved Administrations and their agencies to assess progress being made in delivering the white paper at Bristol International Airport;
6.	To demonstrate the range of costs and benefits of airport growth
7.	To enable Bristol International Airport and others to assess local social and environmental impacts and provide an opportunity to develop preliminary proposals on how those could be mitigated.

From the guidance, Bristol International Airport approached 'Entec' to undertake an Environmental Impact Assessment to assist with the planning applications highlighted within the Master Plan.

What is an Environmental Impact Assessment?

An Environmental Impact Assessment (EIA) is a formal process that investigates the environmental implications of a proposal and its potential alternatives (Glasson and Therivel., 2013). It looks at potential effects of the development and collects data and analysis from the developer and other stakeholders that aids judgement during planning process as to whether the application should be granted or objected (Glasson and Therivel., 2013). This process can be broken down into 15 stages once an EIA has been identified as a need from the proposal. These being.

1. Project Screening

This is the process of utilised to identify if an EIA is required. This procedure identifies if the project will have significant effects on the environment (Weston, 2000).

2. Scoping

Scoping is required to establish criteria and boundaries of the EIA. It is a means of engaging early with stakeholders likely to be impacted by the proposed development. It can be used to draw up the basis of analysis to be carried out whilst identifying possible alternatives (Wood, *et al.*, 2006).

3. Impact Assessment and Mitigation

The evaluates the socioeconomic and environmental impacts of a planned project and its alternative possibilities. From this it will be possible to understand any mitigation measures that enable any impacts to be reduced (Jay *et al.*, 2007).

4. Impact Management

After evaluating the impact assessment and mitigation, managing the mitigation measures is key within an EIA. Also, potential project risk needs to be understood and managed, for example extreme flooding events etc (Lawrence., 1994).

5. The Environmental Impact Statement Report

The aim of this is to accumulate all the research, impact management, mitigation and scoping into a document structured in such a way that it contains all relevant material to deliver concise outcomes (Barker and Wood., 1999). Whilst the Impact Statement will be presented in a detailed concise manner, it needs to consider that these will be public documents so will need to also produce a non-technical summary.

6. Review

A review is where relevant authorities review the DIS report, instruct on any amendments, or reject or agree with the DIA and issue a license. If a review is approved it will progress to a monitoring phase or if rejected, may go through a redesign, and resubmit phase.

7. Monitoring

If approved, the EIA will undertake a monitoring phase. This will keep records of conditions at site and compare these to predicted impacts within the early stages of the EIA.

Long Term aim of EIA

Initial aim of an EIA is to consider all Environmental and Socioeconomic impacts relating to a proposed development. The broader range of an EIA is to ensure any development is sustainable. By that it ensures that ecology, well being and livelihood of the supporting areas are not compromised.

Bristol International Airport Development

As part of the Master Plan and following Government Guidelines, BIA commissioned 'Entec' to carry out a DIA. As part of its Master Plan, BIA proposed the following:

1. Extend the East and West Terminal Buildings.
 - a. This would double the internal capacity of the Airport.
2. Raise the number of Aircraft Bays to 30 (currently 18).
3. Construct a new multi-storey car park.
4. Construct a new Hotel at the site to accommodate crews, staff and the general public.
5. Construct a new Fire Station.
6. Construct a new Administration Building.
7. Construct a new Fuel Depot.

Currently BIA supports 52 businesses in the area and employs 2650 people. It is the 9th largest airport in the UK. It has no rail network and can only be accessed via cars or buses. It is located 7 miles south west of Bristol within the rural area within the Forest of Avon. Due to its geographical location, numerous issues were identified within the EIA. These being:

1. Geology and Land Quality.
2. Cultural Heritage.
3. Community.
4. Air Quality.
5. Landscape and the visual environment.
6. Biodiversity.
7. Noise.
8. Transport.
9. Water.

Geology and Land Quality

A desktop exercise was undertaken on the geology of the area.

Soil surveys identified Brown Loam and Clay on Carboniferous Limestone (Loveland and Findlay., 1982). Mineshafts were found in the area.

The EIA made statements surrounding no detrimental effect to the Geology and Land Quality. They also state mitigation via qualitative assessments.

Cultural Heritage Impacts

Again, a desktop exercise was carried out looking into English Heritage and Local detailed studies. A site visit was also carried by Entec archaeologists visited the site in January 2005. Mesolithic artefacts dating back to 8000 years BC, bronze age barrows were identified at the western end of the runway.

Community

A full public consultation was undertaken in 2005 that aligns with the Government White Paper, with stakeholder engagement from local community, local authorities, and statutory consultants.

Within the consultation, a 3D graphic animation was carried out that illustrated the development.

Distribution of a non-technical summary was delivered to 25,000 households within the local area. Exhibitions and workshops were carried out with residents and businesses attending.

Air Quality

Under the guidelines of the Air Quality Regulations 2000, a survey was undertaken on the air quality. Modelling was used to understand air quality for the period 2005 to 2020. Pollutants studied were nitrogen, carbon monoxide, hydrocarbons, sulphur dioxide and particulate matter. The report concluded that air quality would not be exceeded.

Landscape and Visual Impact

There is an Area of Outstanding Natural Beauty (Mendip Hills and Black Down). The airport is visible from there. Mitigation was discussed and planting of trees on the north side of the airport was proposed.

Improved lighting to reduce glare to local residents was proposed.

Biodiversity Impacts

There are a number of SSSI's located near the airport. The ANOB has a Bat Conservation Area within it. There are a number of non-statutory sites within the area inclusive of Newts, Slow Worms and Dormouse. Also Badger Sets are located South of the Airport. Mitigation to include Badger proof fencing and unlit buffer zones to incorporate bat foraging.

Noise Impacts

This is measured on Noise quota count and is set on a seasonal basis. It is also the most frequent complaint. DEFRA sets 75 dB limit as its level for annoyance. Areas of consideration are Construction, Air-borne, Ground Operations and Road Traffic. Mitigation includes continuous monitoring, acoustic barriers at the perimeter of the Airport and a decrease in night flights.

Transport

As stated previously, transport links to the Airport are poor, it highlighted that a rail link is vital to accommodate future numbers. It also highlighted construction traffic as a large contributor. It carried out a transport study of the A38, A368, A370 and B3130 utilising number plates to establish origin of the cars. It also highlighted increase in private car post development. Mitigation includes a new link road from A38 to A370, staff shuttle bus and car share scheme, better public transport and a strategy for peak times.

Water

Considerations within the report include watercourse drainage, records of pollution incidents (hydrocarbons, oil, metals, de-icing chemicals), Watercourse Quality (physical, biological and Chemical), Discharge consents and licences, surface water abstraction. Mitigation included discharge consents and sustainable urban drainage.

Conclusion of the EIA

It is clear to see from within the EIA that there are few environmental benefits from the development. It is merely an environmental trade off against the social improvements of the development. More air traffic means more jobs, more parking and value to the economy of Bristol. Historically, EIA were a nice to have in development plans, but now these are formally an integral part of the process.

Predominately, this EIA discusses impacts and mitigation rather than biodiversity enhancement. Rather than monitoring, opportunities to design and build green technologies to deal with contamination both short and long term would aide in enhancing this EIA.

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