

An Influenza Pandemic - What it Could Mean for Scottish Tourism¹

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Introduction

There is a growing unease among World Health Organisation (WHO) officials and other global disease surveillance organisations that Avian Flu will mutate into a human influenza pandemic. **Such is the concern that the Scottish Executive asked public bodies to prepare business continuity plans based upon the National Health Service Scotland's contingency plan and scenarios, and this briefing paper is a consequence of that request.**

Avian Flu is a deadly virus, with high mortality rates. By January 2006 it had infected 148 people and killed 79 of them, according to World Health Organisation data as at 14 January 2006 (although deaths in Turkey from the Avian Flu outbreak will increase the number of cases and deaths when fully documented). To date, Avian Flu has been associated with bird to human contact as a result of cross infection due close proximity to infected birds. However, if and when it mutates into virus capable of human to human transmission, humanity could face a pandemic unlike any ever witnessed (Garret 2005).

The media hype and interest in the issue has being heightened ever since the WHO commented that a pandemic is inevitable and the outbreak in Turkey has contributed to a media frenzy as any analysis of recent newspaper headlines shows. For example, current stories on the BBC news online typify the interest in this issue as the following reports indicate:

- 10th January 2006. The outbreak of bird flu cases in Turkey has sparked renewed fears that the world economy could be at risk from any worldwide flu pandemic in humans (Wilson 2006)
- 10th November 2005: Wild ducks in the Firth of Forth are being tested as part of national surveillance programme for bird flu (Anon 2005a)
- 21st October 2005 : At least seven African countries have banned imports of poultry from parts of Asia affected by Bird flu (Anon 2005b)
- 19th October 2005: H5N1, a catchy little name currently on many people's lips. (Ryan 2005)

and many of these news stories reflect the geographical spread of the virus since 1997. Figure 1 portrays the geographical spread initially from Asia and it is now poised to spread to Europe in January 2006.

What is Avian Flu?

Avian Flu is a highly pathogenic disease known as the fowl plague. It first appeared in Italy more than 100 years ago (around 1878). Pathogenic avian influenza was first recognized in the United States in 1924-25. It occurred again in 1929 and was eradicated both times. A pathogenic and mildly pathogenic influenza A viruses occur worldwide. Highly pathogenic avian influenza A (HPAI) viruses of the H5 and H7 HA subtypes have been isolated occasionally from free-living birds in Europe and elsewhere. Outbreaks due to HPAI were recorded in the Pennsylvania area, USA, in the years 1983-84. More recently outbreaks have occurred in Australia, Pakistan, Hong Kong, Italy, Chile and Mexico. A serious outbreak of avian influenza in the Netherlands in 2003, spreading to Belgium and Germany, affected some 250 farms and necessitated the slaughter of more than 28 million poultry. Another serious outbreak of this disease affected Japan, South Korea and south-east Asia early in 2004, reflecting what the WHO claim is a problem area for new emerging diseases in the Western Pacific. This outbreak is still ongoing in China and parts of South East Asia. There is also evidence that H5 viruses of low pathogenicity may mutate and become highly pathogenic.

There were also a small number of cases of avian influenza in the USA and Canada early in 2004. The USA strain in Texas was, however, typed as H5N2, not the same as the strain in South-East Asia. More recently there have been reports of infection of birds in South East Russia and in Kazakhstan, Turkey (and perhaps Romania) as well as concerns being reported in other countries such as Israel.

What is a pandemic?

There were four major influenza pandemics in the twentieth century in 1918, 1957, 1968 and 1977 with 1918 being the most virulent, killing 50 million people worldwide and 200,000 in the UK. Influenza often reaches epidemic levels, which is a widespread occurrence of the virus in a particular community in a specific time, but the fear is that Avian Flu will mutate into an influenza pandemic, which is global rather than local.

Why is Influenza considered a serious economic and social issue?

- *The mortality rate* - In May 2005, WHO statistics indicated a 67% mortality rate among infected and those seeking treatment. When Avian Flu successfully mutates into a human influenza, the

mortality rate envisaged is predicted to be between 0.5 – 5% according to NHS Scotland (Scottish Executive 2005) which will affect the labour force.

- *The impact on the economy* - The Centre for Disease and Control Prevention in the USA suggested that between 89,000 to 207,000 people could die in the USA, with around 314,000 hospitalizations and 18 million outpatient visits. This would generate an impact on the USA economy of between US\$71bn to US\$165bn, which is still a conservative estimate. No data are available from the UK government as yet on the impacts on the UK economy.
- *Social distancing measures* - One of the few tools available to political leaders are social distancing measures i.e., the ability to temporary bans on public gatherings. These will range from football matches, weddings, schools to visitor attractions. Such a measure will have a huge impact on tourism, particularly events that attract large gatherings of people.
- *First impact* - By the very nature of the pandemic, international travel and tourism will be the first industries to be hit by such a scenario. Countries will issue travel advisories, advising tourists not to travel to infected countries.
- *Globalisation* - One of the points of concern from a tourism perspective is the nature of a globalised world, where borders are porous, commerce is global and worldwide travel the norm. This is also accounted for by cross-border transmission, which gives rise to opportunities for any new pathogen to spread quickly and without restraint. In 1918, the influenza pandemic killed 50 million worldwide, including 200,000 in the UK. The WHO is forecasting 100 million deaths due to a new outbreak. In 1918 it took 12 months for the disease to spread across the world – but in 1918 there was no globalised travel by air. Today, the time period will be much shorter with air travel enabling people to travel across the globe in less than 24 hours.
- *It is overdue* - There is an argument amongst epidemiologists that a pandemic is overdue. Global contagions tend to occur every twenty five to thirty five years.
- *No one will escape* - The NHS Scotland scenarios demonstrate that 25% of the population will be affected by the influenza over an eight week period, killing 0.5 – 5% of the population. We may also expect to experience multiple waves

of the influenza, and therefore the pandemic could last several years as the virus mutates.

- *Immunisation* - Currently, influenza immunisation has to change and adapt to each new strain as it emerges. Not only does it take time to produce such a vaccine (at least 8 weeks with research and development), but Avian Flu is likely to mutate and adapt as it spreads, meaning that a vaccine may not be effective for long.
- *The lessons of SARS* - In China, SARS accounted for a 5.3% decrease in tourism for the first five months of 2003 (WTTC 2003). A pandemic is likely to have a more profound effect due to its all embracing effects on the host population. SARS illustrates the global nature of the virus and subsequent impact on Canadian tourism, in a region distant from the original outbreak in China where carriers could transmit the disease rapidly from a source area (i.e. Asia) to other tourist destinations.

One way of seeking to understand the impact of a flu pandemic on tourism is to consider the national ramifications of an outbreak on both the destination and its tourism economy. Two widely used techniques which have been utilised are economic modelling and scenario planning. These techniques can help us understand how a pandemic might unfold and the implications for the tourism sectors

Economic modelling

Computable General Equilibrium (CGE) models have a well established record of providing detailed estimates of the effects of a range of actual or possible tourism-related events on economies (Blake et al 2003; Blake 2005) Such models are well suited to examining the effects on tourism of major shocks such as terrorism or foot and mouth disease (Blake et al; 2003) and can be used to quantify the effects of policy changes, such as changes in value added tax or air passenger duty, as well as of a range of optimistic and pessimistic scenarios relating to the future of the economy (Blake 2005)

CGE models include the entire range of sectors in the economy, covering primary and secondary activities as well as services, and are able to take full account of the interrelationships that occur between all of the sectors. The effects of changes can be used to trace the effects of changes in non-tourism activities on tourism-related sectors, as well as the effects of changes in tourism on the remainder of the economy. CGE modelling permits the quantification of the macro-economic impacts of alternative scenarios on income, employment, welfare, the balance of trade and government revenue, as well as on individual sectors of the economy.

A CGE model (known as the Moffat Model¹) was developed for VisitScotland by The Christel DeHaan Tourism

Research Institute at Nottingham University (Blake 2005) . The model includes 82 industries and 82 corresponding commodities. These include the tourism-related sectors of large hotels, small hotels, bed and breakfast establishments and guesthouses, self-catering accommodation, caravans and camping, restaurants and catering, transport, recreational services and retail distribution. Within the model, industries pay factors of production in return for factor services, pay taxes and purchase intermediate inputs. Labour is mobile between sectors but capital is specific to the sector in which it is employed. Labour (in total) and capital in each sector is not fixed in supply, as the 'open' nature of the Scottish economy allows changes in wages (and rental rates of capital) to induce changes in the supply of factors in Scotland. Exports and imports occur for each of the 82 commodities (except where data show these flows to be zero) and are modelled separately for trade with the rest of the UK and the rest of the world. Scotland faces exogenous world prices and imported products are differentiated according to region of origin. Exports are differentiated from goods produced for domestic use.

Particular attention is paid to the accurate representation of tourism demand and different types of tourism expenditure are considered - by tourists originating within Scotland, from the rest of the UK, international tourists and day visitors. Domestic tourism and tourism from the rest of the UK can be modelled independently, in total, by purpose of visit, by type of transport used or by type of accommodation used. International tourism can be modelled in total, by purpose of visit, by type of transport used, by country of origin or by region of origin. Within the scenarios, CGE modelling has been used to measure impact of changes to demand and transport. All of the Tables cited in this paper are based upon data from 2002 statistics for Scottish tourism and Scotland's provisional Tourism Satellite Account.

Scenario planning and a flu pandemic

In order to understand the economic impact of an influenza pandemic on Scottish Tourism, two scenarios have been constructed using NHS Scotland's own influenza scenarios as a foundation. By using such an approach, continuity and consistency is achieved. The two scenarios, *It's Out There* and *It's Here* follow the present situations of Avian Flu in South East Asia through to mutation into a human influenza. The outcomes of the scenarios were tested with a group of transport and tourism stakeholders on the 6th May 2005, including British Airways, BAA, the Scottish Executive, VisitBritain, Forestry Commission, NHS Scotland, Edinburgh Principal Hotel Association, VisitScotland, Scottish Tourism Forum, and Greater London Authority & London Development Agency.

Scenario 1 – It's out there

In this scenario tourists are aware that Avian Flu is out there but life in Scotland goes on as normal. The impact on Scotland's GDP is very small. Unemployment had risen a

little as a result and tourism saw some disruption. In 2006 international tourism revenues dropped £208 million based upon the fear of flying especially from the American market. The American State Department takes the unprecedented step of warning American citizens to avoid travel to mainland Europe after media reports in USA Today and advice from the Centre for Disease Control in Atlanta on the lack of knowledge about Avian Flu and risk assessment required by US travel insurers. Poor geographical knowledge among US travellers compounds the problem as they see the spread via the Channel Tunnel. Interestingly, one consequence is a rise in domestic tourism as some people that year decided to take their holiday in Scotland rather than abroad. Scotland's domestic tourism market rose by £248 million in 2006, so the tourism sector actually saw a net benefit. The crisis has led to many national tourism organisations updating their crisis management procedures, re-examining their public relations strategies and developing contingency plans in case of an outbreak of influenza

In this scenario, the following assumptions have being made about changes to demand:

- a 5% increase in daytrips
- a 5% increase in domestic markets
- a 5% increase in UK markets
- a 10% decrease in short-haul travel to Scotland
- a 20% drop in tourist arrivals from the USA.

Therefore, the economic impact of this scenario is described in Table 1.

Table 1 Scenario 1: It's out there - macroeconomic impact

	Scenario 1: Its out there (£m)	% Change
GDP	-362	-0.5
Welfare	-306	-0.5
Employment (FTE jobs)	-3180	-0.2
Government revenue	-82	-0.4
Daytrips expenditure	112	4.9
Domestic Tourism expenditure	78	4.9
Rest of UK Tourism expenditure	170	5.3
International Tourism expenditure	-208	-15.2
Domestic plus Rest of UK Tourism expenditure	248	5.2
Overnight Tourism expenditure	40	0.7
Tourism plus Daytrips expenditure	153	1.8

Scenario 2 – It’s here

In this scenario, the following assumptions were made about changes to demand including a:

- Long and deep disruption to tourism
- Recovery takes five years
- 30% decline in day trips
- 50% decline in domestic Scottish tourism
- 60% decline in rest of UK tourism
- 70% decline in short haul tourism
- 90% decline in long haul tourism
- 10% drop in productivity in tourism sectors
- 10% drop in productivity in Scottish economy

Therefore, the economic impact of this scenario is described in Table 2.

Table 2: Scenario 2: It’s here – macroeconomic impact

	Scenario 1: It’s Here (£m)	% Change
GDP	-26841	-38.6
Welfare	-24727	-43.8
Employment (FTE jobs)	-272340	-14.8
Government revenue	-4251	-18.5
Daytrips expenditure	-910	-40.0
Domestic Tourism expenditure	-763	-47.5
Rest of UK Tourism expenditure	-2042	-59.5
International Tourism expenditure	-1191	-78.6
Domestic plus Rest of UK Tourism expenditure	-2805	-55.7
Overnight Tourism expenditure	-3995	-61.0
Tourism plus Daytrips expenditure	-4906	55.6

Implications

If the World Health Organisation states it is only a matter of time before a pandemic arrives in the Western world, the consequences for Scotland and tourism will be dramatic. Compared to Foot and Mouth Disease or SARS, the economic impact of an influenza pandemic would be miniscule in comparison. The main cause for concern within *Scenario 2 – Its Here*, is that the pandemic would occur as a multiple wave, not allowing the economy to recover from one shock and such a pandemic could last up

to five years. Planning for such disruption is difficult, based upon existing crisis management tools. This is because such disruption is based upon the epicentre of the pandemic and tourist flows (i.e. major gateway cities and points of entry for tourists). It could be envisaged that much of Scotland’s tourism industry would close.

Under the present NHS Scotland contingency plans (Scottish Executive 2005), the British government has overall responsibility for managing a pandemic, but confusion may arise where organisations such as local councils or the Scottish Executive takes decisions based upon political pressures. Whilst recent Westminster legislation has provided a framework for crises such as a pandemic, the evidence provided to the House of Lords (2005) Science and Technology Committee on the government’s preparedness for a pandemic highlights a number of problems in implementing such a Westminster response. The response framework is based on a Westminster management of the problem and a series of regional disaster committees to coordinate the local logistics but much of the management is still using public sector managers. The private sector respondents to the report illustrated that they have formulated their own responses. The retail/food sector and logistics companies have examined the real problems which a pandemic would provide for just-in-time systems and transportation which the public sector are largely unable to control such as fuel and food supplies. This would certainly impact upon the ability of the tourism sector to function effectively, whilst other measures (e.g. social distancing) will affect the day to day activities of tourists. Social distancing measures will close visitor attractions, we may see the culling of many bird species and Edinburgh Zoo may be forced to close during this period. Depending on the epicentre of the pandemic and which areas are affected, countries may issue travel advisories, advising against travelling to individual countries. This is one area the World Tourism Organisation are keen to avoid, to avoid damaging public confidence in tourism globally following the experiences of other crises such as 9/11 and SARS. There are endless possibilities and connotations, therefore if we presume that the pandemic will happen, *how should we prepare and what can we do?*

Impact on overall tourism markets

In Scenario 2, Scottish tourism sees a 73% decline in revenue, meaning that that Scottish tourism becomes entrenched and many businesses are forced to close. Tables 3 to 5 highlight how no sectors of the tourism will escape the effects of the pandemic. Lessons learned from other crises suggests that visiting friends and relatives is a more robust market segment in tourism (e.g. Beirman 2003). The travel agency market will suffer the effects of such changes as the internet will become stronger for VFR travel (i.e. seat-only sales) where travellers switch to trusted brands such as British Airways as opposed to low-cost alternatives. City destinations will experience the drop in demand more than rural locations, as people search for

space rather than crowded city areas with a high density of population, and settings for transmission of influenza. There may be a moderate substitution effect between international and domestic travel. Brands such as well-being, heritage, culture and freedom will be more robust, but events and festivals will be dramatically curtailed. People will value factors such as safety, friendships and price as determinants of consumer choice. Prices of tourism products will dramatically fall (although we did not

model this aspect). Low -cost airlines such as Ryanair will cease trading, due to high fixed costs and lack of volume. Just-in-time deliveries will fail due to staff and resource shortages affecting food supplies. Governments will introduce screening technologies in airports and major ports, and there is evidence in the USA that such measures are already being put in place in the event of an escalation of the pandemic.

Table 3: Scenario 2 – It's here – tourism results

Scenario 2: It's here - tourism results	£ million value	Tourism Expenditure		Average Price Paid
		£ million change	% change	% change
Domestic Daytrips	1,362	-910	-40.0	0.0
Domestic Tourism (total)	0	0	0.0	0.0
Domestic Tourism (Business)	222	-193	-50.0	-0.1
Domestic Tourism (VFR)	170	-59	-30.1	0.1
Domestic Tourism (Holidays 1-3 nights)	366	-312	-50.0	-0.1
Domestic Tourism (Holidays 4-7 nights)	152	-135	-50.0	-0.1
Domestic Tourism (Holidays 8+ nights)	66	-56	-50.0	0.1
Domestic Tourism (Other)	10	-8	-50.1	0.1
Rest of the UK Tourism (Business)	331	-424	-60.3	-0.1
Rest of the UK Tourism (VFR)	210	-160	-50.6	0.1
Rest of the UK Tourism (Holidays 1-3 nights)	509	-613	-60.4	-0.1
Rest of the UK Tourism (Holidays 4-7 nights)	444	-568	-60.4	-0.1
Rest of the UK Tourism (Holidays 8+ nights)	194	-249	-60.4	0.0
Rest of the UK Tourism (Other)	23	-27	-60.4	-0.1
International Tourism (USA)	54	-400	-90.1	-0.2
International Tourism (Germany)	38	-72	-70.3	-0.2
International Tourism (Eire)	16	-30	-70.3	-0.2
International Tourism (Netherlands)	18	-34	-70.3	-0.2
International Tourism (Canada)	13	-94	-90.1	-0.2
International Tourism (Australia)	11	-80	-90.1	-0.2
International Tourism (Spain)	16	-30	-70.3	-0.2
International Tourism (Italy)	17	-32	-70.3	-0.2
International Tourism (France)	28	-53	-70.3	-0.2
International Tourism (Belgium)	6	-11	-70.3	-0.2
International Tourism (Others)	186	-354	-70.3	-0.2
Daytrips total	1,362	-910	-40.0	0.2
Domestic Tourism total	985	-763	-55.4	-14.6
Rest of UK Tourism total	1,711	-2,042	-88.5	-18.7
International Tourism total	401	-1,191	-147.7	-19.3
Domestic plus Rest of UK Tourism total	2,696	-2,805	-76.2	-17.2
Overnight Tourism total	3,098	-3,995	-89.0	-17.5
Tourism plus Daytrips total	4,460	-4,906	-73	-12.1

Table 4: Scenario 2 – It's here – sector revenue (GVA) results

Scenario 2: It's here - GVA	Change in output (%)	Change in price (%)	Profit Rate (% change)	GVA (£million)	GVA (£million change)	GVA (% change)
Large Hotels	-58.2	-0.7	-21.8	223	-257	-53.5
Small Hotels	-58.8	-0.8	-22.3	92	-109	-54.1
B&B Guest Hse	-58.8	-0.8	-20.6	64	-76	-54.2
Self Catering	-60.0	-0.7	-20.8	29	-37	-55.6
Caravan And Camping	-59.9	-0.9	-22.3	53	-66	-55.4
Restaurants Etc	-52.1	-0.2	-21.1	506	-445	-46.8
Railways	-49.6	0.2	-19.9	90	-70	-44.0
Other Land Transport	-50.9	0.2	-22.0	622	-519	-45.5
Sea and Air transport	-53.8	0.2	-22.0	230	-217	-48.6
Transport Services	-49.8	0.2	-15.8	592	-469	-44.2
Recreational Services	-38.7	0.6	-20.3	692	-324	-31.9
Retail Distribution	-45.2	0.1	-23.0	1,750	-1,126	-39.1
All Tourism Related Sectors				4,943	-3,714	-42.9
All Accommodation Sectors				462	-545	-54.1

Table 5: Scenario 2 – It's here – sector results (employment)

Scenario 2: It's here - employment	Change in output (%)	Change in price (%)	Profit Rate (% change)	Employ. (FTE jobs)	Employ. (FTE jobs change)	Employ. (% change)
Large Hotels	-58.2	-0.7	-21.8	15,849	-7,937	-33.4
Small Hotels	-58.8	-0.8	-22.3	6,266	-3,221	-33.9
B&B Guest Hse	-58.8	-0.8	-20.6	5,738	-2,957	-34.0
Self Catering	-60.0	-0.7	-20.8	2,641	-1,447	-35.4
Caravan And Camping	-59.9	-0.9	-22.3	3,058	-1,657	-35.1
Restaurants Etc	-52.1	-0.2	-21.1	54,949	-19,656	-26.3
Railways	-49.6	0.2	-19.9	3,036	-969	-24.2
Other Land Transport	-50.9	0.2	-22.0	32,014	-10,205	-24.2
Sea and Air transport	-53.8	0.2	-22.0	5,735	-1,828	-24.2
Transport Services	-49.8	0.2	-15.8	19,165	-5,668	-22.8
Recreational Services	-38.7	0.6	-20.3	53,653	-10,052	-15.8
Retail Distribution	-45.2	0.1	-23.0	129,866	-32,069	-19.8
All Tourism Related Sectors				331,969	-97,665	-22.7
All Accommodation Sectors				33,551	-17,219	-33.9

What can we do as a public sector agency?

As a result of globalised travel patterns and the speed of travel, the spread of Avian Flu and its mutation into influenza could happen faster than one might expect, in a matter of months according to epidemiologists modelling the spatial spread of an outbreak from Asia to Europe. International travel will facilitate the spread of the disease, therefore complacency and no action would be deemed naïve and irresponsible. Therefore, the focus for VisitScotland and the Scottish tourism industry should be business continuity (Scottish Executive 2005) as advised by the National Health Service Scotland contingency plan and recent advice of VisitBritain after consultation with the government Emergency Committee which would lead a response on influenza.

Therefore we need to:

- **Develop a business continuity strategy** for Scottish tourism and VisitScotland, based upon crisis management, business survival, protecting the brand, emphasising its robust features such as safety and freedom rather than constraint. Strands of such a strategy may include a business toolkit, based upon Visit London / London Development Agency emergency business strategy (London Development Agency 2005)
- Share this work with other national tourism organisations through the World Tourism Organisation as an example of **best practice**. An influenza pandemic will impact on everyone, not just Scotland.
- All tourism organisations need to prepare an operational plan based upon the scenario of 25% of employees (or their families) being affected by the influenza over an eight week period. At a national level, government needs a support plan for the tourism industry as the industry could 'melt down', especially small and medium enterprises
- All organisations need to undertake a **risk assessment of all markets and products** for business continuity planning.
- The tourism industry will formulate a **Joint Action Group** in order to be co-ordinate activity and business continuity
- VisitScotland will coordinate action with VisitBritain and the Department of Culture, Media & Sport
- Use **simulation exercises** to test communications procedures and dealing with uncertainties
- Devise a **recovery strategy** for Scottish tourism after the pandemic.

The US government has already signalled the significance of pandemic planning, having allocated US\$7 billion of federal funding to help prepare for an influenza outbreak, including improved quarantine facilities at the major

ports/gateways that handle around 75 million tourists a year. This highlights the severity with which analysts consider a pandemic could hit the USA. Whilst there is no evidence that quarantine may contain this virus and any outbreak, the lessons learned from SARS and problems with tracing infected travellers, has led the US government to begin looking at implementing a new traveller tracking system to provide a clearer reporting system in the event of infected cases reaching the USA. Other countries such as Australia have also made some public comments on how they might manage tourists and travellers in a crisis induced by a pandemic but no clear statements have yet to be issued due to the sensitivity for its tourism sector and the impending Commonwealth Games in the case of Australia. This sensitivity was reiterated by the World Tourism Organisation in their response to the spread of Avian Flu to Turkey in January 2006, emphasising the need to avoid panic and for business contingency planning as a measured response as well as taking advice from the World Health Organisation.

Summary

A worldwide influenza presents a sense of **what can we do** for national tourism organisations, as tourism and travel will be the first industries to be impacted. The key issues and challenges for the Scottish tourism industry are:

- Preparation
- Actions
- Working together and;
- Preparing for recovery.

Business continuity is the key to managing this major challenge for world tourism. This was reiterated by the House of Lords (2005) Science and Technology Committee report which took evidence from businesses that expressed concerns at the possible 'cascades of failure' that might result from interruptions to just-in-time systems of delivery. The combination of failure in multiple delivery systems would lead to these cascades of failure that would set off a chain reaction that could lead to a major collapse of the service delivery systems which we now rely upon not only for tourism, but also among the general population. As, the UK Chief Medical Officer, Sir Liam Donaldson reminds us, it is only a matter of time before a worldwide influenza occurs, Therefore, it is important for all groups to prepare for this eventuality to ensure appropriate plans and systems are in place.

Endnotes:

¹These scenarios have been prepared for VisitScotland and the Scottish tourism industry. No representation or warranty is given (express or implied) as to its accuracy, completeness or correctness of the information and opinions contained in this report. The material should not be regarded as specific advice and no action should be taken in reliance on it. Neither the authors, nor VisitScotland, accepts any liability whatsoever for any loss

or damage in any way of or reliance placed upon the material. The events, places and names used in this document are for illustrative purposes only. They are to enable organisations to develop their own contingency planning and not to suggest that any of the events are likely to take place. The scenarios have drawn upon the work of Dr Ricky Bhabutta on behalf on the Scottish Executive Health Department

²Named after its benefactor - James H Moffat, the co-founder of A T Mays. A donation was received from the Moffat Charitable Trust. Details of the charity are available at <http://www.moffatrust.org.uk/>

Bibliography

Anon (2005a) Forth Ducks Tested for Bird Flu. Accessed at <http://news.bbc.co.uk/1/hi/scotland/4424072.stm> on 19th January 2006

Anon (2005b) Africa Countries Act on Bird Flu. Accessed at <http://news.bbc.co.uk/1/hi/world/africa/4363256.stm> on 19th January 2005

Beirman, D (2003) Restoring Tourism Destinations in Crisis: A Strategic Management Approach. Cabi Publishing, Oxford

Blake, A (2005) The Structure of Moffatt CGE Model. Discussion Paper. Accessed at <http://www.nottingham.ac.uk/ttri/> on 25th April

Blake, A & Sinclair, M.T (2003) Tourism Crisis Management: US Response to September 11. *Annals of Tourism Research*. Vol 30, No 4, pp813-832

Blake, A Sinclair, M.T & Sugiyarto, G. (2003) Quantifying the Impact of Foot & Mouth Disease on Tourism and the UK Economy. *Tourism Economics*. Vol 8, No 4 pp449-465

Garret. L (2005) The Next Pandemic? Foreign Affairs. July/August. Accessed at <http://www.foreignaffairs.org/20050701faessay84401/laurie-garrett/the-next-pandemic.html> on the 20th September.

House of Lords (2005) Pandemic Influenza: Report with Evidence, Science and Technology Committee, 4th Report of Session 2005-2006, The Stationery Office, London.

London Development Agency (2005) Emergency Business As Usual. Accessed on 20th September at <http://www.london.gov.uk/mayor/economy/docs/emergency-business-as-usual-jul05.pdf>

Ryan,C (2005) Fighting Flu – Outwitting a Virus. Accessed at <http://news.bbc.uk/1/hi/health/4358364.stm> on the 19th January 2006

Scottish Executive (2005) UK Health Influenza Pandemic Contingency Plan. Accessed on the 5th June at <http://www.scotland.gov.uk/Publications/2005/03/20771/53729>

VisitScotland (2002). Tourism in Scotland in 2002.

VisitScotland, Edinburgh

WTTC (2003) SARS has a Massive Impact on Travel & Tourism in Affected Destinations. Accessed on 20th September at <http://www.wttc.org/News11.htm>

Scottish Executive (2005) UK Health Influenza Pandemic Contingency Plan. Accessed on the 5th June at <http://www.scotland.gov.uk/Publications/2005/03/20771/53729>

WTTC (2003) SARS has a Massive Impact on Travel & Tourism in Affected Destinations. Accessed on 20th September at <http://www.wttc.org/News11.htm>

Wilson , B (2006) Bird Flu could take its toll on Business. Accessed at <http://news.bbc.co.uk/1/hi/business/4598150.stm> on 19th January 2006

