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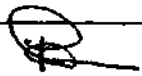
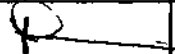
Comparative Airport Study: Anguilla

Contract Number : CNTR 99 8333

Final Report

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1.0 INTRODUCTION

WS Atkins International Limited (WSAIL) was awarded the contract to carry out the Comparative Airport Study: Anguilla by the Department for International Development (DFID) in a letter dated 1 October 1999, with a Contract Number of CNTR 99 8333. Following some disruption caused to the field-work part of the study by Hurricane Jose, the contract was subsequently amended in a letter from DFID dated 28 October 1999, referenced with the same contract number, plus Amendment Number 1.

Team members reprogrammed visits to Anguilla but this was further disrupted by Hurricane Lenny which was considerably more severe than Hurricane Jose. The considerable infrastructure damage inflicted by Lenny is not considered within this report. However, the impact on future tourism of these 2 Hurricanes outside the traditional hurricane season will almost certainly depress tourism growth forecasts over the next four to five years.

The team that carried out the study were:

RG Haywood, Project Director
J G Jamieson, Project Manager
D M Lumb, Aviation Specialist
D Robertson, Finance and Economic Specialist
J Arnott, Land use Planning and Sociology
J Cumberbatch, Sociology Specialist
W Latimer, Environmental Specialist
A J Sheehy, Local Expert, Civil Engineering

All the above visited Anguilla at various times over the period 10 October 1999 to 12 November 1999 and subsequently in December 1999.

They were supported in the UK by:

P Kerridge, Airport Engineering
R Hawkes, Noise specialist.

The field work stage of the study was carried out by extensive interviewing, data collection and several visits to the Brimegin and Wallblake sites. Consultations were carried out with Government Ministries, the National Trust, the tourism board and several social organisations and groupings as well as with individuals that could be affected by the proposed airport developments. A list of interviewers, contacts and organisations is given in Appendix 1.

Very good cooperation was obtained from all levels with Government, the other organisations and individuals contacted, and the team wishes to record its appreciation of this goodwill and cooperation, the results of which this report is based upon. Inevitably, there are different views regarding airport development at Anguilla. We are confident that we have identified all the main groupings and individuals that had an opinion to express, and have tried to record these divergent views fairly in the body of this report.

Section 2 of the report gives the study objectives as understood from the Terms of Reference, a pre-study briefing given by DFID, and the initial interviews at top level within the Anguillan Government.

Section 3 reviews the previous studies made of development at the Brimegin and Wallblake sites, and Section 4 derives forecasts of air traffic growth up to 2015 under various assumptions. Section 5 describes the two sites at Brimegin and Wallblake, and Section 6 outlines development options. Finance and economics of the development options are contained in Sections 7 and 8 respectively. Social aspects are dealt with in Section 9 and environmental considerations in Section 10.

Section 11 contains the overall comparison between the development options and Section 12 identifies the stake holders and the impact of developments on them. Section 13 draws together the conclusions of the study and Section 14 gives recommendations.

Appended are lists of interviewees, the Terms of Reference, supporting data and analysis tables, maps of Anguilla showing location of sites and diagrams of the sites themselves in present and developed forms.

2.0 STUDY OBJECTIVES

The present airport at Wallblake has several constraints imposed upon it. For take-offs towards the west, it is obstacle limited, and for landings towards the east the runway threshold has to be displaced, reducing the landing distance available. At 1097 metres long, runway length limits the types of aircraft that can use it and often imposes large payload penalties on the ATR42, the 44 seat aircraft that provides the main scheduled service link with San Juan.

American Eagle, the current supplier of the San Juan link, will in the medium term replace the ATR42 with the larger, 66-seat ATR72. This type will not be able to use the current runway at Wallblake and its payload (number of passengers) will be limited to uneconomic levels.

Proposals have been made to develop the Wallblake site, including a longer runway and improved infrastructure. Also, proposals have been made for a completely new airport to be built to the north of the present site at Brimegin. Proposals for this site vary from providing an airport that would accommodate Boeing 737 aircraft up to final development which would provide for the Boeing 747.

Apart from development costs between the two options (develop Wallblake, build new airport) there are major implications affecting the environment, social issues, land use issues, economics and the actual structural changes that will result to Anguillan society that impact on resolution of the development options.

Therefore, the objectives of the study were to carry out a thorough review of all these and associated issues, to involve all levels and groupings within Anguilla in establishing their aspirations and expectations, identify all "stake holders" involved in the airport development choices and analyse and evaluate the results.

Study objectives also included financial and economic feasibility analysis, quantification of all relevant factors where possible and identification and ranking of unquantifiable factors, resulting in firm and definitive recommendations on the best options towards which to work.

3.0 REVIEW OF PREVIOUS STUDIES

3.1 Four previous studies of airport development at Anguilla have been made available:

- Anguilla Airport Development. Pre-Feasibility Study for the Development of a New Airport Site. Halcrow Caribbean Ltd for the Government of Anguilla (funded by The British Development Division). January 1983.
- Wallblake Airport Anguilla. Runway Extensions Feasibility Study. Scott Wilson Kirkpatrick for the Overseas Development Agency. May 1994.
- The Anguilla Airport at Brimegin Business Plan (Draft). Aruba-Anguilla Development NV ("Partnership"), a collaboration of the Aruban and Anguillan Governments. 1998.
- New Anguilla Airport. Preliminary Technical and Economic Study Feasibility. CIEC Engineering SA for "The Anguilla 2002 Project". June 1999.

The contents of these studies are reviewed in this section. Where relevant, comparisons with our own conclusions, are discussed here and in other sections of this report.

3.2 The Halcrow-Caribbean Study

Halcrow carried out this study in 1983.

This study is "a very preliminary investigation of a proposed site that has been selected by others". The site is referred to as "The North Site" and is in fact located at the Brimegin site that is the subject of the later studies.

The study compares "like-with-like" at Brimegin and at Wallblake airport with certain improvements to give the same 3600 ft runway facility providing operations for a 50 seat aircraft such as the HS748.

The new airport facility was costed at EC\$28.75M, compared with a "Phase 4" development at Wallblake Airport similar in scale of EC\$7.28m.

The study limited itself to the civil engineering considerations of costs, and did not attempt to provide air traffic forecasts, or environmental and social impact studies. The report recommends further studies commencing with a Master Plan for the North Site (Brimegin) development.

3.3 The Scott Wilson Kirkpatrick Study

This was carried out in 1994 for the ODA and concerned itself with runway extensions to Wallblake Airport. Air passenger traffic forecasts were produced indicating 199,000 passenger movements by 2015. The critical aircraft evaluated were the Shorts 360 and the 70-seater ATR72, with a sector length Anguilla-San Juan.

Four options were evaluated:

- Option 0 - Do nothing
- Option 1 - Extension to 1200 metres
- Option 2 - Extension to 1280 metres
- Option 3 - Extension to 1465 metres

Option 0 provided for existing runway resurfacing only.

Option 1 involved payload restrictions on the ATR42 in wet runway conditions, and reductions on the Shorts 360 and ATR 72 of 5-7 passengers to San Juan.

Option 2 provided no restriction on the ATR42, and a 2 passenger reduction in payload of the Shorts 360 and ATR72 to San Juan.

Option 3 gave no restrictions on the above aircraft in either wet or dry conditions.

Costs were estimated as follows:

- Option 0 EC\$4.9
- Option 1 EC\$7.0
- Option 2 EC\$9.1
- Option 3 EC\$ 20.7

Financial assessment were carried out with the following results:

- Option 0: Airport breaks-even between 2000-2005.
- Option 1: Not justified on financial grounds, but slight increase in operating profit.
- Option 2: Cannot be justified on financial grounds.
- Option 3: Cannot be justified on financial grounds.

An Environmental Assessment was carried out and concluded that the most significant impacts would be caused by provision and transport of fill and by increased tourist numbers. However, many of the potential effects on the environment caused by the extension would be "slight or negligible".

An Economic Assessment concluded that Options 1 and 2 could not be justified on economic grounds, but that Option 3 could justify its investment provided that the discounting of the economic benefits was curtailed at 2005, the year that the ATR72 was scheduled to be introduced at the airport.

3.4 The Anguilla Airport Business Plan

This was drawn up by the Partnership of the Aruban and Anguillan Governments, under the business name of Aruba - Anguilla Development NV.

It proposes that the new airport at Brimegin should have the ability to service 3 x Boeing 737 or MD80 aircraft at peak times.

The Anguilla Government would:

- provide the land for the project
- provide operational personnel to staff the airport.
- relinquish all rights to operational and fee generation to the airports developer/operator.

The total cost of the new airport is estimated at US\$30m. Provision of the land (by the Anguillan Government) is estimated to be worth US\$3m, leaving US\$27m required. It is suggested that US\$2m of this is equity, US\$10m of commercial debt and US\$15m international assistance.

The project was expected to become profitable in year 5 of its operation, with profits of US\$1m in year 9 and US\$2m in year 14.

3.5 New Anguilla Airport at Brimegin Study

The Business Plan Study of 3.4 above refers to the Anguilla 2000 project, which is a combined set of airport and hotel infrastructure proposals.

The Government of Anguilla signed a Memorandum of Understanding with Mr. A Adelaide regarding feasibility studies for the combined Anguilla 2000 Project. It is understood that this MOU is now no longer binding on the parties.

The Anguilla 2000 Project was carried out in association with the French Engineering firm Compagnie Internationale d'Engineering pour la Construction (CIEC Engineering S.A) and was a feasibility study of a new airport at Brimegin. In fact, the document would be better described as a proposal rather than a feasibility study.

This study argues that the Business Plan does not go far enough, in that by limiting the new airport design to service medium-sized aircraft exemplified by the Boeing 737 sufficient passengers will not be attracted to use the new airport. It proposes instead to develop a much longer airport in three phases: an initial runway length of 2200m, extendable to 2700m and then 3200m with a capacity to accommodate 700,000 passenger movements per year, increasing to 1,500,000 passenger movements per year.

3.6 St Martin Airport

It is appropriate to review development proposals at St Martin Airport in this section. St Martin/St Maarten is an island located some six miles south of Anguilla. It is divided in half, part Dutch administered and part French. The main airport is Princess Juliana International Airport (PJIA), which has a runway and infrastructure capable of servicing Boeing 747 although aircraft cannot take off non-stop for Europe. It is located in the Dutch administered portion of the island.

There is also an airport in the French part of the island, Grand Case, but this is small and limited to lighter aircraft only.

Although the feasibility studies have not been obtained, we have interviewed PJIA management and obtained documentation regarding its development intentions. They are of relevance to the comparative airport study at Anguilla.

PJIA serviced 1.3 million passenger movement in 1996, down from the peak of 1.8 million in 1994 prior to hurricane Luis interrupting traffic growth. Its capacity is limited at present and future development is aimed at developing a much larger airport in three phases by 2010:

- Phase 1, to be completed during 1999: Upgrading of terminal building, new apron, taxiways and infrastructure improvements.
- Phase 2 1999-2004: New terminal building, ATC tower, extended apron.
- Phase 3 2005-2010: Terminal extension, runway extension, parallel taxiway.

The extended runway of Phase 3 to 2380 metres is intended to allow non-stop flights to Europe.

4.0 AIR PASSENGER DEMAND AND FORECASTS

4.1 Introduction

This section of the report examines the demand for air services to and from Anguilla in the recent past, identifies the source of this demand and assesses the extent to which demand is likely to develop over the next 15 to 20 years. The aim is to produce realistic estimates of the likely demand for airport facilities to serve Anguilla over the period to 2015.

The section addresses three key questions:

1. To what extent are the acknowledged limitations of the existing Wallblake Airport likely to affect the future development of tourism?¹
2. How is tourism-related and other air traffic likely to develop if either
 - a) measures designed to enhance the operational capability of Wallblake Airport were to be implemented or
 - b) Wallblake were to be replaced by a new similarly sized facility at Brimegin?
3. How is tourism and air traffic likely to develop if Wallblake Airport were to be replaced by a much larger, international jet airport at Brimegin as envisaged in proposals submitted by the French company CIEC Engineering²?

Answers to these three questions will generate traffic projections for two alternative development scenarios:

1. A Do Minimum scenario in which the existing facilities at Wallblake Airport are maintained and operated up to the limit of their existing capacity.
2. A Low Density Tourism Development scenario in which Anguilla continues to be promoted as an up-market, low-density, high-yield destination.

Depending upon the balance of costs and benefits, it may be possible to meet the needs of the Low Density Tourism Development scenario either by enhancing the existing Wallblake Airport or by developing a new airport at Brimegin. It may even be possible for a suitably enhanced Wallblake Airport to accommodate the short to medium haul jet aircraft envisaged by the Aruba proposal. However, the long haul intercontinental facility suggested by the French proposal could only be accommodated at a new site such as Brimegin.

Forecasts for a major new long haul airport, rather than a simple replacement of Wallblake Airport, have been taken from the French report and are intended purely to illustrate the scale of traffic envisaged by the project's promoters. These projections describe a High Density Tourism Development scenario and will be used to test the financial and economic viability of the project in Sections 7 and 8. At that stage,

¹ The impact on air cargo traffic is examined in the following section.

² New Anguilla Airport at Brimegin, Preliminary Technical and Economic Feasibility Study, CIEC Engineering

sensitivity tests will be used to identify the scale of tourism development required for such a project to be judged financially and economically viable. Having identified the scale of tourism development required to support such project, it will then become a social and political question as to whether this option is acceptable to the people of Anguilla.

The forecasts are essentially long-term trend projections and are not sensitive to the relative short-term impacts of particularly damaging hurricanes for example. Two hurricanes hit Anguilla during the 1999 season. Although the first of these, Hurricane Jose, interrupted the field trip for the current study, the second, Hurricane Lenny was more severe and is reported to have caused damage on a similar scale to Hurricane Luis that struck in 1995. Hurricane Luis damaged a number of tourist facilities on Anguilla and led to a reduction in visitor arrivals both in 1995 itself and in the following year. It took two years for the number of visitor arrivals to recover to its pre-hurricane level. The most recent hurricane may have a similar short-term impact on the number of visitor arrivals during the earliest years of the forecast period.

The chapter begins with a brief review of the sources of demand for air passenger services to and from Anguilla.

4.2 Sources of Demand

4.2.1 General

Wallblake Airport handled 89,460 air passenger movements in 1998 of which 57,906 (64.7 percent) were generated by visitors to Anguilla rather than residents. Most visitors (96 percent) were classified as tourists, which means that on arrival they intended to stay at least one night on Anguilla. Residents generated the remaining 31,554 air passenger movements (35.3 percent)³. Details of the composition of air passengers by category in 1998 are set out in Table 4.1.

Table 4.1
Air Passenger Movements by Category at Wallblake Airport in 1998

Category	Passenger Movements	Percentage
Visitors		
Tourists	55,802	62.4 %
Excursionists	2,104	2.3 %
Sub-total	57,906	64.7%
Residents	31,554	35.3%
Total	89,460	100.0%

Source: Consultant's analysis of tourism statistics and airport traffic statistics.

The distribution of air passengers by category has varied very little during the past five years.

The total number of air passengers handled by Wallblake Airport increased by a factor of three between 1985 and 1998. Two thirds of this growth was achieved between 1985 and 1989 during which period the airport was redeveloped and a direct

³ Residents are not required to fill out a disembarkation card. The figure for residents is therefore the difference between the total number of air passenger movements recorded by the airport and the number of visitors arriving by air recorded by the Department of Immigration.

scheduled service to San Juan was introduced by American Eagle Airlines. Annual air passenger movements peaked at 96,607 in 1994; the year before Hurricane Luis caused considerable damage in this part of the Caribbean. Following two years at or around 87,000, air passenger movements recovered to 96,100 in 1997 but fell by 7 percent in 1998 to 89,460. The trend is illustrated in Figure 4.1.

4.2.2 Tourist Visitors

The majority of tourists visiting Anguilla during 1998 (59.9 percent) were from the United States. Canada, the United Kingdom, Italy and Germany accounted for 21.5 percent of tourist visitors and 'other' countries outside the region for 2.8 percent. Caribbean countries accounted for 15.8 percent of all tourist visitors. Details are set out in Table 4.2. The recent trend in tourist arrivals and its close association with the growth in air passenger movements is illustrated in Figure 4.2

**Table 4.2
Tourist Arrivals in Anguilla by Country of Residence in 1998**

Country of Origin	Visitor Arrivals	Percentage
United States	26,297	59.9%
Canada	1,444	3.3%
United Kingdom	2,738	6.2%
Italy	3,983	9.1%
Germany	1,265	2.9%
Other	1,230	2.8%
Sub-total	36,957	84.2%
Caribbean	6,917	15.8%
Total	43,874	100.0%

Source: Table 10, Statistical Review of Tourism 1998, Statistical Unit, Ministry of Finance, Anguilla.

The distribution of tourist arrivals by country of residence has been fairly stable over the years. No surprisingly the proportion of visitors from other Caribbean countries has declined as Anguilla's tourism industry has grown and Italy and Germany have recently emerged as identifiable individual markets.

4.2.3 Excursionists

The vast majority of excursion visitors to Anguilla arrive from the neighbouring island of St Martin/St Maarten. Only a small proportion arrives by air; most travel between the two islands by ferry.

Figure 4.1
Recent Growth of Air Passenger Movements
at Wallblake Airport

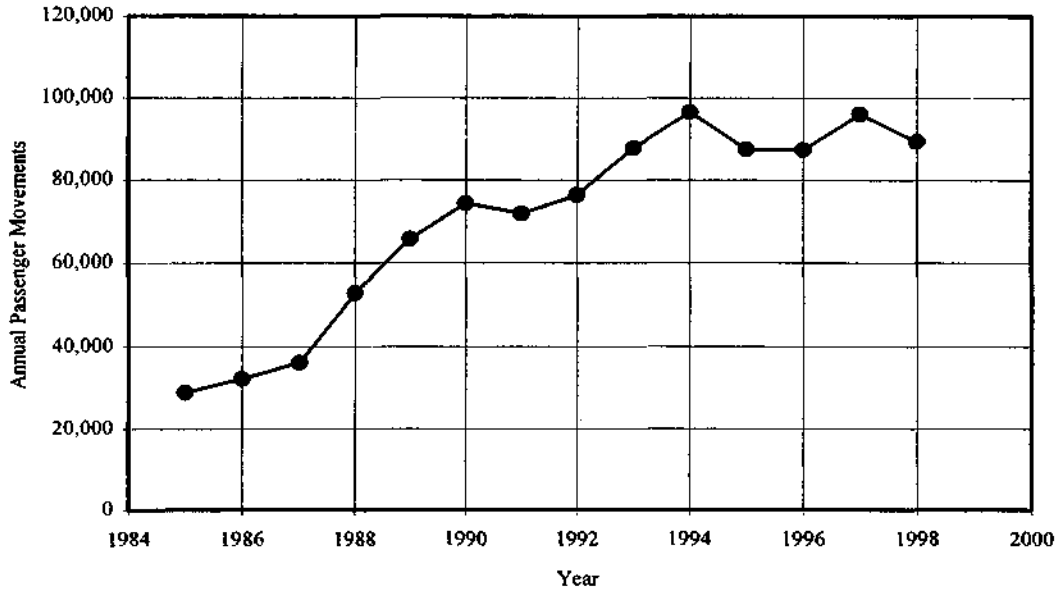
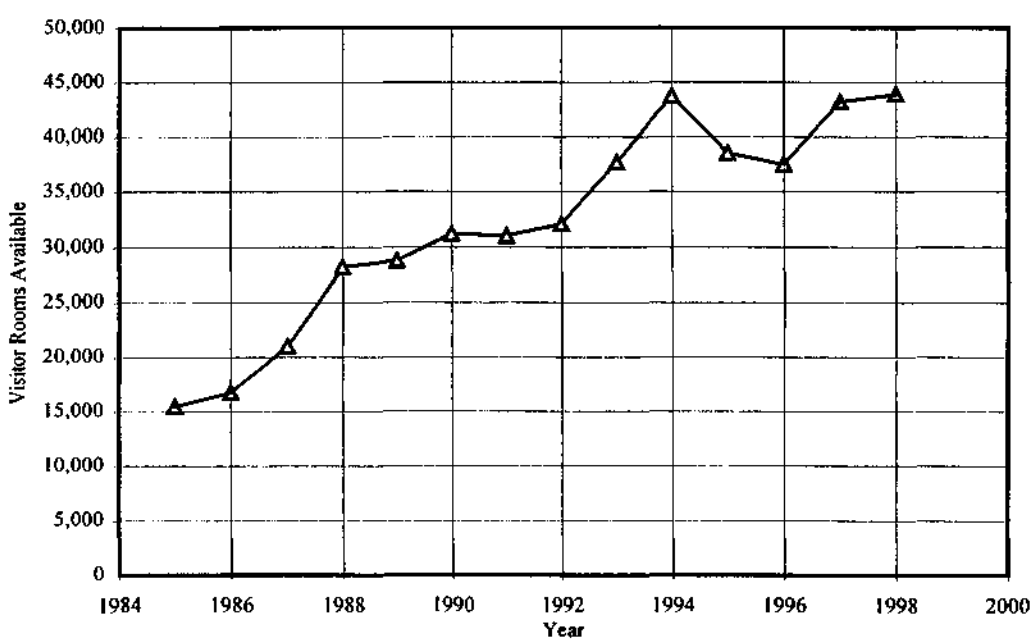


Figure 4.2
Recent Growth of Visitor Arrivals on Anguilla



4.2.4 Residents

Residents are not required to complete disembarkation cards on their return to Anguilla. The number of resident air passengers has therefore been derived as the difference between the total number of air passenger movements recorded by the airport and the number of visitor arrivals recorded by the Department of Immigration and published in the official tourism statistics⁴.

4.3 Journey Purpose and Length of Stay

Some 97.5 percent of all visitors (tourists and excursionists) arriving during 1998 by air and sea, stated 'vacation' to be the main purpose of their visit to Anguilla. Vacation has been the main purpose of visitors' journeys to Anguilla for the past twenty years but the percentage of visitors stating this to be their main purpose rose substantially in 1989 when the scheduled air service to San Juan was launched.

4.4 Tourism on Anguilla

4.4.1 General

Tourism is the main economic activity on Anguilla and accounts for more than half of total employment opportunities. On an island where there are no corporate or personal income taxes, tourism's contribution to government revenues via indirect taxes and duties also represent the single largest source of recurrent revenue.

4.4.2 Early Developments (1985-1992)

a) Tourism Development Plan 1985

The Government of Anguilla published an official plan for the development of tourism on the island in 1985 in which it set the following objectives for the tourism sector:

- To generate foreign exchange;
- To reduce unemployment; and
- To improvement living standards.

b) Growth in Tourism Between 1985 and 1992

Anguilla's economy achieved some of the highest growth rates recorded in the Caribbean during the late 1980s, largely as a result of investment in hotels, villas, and supporting infrastructure designed to attract up-market tourists. As a result of several major tourism and infrastructure projects, unemployment fell from 26 percent during the mid-1980s to less than 1 percent in 1990. However, economic growth rates decreased towards the end of the 1980s with the completion of several large projects.

⁴ Official sources of tourism statistics include the annual Statistical Review of Tourism and The Statistical Bulletin Quarterly Review of Selected Statistics both published by the Statistical Unit of the Ministry of Finance.

Annual tourist arrivals⁵ on Anguilla increased rapidly during the late 1980s and early 1990s, from 15,418 in 1985 to 32,076 in 1992, equivalent to an average annual growth rate of 11 percent.

4.4.3 Recent Developments (1992-1998)

a) Anguilla Strategic Review 1993

A report prepared by Mokoro⁶ in 1993 concluded that only 70 percent of visitors to Anguilla lived in paid accommodation and estimated the average annual occupancy rate for hotels to have been 45.5 percent in 1992, compared to a 'Caribbean average rate of 70 percent'. In view of these findings, Mokoro proposed the following objectives for tourism within the context of a wider development strategy for the island:

- To increase hotel occupancy rates from 45 percent to the Caribbean average, largely by improving occupancy outside the high season;
- To control development of new hotel facilities, at least until occupancy rates have increased;
- To promote the smaller accommodation units; and
- To encourage investment in support services generally but to restrict the issue of additional restaurant licences.

The Mokoro report also identified the following constraints on the further development of tourism on Anguilla:

- limited availability of labour;
- limited supply of development sites;
- limited supply of local capital; and
- limited access to the island by air

Within this context, Mokoro projected an average annual increase of five percent in the number of visitor rooms provided in villas and guesthouses from a base year figure of 384 units in 1992. It was also assumed that a further 200 rooms would be added to the island's then existing stock of 538⁷ hotel rooms by two new 100 room hotel projects in 2000 and 2005 respectively.

b) Tourism Marketing Plan 1995

⁵ The term tourist is used to describe visitors that stay on the island for one or more nights as compared with excursionists that visit the island but do not stay over.

⁶ Anguilla Strategic Review, Final Report, Volume 1, April 1993, Mokoro Limited.

⁷ 426 existing rooms plus 112 rooms under construction.

Coopers & Lybrand (Caribbean) Inc. prepared an Anguilla Tourism Marketing Plan and Promotion Programme in 1995. Their report identified Anguilla as one of a group of five similar small-scale, upmarket destinations within the Caribbean which as well as Anguilla, included Montserrat, Saba, St Eustatius and Nevis. Anguilla was shown to be the leading destination within this group both in terms of the total number of annual visitor arrivals and the quality of tourist accommodation provided. For example, some 53 percent of the 518 hotel rooms available on Anguilla at the time (1993) were in four of the world's internationally acclaimed high quality resort hotels.

The report identified the industry's current problems as:

- Low occupancy;
- A high level of dependency upon the U.S market; and
- A high degree of seasonality.

The C&L report showed that the number of tourist arrivals attracted by Anguilla would need to increase at a substantially higher rate than the island had achieved in the recent past if it was not to lose its dominant position within its small specialist segment of the tourism market.

Two alternative growth rates were projected for the period to 2000:

- Continued growth at the long-term historical growth rate of 5.9 percent, resulting in 56,251 annual tourist arrivals by 2000; and
- Accelerated growth at an annual average rate of 7.7 percent⁸, resulting in 87,500 annual tourist arrivals by 2000.

It was assumed that the number of visitor rooms available in 2000 would be 1,103 in both cases. The visitor projections implied an increase in average occupancy rates from 29 percent in 1992 to 43 percent by 2000 in the accelerated growth case, and 38 percent in the lower growth case. Both forecasts assumed an average stay of 7.4 nights.

c) Growth between 1992 and 1998

The total number of tourist arriving on Anguilla increased from 32,076 in 1992 to a record high of 43,705 in 1994. However, tourism was badly hit by the impact of Hurricane Luis in 1995 and tourist arrivals for the year fell by more than a third to 28,531. The island's tourist industry took two years to recover from the effects of the hurricane recording total tourist arrivals of 43,181 in 1997. The number of tourist visitors increased by less than two percent between 1997 and 1998.

4.4.4 *Current Situation and Future Prospects*

In terms of overall scale, Anguilla clearly has more in common with destinations such as St Kitts & Nevis for example, than with its larger neighbours of Antigua (191,000 visitors) and St Maarten (480,000 visitors).

⁸The average annual growth rate achieved by Nevis between 1989 and 1993.

Approximately two thirds of Anguilla's tourists originate in North America but the European market has been growing in recent years. The total number of visitors from other Caribbean islands has declined steadily over the past ten years or so from 37 percent in 1985 to 26 percent in 1995 and 16 percent in 1998.

The majority of tourist visitors to Anguilla are genuine tourists in that the primary purpose of their visit is to take a vacation. According to a survey of visitors carried out by the Caribbean Tourism Organisation (CTO) in 1993/94, this segment of the market (including a small proportion of honeymoon visitors) accounted for just under 80 percent of stay-over visitor arrivals. Business visitors accounted for 10 percent of all arrivals and mixed business/vacation for 5 percent. Only 5 percent of arriving visitors described the purpose of their visit to be 'Visiting Friends and Relatives' (VFR).

The proportion of visitor rooms available in resort hotels has increased since the CTO survey was undertaken 1993/94 and it is likely that the total proportion of visitors arriving on Anguilla purely to take a vacation is also higher now than it was then.

Most visitors were found to remain on Anguilla for around seven days although those visiting for business purposes tended to stay for a shorter period of 3-4 days. It is interesting to note that Mokoro concluded that VFR traffic was entirely made up of visitors from other Caribbean states who stayed on Anguilla for approximately twice as long (15 days) as the average visitor. The CTO found that only 5 percent of Caribbean visitors identified VFR as the purpose of their visit and that on average, Caribbean visitors stayed on Anguilla for approximately half the time (3.8 days) of all visitors.

The key characteristics of tourist visitors identified by the CTO survey are summarised in Table 4.3.

**Table 4.3
Characteristics of Tourist Visitors to Anguilla in 1993/94**

Journey Purpose	Percentage	Average Stay
Vacation	76 %	7.6 days
Business	10 %	3.2 days
Business/Vacation	5 %	7.4 days
Visiting Friends & Relatives	5 %	6.6 days
Honeymoon	3 %	6.5 days
Other	1 %	12.9 days
Total	100 %	6.9 days

Source: Tables 6 and 20, Anguilla Visitor Survey, Winter 1993/94, Caribbean Tourism Organisation.

CTO's survey showed that the majority of tourist visitors elected to stay in hotels. The main exceptions were visitors from Canada, who were split almost equally between hotels and villas/apartments, and visitors from other Caribbean states, who were spread fairly evenly across hotels, villas/apartments, guest houses and friends/relatives. This latter point again contradicts Mokoro's working assumption that all Caribbean visitors are VFR and stay in the homes of friends or relatives.

The distribution of visitors by the type of accommodation chosen is summarised in Table 4.4.

Table 4.4
Accommodation Chosen by Tourist Visitors to Anguilla in 1993/94

Residence	Hotel	Villa/Apart	G. House	Friend/relative	Other
United States	73 %	20 %	-	5 %	2 %
Canada	47 %	42 %	7 %	4 %	-
United Kingdom	74 %	20 %	-	6 %	-
Europe	71 %	10 %	11 %	8 %	-
Caribbean	27 %	20 %	22 %	29 %	2 %
Other	64 %	9 %	5 %	22 %	-

Source: Table 19, Anguilla Visitor Survey, Winter 1993/94, Caribbean Tourism Organisation.

Both the Mokoro and the C&L reports identified low average occupancy rates as one of the key weaknesses of Anguilla's tourism industry. Mokoro estimated the average annual occupancy rate of Anguilla's major hotels during 1992 to be of the order of 45 percent. The average occupancy rate across the full range of paid visitor accommodation was less than 30 percent. Coopers & Lybrand estimated the average annual occupancy rate for the following year (1993) to be 29 percent.

Discussions carried out in connection with the current study reveal a typical annual occupancy rate for the main hotels on Anguilla to be of the order of 50-55 percent, which is acknowledged to be at least 10 percent below the rate achieved elsewhere in the Caribbean. However, the very low occupancy rates quoted for Anguilla as a whole appear to arise because of the very low rates achieved by villas, apartments and guesthouses.

Table 4.5
Estimated Increase in Annual Occupancy Rates Achieved by Paid Tourist Accommodation Between 1993 and 1998

Category	1993	1998	Increase
Hotel	40%	51%	11%
Villa/apartment	19%	24%	5%
Guest House	17%	21%	4%
Total	30%	39%	9%

Source: W.S. Atkins analysis.

The uncertainty surrounding occupancy rates appears to be due to differences in the average stay reported in Anguilla's tourism statistics and the results of independent surveys of tourists, such as that carried out by the Caribbean Tourism Organisation in 1993/94.

Tourism statistics cite an average stay of 9.2 in 1998 (average stay has only varied between 9.2 and 9.7 over the six years to 1998). This data is based upon on visitors' intended length of stay as reported by the Immigration Department. The detailed survey of tourists visiting Anguilla in 1993/94 found an average length of stay for visitors using paid accommodation of 7.6 days. Mokoro and Coopers & Lybrand also used similar figures in their calculations of the average occupancy of paid tourist accommodation.

Since the current study is primarily concerned with the growth of commercial tourism, the shorter average stay of 7.6 days has been adopted for all tourists staying in paid accommodation.

4.5 Potential Constraints Imposed by the Existing Airport

4.5.1 General

This section discusses the constraints on access to Anguilla by air as currently perceived by Government, the Tourist Board and major hotels on the island. Based on these considerations, it develops passenger traffic forecasts for a Do Minimum Case which attempts to project the likely future growth of tourist arrivals and air passenger traffic at the existing Wallblake Airport if the airport were simply to be maintained and operated up to the limit of its existing capacity.

4.5.2 Operational Constraints of Wallblake Airport

Anguilla's existing Wallblake Airport has a runway with declared take-off and landing distances of 1,097 metres. This distance is too short to allow the 44 seat ATR-42 aircraft operated by American Eagle Airlines to operate to and from San Juan at maximum payload in all conditions. In dry weather, the aircraft operates with a four-seat payload penalty. This payload penalty increases to 16 seats when the runway is wet.

American Eagle is re-equipping with 35-50 seat regional jet aircraft in various key markets of the mainland United States. Many of the airline's 66 seat ATR-72 aircraft are being re-deployed to the San Juan hub and will be used to serve American Eagle's extensive network of Caribbean destinations. When runway extension works at BVI's Beef Island Airport are completed in two years time, Anguilla will be the only American Eagle destination in the region that cannot accommodate the larger ATR-72 aircraft at commercially acceptable seat load factors. If it were to operate into Anguilla, the ATR-72 would incur a payload penalty of 14 seats under all conditions.

The existing passenger terminal at Wallblake Airport was designed to accommodate passengers from two BAe 748 aircraft simultaneously i.e. approximately 90 arriving or departing passengers. The existing terminal's annual passenger handling capacity at a reasonable level of service is considered to be of the order of 100,000 passenger movements (arrivals + departures). Maximum annual capacity is judged to be 150,000 annual passenger movements

4.5.3 Implications for Scheduled Air Services

American Eagle is clearly not going to say that it will withdraw services to Anguilla if the island's airport is unable to accept the ATR-72 but there are precedents, albeit on a slightly smaller scale. American Eagle used to operate a fleet of 19 seat CASA 212 passenger aircraft out of San Juan to destinations such as Virgin Gorda in BVI. Services to Virgin Gorda were withdrawn when for wider fleet planning reasons, American Eagle decided to withdraw the CASA 212 from service in 1991. In any event, American Eagle could reasonably be expected to increase fares between San Juan and Anguilla if it was faced consistently by significant payload restrictions at Wallblake Airport.

LIAT, the only other scheduled airline of any size to serve Wallblake Airport, operates a fleet of De Havilland Canada DHC-8-100 and -300 aircraft throughout the Eastern Caribbean. The DHC-8 aircraft is much less demanding in terms of the take-off and landing distances required than the ATR-42 or -72. However, LIAT is jointly owned by the Governments of 14 Caribbean states and is better known for providing multi-stop services at relatively low frequencies rather than the type of high frequency feeder services that American Eagle has developed out of San Juan. Most informed people on Anguilla feel that the island's airport, whether it is Wallblake or a new one, must be able to accommodate American Eagle's ATR-72 aircraft.

4.5.4 *Will Enhancing Airport Facilities on Anguilla Make any Difference*

The Mokoro report of 1993 identified 'the limited airline access to Anguilla during the high season' as one of the four main constraints on the future growth of tourism. Two years later Cooper & Lybrand concluded that 'modest improvement in runway length at Anguilla might yield significant increases in visitor arrivals as larger aircraft would be able to use the facility'.

The report prepared by Scott Wilson in 1994⁹ examined a number of options to extend the runway at Wallblake Airport. The most ambitious proposal would have extended the runway to 1,465 metres and would have allowed the ATR-72 to operate between Anguilla and San Juan in all reasonable conditions without incurring a payload penalty. However, by contrast with both Mokoro and C&L, Scott Wilson concluded that none of the runway extension options proposed could be judged to be economically viable because they would have no impact the number of tourists visiting Anguilla in the future.

The current study argues differently. Firstly, according to a cross-section of the island's leading hoteliers, Anguilla is thought to be losing tourists to competing destinations. Having booked their accommodation at one of the island's hotels, potential visitors are unwilling to join a long wait-list for the short flight from San Juan in the hope that a seat will become available before they wish to travel.

The majority of the visitors to Anguilla are independent travellers rather than package tour customers. They are therefore responsible for arranging both their accommodation and their flights. Prospective visitors from North America will generally reserve their accommodation first and then try to book suitable flights through American Airlines' San Juan hub. Hotel owners report that seats between San Juan and Anguilla are often wait-listed during the tourist season, i.e. demand for the flights exceeds supply and prospective travellers join a queue with no guarantee of obtaining flights to tie in with their hotel booking. Faced with this uncertainty, many potential visitors are reported to switch to competing destinations with more reliable access links.

According to Anguilla's major hotels, American Eagle's promise to put on extra flights if the demand is there misses the point – potential visitors are diverted away from Anguilla because airline seats cannot always be guaranteed when hotel reservations are made.

⁹ See Section 3

A second consideration is that American Eagle's Caribbean operation wishes to standardise on the ATR-72 and if this aircraft cannot be operated profitably into Anguilla, there is the risk that Anguilla may be dropped from the airline's Caribbean network. Other smaller airlines may step in to serve the route using smaller aircraft but the undoubted advantage American Eagle enjoys by being part of the United States' largest airline, in terms of computerised booking, ticketing, market presence etc, will be lost. Travelling to San Juan and hoping to pick up a flight on a small Caribbean carrier is clearly going to be less attractive to first time visitors from the United States than booking all the way through on American Airlines from New York or Chicago.

Evidence dating from the last time the airport was upgraded in 1988 shows that the proportion of total visitors (not just tourists) arriving in Anguilla by air increased substantially (from 14 percent to 22 percent) when Wallblake Airport was redeveloped in 1988 and American Eagle began its service between Anguilla and San Juan. Although there are some constraints on access by air at the present time, any further development of airport facilities and services is likely to have a less marked impact on the air mode share. It should however, still be positive.

4.5.4 *Why St Maarten is Not an Adequate Substitute*

The major hotels on Anguilla do not consider St Maarten to be a suitable replacement for the limited access to Anguilla. Although residents and visitors familiar with the island are aware of the options offered by St Maarten, most new visitors want as seamless a journey as possible, i.e. either a direct flight from the United States or failing that, a flight through a major US hub such as San Juan.

Anguilla's most prestigious hotels are emphatic that St Maarten is not an adequate substitute for an airport that will continue to enable Anguilla to be served directly from San Juan at least and in the longer term from major hubs in the southern United States. However, the Italian experience shows that a proportion of passengers, particularly those from Europe may access Anguilla through St Maarten. Independent travellers, particularly those already familiar with Anguilla, are also more likely to use the ferry between Anguilla and St Maarten to connect with medium or long haul flights to the United States and Europe. By doing so, European travellers will by-pass the often time-consuming immigration procedures that even transit passengers are required to complete at San Juan.

There is also a suspicion that current constraints on airline capacity to and from Anguilla may be causing some passengers to use St Maarten. However, according to the major hotels, pressure on the availability of direct flights to Anguilla is more likely to dissuade potential tourist from visiting Anguilla altogether.

4.5.6 *Likely Impact of the Do-Minimum Option on the Development of Tourism*

Anguilla is likely to attract only a limited amount of additional tourist-related development if improvements are not made to the island's accessibility by air. In round terms this is expected to mean a modest increase in the number of hotel rooms by just over one third, from 1,122 in 2000 to 1,522 by 2015. Average occupancy is projected to increase over the forecast period but at a fairly modest rate, from 50 percent at present to 56 percent by 2015. No change has been assumed in the average length of stay of 7.6 days. These assumptions result in total tourist arrivals of 71,068

by 2015, representing a 62 percent increase over 1998. By 2015, the total number of annual air passenger movements at Wallblake Airport in the Do-Minimum scenario would be 137,497, representing a 54 percent increase over 1998 traffic levels.

Detailed Do Minimum forecasts are derived alongside the With Project forecasts in the following section.

4.6 Future Growth of Tourism if Constraints on Access by Air are Relaxed

4.6.1 General

Anguilla wishes to retain its reputation and position as an up-market destination, which implies low density, high quality, high yield developments at a level which the island can sustain without compromising the environment or importing unacceptable numbers of immigrant workers and the social problems and costs that this implies. A frequently repeated observation is that 'Anguilla does not want to become like St Maarten'.

Dutch St Maarten is smaller than Anguilla (31 sq. km compared to Anguilla's 91 sq. km) and at one time was probably considerably to be more attractive with wooded hills and picturesque bays. However, now it is home to more than 4,900 hotel rooms and handled 458,500 stay-over tourist visitors in 1998¹⁰. It only takes a short visit to St Maarten to appreciate the characteristics of Anguilla that enable it to be promoted as an up-market destination.

If Anguilla were to attempt to become another St Maarten, it would have to compete with the large number of empty hotel rooms already on St Maarten and high volume, low yield destinations such as the Dominican Republic. A number of Anguilla's most prestigious hotels consider that any significant expansion into the high volume, low yield tourist market would undermine Anguilla's existing tourist product. The forecasts reported here therefore assume a continuation of the modest historical growth of high quality tourism development on Anguilla. In common with the projections prepared by Mokoro and others, the future growth of tourism on Anguilla has been assumed to result from a prudent combination of new, high quality accommodation and better use of existing tourist facilities.

Discussions have been held with government departments, the tourist board and a cross-section of Anguilla's leading hoteliers, some of whom are long-established whilst others represent companies that have invested in the island very recently. The predominant view to emerge from these discussions was that the development of high-density tourism along the lines of St Maarten is seen as neither desirable nor appropriate for Anguilla. Projections of potential visitor arrivals in a high density tourism scenario have therefore only been developed in order to explore the scale of development that would be needed to support a major new long haul airport such as that proposed by French developers at Brimegin.

¹⁰ Advanced copy of tourism statistics to be published in Caribbean Tourism Statistical Report 1998, Caribbean Tourism organisation.

4.6.2 *Tourist Accommodation and Occupancy Rates*

4.6.2.1 Tourist Accommodation

With the opening of the new Cuisinart Hotel during the final quarter of 1999, there are now some 1,122 tourist rooms available on Anguilla. Of this total 680 (61 percent) will be provided in hotels, 411 (37 percent) in villas or apartments and 46 (2 percent) in guesthouses.

The total number of visitor-rooms available has increased by 30 percent since 1991 but virtually all of this growth has taken place within the hotel sector. The trend is illustrated in Figure 4.3.

Anguilla's tourism season essentially runs from November to April. The concentration of traffic within this six-month period is largely dictated by weather and the range of other attractions available to the island's predominantly US clientele outside this period.

As a result of discussions held with interested parties on Anguilla and an assessment of the Caribbean tourist industry as a whole, it has been assumed that an additional 50 visitor-rooms will be provided by winter 2000 with a further 50 rooms a year on average between 2001 and 2015. This assumption would result in a total of 1,922 tourist rooms by 2015, equivalent to an average annual increase of 3.4 percent over the intervening 16 years. Growth on this scale would represent the equivalent of one large hotel, by Anguillan standards, every two years. Discussions with existing major hotel owners on Anguilla suggest that this level of growth could be accommodated without compromising the quality of product offered by their own establishments or by Anguilla as a whole. The projections reflect the experience of recent years, which suggests that the majority of this new accommodation will be provided in hotels rather than in villas or guesthouses.

The projected growth in visitor rooms is illustrated in Figure 4.4, which also shows alternative low and high growth assumptions based on average annual provision of 40 and 70 new visitor rooms respectively. Alternative projections assume average annual increase in the number of tourist rooms of 40 (low) and 80 (high) resulting in 1,762 and 2,322 rooms respectively by 2015.

Figures 4.5 and 4.6 compare the total number of tourist rooms per square kilometre for Anguilla in 2005, 2010 and 2015 with corresponding statistics for selected Caribbean destinations in 1998. Both figures show that even with the growth in tourist accommodation projected over the period to 2015, Anguilla would remain a low-density destination

4.6.2.2 Average Occupancy

At an estimated 50 percent, the average occupancy rate for tourist accommodation on Anguilla is currently lower than the 65 percent average achieved by reporting Caribbean destinations as a whole.

Occupancy is measured in percentage terms as the ratio of visitor nights to available bed nights. It is therefore determined not only by the number of visitors to Anguilla each year, but also by the average length of stay and the number of twin rooms

occupied by single persons. In practical terms, it is also influenced by the extent to which hotels and other interested parties can extend Anguilla's traditional November to April season.

Figure 4.3
Recent Growth of Visitor Rooms Available on Anguilla

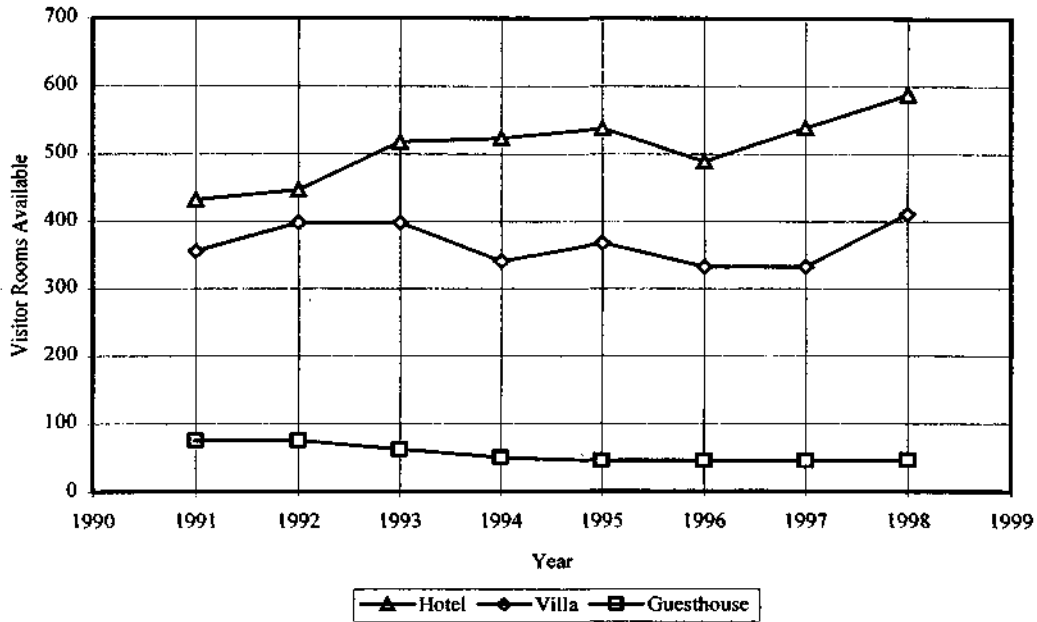


Figure 4.4
Projected Growth of Visitor Rooms Available on Anguilla

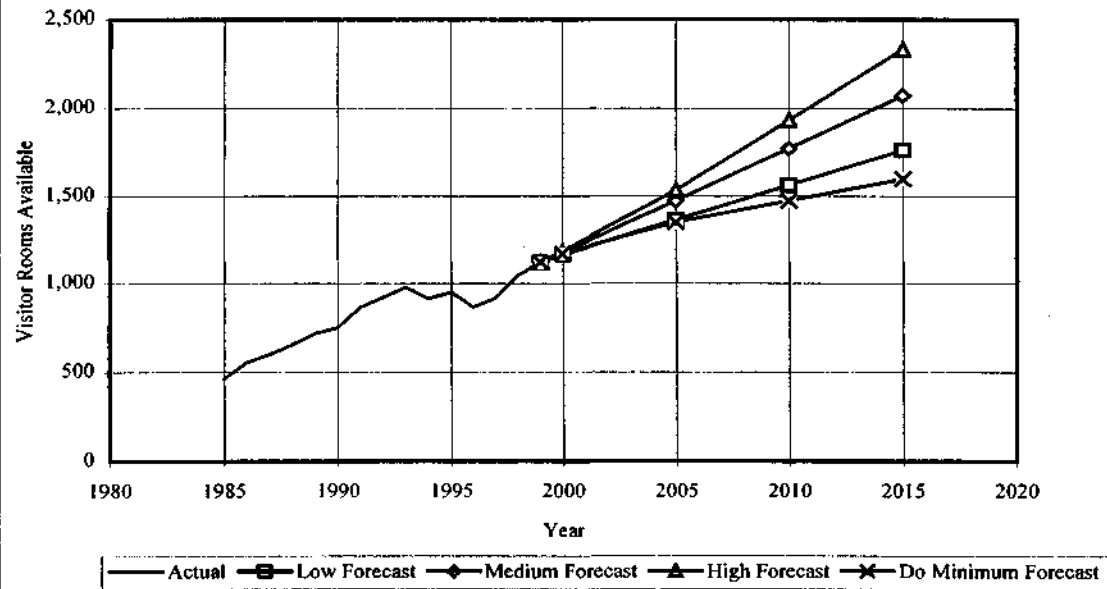


Figure 4.5
Tourist Rooms Available at Selected Caribbean Destinations

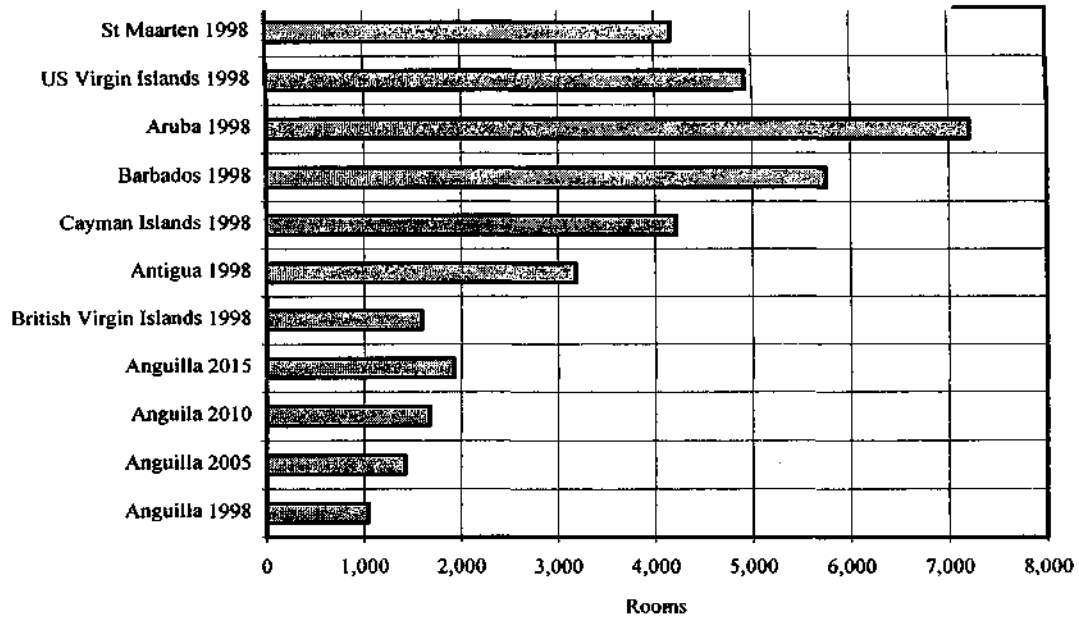
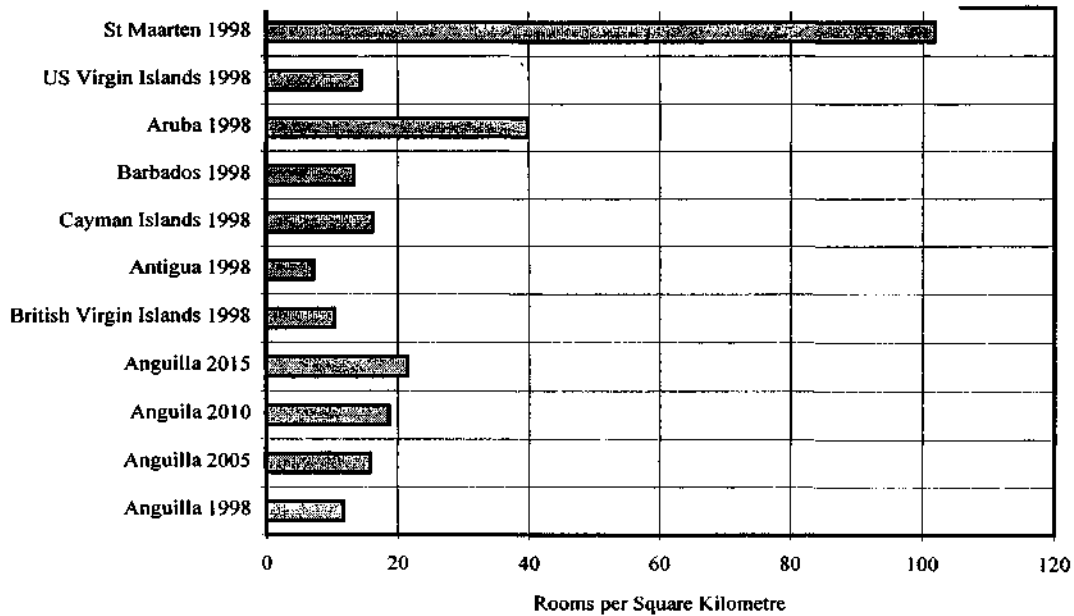


Figure 4.6
Density of Tourist Rooms at Selected Caribbean Destinations



The average occupancy rate for paid tourist accommodation on Anguilla in 1998 is estimated to have been of the order of 53 percent. The corresponding figure for 1999 is likely to be very similar since the numbers of available rooms and visitor arrivals¹¹ are both expected to increase by approximately 10 percent. Occupancy rates for Anguilla have ranged from a high of 62 percent in 1994 to a low of 46 percent in 1992.

Anguilla's occupancy rates are low by the comparison with other Caribbean destinations. Some hoteliers attribute this in part at least to constraints on the island's accessibility by air. It has been assumed that with an enhancement of the airport's capabilities and the general increase in the scale of the tourism market on Anguilla, there will be a modest increase in average occupancy levels over the next 15 years to reach 65 percent by 2015. The low and high forecasts assume an increase in average occupancies to 60 percent and 70 percent respectively by 2015. In the Do-Minimum case, average occupancy has been assumed to reach 56 percent by 2015.

Given that the forecasts are based on the continued development of Anguilla's existing tourism product, no change has been assumed in the average length of stay on the island, which has been held constant at 7.6 days over the forecast period.

Table 4.6 summarises the forecast growth in tourist nights spent on Anguilla over the period to 2015 that result from the assumptions made concerning the increase in visitor rooms and average occupancy rates.

**Table 4.6
Forecast Tourist Nights Spent on Anguilla from 1998 to 2015
In Thousands**

Year	Actual	Forecast			
		Do Minimum	Low	Medium	High
1993	258	-	-	-	-
1998	300	-	-	-	-
2000	-	339	339	341	343
2005	-	396	430	448	475
2010	-	440	520	569	630
2015	-	486	617	703	794
Average Annual Growth Rate		2.9%	4.3%	5.1%	5.9%

Source: W.S. Atkins analysis.

¹¹ Based on the number of visitor arrivals recorded during the first half of 1999 compared to the corresponding period in 1998.

Figures 4.7 and 4.8 illustrates the projected growth of tourist arrivals on Anguilla in terms of two standard measures of tourism development:

- Tourism Density Ratio (TDR), defined as:

$$\frac{\text{Number of visitors x Average Length of Stay}}{\text{Area in Square Kilometres x 365}}$$

- Tourism Penetration Ratio (TPR), defined as:

$$\frac{\text{Number of Visitors x Average Length of Stay}}{\text{Mid-year Population x 365}}$$

These figures demonstrate again that even with the projected growth in tourist arrivals, Anguilla will remain a comparatively low-density tourist destination throughout the forecast period.

Figure 4.7
Tourism Density Ratio - Low Density Tourism Scenario

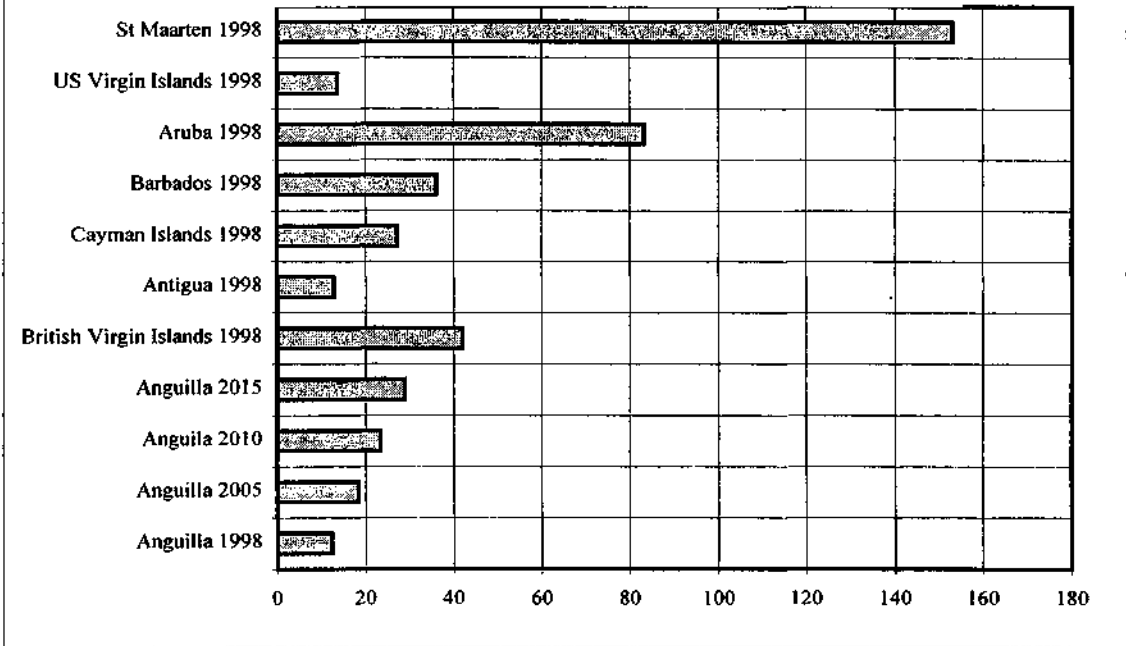
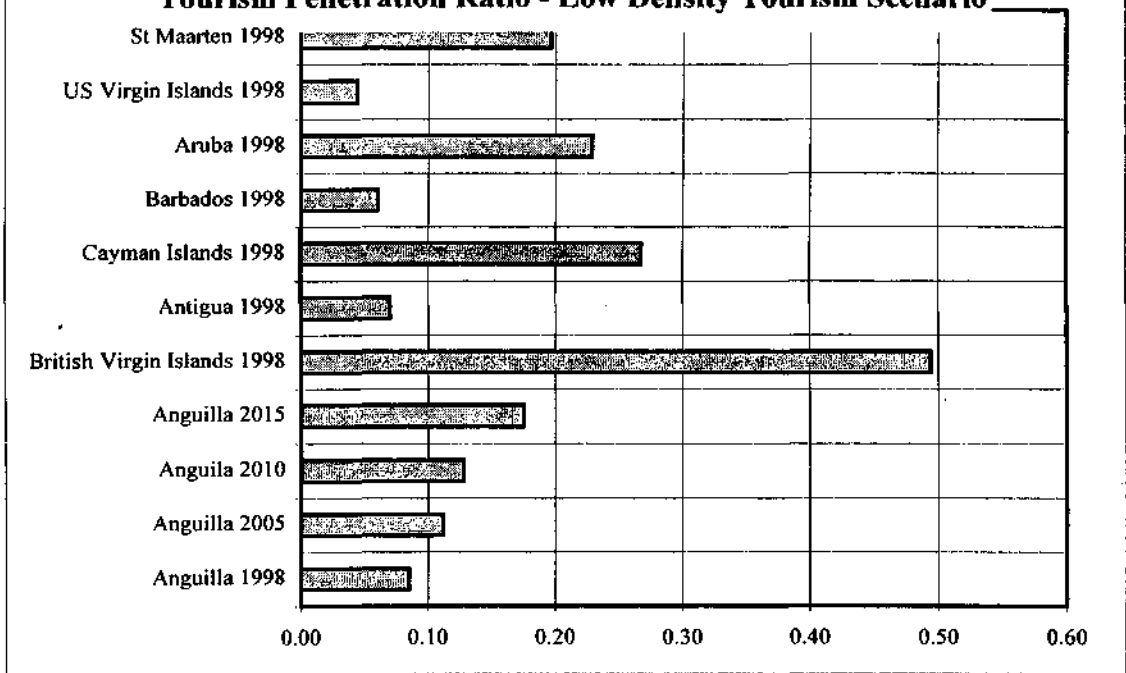


Figure 4.8
Tourism Penetration Ratio - Low Density Tourism Scenario



4.6.3 *Future Growth in Visitor Arrivals*

4.6.3.1 *Tourist Arrivals*

The projected growth in tourist arrivals is effectively defined by the assumptions outlined in the previous section in respect of the future provision of tourist accommodation and average occupancy rates. At an average occupancy of 65 percent, each two-bed room will generate 474.5 tourist-nights or approximately 62.5 tourist arrivals assuming a typical average stay of 7.6 nights.

On this basis, the central forecasts indicate an increase in annual tourist arrivals from 43,874 in 1998 to 65,500 in 2005 rising to 102,800 by 2015. This would be equivalent to an average annual increase of 5.1 percent between 1998 and 2015, which is slightly higher than the historical average over the past ten years but substantially lower than the average rate of 8.4 percent achieved between 1985 and 1998. Details are set out in Table 4.7.

Table 4.7
Forecast Tourist Arrivals in Anguilla
Low Density Tourism Development Scenario
In Thousands

Year	Actual	Forecast			
		Do Minimum	Low	Medium	High
1988	28.2	-	-	-	-
1993	37.7	-	-	-	-
1998	43.9	-	-	-	-
2000	-	49.8	49.6	49.8	50.1
2005	-	57.9	62.8	65.5	69.6
2010	-	64.4	76.0	83.2	92.1
2015	-	71.1	90.3	102.8	116.1
Average Annual Growth Rate		2.9%	4.3%	5.1%	5.9%

Source: W. S Atkins analysis.

4.6.3.2 *Excursionists*

Excursionists are persons who visit Anguilla but do not spend a night on the island. Their numbers will be influenced mainly by the growth of tourism on neighbouring islands, particularly St Martin/St Maarten, which is linked to Anguilla both by air and by high frequency sea ferry services.

The number of excursion visitors arriving in Anguilla has tended to rise and fall in sympathy with the number of tourist arrivals in St Maarten, particularly over the period since 1995 when Hurricane Luis struck the two islands.

Projected future growth in excursion visitors to Anguilla has therefore been based on the expected growth of tourist arrivals in St Martin/St Maarten. This has been set at an average annual rate of 3 percent per annum with alternative low and high growth assumptions of 2 percent and 4 percent respectively. The central growth rate of 3 percent is compatible with the average annual growth rates underpinning the current plans to develop the island's Princess Juliana International Airport.

These assumptions imply an increase in excursion visitors from 69,900 in 1998 to 114,400 by 2015¹² of which only a very small proportion would travel by air.

4.7 Impact on Employment and Resident Population

Unemployment on Anguilla is very low even allowing for the seasonal nature of tourism-related activities. Any further substantial expansion of the island's tourism sector would therefore require significant numbers of suitably qualified ex-patriate workers.

Discussions with some of Anguilla's more up-market hotels reveal staff to room ratios of between three and four. For each hotel job created, there may be another one per room created in supporting activities outside the hotel. This is lower than the number of external jobs observed in some other Caribbean destinations and reflects the low level of tourism infrastructure outside Anguilla's major hotels and beach resorts.

The number of jobs created by new rooms in guesthouses and villas is likely to be much lower than for hotels. Details of the assumed employment requirements for each category of visitor accommodation are summarised in Table 4.8. The average number of incremental jobs per hotel room or other unit of tourist accommodation is in agreement with the assumptions adopted by Mokoro.

**Table 4.8
Employee Requirements per Tourist Room
Low Density Tourism Development Scenario**

Description	Hotels	Guest Houses	Villas
Direct Jobs	3	0.5	0.5
Indirect Jobs	1	0.5	0.5
Total Jobs	4	1.0	1.0

Source: W. S Atkins assumptions.

The Anguilla Tourist Board is keen to ensure that any new jobs created by the expansion of tourism on Anguilla will be open to belongers or at least to the island's existing residents and their children. However, despite a 29 percent increase in Anguilla's de-jure population between 1993 and 1998 resulting from significant levels of immigration, the underlying growth of Anguilla's resident population is very modest. Based on raw data for births and deaths, it may have been as low as 0.7 percent per annum over the past five years. If the resident workforce were to increase at the same low rate as the long-term resident population, Anguilla will need a significant number of expatriate or immigrant workers to support the projected growth in tourism. Mokoro assumed a immigrant population growth of 1 percent per annum and this assumption has also been adopted for the current study.

A proportion of the imported workers is likely to be accompanied by wives and dependants. It has been estimated that some 930 workers would need to be imported by 2005 of which 30 percent may be accompanied by an average of 2.0 dependants. This would add an additional 1,486 persons to the long-term resident population of 13,288. The new workers and their dependants would represent just over 10 percent of the total population in 2005. By 2015, the number of incremental workers required

¹² Alternative low and high average annual growth rates of 2 percent and 4 percent imply annual excursion visitors of 96,948 and 134,891 respectively by 2015.

would rise to 1,916 with some 1,534 of dependants. Anguilla's total population would be 18,127 thousand of which 19 percent would be newcomers attracted by the growth in tourism and related business activity on the island.

Details of the forecast increase in employment and population associated with the forecast growth of tourist accommodation and arrivals are set out in Table 4.9.

Table 4.9
Forecast Growth in New Immigrant Workforce and Population
Low Density Tourism Development Scenario

Year	New Immigrant Workers	New Immigrant Population	Total Population	Percentage of New Immigrants
Low				
1998	-	-	12,394	-
2000	411	616	13,259	4.6%
2005	854	1,366	14,655	9.3%
2010	1,289	2,192	16,157	13.6%
2015	1,716	3,089	17,767	17.4%
Medium				
1998	-	-	12,394	-
2000	423	635	13,278	4.8%
2005	929	1,486	14,775	10.1%
2010	1,427	2,425	16,391	14.8%
2015	1,916	3,449	18,127	19.0%
High				
1998	-	-	12,394	-
2000	436	654	13,297	4.9%
2005	1,004	1,606	14,895	10.8%
2010	1,564	2,659	16,625	16.0%
2015	2,116	3,809	18,487	20.6%
Do Minimum				
1998	-	-	12,394	-
2000	423	688	13,331	5.2%
2005	667	1,166	14,455	8.1%
2010	764	1,433	15,399	9.3%
2015	853	1,707	16,385	10.4%

Source: W. S Atkins analysis.

The Anguilla Tourist Board and other Government bodies are aware of the employment implications of increased tourism but point out that there are a large number of Anguillans living abroad in North America and the United Kingdom who actively maintain links with the island through Anguillan community associations. A proportion of the additional workers that would be required to support the projected increase in tourism may be drawn from these expatriate communities.

The incremental workers and their dependants will contribute to the demand for air services from Anguilla's growing resident population.

4.8 Future Demand from Residents

There are two source of future internal growth for air passenger traffic generated by Anguillan residents:

- Increasing population; and
- Increasing prosperity.

The likely increase in Anguilla's resident population resulting from the natural expansion of the existing population and migration has been considered in the previous section.

The other factor, increasing prosperity, can be measured in terms of GDP per capita. Government statistics show that GDP per capita declined steadily from a high of EC\$ 16,387 (1998 prices at factor costs) in 1994 to EC\$ 13,801 in 1998, presumably due largely to the damage caused to Anguilla's tourism industry by Hurricane Luis which hit the island during 1995. GDP per capita has not yet recovered to the pre Hurricane levels even though the total number of tourist arrivals recorded in 1997 matched the previous high of 1994.

The effect of increasing prosperity over the forecast period has been modelled in terms of a projected increase in the average Propensity to Fly¹³. Under the medium growth assumptions, this has been assumed to increase from the 1998 figure of 2.68 annual air passenger movements per resident to 3.10 by 2015. Applying this figure to the projected residential population results in an increase in the number of annual air passenger movements made by residents from 35,200 in 1998 to 41,500 in 2005 and 56,200 by 2015, equivalent to an average annual increase of 2.8 percent.

Similar average annual growth rates would be generated by an average increase in real GDP per capita of 0.5 percent per annum between 1998 and 2002 rising to 1.0 percent between 2005 and 2015 and an elasticity of demand with respect to GDP growth of 1.5.

Table 4.10 summarises the projected growth in air passenger movements between 1998 and 2015 in the Do-Minimum case and with low, medium and high growth assumptions.

¹³ Propensity to Fly (PTF) is defined as the average number of annual air passenger movements generated by residents per resident

Table 4.10
Projected Growth in Demand from Residents of Anguilla

Description	Population Growth	Increase in Propensity to Fly	Overall Growth
Do-Minimum			
1998 – 2005	2.2%	0.75%	3.0%
2005 – 2010	1.3%	0.75%	2.0%
2010 – 2015	1.2%	0.75%	2.0%
Overall	1.7%	0.75%	2.4%
Low Growth			
1998 – 2005	2.4%	0.75%	3.2%
2005 – 2010	2.0%	0.75%	2.7%
2010 – 2015	1.9%	0.75%	2.7%
Overall	2.1%	0.75%	2.9%
Medium growth			
1998 – 2005	2.5%	1.0%	3.6%
2005 – 2010	2.1%	1.0%	3.1%
2010 – 20015	2.0%	1.0%	3.1%
Overall	2.3%	1.0%	3.3%
High Growth			
1998 – 2005	2.7%	1.25%	3.9%
2005 – 2010	2.2%	1.25%	3.5%
2010 – 2015	2.1%	1.25%	3.4%
Overall	2.4%	1.25%	3.7%

Source: W. S Atkins projections.

4.9 Distribution of Passenger Demand between Air and Sea Links

4.9.1 Tourist Visitors

Some 72 percent of tourist visitors to Anguilla arrived and departed by air between 1994 and 1997. This percentage fell to 64 percent in 1998 as the result of Italian package tourists arriving on charter flights between Italy and St Maarten, who made the final journey to Anguilla by ferry.

However, the United States is Anguilla’s largest market and the island’s major hoteliers are adamant that St Maarten is not an adequate substitute for a capable airport on Anguilla itself. Although the distances are similar, the relationship between Anguilla and St Maarten is not the same as that between Tortola and Virgin Gorda for example, which form part of the same British dependency.

The medium growth forecasts for Anguilla are based on the assumption that the proportion of tourist visitors arriving by air increases from 60 percent between 1998 and 2000 to 67.5 percent by 2015. Alternative low and high growth projections assume an increase to 65 percent and 70 percent respectively. These assumptions implicitly acknowledge that existing capacity constraints at Princess Juliana International Airport on St Maarten will be relieved by the airport company’s phased development proposals.

4.9.2 *Excursion Visitors*

Less than two percent of excursion visitors arrived on Anguilla by air between 1994 and 1998. The size and type of aircraft that currently operate between Anguilla and neighbouring islands such as St Maarten, Antigua and St Kitts suffer no constraint on their operation at the existing Wallblake Airport. This fact together with the small numbers of passengers involved means that relatively simple projections of the future air mode share of excursion visitors will be sufficient for the purpose of the current study.

It has been assumed that the proportion of excursion visitors arriving by air will be a constant 2 percent of total excursion visitors in the Do-Minimum case and under the low, medium and high growth assumptions. This is slightly higher than the average of 1.8 percent recorded between 1994 and 1998 but lower than the peak figure of 2.3 percent recorded in 1996.

On this basis under the medium growth assumptions, the number of air passengers generated by excursion visitors is projected to increase from approximately 4,200 in 1998 to 4,600 by 2015.

4.9.3 *Resident Traffic*

This analysis has considered resident air traffic in isolation rather than in the context of total air and ferry traffic. The traffic growth rates developed in section 4.6 therefore represent the projected growth of resident air passenger traffic only.

4.10 **Future Growth of Air Passenger Movements**

The total number of air passenger movements on Anguilla is projected to increase from 32,500 in 1998 to 126,850 in 2005, 160,500 in 2010 and 199,600 by 2015. This represents an average annual increase of 4.8 percent over the 17 years from 1998 to 2015.

These projections are independent of but largely compatible with those produced by Scott Wilson Kirkpatrick in 1994, which envisaged some 199,000 annual passenger movements by 2015.

Alternative low and high growth assumptions result in total air passenger movements of 174,100 and 227,700 respectively by 2015.

Details of the forecasts are set out in Tables 4.11 and 4.12 and illustrated in Figures 4.9 and 4.10.

Table 4.11
Forecast Annual Air Passenger Movements in Thousands

Low Density Tourism Development Scenario

Year	Tourists	Excursion	Sub-total	Resident	Total
Low Forecast					
1998	55.8	2.1	57.9	31.5	89.4
2000	59.5	2.9	62.4	34.6	97.0
2005	75.3	3.2	78.5	40.5	119.0
2010	95.0	3.5	98.5	46.3	144.8
2015	117.3	3.9	121.2	52.9	174.1
Central Forecast					
1998	55.8	2.1	57.9	31.5	89.4
2000	59.8	2.9	62.7	34.9	97.6
2005	81.9	3.4	85.3	41.5	126.8
2010	108.1	4.0	112.1	48.4	160.5
2015	138.8	4.6	143.4	56.2	199.6
High Forecast					
1998	55.8	2.1	57.9	31.5	89.4
2000	60.1	3.0	63.1	35.1	98.2
2005	90.5	3.6	94.1	42.6	136.7
2010	124.4	4.4	128.8	50.5	179.3
2015	162.5	5.4	167.9	59.8	227.7
Do Minimum Forecast					
1998	55.8	2.1	57.9	31.5	89.4
2000	59.8	2.9	62.7	34.5	97.2
2005	69.5	3.4	72.9	39.9	112.8
2010	77.2	4.0	81.2	44.1	125.3
2015	85.3	4.6	89.9	48.7	138.6

Table 4.12
Forecast Growth in Annual Air Passenger Movements

Low Density Tourism Development Scenario

Year	Tourists	Excursion	Sub-total	Resident	Total
Low Forecast					
1998-05	3.3%	17.5%	3.8%	4.8%	4.2%
2005-10	4.8%	2.0%	4.7%	3.2%	4.2%
2010-15	4.8%	1.8%	4.6%	2.7%	4.0%
Overall	4.5%	3.7%	4.4%	3.1%	4.0%
Central Forecast					
1998-05	3.5%	17.5%	4.1%	5.3%	4.5%
2005-10	6.5%	3.2%	6.3%	3.5%	5.4%
2010-15	5.7%	3.3%	5.6%	3.1%	4.8%
Overall	5.5%	4.7%	5.5%	3.5%	4.8%
High Forecast					
1998-05	3.8%	19.5%	4.4%	5.6%	4.8%
2005-10	8.5%	3.7%	8.3%	3.9%	6.8%
2010-15	6.6%	4.1%	6.5%	3.5%	5.6%
Overall	6.5%	5.7%	6.5%	3.8%	5.7%
Do Minimum Forecast					
1998-05	3.5%	17.5%	4.1%	4.7%	4.3%
2005-10	3.1%	3.2%	3.1%	3.0%	3.0%
2010-15	2.1%	3.3%	2.2%	2.0%	2.1%
Overall	2.5%	4.7%	2.6%	2.6%	2.6%

Source: WSA analysis.

Figure 4.9
Forecast Annual Air Passenger Movements
Low Density Tourism Scenario

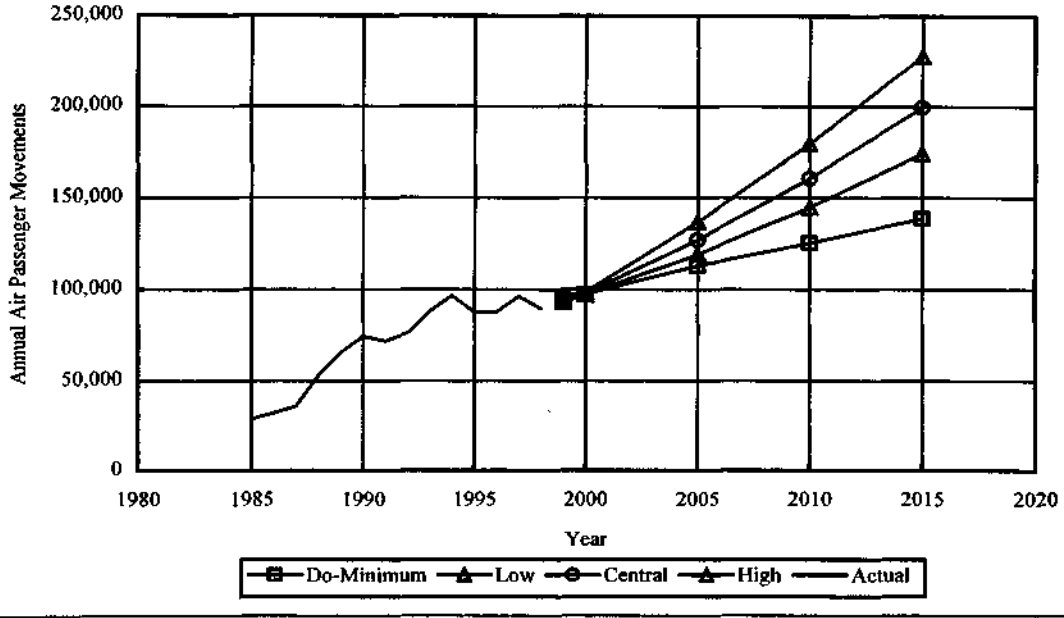
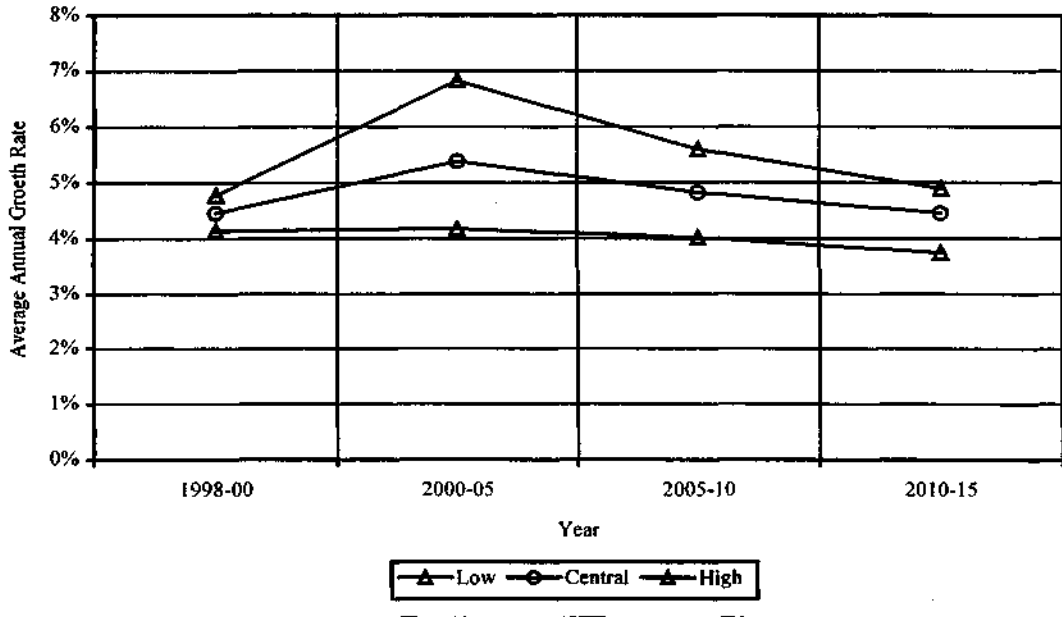


Figure 4.10
Forecast Annual Air Passenger Growth Rates
Low Density Tourism Development Scenario



4.11 Future Growth of Passenger Air Transport Movements

Airport movement (ATM's) will grow more slowly than the number of passengers, firstly because passenger load factors will increase and secondly as larger aircraft replace aircraft with few seats, as may well be the case in the medium term when the ATR72 replaces the ATR42 and the Dash-8-300.

For scheduled services, growth in ATM is likely to be 2-3 percentage points below forecast passenger growth rates and is not likely to be overly sensitive to changes in passenger growth rates, since if these turn out to lower the forecast the introduction of higher capacity aircraft is likely to be delayed and vice versa. Therefore, for the scheduled services, a central growth rate of 3.5% in ATM is assumed, with the low and high forecast sensitivity tests at $\pm 0.5\%$ or 3.0% and 4.0% up to 2005. After 2005, higher capacity aircraft will increase in use of the longer runway length available and growth rates of 2.0% (low forecast) 2.5% (medium) and 3.0%(high) are assumed.

For non-scheduled flights a smoother transfer from the lower capacity to the higher capacity aircraft types can fairly be assumed, since there will be no step function such as the 66 seat ATR replacing the 44 seat version, but a more gradual transition up through the 9-30 seat sizes. Therefore growth rates of 2.5%, 3.5% and 4.5% are used evenly throughout the period up to 2015.

Private aircraft flying in is also assumed to increase as tourism and business activities grow at Anguilla. They are currently constrained by runway length, as discussed elsewhere in the report, and a higher growth rate past 2005, when the longer runway is assumed to become operational, is used. Private aircraft increase is therefore assumed to be 3% (low) 4% (medium) and 5% (high) up to 2005, and thereafter 5%, 6% and 7%.

The results of these assumptions are given in Table 4.13 (a) (b) and (c).

**Table 4.13 (a)
Scheduled Air Transport Movements**

Year	Forecast		
	Low	Medium	High
1998 (actual)	6341	6341	6341
2000	6727	6793	6858
2005	7798	8067	8344
2010	8610	9127	9672
2015	9506	10326	11213

Table 4.13 (b)
Non-scheduled Air Transport Movements

Year	Forecast		
	Low	Medium	High
1998 (actual)	5733	5733	5733
2000	6023	6141	6260
2005	6815	7294	7802
2010	7710	8663	9722
2015	8723	10289	12115

Table 4.13 (c)
Private Flying Movements

Year	Forecast		
	Low	Medium	High
1998 (actual)	1152	1152	1152
2000	1222	1246	1270
2005	1416	1516	1621
2010	1808	2018	2273
2015	2307	2715	3188

4.12 The Likely Impact of a Major Upgrade in Airport Capability

4.12.1 General

It is clear from the scale of the forecasts developed above that the continued gradual development of Anguilla as an up-market tourist destination could be accommodated either by:

- a relatively modest increase in the capability of the existing Wallblake Airport; or
- the replacement of the existing airport by a new airport of similar capability to that of an upgraded Wallblake.

The airport envisaged by French developer CIEC Engineering, for the site at Brimegin would have an operational capability significantly greater than that of an upgraded or relocated Wallblake. With a 2,200 metre runway, large passenger aircraft such as the 200 seat Boeing 757 and 345 seat Boeing 767-300 would be able to fly into Anguilla directly from mainland United States. Later phases of the project envisage the extension of the runway to 3,200 metres, which would allow 440 seat Boeing 747-400 aircraft to fly directly to and from Europe.

CIEC Engineering's proposal for Brimegin would closely mirror the scale of facilities proposed for Princess Juliana International Airport on St Maarten following implementation of the final phase of that airport's master plan between 2005 and 2010.

With an initial capital cost estimated by the promoters to be of the order of US\$ 73 million (excluding land acquisition costs), an airport of this scale is unlikely to be justified by the relatively modest growth of tourist arrivals projected by the current

study. It would almost certainly require a significant and very early increase in the number of visitor rooms available on Anguilla. The airport's promoters also foresee that some 3-400,000 passengers a year would use the new airport to interline with flights to and from adjacent Caribbean destinations including St Martin/St Maarten.

It is not possible to adjust the forecasts developed above to take account of the very different operational capability of the airport at Brimegin as proposed by CIEC Engineering. It would need a complete change in the direction of Anguilla's tourism development strategy to generate enough traffic to render the project viable. The promoters acknowledge this fact and also the need for some very early large-scale hotel development to provide the new airport with an adequate revenue base.

The forecasts for a major new long haul airport, rather than a simple replacement of Wallblake Airport, have been taken from the report prepared by CIEC Engineering and are intended purely to illustrate the scale of traffic envisaged by the project's promoters. These projections will be used to test the financial and economic viability of the project in Sections 7 and 8. At that stage of the report, sensitivity tests will be used to identify the time profile tourist arrivals required for such a project to be judged viable. It then becomes a social and political question as to whether the scale of development required to accommodate these tourists is appropriate for Anguilla and acceptable to the people of Anguilla. CIEC Engineering's forecasts of passenger movements to be handled a major new airport at Brimegin are summarised in Table 4.17 and illustrated in Figures 4.11 and 4.12.

CIEC's forecasts are related to the commissioning date of the new airport rather than to any specific calendar year. A three-year construction period has been assumed to start in 2001 with the new airport being commissioned in 2004.

**Table 4.17
Passenger Forecasts Associated with the Proposal
for a Major New Airport at Brimegin**

Year	Total Visitor Rooms	Non-resident Air Passengers	Resident Air Passengers	Transfer Air Passengers	Total Air Passengers
1998	1,000	57.9	31.6	-	89.5
2005 (N+1)	2,400	499.2	11.9	300.0	811.1
2010 (N+6)	3,300	728.0	13.9	337.6	1,079.5
2015 (N+11)	3,800	790.4	16.1	391.3	1,210.0

Note: Forecasts assume a 3-year construction programme (2001-2002) with commissioning in 2004.

Source: New Anguilla Airport at Brimegin, Preliminary Technical and Economic Study Feasibility, CIEC Engineering, 1999.

Key features of the CIEC forecasts include:

- The rapid increase in tourist accommodation between 1998 and 2005; and
- The significant contribution of transfer traffic to total passenger throughput.

4.12.2 Implications of a High Density Tourism Development Scenario

The rapid increase in tourist accommodation that forms an integral part of CIEC Engineering's proposal for a major new airport at Brimegin would have a major impact on the nature of Anguilla's tourism product. The emphasis would change from low-density, up-market tourism to high-density and almost inevitably, lower yield tourism. The developer's proposal for Brimegin identifies a need for some 165 acres of land to accommodate the additional 3,300 hotel rooms to be provided within five years of the new airport's opening. A number of Anguilla's leading hoteliers have suggested that it would be difficult for them to maintain their own and Anguilla's premium status alongside such a rapid expansion of tourist accommodation.

The proposed change in the density of tourism on Anguilla and is illustrated in Figures 4.13 and 4.14 which summarise the change in Tourism Density Ratio and Tourism Penetration Ratio that would result from the expansion of tourist accommodation envisaged in CIEC Engineering's Brimegin proposal.

Figure 4.11
Forecast Annual Air Passenger Movements
High Density Tourism Development Scenario

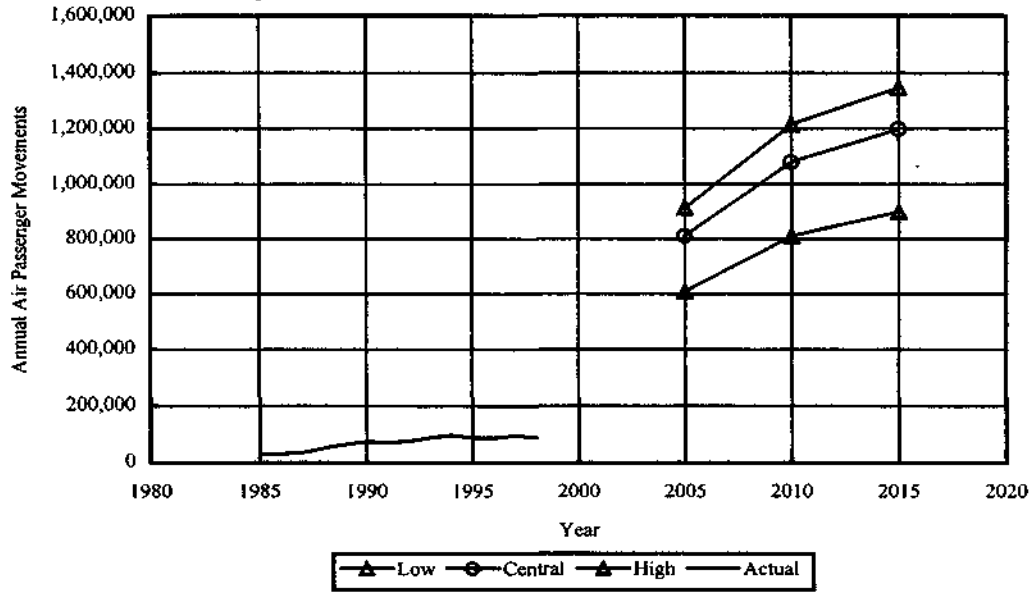


Figure 4.12
Forecast Annual Air Passenger Growth Rates
High Density Tourism Development Scenario

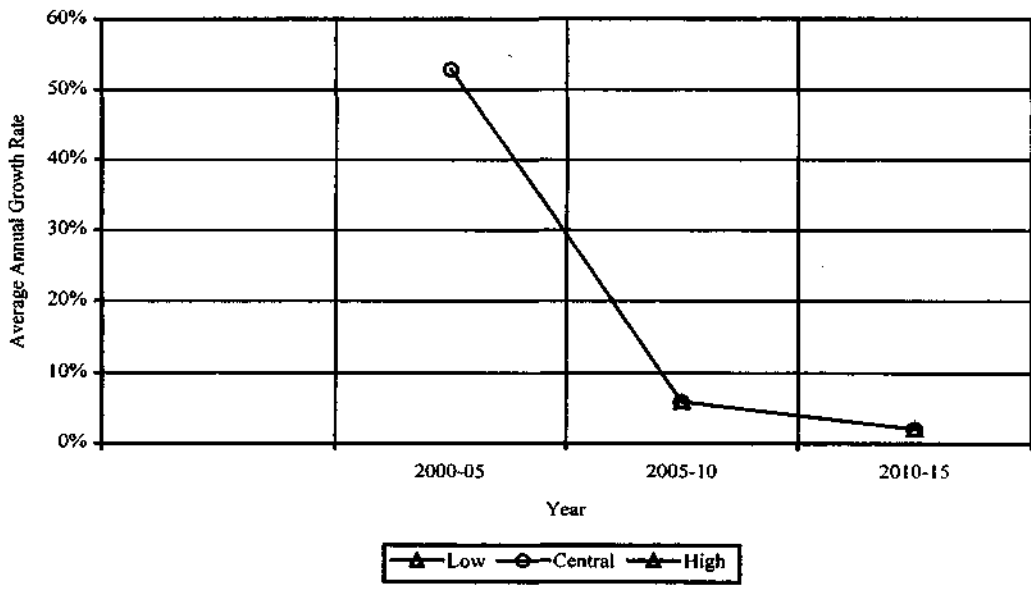


Figure 4.13
Tourism Density Ratio - High Density Tourism Scenario

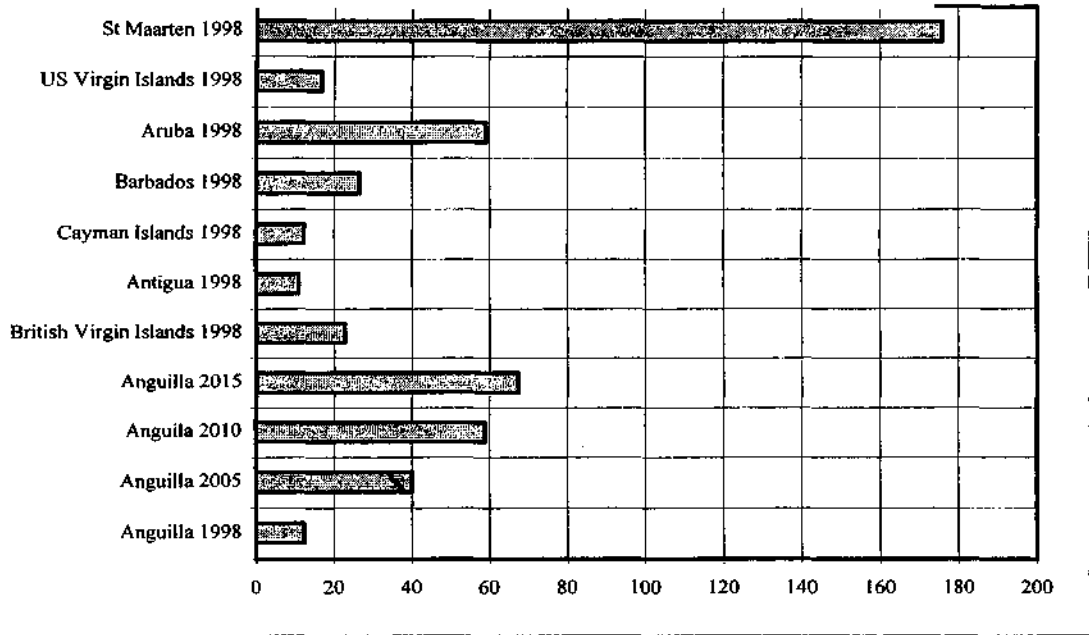
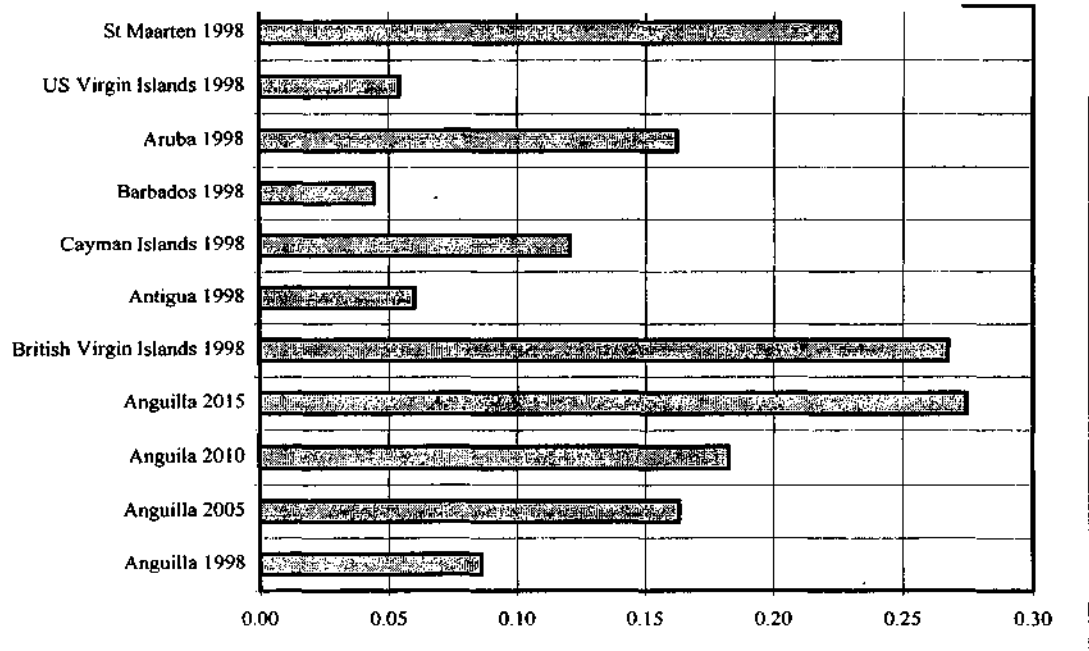


Figure 4.14
Tourism Penetration Ratio - High Density Tourism Scenario



A high-density tourism development scenario would also place very severe demands on labour, which could only be met by the importation of large numbers of immigrant workers. Even assuming that the ratio of incremental jobs per hotel room would be 3 for higher density, lower quality tourist accommodation rather than 4 for traditional accommodation, the influx of immigrant workers and their dependants would transform the demographic structure of Anguilla within 10-15 years of the new airport's opening. In the medium growth case, newcomers would outnumber Anguilla's existing population by 2015.

Details of the projected increase in employment and population associated with the forecast growth of tourist accommodation and arrivals are set out in Table 4.18.

**Table 4.18
Forecast Growth in New Immigrant Workforce and Population
High Density Tourism Development Scenario**

Year	New Immigrant Workers	New Immigrant Population	Total Population	Percentage of New Immigrants
Low				
1998	-	-	12,394	-
2005 (N+1)	3,564	5,703	13,592	30.0%
2010 (N+6)	6,007	10,211	23,731	42.2%
2015 (N+11)	6,642	11,956	26,138	44.9%
Medium				
1998	-	-	12,394	-
2005 (N+1)	5,439	8,703	21,592	39.6%
2010 (N+6)	8,769	14,908	28,427	51.6%
2015 (N+11)	9,692	17,446	31,628	54.3%
High				
1998	-	-	12,394	-
2005 (N+1)	7,314	11,703	24,592	46.8%
2010 (N+6)	11,532	19,604	33,124	58.4%
2015 (N+11)	12,742	22,936	37,118	61.0%

Note: Forecasts assume a 3-year construction programme (2001-2002) with commissioning in 2004.

Source: W. S Atkins analysis based on developer's proposed increase in hotel rooms.

5.0 DESCRIPTION OF WALLBLAKE AND BRIMEGIN SITES

5.1 Wallblake Site

The existing Wallblake airport is situated almost in the centre of the island of Anguilla, adjacent to the Valley where the majority of Governmental offices are located. The aerodrome reference position is 18°13' north, 63°13' West, with an elevation of 31m.

Runway

The airport has a single runway, 10/28, which is 1097m long and 30m wide with no shoulders. The pavement is of flexible construction with a grooved wearing course which was added in 1998.

The longitudinal profile of the runway is not conducive to airport operations since the far ends of the runway are not visible from the opposite thresholds. Indeed, because of the proximity of housing development to the (relatively) low 10 threshold, the landing threshold has had to be displaced to allow safe aircraft operations.

The runway is grooved but has crossfalls, slope running north/south at the thresholds and south/north over the central portion. No drainage is provided and the grooving is probably inadequate with 3mm deep x 5mm wide grooves at approximately 25mm centres. At the time of inspection, on 10/28, following hurricane José and a small tropical downpour, the thresholds were still very damp although the crown was dry.

The recently applied 40mm wearing course overlay is in good condition although the constituent aggregates appear to be a mix of basalt (imported reportedly) and limestone. There is much evidence of 'pop-outs' and the surface finish is quite coarse.

Apron and Taxiway

The apron is of flexible construction and measures 75m by 150m. A single taxiway connects the apron to the runway. Aircraft are parked on the apron on a self-manoeuvring basis. The Scott Wilson Kirkpatrick study of 1994 suggests that the present apron will be sufficient to service operational demand up to the year 2015, but that additional apron will be required to provide sufficient overnight parking space.

There is a small apron to the south of the runway, connected to it by an unsurfaced taxiway. This apron serves one old hangar which has become dilapidated and two newer small hangars which provide for light aircraft storage and, potentially, light maintenance facilities.

Buildings

The terminal building and adjacent Fire Station and ATC Tower were constructed in 1988 and are in good condition.

There are two small steel framed and sheeted hangars on the south side of the runway.

The adjacent car park area is in reasonable condition.

Drainage

There is, however, a problem with regard to drainage of the car park area. Following the rain deposited by Hurricane José, reportedly 15" in 12 hours, the whole of the access road in front of the terminal building and some of the car park were flooded. There is a small drain provided to the north of the north side of the concourse road which reportedly feeds to a soakaway. However, since the soakaway is placed in a clay stratum, it soon fills up and ceases to work. Consideration should therefore be given to improving this drainage by positive methods. Similarly, consideration should be given to the provision of some drainage swales on either side of the runway to assist in clearing surface water.

Development Possibilities

In order to provide a safer environment for aircraft operations, there are two major ways forward.

Firstly, an extension of the runway to the east should be considered, giving a total length of runway of 1697m.

Secondly a reprofiling of the western end to improve the obstacle situation and to increase the length of useable runway in both directions could also be considered. The sequence of construction operations should be to extend to the east first such that the length of runway is never less than the current 1097m during the secondary re-profiling operation.

5.2 Brimegin Site

The site proposed for the new airport is indicated in Appendix 4.

Access at present is from the Shoal Bay village road to the north of the site adjacent to the existing rock quarry and asphalt plant, or from the south through North Side and Brimegin. In the event that the new airport authority wished to erect a proper boundary fence, then approximately 2km of the Shoal Bay village road would have to be diverted to give access to the proposed terminal building on the north side of the site.

The land comprising the site is predominantly covered by dense bush. The predominant underlying soil condition is massive grey limestone, with occasional creamy coloured patches.

Apart from the road access diversion there is no other infrastructure supporting the area other than a buried water pipeline alongside the shoal Bay road, which would also have to be re-routed in the event of airport development. Power for the quarry and asphalt plant operations is provided by on site generators.

6.0 DEVELOPMENT OPTIONS

6.1 Aircraft Demand

Current operations at Wallblake Airport comprise:

- Scheduled services Anguilla - San Juan, which is a sector length of 150nm and is operated by American Eagle (a subsidiary of American Airlines) with ATR 42 aircraft in 44 seat configuration.
- Scheduled services to Barbados and other Caribbean islands by Liat (Leeward Islands Air Transport) using Bombardier Dash 8 aircraft in various configurations of 37-50 seats.
- Short haul scheduled services to St Martin and other Caribbean islands by Winair (Winchward Islands Airlines) using De Havilland Twin Otter turbo propellor 19 seat aircraft.
- Charter operations by Trans Anguilla Inc, Air Anguilla Inc and Tyden Air using Pilatus Britten-Norman Islander 9-seat, twin piston engined aircraft.
- A few privately-owned light twin aircraft exemplified by a Beech King Air 90 turbo-propellor aircraft and a Cessna Citation twin-jet.

The most important of these operations, in the term of the number of passengers carried, is the American Eagle ATR 42 service to San Juan. It services, via San Juan, the dominant USA market for Anguilla Tourism.

The ATR 42 is limited in payload due to present runway constraints at Wallblake Airport. Usually it has to limit its 46 seat potential to 42 or 43 passengers, but in wet conditions and in wind conditions when the obstacle-limited r/w 28 has to be used it can be limited to 30-35 passengers.

6.2 Future Aircraft

American Eagle has the intention to replace its ATR 42's in the Caribbean with ATC 72s', a much large 66 seat aircraft that requires more runway length than the ATR 42.

American Eagle has deployed on its feeder services within the domestic United States Regional Jet aircraft such as the Embraer RJ145. This is a (typically) 50 seat twin jet aircraft. American Eagle say that it has no intention at present to introduce the RJ into Caribbean Service. However, passenger preference is likely to put pressure on airlines to replace the turbo-propeller fleets with jet aircraft and it would be prudent, if possible, to allow for this when considering airport development options at Anguilla.

The critical aircraft for short/medium term development at Anguilla is therefore identified as the ATR72, with a possible longer term requirement to cater for the introduction of Regional Jet 50-60 seat aircraft types.

In the case of a much larger aircraft servicing Anguilla, such as is suggested at the new airport site on Brimegin, longer runway lengths must be considered. The effects

of increasing the tourist market by introducing larger (and therefore lower seat-mile cost) aircraft at Brimegin and its effect on capital costs and cost and benefits to the Anguillan economy are discussed elsewhere in this report. The development options at Brimegin discussed below are derived to cover:

- a like-with-like comparison of a development at Brimegin with a similar development at Wallblake.
- the proposals of the CIEC report covering runways of progressively longer length to service larger aircraft.

6.3 The Wallblake Site

The current situation at Wallblake Airport is reviewed in Section 5.

The development options proposed are:

Landing Req. ATR 72

○ **Phase 1** an extension to the eastern end of the runway of 450m plus a further paved area representing strip end plus runway end safety area (RESA) of 60m + 90m = 150m. The extension and paved strip end and RESA will be 30m wide. The paved strip end and RESA will act as a "starter extension" for take off towards the west on r/w 28, giving a take off run available of 1697m. Landing distance available on r/w 10 would be the present landing distance (1097m of runway, less 183m for the present displaced threshold) plus 450m, or 1364m in total. *1567m*

- 460
3600*
- **Phase 2** reprofile the western end of the runway, reducing the effect of the "hump" in the present profile of the runway and also improving obstacle clearance slopes by raising the western (threshold of r/w 10) end of the runway. The total reprofiling would take place over the first 520m of the runway which would result in a more level runway and reduce the displaced threshold to 80m. Detailed consideration of the benefits and disadvantages of providing a 60m Runway End Safety Area, plus a 50m strip end by some additional land take at the western end of the runway should be undertaken. These areas would remain unpaved.
 - **Phase 3** a possible longer term development, comprising increasing runway length by 250m (including strip end and RESA) at the eastern end of the runway.

The Phase 1 and 2 extensions and the re-profiling would, taken together, provide:

- a paved r/w length totaling 1697m, giving a take off run available on westerly take offs of the same distance and, also, a landing distance available of the same in the same direction.
- A take off run towards the east of 1547m (ie the full runway length less the strip end and RESA, both of which, being paved, are available for take offs towards the west).

The implications of these developments in terms of aircraft performance are discussed later in this section.

6.4 The Brimegin Site

The proposed new airport site at Brimegin has been the subject of two proposals: the Aruba-Anguilla Partnership, NV Business Plan and the CIEC proposals "New Anguilla Airport". The development proposals and costings of the Business Plan are not as fully described as in the CIEC proposals: its proposed runway is 2000 metre long x 30 metres wide, with a terminal building of 2550 sq.metre and a cargo facility of 600 sqmetres. Otherwise, other development details are not given. It has therefore been concluded that the proposed development evaluation should concentrate on the CIEC proposals, which start with a 2200 metre long runway 45 metres wide and gives associated infrastructure development and costs in more details. Both the Aruba-Anguilla Business Plan and the CIEC proposals are reviewed in Section 3 of this report, and the site at Brimegin in Section 5. An additional development option is considered at Brimegin to ensure a like-with-like comparison of costs and benefits of developments comparable with those derived for Wallblake Airport.

6.5 Aircraft Performance

6.5.1 The Critical Aircraft

The critical aircraft, at least in the medium term has been identified as the ATR72. Aerodrome reference temperature at Wallblake Airport is 32°C, and airfield elevation is 31m. Under these conditions, the ATR requires a runway length of 1402 metres for take off, provided that the flight path is obstacle free, at a take off weight of 47,400lb, giving it maximum, unrestricted, payload on the San Juan sector. This would be the runway length requirement on runway 10, provided that the obstacles infringing the clearance surfaces were removed. *un v*

Under the same conditions (32°C, 31m elevation), and with the existing obstacle environment for take offs towards the west (r/w28), the ATR requires a runway length of 2073 metres to take off at 47,400lb. This runway length would be nearly provided at the completion of Phases 1, 2 and 3 (1097 + 450 + 150 + 250 = 1947m). However, since Phase 2 will improve, if not eliminate, nearly all the obstacles at the western end of the runway by increasing the elevation of the runway end itself, the ATR 72 will be able to take off in either direction at Wallblake with unrestricted payloads on the San Juan sector with much improved payload capability. (Source of the above data: American Eagle Flight Standards Department).

Runway lengths of about 2000m are also sufficient for most types of 50 seat Regional Jets, which as discussed above are a longer term possibility at Anguilla. Most of these types, and particularly the Embraer 135/145 series which American Airlines operate and may, in the longer term, be introduced in the Caribbean, could perform the Anguilla - San Juan sector at or near to maximum passenger payloads.

6.5.2 Other Aircraft Types

An increase in runway length at Anguilla will enable other types of aircraft to use the airport. These include executive jet aircraft exemplified by the Learjet, HS125, Falcon, Citation and similar types.

Although not visualised as a major user of the airport, even in the longer term, some of the Boeing 737 variations can use a 2000m runway although not at maximum take off weight. Nevertheless, useful payloads over medium-range sectors could be achieved.

The larger piston engine freighters such as the DC6, the turbine powered MDC Electra and Lockheed L-100 could also carry useful loads over medium-length sectors. These types may also have important significance, because although visits by larger freight aircraft are not expected to be frequent, the longer runway would provide such facilities for disaster relief operations. Such operations have proved difficult for Anguilla in the past (especially during hurricane Luis in 1995, when relief for Anguilla has to transit through Princess Juliana Airport on St Martin, and political pressures meant that Anguilla was well down the list of priorities, which could have been avoided had a suitable airport been available on the island itself).

7.0 FINANCIAL ANALYSIS

7.1 Introduction

This section of the report examines the likely financial performance of each of the proposed airport development options. In doing so it seeks to take full account of:

- The appropriate scope and level of airport user charges; and
- The potential for alternative revenue generating measures.

The aim of the examination is to assess the financial sustainability of the alternative development options and the net cost to the Government of Anguilla over the appraisal period, which is defined as the first 20 years of operation of an upgraded Wallblake or a new airport at Brimegin.

The section begins by defining the framework for the analysis. It then goes on to review the capital costs associated with each development option, the debt service charges that would be incurred if the various development proposals were to be funded by loans and the likely balance between operating costs and revenues. It concludes with the assessment of the financial performance of each development option in terms of:

- Projected operating surplus/(deficit);
- Projected cash flow;
- Financial net present value; and
- The level of operating and capital subsidy required.

7.2 Analytical Framework

The analysis examines the financial performance of the various airport development proposals as individual free-standing projects.

For convenience, this and the following section of the report identify the various development options as follows:

- Wallblake Option 1 - extension at the east end of the runway to 1,697 metres
- Wallblake Option 2 - As Option 1 plus reprofiling runway at west end
- Brimegin Option 1 - provision of a new airport equivalent to Wallblake; and
- Brimegin Option 2 - provision of a new airport based on a 2,200-metre runway at Brimegin.

The analysis does not examine the financial performance of the larger Brimegin proposal (Option 2) which is part of a wider airport/hotel development project; there is not enough information available to do this. It does however, identify the shortfall associated with the airport proposal itself and hence the funding gap that would have to be met from any complementary operation of tourism facilities. Similarly, the analysis does not attempt to distribute profits or losses between the potential partners of any company formed to develop and operate the Brimegin Option 2.

Improvements to the existing Wallblake airport have been assumed to take two years whilst construction of new facilities at Brimegin would have a three year construction period. Assuming a start date of 2001, upgraded facilities at Wallblake could be commissioned in 2003 and a new airport at Brimegin in 2004.

The financial performance of the alternative development options has been appraised over the period to 2023. This allows the Brimegin proposals, which take longer to construct, to operate for a full 20-year period after commissioning. Costs and revenues are held constant beyond the end of the traffic forecasting horizon of 2015.

Costs and revenues have been expressed in US dollars at constant 1999 price levels throughout and where appropriate, have been converted to net present values with a base year of 2000. Estimates based on unit charges set in EC dollars have been converted to US dollars at an exchange rate of EC\$2.65 to the US dollar. It has been assumed that the airport authority or company will retain all revenue generated by the airport including the passenger departure tax.

7.3 Relevant Costs and Revenues

The financial costs and benefits associated with the various airport development options comprise:

- Costs
 - Land acquisition and resettlement costs;
 - Capital costs;
 - Debt service charges; and
 - Operating costs.

- Revenues
 - Proceeds on the disposal of land; and
 - Operating revenues.

7.4 Land Acquisition and Resettlement Costs

Any extension of Wallblake Airport's runway would require the acquisition of land immediately adjacent to the existing airport site. Changes to the airspace reservations resulting from the increased runway length may also affect land and buildings outside the area needed to accommodate the extended runway.

Option 1 for the development of Wallblake would require the acquisition of 8.4 hectares (21 acres) of land along the extended centreline of the existing runway in an easterly direction. The value of land in this location has been assumed to be US\$ 123,500 per hectare, (US\$50,000 per acre), which is some 15 percent higher than the average value placed on the land required for a new airport at Brimegin. On this basis, the total cost of the additional land needed to implement Option 1 at Wallblake would be US\$ 1,037,400.

Some 18 buildings would be affected by Wallblake Option 1 ranging from single and two-storey residential properties to commercial premises, and school buildings. Two-thirds of these buildings are located within the area to be cleared in order to accommodate the extended runway. The remaining one third would be affected by changes in the airspace reservations in the vicinity of the runway. Unit values are estimated to range between US\$ 100,00 for single storey residential buildings to US\$150,000 for single storey commercial premises and US\$175,000 for two-storey residential buildings. The total cost of acquiring these 18 buildings is estimated to be US\$2.16 million.

Option 2 for Wallblake would require very little additional land over and above that needed to accommodate Option 1. The additional 0.5 hectares (1.3 acres) would cost US\$ 61,750. No additional buildings would be affected by this option.

Other specific development options for Wallblake Airport may identify solutions that require the replacement of fewer properties, which would reduce the scale of this cost item. On the other hand, the figure of US\$2.16 million derived above excludes compensation payments over and above the cost of replacing properties that might arise because of the disruption incurred by owners and tenants that are required to relocate. The effect of both of these factors on the total scale of land acquisition and resettlement costs would need to be examined carefully at the detailed planning and design stage of any development proposal for Wallblake Airport.

Development of the Brimegin options would require the acquisition of 42 hectares (103 acres) of land for Option 1, a replacement facility equivalent to the enhanced Wallblake Airport. It has been assumed that up to 5 buildings would have to be demolished and replaced at a unit cost of US\$ 136,650. The total cost of acquiring the land and buildings needed to accommodate this option is therefore US\$ 5,179,100.

The CIEC Engineering proposal for a larger airport would involve the acquisition of 345 hectares (853 acres) in the vicinity of Brimegin. The land and buildings involved have been formally surveyed by the Department of Land and Surveys and valued at US\$ 35.95 million. Just over 80 percent of the proposed land take (276 hectares or 690 acres) would be required for Phase 1 of the proposed 2,200-metre runway airport. The remaining 20 percent (69 hectares or 163 acres) would be needed to extend the runway to 3,200 metres.

The current study estimates that a 2,200-metre runway and supporting taxiway, apron, terminal and access facilities could be accommodated in an area less than half that proposed by CIEC Engineering for Phase 1. The financial impact of this much smaller land-take will be examined during the sensitivity analysis.

It has been assumed that the land and buildings required to accommodate the various development options would be purchased during the early months of 2001.

Some 18 buildings would be affected by Wallblake Option 1 ranging from single and two-storey residential properties to commercial premises, and school buildings. Two-thirds of these buildings are located within the area to be cleared in order to accommodate the extended runway. The remaining one third would be affected by changes in the airspace reservations in the vicinity of the runway. Unit values are estimated to range between US\$100,00 for single storey residential buildings to US\$150,000 for single storey commercial premises and US\$175,000 for two-storey

residential buildings. The total cost of acquiring these 18 buildings is estimated to be US\$2.16 million.

Details of the cost of the land and buildings required to implement the alternative development options are summarised in Table 7.1.

Table 7.1
Land and Building Acquisition Costs
US\$ '000 at 1999 Prices

Category of Cost	Wallblake		Brimegin	
	Option 1	Option 2	Option 1	Option 2
Land Acquisition				
Land Take – hectares	8.4	8.9	41.9	280.0
Cost per hectare US\$	123,500	123,500	107,300	107,300
Total Cost US\$ '000	1,037.4	1,099.1	4,495.9	30,044.0
Resettlement Costs				
Properties demolished	18	18	5	20
Cost per property US\$	120,000	120,000	136,650	136,650
Total Cost US\$ '000	2,160.0	2,160.0	683.2	2,733.0
Total Land & Buildings Cost				
Total Costs US\$ '000	3,197.4	3,259.1	5,179.1	32,777.0

Note Brimegin Option 2 corresponds with CIEC Engineering's Phase 1 proposal for Brimegin.

Source: W.S. Atkins estimates.

If Wallblake Airport were to be abandoned in favour of a new facility at Brimegin, the existing airport site would be released for alternative uses. The site is adjacent to The Valley, Anguilla's main commercial centre and would therefore have significant development potential. The existing airport occupies some 33 hectares (81 acres) all of which would become available for development. It has been assumed that the land released for development would be purchased from the Government in equal tranches over a five-year period. The proceeds from these sales could then be netted off against the cost of acquiring land at Brimegin.

Details of the total proceeds of the sale of land at Wallblake land are summarised in Table 7.2. The net cost of acquiring the land needed to accommodate each of the alternative development options is summarised in Table 7.3.

Table 7.2
Proceeds on the Sale of Land at Wallblake
US\$ '000 at 1999 Prices

Category of Cost	Wallblake		Brimegin	
	Option 1	Option 2	Option 1	Option 2
Land Acquisition				
Land Released – hectares	-	-	33.0	33.0
Proceeds per hectare US\$	-	-	123,500	123,500
Total Proceeds US\$ '000	-	-	4,075.5	4,075.5

Note Brimegin Option 2 corresponds with CIEC Engineering's Phase 1 proposal for Brimegin.

Source: W.S. Atkins estimates.

Table 7.3
Net Land and Building Acquisition Costs
US\$ '000 at 1999 Prices

Category of Cost	Wallblake		Brimegin	
	Option 1	Option 2	Option 1	Option 2
Acquisition costs	3,197.4	3,259.1	5,179.1	32,777.0
Proceeds on disposal	-	-	4,075.5	4,075.5
Net costs	3,197.4	3,259.1	1,103.6	28,701.5

Note Brimegin Option 2 corresponds with CIEC Engineering's Phase 1 proposal for Brimegin.

Source: W.S. Atkins estimates.

7.5 Capital Costs

7.5.1 General

Capital costs fall into two categories:

- Initial capital costs; and
- Replacement capital costs.

In view of the scale of expenditure required to implement periodic maintenance of major airport assets such as runways, aprons and terminal buildings, periodic maintenance costs have been treated as replacement capital costs, which are funded by grant or loan and capitalised.

7.5.2 Initial Capital Costs

The initial capital costs associated with the various development options identified in the previous chapter of this report are:

- Wallblake Option 1 US\$ 25.0 million;
- Wallblake Option 2 US\$ 38.7 million
- Brimegin Option 1 US\$ 119.6 million
- Brimegin Option 2 US\$ 307.6 million

For ease of reference, these costs are summarised and phased in Table 7.4.

Table 7.4
Initial Capital Costs
US\$ '000 at 1999 Prices

Option	2000	2001	2002	2003	Total
Wallblake 1	-	15,004	10,003	-	25,007
Wallblake 2	-	23,212	15,475	-	38,687
Brimegin 1	-	53,827	41,865	23,923	119,614
Brimegin 2	-	138,433	107,670	61,526	307,628

Source: W.S. Atkins analysis.

Note: Initial Capital Costs estimates include buildings, parking apron, airfield ground lighting and navigational equipment.

Note: Initial Capital Costs estimates include buildings, parking apron, airfield ground lighting and navigational equipment.

By definition, there are no initial capital costs associated with the Do Minimum option, which simply involves the operation and maintenance of the existing airport facilities at Wallblake up to the limit of their present capacity.

7.5.3 *Replacement Capital Costs*

All of the capital assets associated with the Do Minimum option are some way into their operating lives and some may have to be replaced during the course of the appraisal period. Similarly, certain categories of new asset may have operating lives somewhat shorter than the 15-year appraisal period.

Unlike initial capital costs, replacement capital costs are not exempt from import duties. Basic costs have been uplifted by 10 percent to allow for this. Details of the replacement capital costs associated with each of the development options, including the Do Minimum Case, are summarised in Table 7.5.

7.6 **Funding Options and Debt Service**

The alternative development proposals may be funded from various sources including grants, soft loans and commercial loans. A US\$ 53 million package of investment now being made at Beef Island Airport in the British Virgin Islands for example has received funding from a wide range of different sources.

The general view on Anguilla is that the availability of grants for airport projects is likely to be limited and that loans of one sort or another will be required to fund the bulk of the capital investment required to implement any of the proposed development options. It is neither possible nor necessary to examine the full range of available funding options in any detail. The main aim is to compare the ability of each option to service any loans associated with the proposed capital investment.

A type of loan commonly used to finance long term infrastructure projects is the variable rate loan with 10 year term including a grace period of up to 2 years, and an interest rate based upon the 3 month London Interbank Rate (LIBOR). This type of loan would normally attract up-front charges equivalent to 1 percent of the loan and an annual commitment fee of 0.5 percent of the outstanding balance.

Table 7.5 : Replacement Capital Costs in US\$ '000 at 1999 prices

Cost Item	Do Minimum	Wallblake		Brimegin		Do Minimum	Wallblake		Brimegin	
		1	2	1	2		1	2	1	2
Development Option										
Maintenance Period	Every 15 years					At 30 years				
Pavements	1,097.0	1,662.1	1,662.1	1,485.0	3,850.0	257.0	389.4	825.0	880.0	1,925.0
AGL/Nav aids	363.0	363.0	363.0	2,266.0	4,136.0	-	-	-	-	-
Freight	-	-	-	-	-	-	-	-	-	1,237.5
ATC Tower	-	-	-	-	-	-	-	-	-	-
Fire Station	-	-	-	-	-	2,831.4	4,290.0	4,290.0	4,290.0	6,517.5
RFPS Equipment	1,375.0	1,375.0	1,375.0	-	-	412.5	412.5	412.5	412.5	495.0
Airport Maintenance	-	-	-	1,375.0	1,650.0	264.0	330.0	330.0	330.0	618.8
Passenger Terminal	550.0	1,100.0	1,100.0	1,100.0	4,950.0	261.2	522.5	522.5	522.5	2,227.5
Hangar	-	-	-	-	-	123.8	123.8	123.8	123.8	123.8
Fees at 5%	169.2	225.0	225.0	311.3	729.3	207.5	325.2	325.2	327.9	657.3
Total	3,554.2	4,725.1	4,725.1	6,537.3	15,315.3	4,357.4	6,393	6,829	6,887	13,802

Note: Costs are quoted inclusive of average import duties of 10 percent.

Source: WSA estimates.

On 1st February 2000, the LIBOR stands at 6.15 percent (nominal), say 3.65 percent in real terms after adjustment for an average inflation rate of 2.5 percent. A credit margin of 2 percent plus the 0.5 percent commitment fee would result in a typical interest rate of 8.65 percent, say 9 percent (nominal) or 6.5 percent (real). The credit margin will comprise the lender's standard administrative margin plus an additional risk premium that will vary from project to project and between project sponsors. It would normally be lower for loans made to governments or state guaranteed loans and lower for projects such as this with no significant exchange rate risk.

Table 7.6 summarises the annual repayments that would be payable on loans taken out to finance in full the initial and replacement capital costs associated with each of the alternative development options. Annual repayments are given for nominal interest rates of 7.5 percent, 9 percent and 10.5 percent (5.0 percent, 6.5 percent and 8 percent real).

**Table 7.6
Projected Annual Debt Service Charges**

Option	Do Minimum	Wallblake 1	Wallblake 2	Brimegin 1	Brimigen 2
Interest Rate	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
Initial Capital Costs					
7.5%	-	3,238.6	5,010.1	15,490.6	39,839.3
9.0%	-	3,478.7	5,381.5	16,638.9	42,792.5
10.5%	-	3,726.9	5,765.4	17,826.1	45,845.7
Replacement & Refurbishment every 15 years					
7.5%	460.3	611.9	611.9	846.6	1,983.4
9.0%	494.4	657.3	657.3	909.4	2,130.4
10.5%	529.7	704.2	704.2	974.2	2,282.4

Note (1) Annual repayments to be made on an annuity basis over a ten-year term.

(2) Nominal interest rates; real rates are 2.5 percent lower.

Source: WSA analysis.

7.7 Operating Costs

7.7.1 Composition of Operating Costs

The main recurrent costs of airport operations comprise:

- Staff Costs;
- Maintenance Costs;
- Utilities Costs; and
- Other operating Costs

7.7.2 Existing Airport Operating Costs

Wallblake Airport incurred total operating costs of US\$ 863,300 in 1998 of which staff costs accounted for almost 60 percent. Other important cost categories were identified as airport development (17.3 percent), consumables (12.5 percent), which included unspecified materials and maintenance costs, and utilities (8.9 percent).

Average operating costs per passenger handled was US\$ 9.65 or US\$7.98 excluding expenditure on 'airport development'. Details are set out in Table 7.7.

**Table 7.7
Summary of Annual Operating Costs
Wallblake Airport - 1998**

Description	US\$	Percentage Share	US\$ per Passenger
Staff Costs	513,403	59.5%	5.74
Travel Costs	3,547	0.4%	0.04
Utilities	76,430	8.9%	0.85
Communications	12,350	1.4%	0.14
Consumables	107,949	12.5%	1.21
Sub-total	713,680	82.7%	7.98
Airport Development	149,617	17.3%	1.67
Total	863,297	100.0%	9.65

Source: Airport Manager, Wallblake Airport.

Based on information to the end of September 1999, operating costs for 1999 are likely to be almost 7 percent higher at US\$921,500.

The pattern of airport expenditure during the past two years has been atypical in that there have been relatively high levels of expenditure within the cost category identified as 'airport development'. It is understood that this expenditure refers to minor capital expenditure and refurbishment costs. It accounted for 5 percent of total airport operating costs between 1994 and 1997 but increased by a factor of 3 in 1998 and 1999.

Since the current analysis will provide separate estimates of routine and periodic maintenance costs, 'airport development' costs have been abstracted from the airport's total operating costs in order to provide a base for the future projection of operating costs exclusive of maintenance. Half of the expenditure on 'consumables', which includes materials, tools etc, has been deducted from total operating costs for the same reason.

Table 7.8 summarises the annual operating costs for Wallblake Airport between 1994 and 1999 (estimated) as modified to exclude maintenance costs.

Table 7.8
Modified Annual Operating Costs
Wallblake Airport

Cost Category	1994	1995	1996	1997	1998	1999
Annual Costs in US\$ '000						
Staff Costs	423.9	391.3	437.7	494.7	513.4	6005
Travel Costs	4.3	4.0	5.3	3.9	3.5	3.7
Utilities	80.0	63.5	67.4	70.5	76.4	81.9
Communications	9.7	8.8	10.5	11.4	12.3	12.8
Consumables	24.5	26.7	29.6	32.9	54.0	45.2
Total	542.3	494.2	550.5	613.4	659.7	744.1
Percentage Distribution						
Staff Costs	78.2%	79.2%	79.5%	80.7%	77.8%	80.7%
Travel Costs	0.8%	0.8%	1.0%	0.6%	0.5%	0.5%
Utilities	14.7%	12.8%	12.2%	11.5%	11.6%	11.0%
Communications	1.8%	1.8%	1.9%	1.9%	1.9%	1.7%
Consumables	4.5%	5.4%	5.4%	5.4%	8.2%	6.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cost per passenger in US\$						
Current prices	5.6	5.7	6.3	6.4	7.4	8.3
Constant 1999 prices	6.3	6.1	6.8	6.6	7.6	8.3

Source: Airport Manager, Wallblake Airport.

7.7.3 Future Airport Operating Costs

Future airport operating costs have been projected as the sum of four separate categories:

- Staff costs;
- Routine Maintenance;
- Utilities; and
- Miscellaneous Costs

a) Staff Costs

Wallblake Airport currently has a staff complement of 62 made up as shown in Table 7.9.

Individual airlines and aircraft operators provide passenger and aircraft handling services. It has been assumed that the fuel concessionaire would staff any future refuelling service and that the cost of doing so would be recouped in full from customers. Immigration and customs staff are provided and funded by the relevant Government departments.

Table 7.9
Existing Staff Complement of Wallblake Airport

Description	Employees	Percentage Share
Administration	4	6%
Air Traffic Control	8	13%
Rescue & Fire Fighting Service	19	31%
Security	15	24%
Engineering	8	13%
Support	8	13%
Total	62	100%

Source: Airport Manager, Wallblake Airport.

Airport staff numbers have been assumed to increase in line with annual passenger throughput but at a lower rate equivalent to 40 percent of the percentage increase in passenger movements. Average unit costs have been assumed to remain constant over the appraisal period.

The resulting relationship between staff complement, annual passenger throughput, staff productivity and average staff cost per passenger movement are summarised in Table 7.10 and illustrated in Figures 7.1 and 7.2.

Table 7.10
Projected Increase in Airport Staff Complement and Costs
With Passenger Throughput
1999 Prices

Annual Passenger Movements	Employees	Annual Cost US\$ '000	Passengers per Employee	US\$ per Passenger
90,000	62	630	1,452	7.00
100,000	65	665	1,528	6.65
110,000	69	698	1,601	6.35
120,000	72	730	1,670	6.08
130,000	75	760	1,737	5.85
140,000	78	790	1,802	5.64
150,000	80	818	1,864	5.45
160,000	83	845	1,924	5.28
170,000	86	872	1,982	5.13
180,000	88	897	2,039	4.98
190,000	91	922	2,094	4.85
200,000	93	946	2,147	4.73
Higher Throughput				
250,000	105	1,065	2,386	4.26
500,000	150	1,525	3,333	3.05
750,000	185	1,875	4,065	2.50
1,000,000	219	2,223	4,570	2.22

Source: WSA analysis.

Figure 7.1
Projected Increase in Staff Complement and Staff Costs

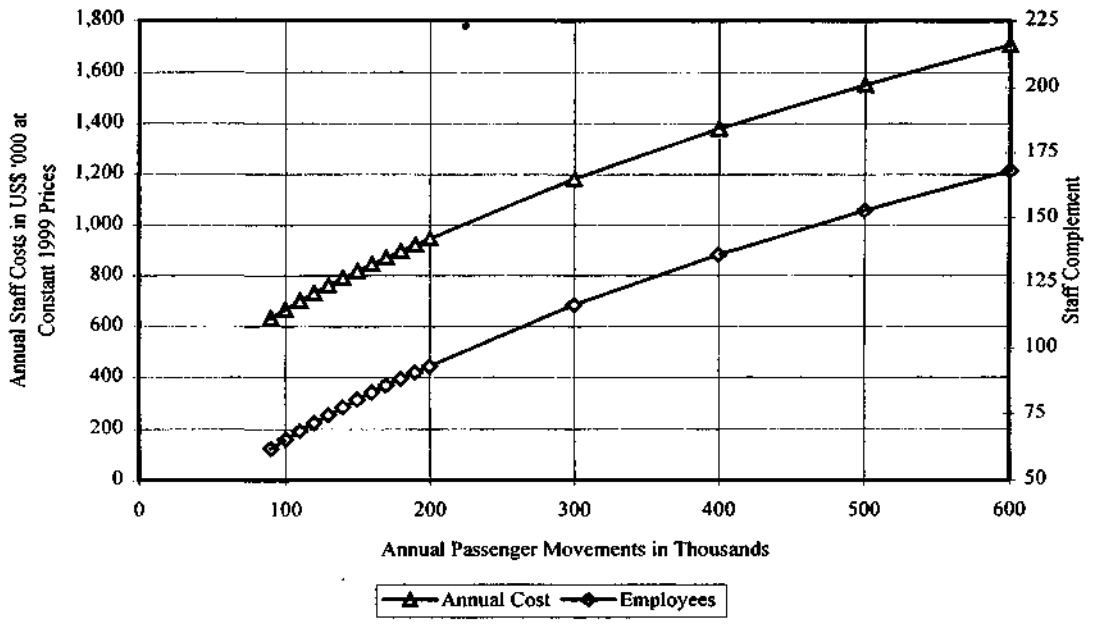
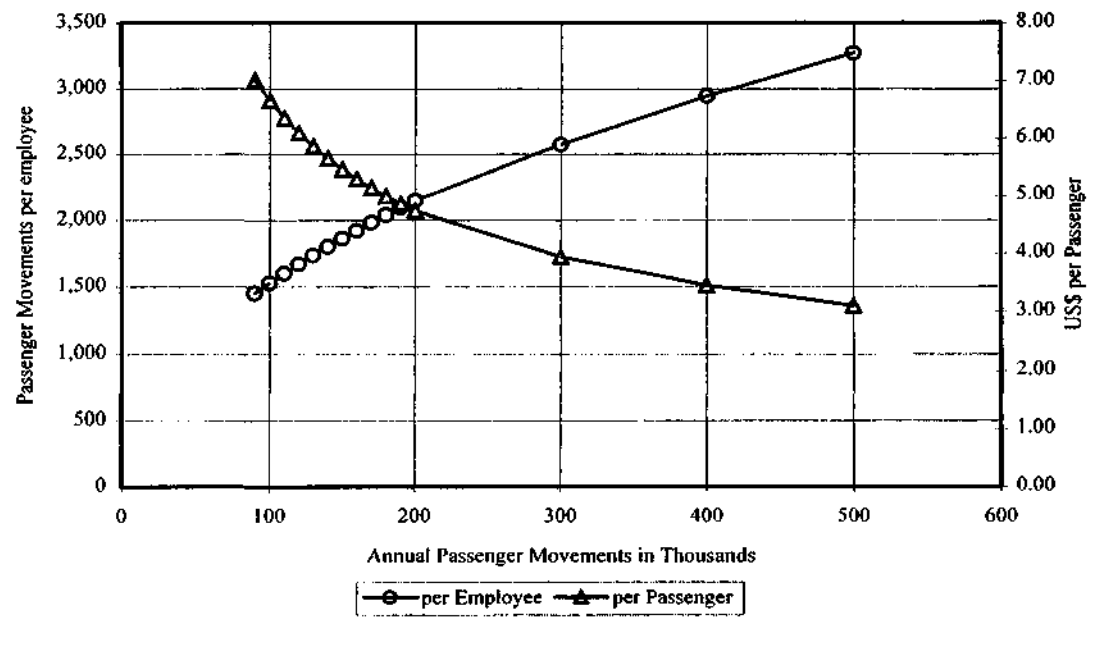


Figure 7.2
Projected Increase in Staff Productivity



The resulting annual staff costs for each of the development options are summarised in Table 7.11.

Table 7.11
Projected Staff Costs
US\$ '000 at 1999 Prices
Medium Growth

Year	Do Minimum	Wallblake		Brimegin	
		1	2	1	2
2000	711	711	711	711	711
2005	770	793	793	793	2,036
2010	815	889	889	889	3,063
2015	864	997	997	997	3,383

Source: WSA estimates.

b) Utilities

Utilities are related more to the overall scale of facilities provided than to passenger throughput. Table 7.12 compares the estimated ratio of annual utilities costs for the alternative development options with the corresponding Do-Minimum expenditure base on existing utilities costs at Wallblake and summarises the resulting annual utilities cost for each option. The level of annual expenditure on utilities has been assumed to remain constant in real term throughout the appraisal period.

Table 7.12
Projected Utilities Costs
US\$ '000 at 1999 Prices

Year	Do Minimum	Wallblake		Brimegin	
		1	2	1	2
Ratio of Option : Do Minimum		1.8	1.8	1.8	2.5
Annual Cost	85	153	153	153	212.5

Source: WSA estimates.

c) Routine Maintenance Costs

The current study has estimated routine maintenance costs individually for each development option on the basis of the range and scale of facilities to be provided. Table 7.13 summarises the projected annual expenditure on routine maintenance for each development option. The level of annual expenditure has been assumed to remain constant in real term throughout the appraisal period.

Table 7.13
Projected Routine Maintenance Costs
US\$ '000 at 1999 Prices

Category of Asset	Do Minimum	Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
Pavements	320,184	450,280	450,280	476,806	945,421
Terminal	88,000	176,000	176,000	176,000	264,000
Total	408,184	626,280	626,280	652,806	1,209,421

Source: WSA estimates.

d) Miscellaneous Costs

Miscellaneous operating costs, which essentially comprise expenditure on communications and consumables, currently account for US\$ 2.11 per passenger movement. This figure has been uprated to US\$ 2.25 per passenger movement for 2000 and maintained at the same unit rate throughout the appraisal period.

e) Depreciation Charges

As a department of government, Wallblake Airport has no independent balance sheet and hence no fixed assets against which to charge depreciation. Since all of the capital assets at the airport were funded by grant aid, the government does not charge depreciation either.

There is no corporate income tax on Anguilla and hence no tax advantage in levying depreciation charges. A number of the major hotels have reported that they write off their capital investment in the year that it is incurred rather than depreciating it over the life of the asset. However, despite the lack of tax implications on Anguilla, depreciation has a useful role to play in ensuring that the cost of using up a capital asset is accurately reflected over the full period of its useful life.

Appropriate depreciation charges depend upon the operating life and residual value of an asset. Appropriate values for the major categories of airport asset and the resulting annual depreciation charge are summarised in Tables 7.14 and 7.15.

Table 7.14
Annual Depreciation of Capital Assets

Category of Asset	Operating Life	Residual Value	Annual Depreciation
Civil Works	20 years	70 percent	1.5 percent
Pavement Works	20 years	50 percent	2.5 percent
Building Works	20 years	20 percent	4.0 percent
Terminal Equipment	15 years	10 percent	6.0 percent
RFFS Equipment	15 years	10 percent	6.0 percent
AGL & Nav aids	15 years	10 percent	6.0 percent

Source: WSA estimates.

Table 7.15
Annual Depreciation Charges
US\$ '000 at 1999 Prices

Category of Asset	Do Minimum	Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
Civil Works	0.0	302.4	158.1	1,461.5	3,978.7
Pavements	600.0	669.8	672.5	233.2	446.7
Buildings	180.0	252.0	180.0	427.0	934.0
Equipment	90.0	104.3	99.0	160.3	270.4
Total	870.0	1,328.5	1,109.6	2,282.0	5,629.8

Source: WSA estimates.

e) *Total Operating Costs*

Total operating costs have been calculated as the sum of:

- Staff costs;
- Maintenance costs;
- Utilities;
- Miscellaneous costs; and
- Depreciation charges.

Table 7.16 summarises total annual operating costs with and without depreciation charges, which affect profitability but not cash flow.

Table 7.16
Projected Total Operating Costs
US\$ '000 at 1999 Prices

Year	Do Minimum	Wallblake		Brimegin	
		1	2	1	2
Excluding Depreciation					
2000	1,276.0	1,278.0	1,278.0	1,278.0	1,278.0
2005	1,359.9	1,653.1	1,653.1	1,679.7	4,300.1
2010	1,426.8	1,833.9	1,833.9	1,860.4	5,539.6
2015	1,498.2	2,043.8	2,043.8	2,070.3	5,886.6
Including Depreciation					
2000	2,146.0	2,148.0	2,148.0	2,148.0	2,148.0
2005	2,229.9	2,981.6	2,762.7	3,961.7	9,929.9

Source: WSA estimates.

7.8 Project Revenues

7.8.1 Sources of Revenue

Wallblake Airport generates revenue from the normal range of operational charges and limited commercial activities. Sources of operational revenue include:

- Aircraft landing fees;

- Air navigation service charges; and
- Aircraft parking charges.

Operators using the airport outside normal hours are required to pay a surcharge.

Passengers leaving Wallblake Airport by air are required to pay a Passenger Departure Tax but the income from this source is currently collected directly by Government and forms no part of the airport's operating revenue.

Commercial Revenues are currently limited to the rental income from concession areas within the passenger terminal.

7.8.2 Existing Airport Charges

Aircraft using Wallblake Airport are subject to the following operational charges:

- Landing charge;
- Air navigation service charge; and
- Aircraft parking charges.

Landing charges are based upon a unit rate of US\$ 0.75 per 1,000 pound of certificated Maximum Take-Off Weight (MTOW).

The navigation charge is US\$ 10 per landing for aircraft with an MTOW of less than 12,500 lb., and US\$ 15 for heavier aircraft.

Parking charges are payable by the operators of aircraft that remain parked for more than two hours. The current parking charge is based on a sliding scale averaging US\$ 0.17 per thousand pound of MTOW.

Table 7.17 translates these unit rates into the charge per landing for a range of typical aircraft types using Wallblake Airport. The out of hours surcharge is currently US\$132 (EC\$350).

**Table 7.17
Operational Charges for Representative Aircraft Types
At Wallblake Airport**

Aircraft Type	BN2B Islander	DHC-6 Twin Otter	ATR-42
MTOW in pounds	6,589	12,500	40,920
Passenger Seats	9	19	44
Charges in EC\$			
Navigation Charge	10	15	15
Charge per Landing	14	26	82
Parking Charges (1)	4.5	7.5	22.5
Charges in US\$			
Navigation Charge	3.77	5.66	5.66
Charge per Landing	5.28	9.81	30.94
Parking Charges (1)	1.70	2.83	8.49

Note (1) Aircraft parking charges are levied per 24 hours or part in excess of 2 hours.

Source: WSA analysis of current airport charges.

Passengers leaving Wallblake Airport by air are required to pay a departure tax as summarised in Table 7.18.

Table 7.18
Passenger Departure Tax
Payable at Wallblake Airport

Currency	Non-resident	Resident
Local	EC\$ 24	EC\$ 10
Foreign	US\$ 20	US\$ 5

Source: WSA analysis of current airport charges.

7.8.3 Existing Airport Revenues

a) Operational Revenue

Information defining historical operating revenues for Wallblake Airport is neither detailed nor complete. The airport itself has quoted total annual income of US\$300,00 for 1997. Government budget estimates for the same year envisaged income of US\$ 300,000 from the passenger departure tax and US\$ 100,000 from aircraft-related charges levied at the airport. Actual revenue from these sources in 1997 was recorded as US\$ 185,754 and US\$ 61,295 respectively.

Comparing the level of charges with passenger numbers confirms that the government budget estimates of annual airport revenue are reasonable. The fact that the actual revenue collected is substantially below budget confirms anecdotal evidence that a significant proportion of the operational charges payable by airport users are not in fact paid.

The airport reports current debtors of US\$93,458 comprising unpaid:

- Landing fees US\$ 41,505; and
- Navigation charges US\$ 51,953.

Based on the government's annual budget estimate of US\$100,000 for aircraft-related charges, unpaid charges represent almost a year's turnover. Some of these debts extend beyond a year and there are reports of pressure being applied directly on the airport to waive outstanding charges in certain cases. Clearly, the problem of late or non-payment of airport charges should be addressed. This could be carried out during the re-organisation study of the Airport Department, which is also recommended.

b) Commercial Revenue

Wallblake Airport rents space within the passenger terminal building to:

- six airlines or charter operators;
- a bar/restaurant; and
- three retail outlets.

The total rental income is US\$ 27,562 per annum, equivalent to 23 percent of total airport revenue excluding the passenger departure tax, or 6 percent of airport revenue if the departure tax were to be treated more conventionally as a passenger service charge retained by the airport operator.

In the aftermath of the two recent hurricanes, the airport has been unable to provide details of the area rented by each concessionaire. It has therefore not been possible to conclude whether or not the rental charges have been set on a commercial basis. However, commercial revenues appear to be just as subject to late payment as operations revenues with US\$23,919 unpaid at the time of the field trip in October 1999. The rents overdue at that time represent 10 month's rental income.

7.8.4 *Potential for Revenue Enhancement*

Unit rates for operational charges at Wallblake Airport were last amended in 1981. Even allowing for inflation at the modest rate of just over 2 percent per annum, these charges ought to be increased now by some 50 percent. This would increase budget estimates of aircraft-related charges from US\$100,000 to US\$150,000. It would clearly be easier to justify this increase in aircraft-related charges if it were to be implemented in parallel with an enhancement of the airport's operational capability i.e. as and when one of the alternative development proposals is implemented. The analysis has assumed a 50 percent increase in existing aircraft-related charges when the various development proposals are implemented. The revised rates have been held constant in real terms throughout the appraisal period, which implies regular increases in nominal charges to keep pace with inflation.

The passenger departure tax already generates some 70 percent of the total income generated by Wallblake Airport even if the money collected it not treated as airport revenue. However, at US\$10 per departing non-resident passenger the current charge is only half of that payable by non-residents using Princess Juliana International Airport on St Maarten. Princess Juliana International Airport is not an isolated case; non-residents including tourists, have been paying a US\$20 departure tax to use airports in East Africa for the past ten years or so.

Some hoteliers have pointed out that despite the fact that Anguilla is an up-market and relatively expensive destination, their clients tend to be fairly money conscious and any increase in the departure tax would be unwelcome. However, it would be unreasonable for relatively affluent visitors not to expect to make a reasonable contribution towards the cost of providing the airport facilities needed to accommodate efficient tourist-oriented air services. It therefore seems reasonable to propose an increase in the passenger departure tax payable at Wallblake Airport from US\$10 to US\$20 and to increase this charge in line with inflation over the appraisal period. The analysis assumes that such an increase is introduced as and when any of the alternative airport development options are implemented.

Commercial revenue at Wallblake Airport currently represents 6.4 percent of total airport revenue, inclusive of income from the passenger departure tax. With the increase in operational charges proposed above, this share would drop to 3.4 percent, which is low even for a small airport such as Wallblake.

Table 7.19
Projected Commercial Revenue
as a Percentage of Operational Revenue

Year	Do Minimum	Wallblake 1	Wallblake 2	Brimegin 1	Brimegin 2
2000	6.0%	-	-	-	-
2005	11.0%	11.0%	11.0%	15.0%	20.0%
2010	13.0%	13.0%	13.0%	17.7%	25.0%
2015	15.0%	15.0%	15.0%	20.0%	30.0%

Note Percentages for Do Something options have been calculated at the recommended new operational charge levels

Source: WSA assumptions.

Table 7.20
Projected Commercial Revenue
US\$ '000 at 1999 prices

Year	Do Minimum	Wallblake 1	Wallblake 2	Brimegin 1	Brimegin 2
2000	26.1	-	-	-	-
2005	58.0	142.0	142.0	159.7	1,013.9
2010	76.2	219.7	219.7	263.7	2,046.7
2015	97.3	240.8	240.8	321.1	2,745.0

Source: WSA projections.

7.8.5 Future Revenue Projections

The projected annual airport revenue for each of the alternative development options is summarised in Table 7.21.

Table 7.21
Projected Operating Revenue
US\$ '000 at 1999 prices

	Passenger Service Charge	Aircraft Related Charges	Commercial Revenue	Total Revenue
Do-Minimum				
2000	356.8	97.2	26.1	480.1
2005	414.6	112.8	58.0	585.4
2010	461.0	125.3	76.2	662.5
2015	510.2	138.6	97.3	746.1
Wallblake Option 1				
2005	886.5	178.5	142.0	1,207.0
2010	1,101.1	217.3	219.7	1,538.1
2015	1,344.3	261.1	240.8	1,846.2
Wallblake Option 2				
2005	886.5	178.5	142.0	1,207.0
2010	1,101.1	217.3	219.7	1,538.1
2015	1,344.3	261.1	240.8	1,846.2
Brimegin Option 1				
2005	886.5	178.5	159.7	1,224.7
2010	1,101.1	217.3	263.7	1,582.1
2015	1,344.3	261.1	321.1	1,926.5
Brimegin Option 2				
2005	4,397.0	672.6	1,013.9	6,083.5
2010	7,105.8	1,081.1	2,046.7	10,233.6
2015	7,941.8	1,208.3	2,745.0	11,895.1

Source: WSA analysis.

7.9 Financial Performance

7.9.1 Existing Situation

Wallblake Airport consistently reports a substantial operating deficit. This is partly because of the low level of passenger throughput but also because the main source of revenue generated by the airport, the Passenger Departure Tax, goes directly into the Government's general revenue fund and forms no part of the airport's operating revenue. The airport's own financial performance is also adversely affected by the late or non-payment of a significant proportion of operational and commercial charges. The projections of future financial performance assume that the passenger departure tax is recast as a passenger service charge and retained by the airport operator.

7.9.2 Operating Surplus/Deficit

Operating surplus comprises the difference between operating revenues and operating costs before debt service charges.

Table 7.22 summarises the projected annual operating surplus or deficit generated by each of the alternative development options and shows that:

- The Do-Minimum option would record an operating deficit throughout the appraisal period;
- The other options designed to meet the requirements of the Low Density Tourism Development Scenario (both Wallblake options and Brimegin Option 1) would achieve a modest operating surplus by 2015 if depreciation charges are excluded but that annual operating deficits would remain substantial when depreciation charges are taken into account.
- Brimegin Option 2 would generate substantial operating surpluses (excluding depreciation charges) from the early years of the appraisal period and that even with depreciation charges included, positive operating surpluses would be recorded from 2010 onwards.

Table 7.22

Projected Annual Operating Surplus

Option	Do Minimum US\$ '000	Wallblake 1 US\$ '000	Wallblake 2 US\$ '000	Brimegin 1 US\$ '000	Brimegin 2 US\$ '000
Excluding Depreciation Charges					
2005	-774.4	-379.6	-379.6	-360.2	3,106.0
2010	-764.3	-158.5	-158.5	-118.3	5,690.4
2015	-752.1	110.5	110.5	177.6	6,800.0
Including Depreciation Charges					
2005	-1,644.4	-1,708.1	-1,489.2	-2,642.2	-2,523.8
2010	-1,634.3	-1,487.0	-1,268.1	-2,400.3	60.6
2015	-1,622.1	-1,218.0	-999.1	-2,104.4	1,170.2

Source: WSA analysis.

The projected cumulative operating surplus/(deficit) for each development option is summarised in table 7.23. The profiles of annual and cumulative operating surpluses (excluding depreciation charges) are illustrated in Figure 7.3.

Table 7.23

Projected Cumulative Operating Surplus

Option	Do Minimum	Wallblake 1	Wallblake 2	Brimegin 1	Brimegin 2
	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
Excluding Depreciation Charges					
2005	-4,722.9	-3,656.7	-3,656.7	-3,945.6	1,053.6
2010	-8,565.5	-4,918.1	-4,918.1	-5,050.5	24,224.3
2015	-12,351.2	-4,933.2	-4,933.2	-4,787.1	55,974.1
2020	-12,351.2	-4,933.2	-4,933.2	-4,787.1	55,974.1
Including Depreciation Charges					
2005	-9,942.9	-10,252.2	-9,595.5	-11,989.6	-13,686.0
2010	-18,135.5	-18,156.1	-16,404.9	-24,504.5	-18,664.3
2015	-26,271.2	-24,813.7	-21,968.0	-35,651.1	-15,063.5
2020	-34,381.6	-30,903.8	-26,963.6	-46,173.0	-9,212.7

Source: WSA analysis.

7.9.2 Projected Cash Flow

The airport's net cash flow comprises operating revenues less operating costs after debt service charges but excluding depreciation charges, which involve no movement of cash.

Table 7.24 summarises the projected annual and cumulative cash flow associated with each of the alternative airport development options. It shows that:

- The Do Minimum option incurs a relatively small but persistent operating deficit throughout the appraisal period;
- The other development options designed to accommodate the demands of the Low Density Tourism Development Scenario (both Wallblake options and Brimegin Option 1) all achieve a modest positive cash flow by 2015; and
- Brimegin Option 2 incurs very high annual deficits initially due to the heavy burden of debt service charges but that annual cash flow becomes positive between 2010 and 2015.

Figure 7.3
Projected Airport Operating Surplus

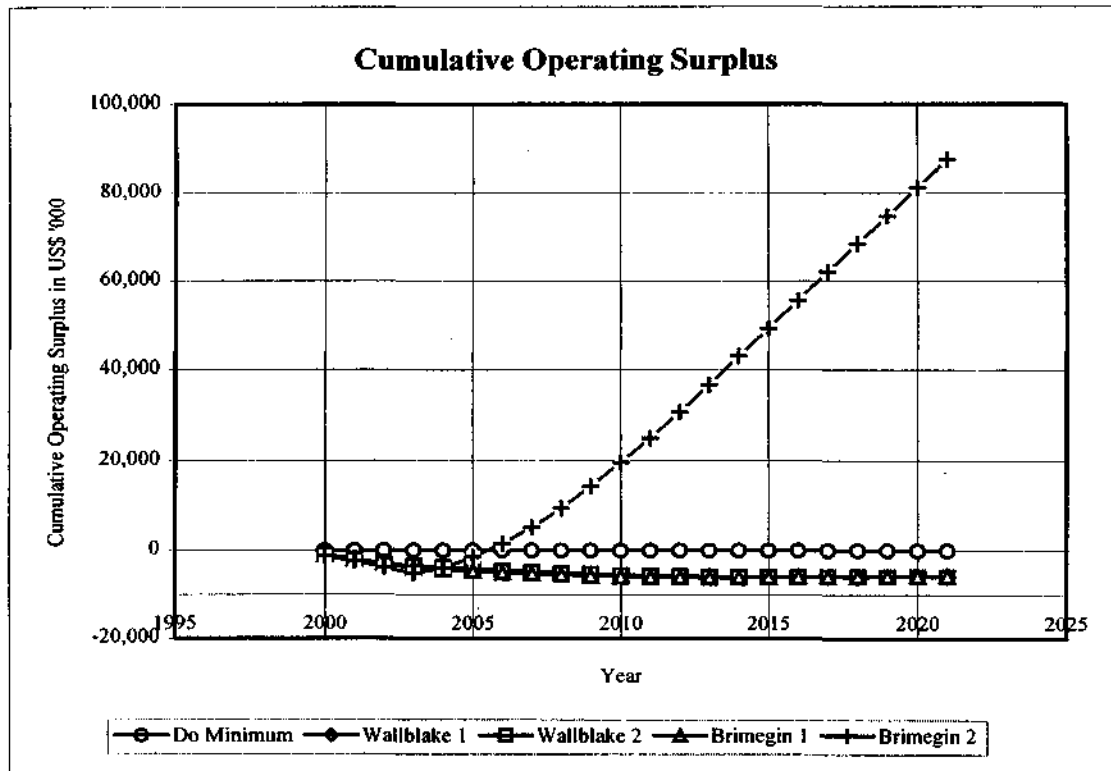
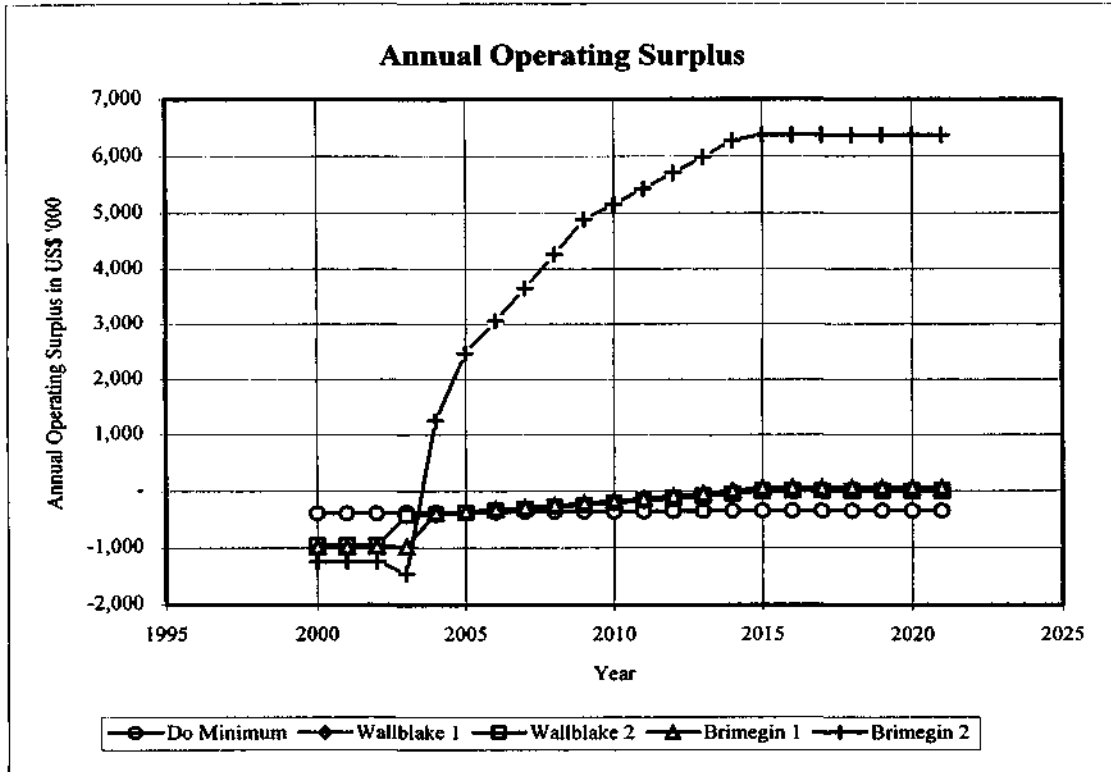


Table 7.24
Projected Cash Flow

Option	Do Minimum	Wallblake 1	Wallblake 2	Brimegin 1	Brimegin 2
	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
Annual					
2005	-774.4	-4,303.1	-6,214.4	-17,152.6	-43,679.0
2010	-764.3	-4,082.0	-5,993.3	-16,910.7	-41,094.6
2015	-752.1	110.5	110.5	177.6	6,800.0
Cumulative					
2005	-4,722.9	-10,112.2	-24,843.5	-58,636.2	-153,992.2
2010	-8,565.5	-30,991.1	-55,279.1	-143,703.4	-364,746.7
2015	-12,351.2	-44,168.2	-63,281.7	-172,711.7	-411,876.3
2020	-17,100.4	-44,930.3	-64,043.8	-174,551.6	-382,137.4

Source: WSA analysis.

The profiles of projected cash flow for each of the development options are illustrated in Figure 7.4.

7.9.3 Financial Return

The financial return on each of the airport development options has been measured in terms of net present values discounted to the present day at real interest rates of 7 percent, 9 percent and 11 percent.

Table 7.25 summarises the net present value of each option, firstly in terms of the balance of costs and benefits associated with the development option alone and secondly net of the corresponding NPV of the Do-Minimum option. It shows that all of the options return substantial negative financial returns at real interest rates of between 5 and 8 percent. Financial Internal Rates of Return are negative in all cases.

The Do-something options would be ranked in the following order:

- Wallblake 1;
- Wallblake 2;
- Brimegin 1; and
- Brimegin 2.

The least worst option in purely financial terms would be the Do-Minimum option of operating and maintaining the existing airport facilities at Wallblake up to the limit of their existing capacity.

Figure 7.4
Projected Airport Cash Flow

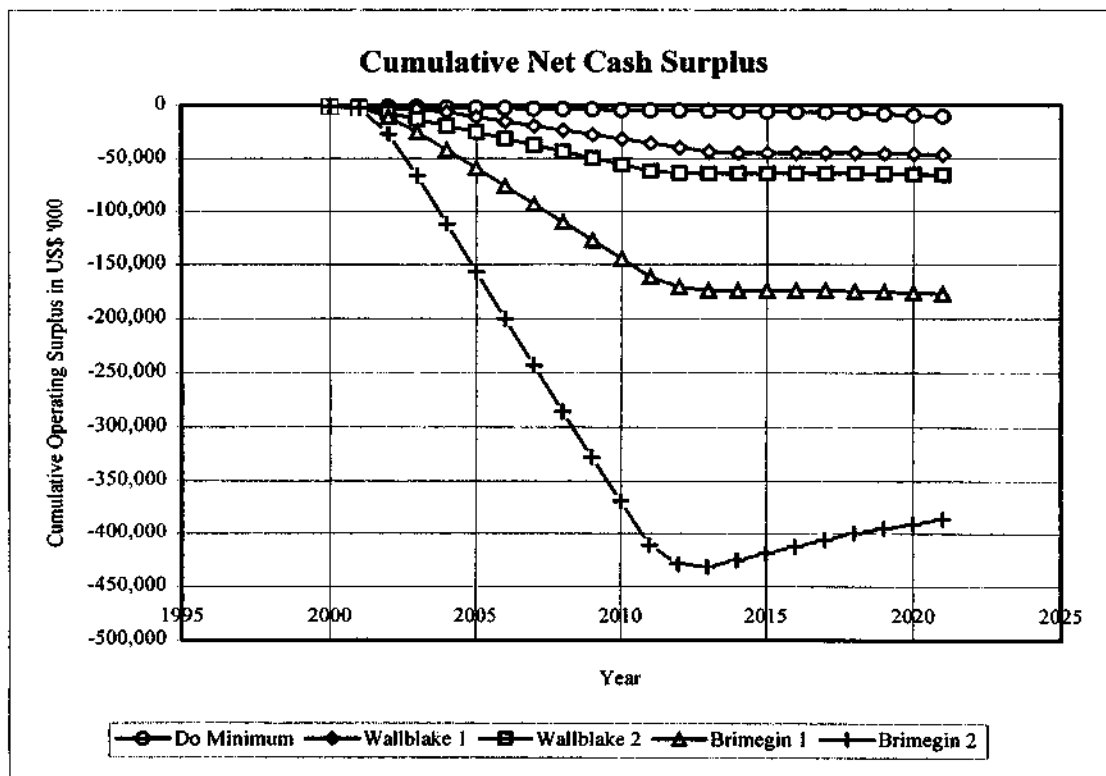
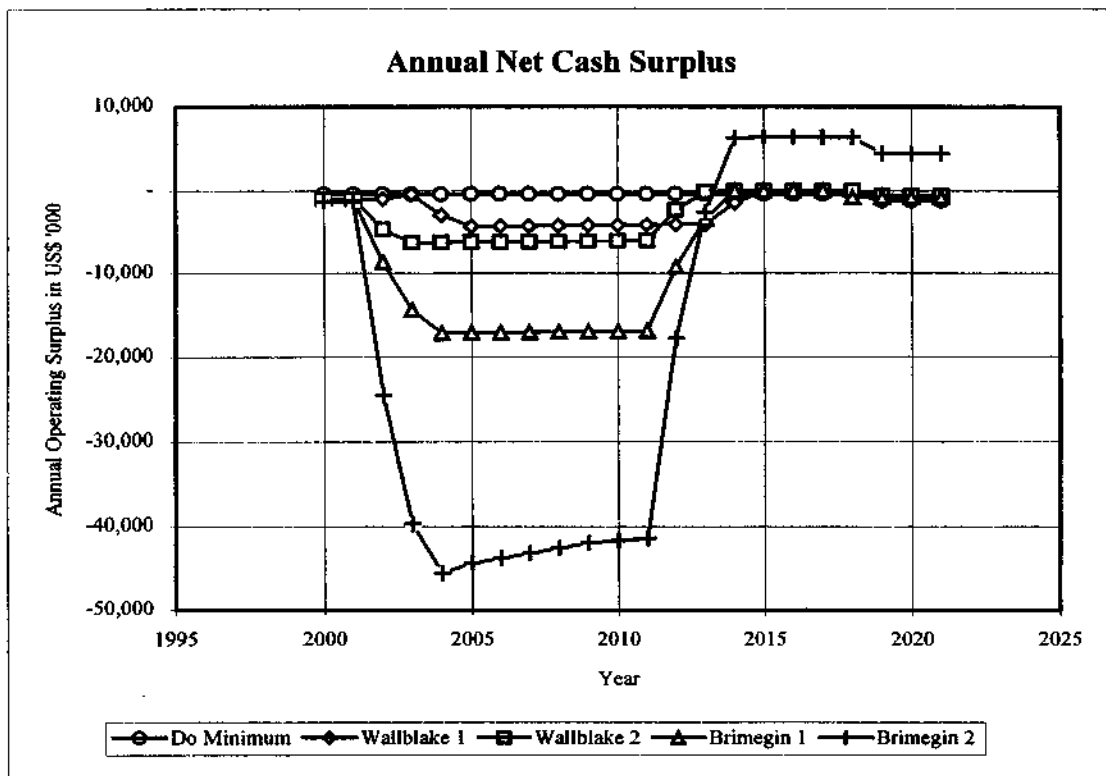


Table 7.25
Project Net Present Value

Option	Do Minimum	Wallblake 1	Wallblake 2	Brimegin 1	Brimegin 2
Interest Rate	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
Net Present Value					
5.0%	-8,772.4	-22,632.3	-35,291.7	-101,377.2	-212,949.3
6.5%	-8,183.7	-21,703.0	-34,677.1	-96,745.2	-211,694.5
8.0%	-7,616.7	-20,540.8	-33,535.9	-91,503.9	-206,285.8
Incremental Net Present Value					
Interest Rate	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
5.0%	-	-13,859.9	-35,392.6	-92,604.9	-204,176.9
6.5%	-	-13,519.3	-32,808.8	-88,561.5	-203,510.8
8.0%	-	-12,924.1	-30,435.5	-83,887.2	-198,669.1

Source: WSA analysis.

7.9.4 The Need for Subsidy

With a limited contribution from operating revenues and significant debt service charges, all of the alternative development options would need some degree of financial subsidy. This could be provided in the form of grant aid designed to eliminate or reduce the need for loan finance, or of revenue support to enable the airport operator to meet operating deficits and annual debt service charges.

Table 7.26 identifies the scale of operating and capital subsidy required to support each of the alternative development options. It shows that:

- A substantial operating subsidy would be required to support the Do-Minimum option;
- All of the Do-something options would require lower operating subsidies but much higher capital subsidies than the Do-Minimum option;
- Total subsidies over the appraisal period as a whole would range from US\$ 20.8 million for the do-Minimum option to US\$ 368.1 million for Brimegin Option 2;
- Average total subsidies per passenger movement over the appraisal period would range from US\$6.94 for the Do-Minimum option to US\$24.79 for Brimegin Option2;
- The Do-something option requiring the lowest level of subsidy would be Wallblake Option 1, which would require total support of US\$20.8 million over the appraisal period, equivalent to US\$868,000 per annum.

The Government of Anguilla recorded total recurrent revenue of approximately US\$25 million in 1998¹. The average total operating and capital subsidies required to support the various development options range from 3.5 percent of this total annual revenue in the Do-Minimum case to 30 percent for Brimegin Option 1. The alternative Wallblake development options would account for 8 percent (Wallblake 1) and 11 percent (Wallblake 2) of the Government's total annual revenue respectively.

¹ Table 11, Government of Anguilla National Accounts Statistics 1998, Statistical unit, Ministry of Finance.

Brimegin Option 2 would require an average annual subsidy equivalent to some 60 percent of the Government's total annual revenue. However, CIEC Engineering's proposal for Brimegin envisages that the airport's operating losses would be offset by the revenues generated by associated hotel developments.

The profiles of projected cash flow for each of the development options are illustrated in Figures 7.5 and 7.6.

**Table 7.26
Scale of Subsidy Required**

Option	Do Minimum	Wallblake 1	Wallblake 2	Brimegin 1	Brimigen 2
	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
Operating subsidy					
Average Annual	765.3	212.3	212.3	213.6	132.8
Cumulative	18,367.8	5,094.3	5,094.3	5,125.7	3,186.3
Per Passenger	US\$6.11	US\$1.30	US\$1.30	US\$1.31	US\$0.21
Capital subsidy					
Average Annual	103.0	1,728.2	2,524.6	7,150.9	15,205.9
Cumulative	2,472.1	41,476.4	60,589.9	171,621.2	364,942.4
Per Passenger	US\$0.82	US\$10.60	US\$15.48	US\$43.84	US\$24.58
Total subsidy					
Average Annual	868.3	1,940.4	2,736.8	7,364.5	15,338.7
Cumulative	20,839.9	46,570.7	65,684.2	176,746.9	368,128.7
Per Passenger	US\$6.94	US\$11.90	US\$16.78	US\$45.15	US\$24.79

Figure 7.5
Projected Airport Subsidy Required

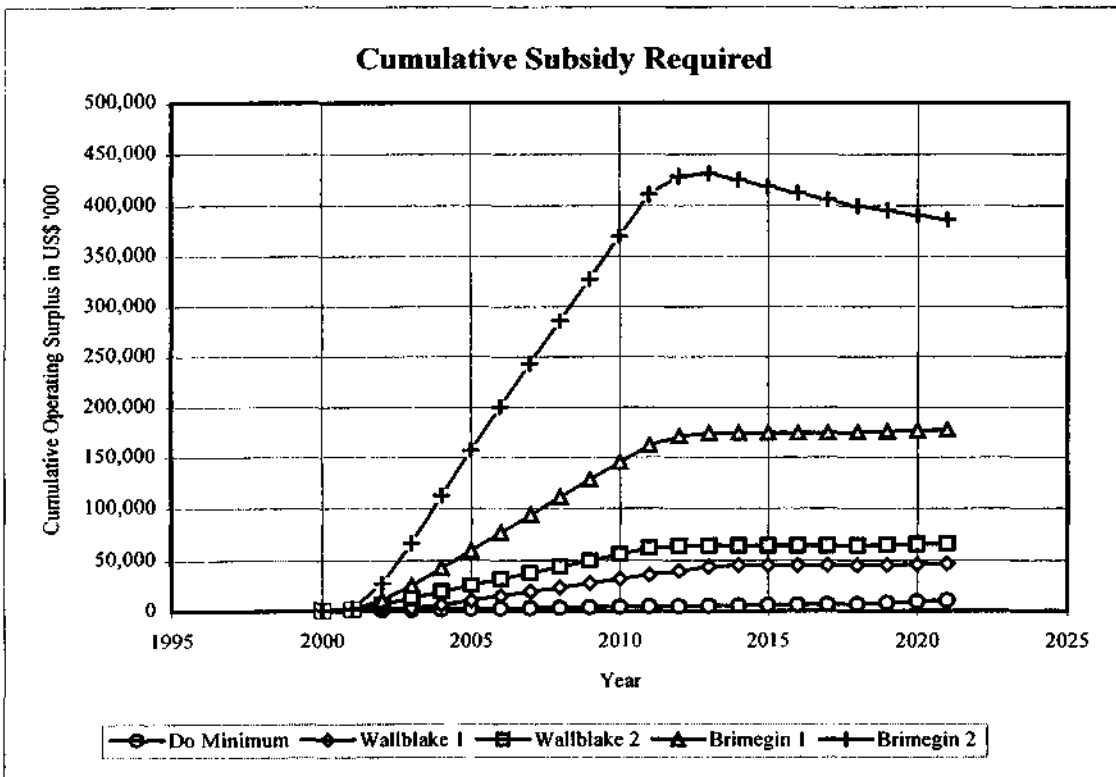
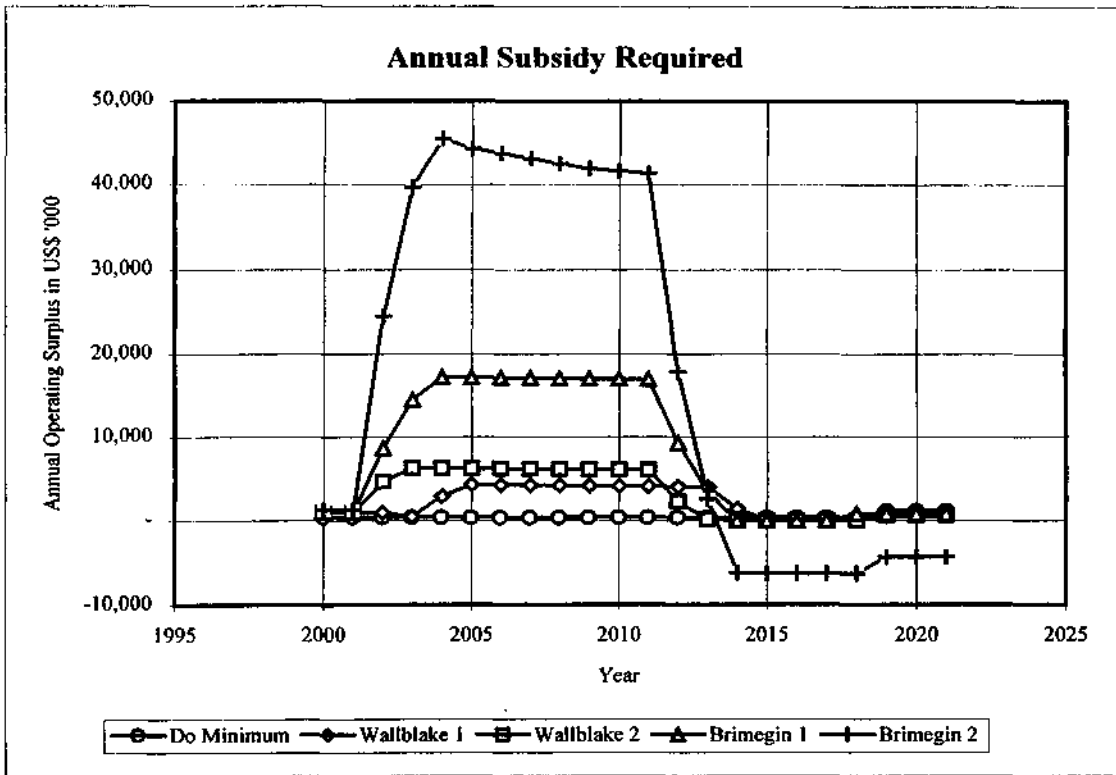
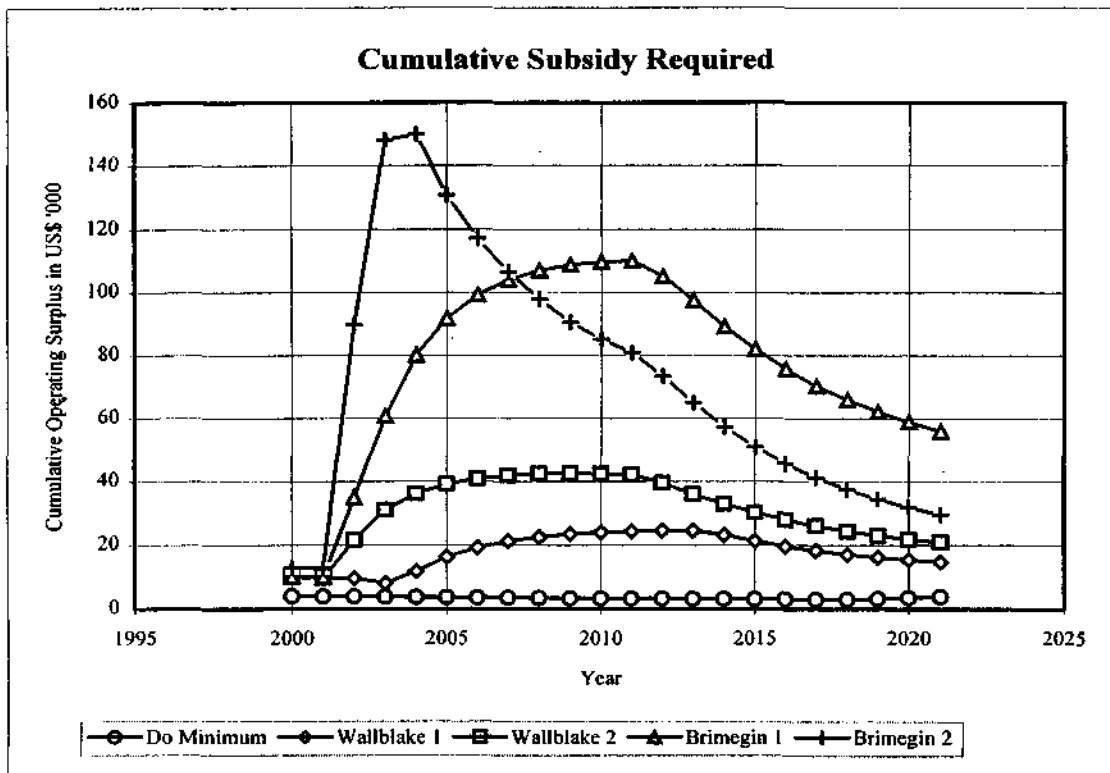
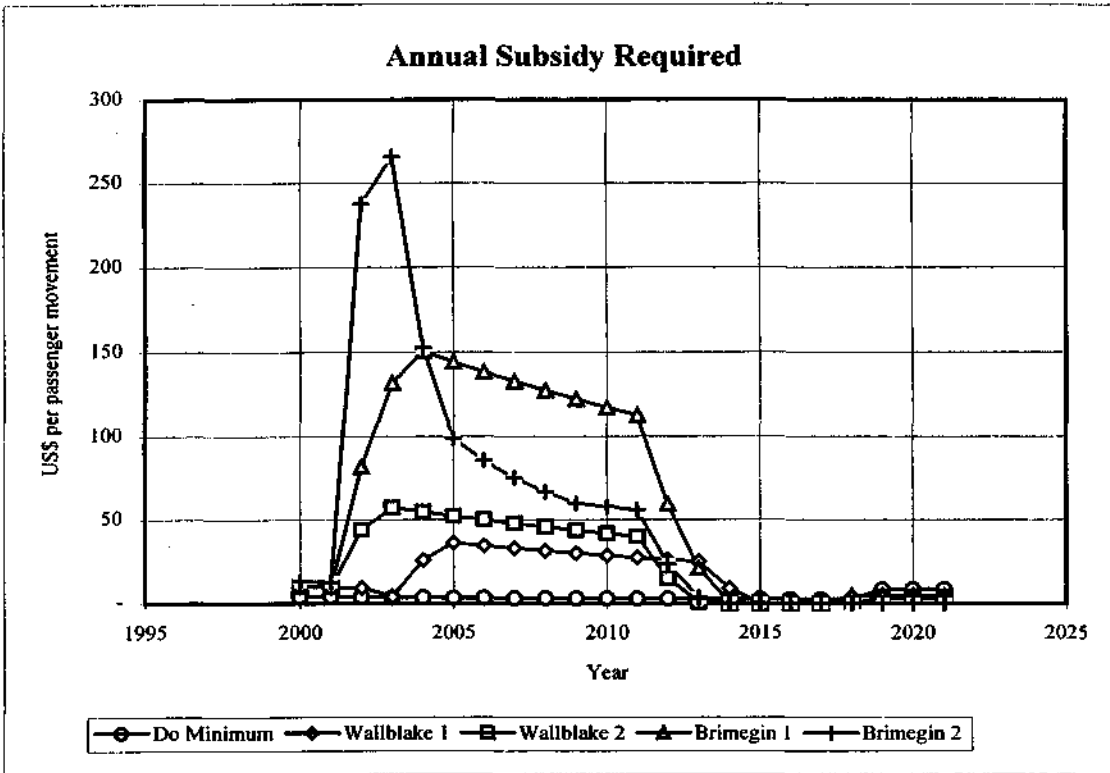


Figure 7.6
Projected Airport Subsidy per Passenger



7.10 Sensitivity Analysis

Based on the central analysis, the most important factors affecting the financial performance of the alternative development options have been identified as:

- Land costs;
- Capital costs;
- Balance of grant and loan funding;
- Traffic and/or revenue levels.

A series of sensitivity tests has been carried out to assess the impact of variations about the central assumptions for these key factors on the incremental net present value of the alternative development options. The individual sensitivity tests are summarised in Table 7.27.

**Table 7.27
Summary of Sensitivity Tests**

Factor	Test	Description
Land Costs	1.1	Excluded
	1.2	Unit costs reduced by 20 percent
	1.3	Unit costs increased by 20 percent
	1.4	Land-Take for Brimegin Option 2 reduced by 55% to 125 ha.
Capital Costs	2.1	Reduced by 20 percent
	2.2	Increased by 20 percent
Grant Aid	3.1	Grant aid set at 50 percent of total land & capital costs
Traffic/Revenue	4.1	Reduced by 20 percent
	4.2	Increased by 20 percent

Source: W.S. Atkins.

Few if any of the variations in the selected cost and revenue items are sufficiently large to reverse the very high negative NPV's derived by the central appraisal. Not surprisingly the sensitivity test with the greatest impact across all development options is Test 3.1, which assumes that 50 percent of all land and capital costs is met from grant aid. This reduces the negative NPV of the lowest cost option, Wallblake Option 1, to minus US\$0.85 million.

The results of this and the other sensitivity tests are summarised in Table 7.28 and illustrated in Figures 7.7 and 7.8.

Table 7.28
Sensitivity Analysis
Incremental Net Present Value of Development Options
US\$ '000 at 1999 prices

Sensitivity Test	Wallblake		Brimegin	
	Option 1	Option 2	Option 1	Option 2
Nominal Interest rate - 7.5%				
Central analysis	-13,859.9	-35,392.6	-92,604.9	-204,176.9
Land excluded	-10,893.2	-32,058.6	-91,475.9	-174,815.9
Land -20%	-13,266.6	-34,725.8	-92,379.1	-198,304.7
Land +20%	-14,453.3	-36,059.4	-92,830.7	-210,049.1
Land Take - 55%	n/a	n/a	n/a	-192,456.9
Cap - 20%	-9,248.9	-27,580.3	-68,770.3	-142,868.1
Cap + 20%	-18,471.0	-43,205.0	-116,439.5	-265,485.8
50% Grant Aid	-848.9	-14,194.7	-32,453.9	-36,224.2
Traffic -20%	-16,299.5	-37,740.5	-95,105.4	-225,434.9
Traffic + 20%	-11,420.3	-33,044.7	-90,104.3	-182,918.9
Nominal Interest Rate - 9.0%				
Central analysis	-13,519.3	-32,808.8	-88,561.5	-203,510.8
Land excluded	-10,872.4	-29,748.6	-87,525.2	-176,561.0
Land -20%	-12,990.0	-32,196.7	-88,354.2	-198,120.8
Land +20%	-14,048.7	-33,420.8	-88,768.7	-208,900.7
Land Take - 55%	n/a	n/a	n/a	-191,839.2
Cap - 20%	-9,436.3	-25,685.1	-66,940.6	-147,903.9
Cap + 20%	-17,602.4	-39,932.4	-110,182.3	-259,117.6
50% Grant Aid	-1,988.2	-13,469.6	-33,991.1	-51,018.7
Traffic -20%	-15,558.6	-34,781.9	-90,639.4	-221,220.3
Traffic + 20%	-11,480.0	-30,835.7	-86,483.6	-185,801.2
Nominal Interest Rate - 10.5%				
Central analysis	-12,924.1	-30,435.5	-83,887.2	-198,669.1
Land excluded	-10,554.9	-27,618.7	-82,933.3	-173,863.4
Land -20%	-12,450.2	-29,872.1	-83,696.4	-193,708.0
Land +20%	-13,397.9	-30,998.8	-84,077.9	-203,630.2
Land Take - 55%	n/a	n/a	n/a	-187,278.3
Cap - 20%	-9,295.3	-23,919.5	-64,209.0	-148,063.6
Cap + 20%	-16,552.8	-36,951.4	-103,565.3	-249,274.6
50% Grant Aid	-2,667.6	-12,737.2	-34,214.9	-59,752.6
Traffic -20%	-14,644.3	-32,107.8	-85,628.8	-213,544.4
Traffic + 20%	-11,203.8	-28,763.2	-82,145.5	-183,793.8

Source: W.S. Atkins analysis.

Figure 7.7
Variation in Incremental Project Net Present Value with Sensitivity Test
Wallblake Options at 6.5% Real Interest Rate

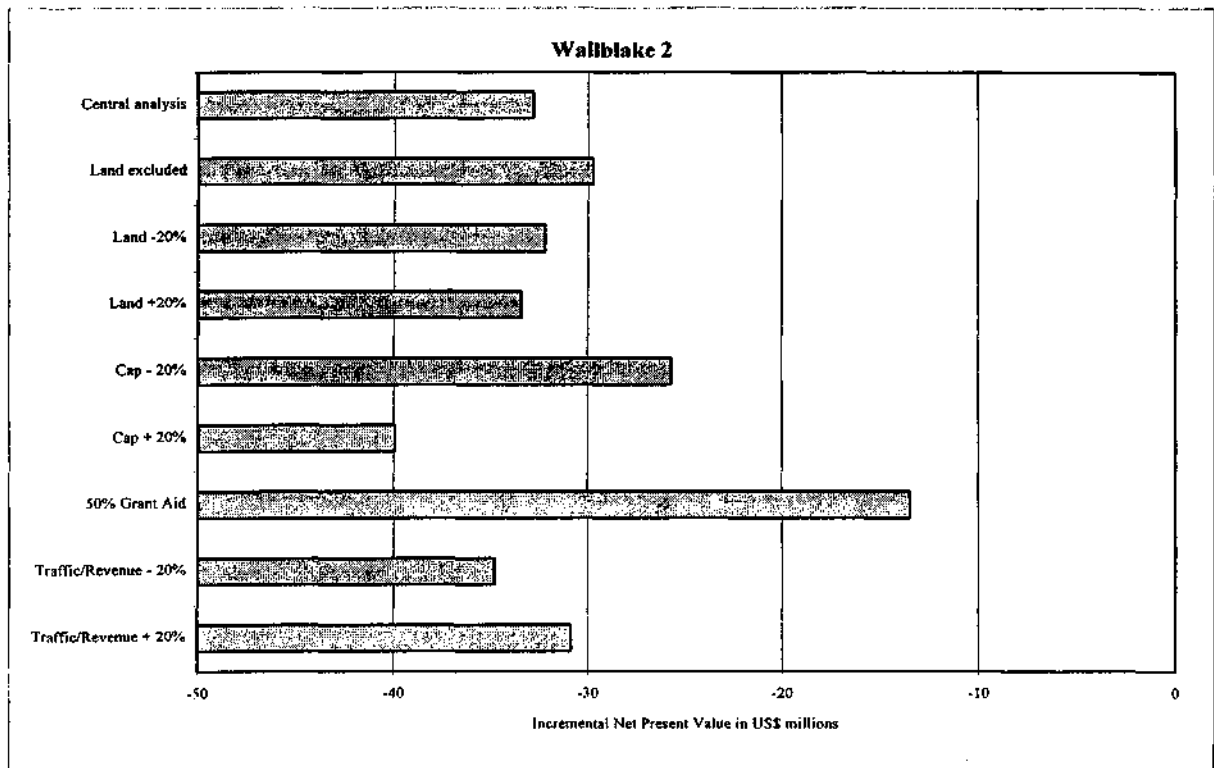
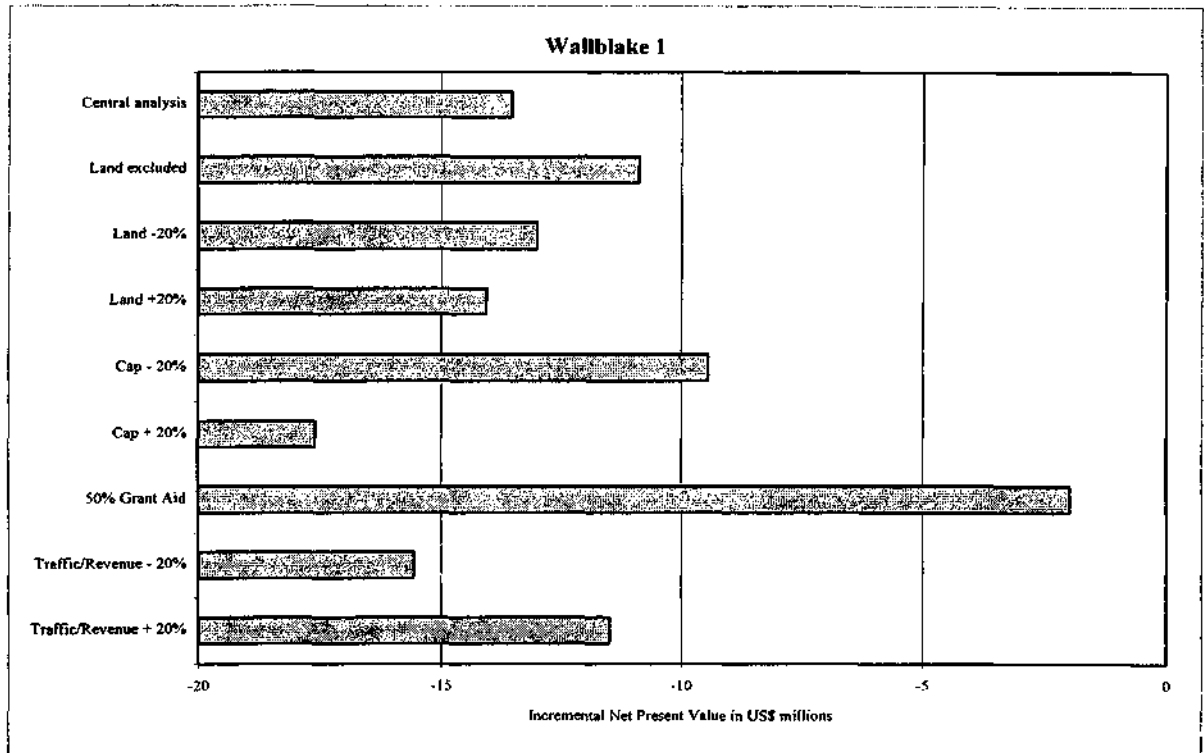
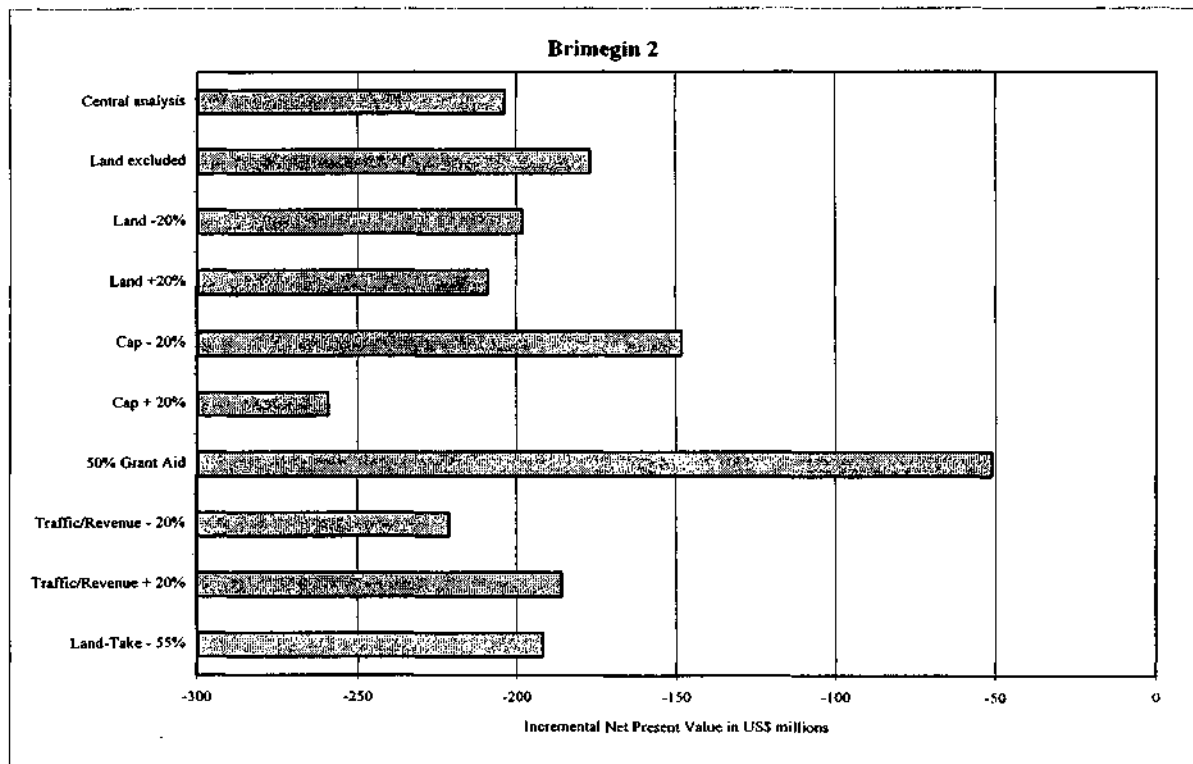
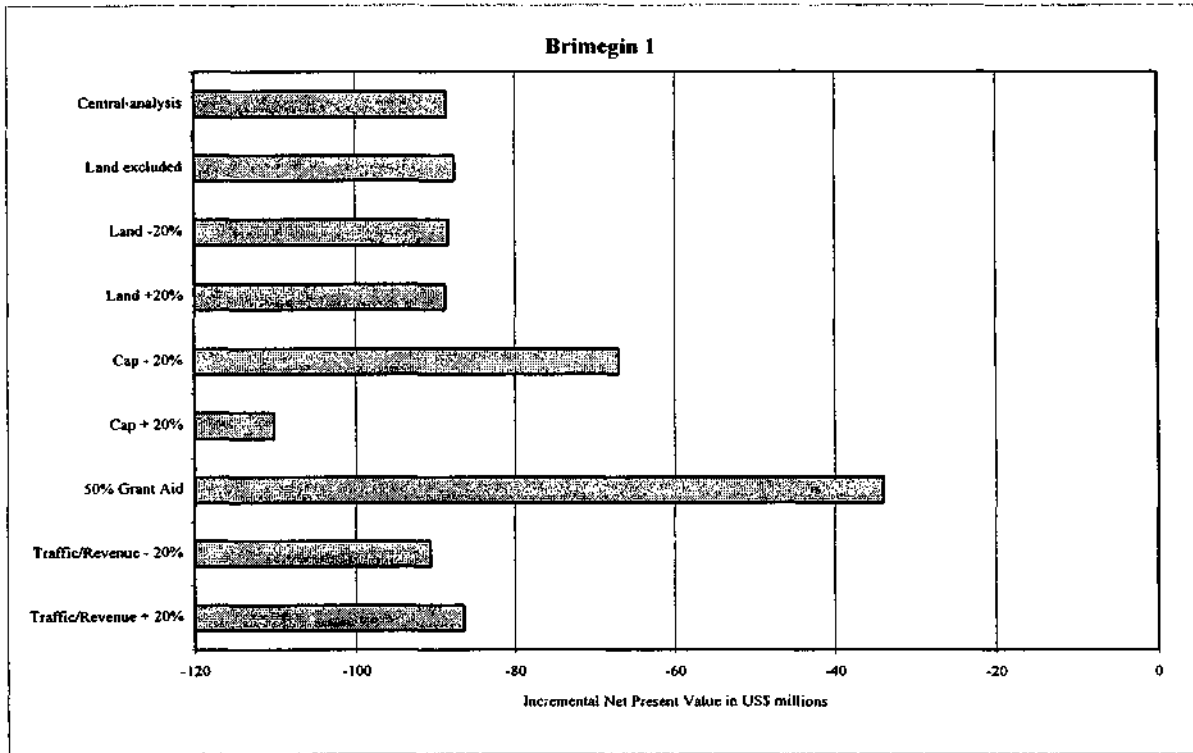


Figure 7.8
Variation in Incremental Project Net Present Value with Sensitivity Test
Brimegin Options at 6.5% Real Interest Rate



8.0 ECONOMIC COST BENEFIT ANALYSIS

8.1 Introduction

This chapter of the report assesses the economic costs and benefits of the competing development options described in Chapter 6. It uses standard economic appraisal criteria to measure the quantifiable economic performance of the various airport development options and examines the robustness of the analysis through a series of sensitivity tests.

8.2 Appraisal Framework

The appraisal measures costs and benefits to the economy of Anguilla. It uses the analytical approach developed by Little and Mirlees and recommended by the Department for International Development¹ in which the net economic benefit to the Anguillan economy is measured in terms of uncommitted foreign exchange in the hands of the government.

Salient features of the Anguillan economy to be taken into account in the valuation of economic costs and benefits include the fact there are:

- No personal or corporate income taxes;
- No sales tax;
- No customs duties on development projects; and
- No exchange controls.

On this basis, it is reasonable to conclude that for the majority of traded goods and services, financial costs accurately reflect economic costs. Consequently no general shadow pricing or other adjustments are proposed. One important exception to this general rule arises in the case of capital replacement and refurbishment costs which, unlike initial capital costs, are subject to import duties.

The Government of Anguilla has no formally approved test discount rate against which to assess the economic performance of public investment projects. Anguilla's economic position is clearly at some point between that of a rapidly developing third world economy, where a social discount rate of 12 percent may reflect an appropriate balance between the value placed on present and future benefits, and a more mature economy such as the United Kingdom, where a test discount rate of 6 percent is applied to public sector infrastructure projects. This appraisal uses a discount rate of 9 percent for the central appraisal. Alternative discount rates of 7 percent and 11 percent have been used to examine the sensitivity of the projects' performance to variations in the rate used.

The appraisal acknowledges that the scale of tourist-related development associated with Brimegin Option 2 would run counter to the Government's strategy for the

¹ Appraisal of Projects in Developing Countries, A Guide for Economists, HMSO, 1998.

continued development of a premium high yield low density tourism product and radically transform Anguilla's current development model.

8.3 Economic Costs

8.3.1 Relevant Costs

The relevant economic cost associated with the various airport development options include:

- Land acquisition and resettlement costs;
- Airport capital and recurrent costs;
- Capital and recurrent cost of supporting physical infrastructure; and
- Capital and recurrent cost of supporting social infrastructure.

The various airport development options may have a differential impact on airline operating costs but to the limited extent that these affect the Anguillan economy, they are treated as cost savings and discussed alongside other potential benefits in the following section.

Anguilla is not a large island and surface access costs are unlikely to represent a significant issue. For the option involving the enhancement of the existing Wallblake Airport, there will be no change in location and hence no difference in access costs per passenger. The Brimegin site is more distant from the existing population centres but re-siting the airport may shift the focus of development, which would over time, reduce the differences in access costs between the two sites, particularly with any high density tourism scenario. In view of their limited impact on total economic costs, surface access costs have been excluded from the appraisal.

The capital cost of the additional hotels required to accommodate the projected increase in tourist visitors² has also been excluded from the analysis as a substantial proportion of this expenditure is expected to be incurred by foreign companies and therefore will impose no economic cost on the Anguillan economy. Some residents may invest in new villas and guest-houses but hotels are expected to dominate any incremental increase in tourist accommodation.

Additional land will be required to any accommodate new hotels. However, since most of the land on Anguilla is privately owned, there are few if any public revenue implications in its sale. The cost of acquiring the land required to expand hotel and other tourist accommodation on Anguilla has therefore been excluded from the economic appraisal, which in line with the Little and Mirlees approach, measures project costs and benefits in terms of uncommitted foreign exchange in the hands of the Government.

² About US\$ 400,000 per room for Anguilla's more up-market hotels

8.3.2 Land Acquisition and Resettlement Costs

The discussion of financial costs in the previous chapter pointed out that all of the airport development options will require additional land either directly adjacent to the existing airport site at Wallblake or at Brimegin. There would also be additional costs associated with the need to demolish and replace existing buildings affected by the development proposals.

Option 1 for the development of Wallblake would require the acquisition of 8.4 hectares (21 acres) of land at an estimated cost of US\$ 1.04 million. Some 18 buildings would need to be replaced at an estimated cost of US\$2.16 million. Option 2 for Wallblake would require very little additional land over and above that needed to accommodate Option 1. The additional 0.5 hectares (1.3 acres) would cost US\$ 66,750. No additional buildings would be affected by this option.

The area surrounding the existing airport is well developed and although relatively high, the average land values quoted by local sources appear to be reasonable in the Anguillian context. By contrast, much of the 345 hectares of land earmarked for the potential major new airport at Brimegin appears to be largely unoccupied and unused at present, which suggests a low opportunity cost in economic terms. However, most of the land is privately owned and has been valued for potential acquisition purposes by the Anguillian Department of Lands and Surveys. This process has had the effect of setting a price that the Government would have to pay to acquire the land even if in terms of opportunity cost, this may appear to overstate its economic value. From the Government's point of view therefore, the economic cost of land at Brimegin is represented by its price rather than its opportunity cost.

In order to provide a replacement facility equivalent to the enhanced Wallblake Airport, Brimegin Option 1 would require the acquisition of 42 hectares (103 acres) at a unit cost of US\$107,300 per hectare (US\$43,440 per acre). Up to 5 buildings would have to be demolished and replaced at a unit cost of US\$ 136,650. The total cost of acquiring the land and buildings needed to accommodate this option is therefore US\$ 5.18 million.

The CIEC Engineering proposal for a larger airport would involve the acquisition of 345 hectares (853 acres) in the vicinity of Brimegin. The land and buildings involved have been formally valued at US\$ 35.95 million. Just over 80 percent of the proposed land take (276 hectares or 690 acres) would be required for Phase 1 of the proposed 2,200-metre runway airport. The remaining 20 percent (69 hectares or 163 acres) would be needed to extend the runway to 3,200 metres at a later date.

The net economic cost of the additional land required to implement each development option and the buildings that would have to be demolished and replaced in each case is summarised in Table 8.1. It has been assumed that the land needed for all development options would be acquired in 2001.

Table 8.1
Land Acquisition and Resettlement Costs
Economic Costs in US\$ '000 at 1999 Prices

Category of Cost	Wallblake		Brimegin	
	Option 1	Option 2	Option 1	Option2
Land Acquisition Costs	1,037.4	1,099.1	4,495.9	30,044.0
Building Costs	2,160.0	2,160.0	683.2	2,733.0
Total	3,197.4	3,259.1	5,179.1	32,777.0

Source: W.S. Atkins analysis.

8.3.3 Airport Capital and Recurrent Costs

Initial capital cost estimates were developed for each of the alternative airport development options in Chapter 6.

The initial capital investment associated with major capital projects is normally exempted from customs duties and in the absence of any other relevant adjustments, economic costs are identical to the corresponding financial costs. By contrast, replacement capital costs are subject to customs duties, which have been deducted to arrive at economic costs.

For ease of reference Tables 8.2 and 8.3 briefly restates initial and replacement capital costs respectively in economic prices. A detailed breakdown of the corresponding financial costs, which are some 10 percent higher than the economic costs, was given in Table 7.4.

Table 8.2
Initial Capital Costs
Economic Costs in US\$ at 1999 Prices

Option	2000	2001	2002	2003	Total
Wallblake 1	-	15,004	10,003	-	25,007
Wallblake 2	-	23,212	15,475	-	38,687
Brimegin 1	-	53,827	41,865	23,923	119,614
Brimegin 2	-	138,433	107,670	61,526	307,628

Source: W.S. Atkins analysis

Table 8.3
Replacement Capital Costs
Economic Costs in US\$ '000 at 1999 Prices

Year	Do Minimum	Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option2
2018	3,231	4,296	4,296	-	-
2019	-	-	-	5,943	13,923
2033	3,961	5,812	6,208	-	-
2034	-	-	-	6,261	12,547

Source: W.S. Atkins analysis.

Estimates of the recurrent costs of airport operations were developed in Chapter 7. The only difference between the financial and economic value of recurrent airport costs arises because spare parts and other imported goods required to refurbish existing assets attract customs duties.

Table 8.4 summarises the recurrent economic cost incurred by airport operations under each of the alternative development options.

**Table 8.4
Airport Operating Costs
Economic Costs in US\$ '000 at 1999 Prices**

Year	Do Minimum	Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option2
2000	1,238.9	1,240.9	1,240.9	1,240.9	1,240.9
2005	1,322.8	1,596.2	1,596.2	1,620.3	4,190.1
2010	1,389.7	1,776.9	1,776.9	1,801.1	5,429.7
2015	1,461.1	1,986.9	1,986.9	2,011.0	5,776.6

Source: W.S. Atkins analysis.

8.3.3 *Capital and Recurrent Cost of Supporting Physical Infrastructure*

In addition to the capital and recurrent cost of expanding airport facilities on Anguilla, an increase in tourism may result in a need for incremental investment in the island's physical infrastructure. A proportion of the additional facilities required may be met on-site by individual developers. Other facilities and services may be provided by utility companies who would recover the full cost of provision through charges levied ultimately on tourist visitors.

The main item of physical infrastructure provided as a public good is the road network. Car hire companies and taxis make a contribution to government revenues through import duties on vehicles, fuel, spare parts etc but this will be taken into account under 'tourism benefits' leaving no contribution for the upkeep or expansion of the existing road network. With the exception of the heavy trucks associated with major construction projects, most tourist-oriented traffic will involve light passenger vehicles. It is therefore unlikely to impose significant damage on made-up roads, whose maintenance requirements will be determined more by weathering than traffic levels.

This is particularly true in the Low Tourism Density Scenario for which it has been assumed that there will be no incremental physical infrastructure costs that are not met in full from user charges paid ultimately by tourist visitors. The scale of additional facilities required in the High Density Tourism Development Scenario may be such that it will be necessary to require developers to meet the cost of upgrading parts of the island's physical infrastructure to accommodate the particular needs of their development. Again, the assumption is that none of these incremental costs will fall onto the Government of Anguilla.

8.3.4 Capital and Recurrent Cost of Supporting Social Infrastructure

Chapter 4, which dealt with passenger demand and traffic forecasts, identified one of the major implications of any significant expansion in tourism on Anguilla to be an inevitable increase in the number of returnee, migrant or immigrant workers a proportion of whom would be accompanied by dependants. Under the medium growth traffic forecasts for the Low Density Tourism Development Scenario for example, the resident population of Anguilla in 2015 was projected to be some 10 percent higher than in the Do Minimum case.

Government accounts statistics³ show that the recent increase in Anguilla's population has been accompanied by a corresponding growth in Government spending across all areas of government activity. The figures are summarised in Table 8.5, which shows:

- Annual expenditure in real terms growing in line with but more slowly than population growth; and
- A slight reduction in real per capita expenditure as the population has increased.

**Table 8.5
Summary of Government Recurrent Expenditure
1994-1997**

Year	1994	1995	1996	1997	Annual Growth
Resident Population	9,926	10,302	10,663	11,915	4.7%
Government Expenditure					
Annual US\$m -current prices	17.73	18.46	18.71	21.92	5.5%
Annual US\$m- 1999 prices	19.98	19.99	20.06	22.61	3.1%
Per Capita US\$ at current prices	1,786	1,792	1,754	1,840	0.7%
Per Capita US\$ at 1999 prices	2,012	1,941	1,881	1,898	- 1.5%

Source: WSA analysis of information contained in the Report and Accounts of the Consolidated and Development Fund, Government of Anguilla, 1994 to 1997.

Incremental population growth will impact most directly upon people-oriented services such as education, health, welfare, housing and police. These key areas accounted for almost 35 percent of total public expenditure between 1994 and 1997. The figures for 1998 are less directly comparable because in that year the Government began a programme of road maintenance, which temporarily distorted the long-term distribution of public expenditure. A detailed breakdown of the relevant costs is set out in Table 8.6.

³ Report and Accounts of the Consolidated and Development Fund , 1994 to 1997 and National Accounts Statistics 1998.

Table 8.6

**Government Recurrent Expenditure by Category
1994 - 1997**

Category of Cost	1994	1995	1996	1997	Average
Police	5.2%	5.3%	5.5%	4.7%	5.2%
Education	12.6%	12.8%	14.1%	13.8%	13.4%
Health – Hospitals	8.5%	9.1%	10.5%	8.7%	9.2%
Health – Sanitation	2.3%	2.4%	2.5%	4.9%	3.1%
Community & Welfare	2.1%	2.6%	2.8%	2.4%	2.5%
Immigration & Labour	1.1%	1.3%	1.3%	1.3%	1.3%
Sub-total	31.9%	33.5%	36.6%	35.9%	34.6%

Source: WSA analysis of information contained in the Report and Accounts of the Consolidated and Development Fund, Government of Anguilla, 1994 to 1997.

In terms of cost per resident, these categories of public expenditure account for an average of US\$ 618 per resident or an estimated US\$ 666 per resident at 1999 prices levels. This is summarised in Table 8.7

**Table 8.7
Government Annual Recurrent Expenditure per Capita
Selected Categories**

Year	1994	1995	1996	1997	Average
US\$ at current prices	570	600	643	661	618
US\$ at 1999 prices	642	649	690	682	666

Source: WSA analysis of information contained in the Report and Accounts of the Consolidated and Development Fund, Government of Anguilla, 1994 to 1997.

National Accounts Statistics show the final consumption figure for Government expenditure across these sectors to be some 20 percent higher than the figure for recurrent expenditure at US\$800 per resident.

Although employers may meet a proportion of these incremental social costs through the provision of private medical cover or staff accommodation for example, the majority is likely to fall on the Government of Anguilla. It has therefore been assumed that every incremental resident over and above the natural growth in Anguilla's existing resident population will impose an annual cost of US\$ 800 on the Anguillan economy. The scale of this cost is summarised in Table 8.8.

**Table 8.8
Incremental Annual Social Costs
Economic Costs in US\$000 at 1999 Prices**

Year	Do Minimum	Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
2000	119	119	119	119	119
2005	417	753	753	753	6,643
2010	552	1,453	1,453	1,453	11,659
2015	686	2,216	2,216	2,216	13,560

Source: W.S. Atkins analysis.

8.4 Economic Benefits

8.4.1 *Relevant Benefits*

Economic benefits likely to be generated by one or more of the proposed airport development options include:

- the value of land released for development at Wallblake Airport, which has already been taken into account as a reduction in land acquisition costs associated with the two Brimegin options;
- incremental Government revenues from tourism;
- travel benefits accruing to Anguillan residents;
- incremental airport user charges paid by non-residents; and
- wider economic benefits of tourism;

Benefits are only relevant to the economic appraisal insofar as they impact on the Anguillan economy. For example, although the operational enhancement of Wallblake Airport will reduce the operating cost of some airlines, i.e. those whose aircraft suffer operating penalties at the existing airport, the savings involved will only represent a project benefit to the extent that they impact on the Anguillan economy. Fare reductions enjoyed by Anguillan residents would therefore be a relevant benefit whereas the savings accruing to visitors would only count to the extent that any funds released as a result of the savings are spent on Anguilla resulting in incremental Government revenue, business revenue and profit.

The volume of air cargo traffic to and from Anguilla is very low and is expected to remain at a modest level throughout the appraisal period. Unlike other relatively small scale Caribbean destinations such as the Turks and Caicos Islands, which import most tourist oriented goods directly from Miami some 600 miles away, Anguilla is very close to St Maarten. It can therefore take full advantage of regular flights into St Maarten by wide-bodied aircraft capable of carrying substantial amounts of freight in their belly holds.

Even hoteliers who once flew produce directly into Anguilla now prefer to take advantage of the large volumes of fresh produce flown into St Maarten and find it more convenient and economical to make the last leg of the journey by ferry rather than by air. Potential cost savings to air cargo traffic are therefore likely to be small and have been excluded from the appraisal. The situation may be slightly different if, in the case of Brimegin Option 2, wide-bodied aircraft were to serve Anguilla regularly.

8.4.2 *Value of Land Released for Development*

If Wallblake Airport were to be abandoned in favour of a new airport at Brimegin, the existing 33 hectare (81.5 acre) airport site would become available for development.

The site of the existing Wallblake Airport is adjacent to The Valley, Anguilla's main commercial centre and the focus of much of the island's commercial development. As such, it is probably one of the prime non-tourist development sites on Anguilla. However, the pace of development on the island is relatively slow and a large area of land between the Airport and the Valley is still used to graze farm animals. Redevelopment of the existing airport site may therefore take a number of years to complete. For the purposes of the appraisal, it has been assumed that the 33 hectares released by the closure of Wallblake Airport would be realised in equal tranches over the five-year period from 2005 to 2009.

The land has been valued at the same unit rate used to estimate the cost of acquiring land to expand the airport, i.e US\$123,500 per hectare (US\$50,000 per acre), which gives a total benefit of US\$ 4.075 million. No allowance has been made for any increase in the value of all land surrounding the airport that might arise as a result of relief from aircraft noise, fumes and vibration.

The projected scale and phasing of the economic benefits resulting from this process is summarised in Table 8.8 (a).

**Table 8.8 (a)
Development Phasing of Land Released on and Around the Site of Wallblake Airport
Economic Benefit in US\$ at 1999 Prices
Brimegin Option Only**

Year	Area Redeveloped hectares	Unit Value US\$ per hectare	Total Value US\$ '000
2005	6.6	123,500	815.1
2006	6.6	123,500	815.1
2007	6.6	123,500	815.1
2008	6.6	123,500	815.1
2009	6.6	123,500	815.1
Total	33.0	123,500	4,075.5

Source: W.S. Atkins analysis.

8.4.3 *Government Revenues from Tourism*

a) Sources of Revenue

The Government of Anguilla receives more than 90 percent of its revenue from two major sources⁴:

- Indirect taxes including an accommodation tax and airport/ferry departure taxes; and
- customs duties payable on a range of imported goods.

Property taxes on Anguilla are modest. A 100 room hotel for example might pay US\$ 5,000 a year. Similarly, there are no personal or corporate income taxes. Anguilla's tax base is therefore quite narrow and despite substantial revenue from import duties

⁴ Percentage quoted for 1998 but have been similar throughout the period 1994 to 1998.

levied on aluminium transhipped through the island, is sensitive to the number of tourist visitors arriving each year.

i) **Accommodation Tax**

The accommodation tax is a levy of 8 percent on the accommodation charges paid by visitors to hotels, guest-houses and villas. This tax raised US\$2.164 million in 1997, equivalent to US\$ 50 per tourist visitor.

Some sources in the tourist industry suggest that some villa and guest-house owners understate the amount of accommodation tax payable on their properties by claiming that the accommodation is rented to belongers or lent rather than rented to visitors. There is no hard evidence to support these allegations but since any dilution of accommodation tax revenue could lead to an overstatement of economic benefits from this source, a brief check has been made on their validity. This has been done by comparing the government revenue actually generated by the accommodation tax in 1997 (US\$ 2.164 million) with the amount of accommodation tax payable out of the estimated total expenditure by tourist visitors that year. This amounted to US\$ 54.1 million of which approximately 50 percent (US\$ 27.1 million) represented accommodation charges, and 4 percent (US\$ 2.164 million) the accommodation tax payable. On this basis, there is no significant difference between the amount of accommodation tax payable and the tax collected.

Note:

The proportion of expenditure for 'accommodation' refers only to the room charge and excludes any other expenditure (on food, facilities, services etc) incurred within hotels. The total proportion of visitor expenditure incurred within hotels is therefore significantly higher than 50 percent).

ii) **Passenger Departure Tax**

The previous chapter proposed that the departure tax payable by passengers leaving Anguilla by air should be re-cast as an airport passenger service charge and should form part of the airport's operating revenue. The economic benefit of airport operating revenues is discussed below in Section 8.4.5.

iii) **Customs Duties**

Import duties generated 37 percent of recurrent government revenue in 1998. Rates vary from zero on diesel fuel to 30 percent on wine. The rates currently applicable to tourist-oriented goods are summarised in Table 8.9.

Customs duties are not payable on boats used to provide ferry services, diesel fuel or on aviation fuel were it to be available on Anguilla. Import duties are normally waived on the initial capital cost of tourist-oriented developments but not on refurbishment or maintenance costs.

Revenue from customs duties clearly depends upon the level of expenditure by both tourists and hotels.

Table 8.9
Customs Duties on Tourism Oriented Goods

Category of Goods	Customs Duty
Food and Beverages	
Food	5 – 20 percent
Wine	30 percent
Beer	US\$ 3.77 per gallon
Entertainment	
Beach equipment	20 percent
Watersports equipment	20 percent
Transport	
Hire cars	25 percent
Taxis (new vehicles only)	12.5 percent
Petrol	US\$ 0.57 per gallon
Hotel Refurbishment and Re-equipment	
Building products	15 – 20 percent
Hotel furnishings	20 percent
Air conditioning	25 percent
Commercial kitchen equipment	25 percent
Electrical & electronic equipment	25 percent

Source: Customs and Excise Department, Anguilla.

b) Tourist Expenditure

A detailed survey of tourist expenditure on Anguilla was carried out by the Caribbean Tourism Organisation in 1993/94. The tourist expenditure figures quoted by Government statistics for subsequent years simply factor the results of the 1993/94 survey by the consumer price index and the number of tourist arrivals recorded each year. The figures derived in this manner are summarised in Table 8.10 under the heading Government estimates. Total spend is estimated to be US\$ 1,276 per visitor or slightly less than US\$ 168 per visitor night based on an average stay of 7.6 days.

W.S. Atkins interviewed the managers and/or proprietors of a number of Anguilla's major hotels during the course of the field visit. As part of the interview, they were asked to estimate the typical daily expenditure of their clients inside and outside the hotel and to indicate the likely distribution of this expenditure between accommodation, food, beverages, entertainment and transport. The general consensus was that the distribution of tourist expenditure by main category of cost, accommodation, food & beverage, transport etc, remained much the same as interview surveys found during the CTO survey of 1993/94.

Table 8.10
Daily Tourist Expenditure

Expenditure	Government Estimates		WS Atkins Interviews	
	Percentage	US\$ daily	Percentage	US\$ daily
Accommodation	54.3%	91.2	50.0%	84.0
Food & Beverage	23.8%	40.0	25.0%	42.0
Transport	7.3%	12.3	8.0%	13.4
Entertainment	3.8%	6.4	7.0%	11.8
Shopping	6.8%	11.4	5.0%	8.4
Other	4.0%	6.7	5.0%	8.4
Total	100.0%	167.9	100.0%	167.9

Note: Government estimates for 1998 have been increased by 2 percent in order to compare them directly with study estimates for 1999.

Source: W.S. Atkins analysis.

Table 8.11 summarises the government revenue obtained from each category of tourist expenditures from accommodation tax and customs duties. This shows that of the average US\$ 1,276 spent by each tourist, US\$ 47.3 (3.7 percent) is paid directly to the Government in the form of accommodation tax and US\$ 89.4 (7.0 percent) as customs duties paid on the operation and upkeep of hotels and other tourist oriented businesses.

Table 8.11
Government Revenue from Tourist Expenditure in US\$ per Visitor Arrival

Category	Total Spend	Accommodation Tax		Customs Duties		Total Revenue US\$
		%	US\$	%	US\$	
Accommodation Tax						
Accommodation	639	8	47.3	-	-	47.3
Customs Duties						
Hotel/restaurant	957	-	-	7.1%	63.5	63.5
Transport	102	-	-	9.0%	8.4	8.4
Entertainment	89	-	-	7.4%	6.2	6.2
Shopping	64	-	-	9.1%	5.3	5.3
Other	64	-	-	10.4%	6.0	6.0
Sub-total	1,276	-	-		89.4	89.4
Total	-	-	47.3		89.4	136.7

Note: Figures refer to the first round of spending only.

Source: W.S. Atkins analysis.

Table 8.12 summarises the estimated cost structures of typical tourist oriented businesses from which the aggregate customs duties payable per unit of revenue have been derived.

Table 8.12
Summary of Customs Duties Paid on the Operating Expenses
of Tourist-Related Enterprises

	Cost Input	Expenditure Per Tourist	Customs Duties	Government Revenue
	Percentage	US\$ per Tourist	Percentage	US\$ per Tourist
Hotels				
Maintenance	7.0%	67.0	5.0%	3.4
Consumables	10.0%	95.7	5.0%	4.8
Equipment	10.0%	95.7	25.0%	23.9
Staff costs	33.0%	315.9	0.0%	0.0
Food & Beverage	30.0%	287.2	12.5%	35.9
Profit	10.0%	95.7	0.0%	0.0
Sub-total	100.0%	957.3	7.1%	68.0
Transport				
Vehicles	20.0%	20.4	25.0%	5.1
Staff	30.0%	30.6	0.0%	0.0
Premises	20.0%	20.4	0.0%	0.0
Maintenance	15.0%	15.3	25.0%	3.8
Consumables	5.0%	5.1	5.0%	0.3
Profit	10.0%	10.2	0.0%	0.0
Sub-total	100.0%	102.1	9.0%	9.2
Entertainment				
Vehicles	30.0%	30.6	0.0%	0.0
Staff	20.0%	20.4	0.0%	0.0
Premises	30.0%	30.6	20.0%	6.1
Maintenance	10.0%	10.2	5.0%	0.5
Consumables	10.0%	10.2	0.0%	0.0
Profit	100.0%	89.3	7.4%	6.6
Shopping				
Staff	30.0%	30.6	25.0%	7.7
Premises	20.0%	20.4	5.0%	1.0
Purchases	30.0%	30.6	0.0%	0.0
Consumables	10.0%	10.2	0.0%	0.0
Profit	10.0%	10.2	0.0%	0.0
Total	100.0%	95.7	9.1%	8.7
Other				
Staff	30.0%	30.6	0.0%	0.0
Premises	20.0%	20.4	0.0%	0.0
Purchases	30.0%	30.6	20.0%	6.1
Consumables	10.0%	10.2	5.0%	0.5
Profit	10.0%	10.2	0.0%	0.0
Total	100.0%	63.8	10.4%	6.6

Source: W.S. Atkins analysis.

Approximately 30 percent of the operating expenses of hotels and other tourist-oriented business enterprises are attributable to staff wages and salaries. Income taxes payable on these earnings would also normally contribute to government revenue as would taxes on corporate profits. There are no corporate or personal income taxes on Anguilla and relatively few indirect taxes. However, the main source of Government revenue is customs duties and these are levied on a wide range of consumer goods. It has been assumed that some 10 percent of staff earnings are paid over to the government in the form of import duties.

Anguilla has acquired a reputation as an up-market and relatively expensive Caribbean destination. However, as Figure 8.1 shows⁵, it is by no means the most expensive destination in the region or the fastest growing in terms of average visitor expenditure per day. Interestingly tourists visiting nearby St Maarten and Puerto Rico both spend more per day on average than tourist visitors to Anguilla. Figure 8.2 shows that between 1994 and 1998, average tourist expenditure per day also increased slightly more quickly on St Maarten than on Anguilla.

However, government revenues depend upon total tourist expenditure and therefore on average stay as well as average expenditure per day. In this respect Anguilla is close to the top of the rankings, just below Barbados and the rapidly developing Turks & Caicos Islands. Anguilla achieves this position because its tourism product attracts high yield visitors for relatively long average stays. Figure 8.3 shows that for other high daily expenditure destinations, the average length of stay tends to be shorter than for Anguilla and that as a consequence, the total average expenditure per tourist visit is lower. The average stay on St Maarten for example is of the order of 5 days compared with 9.2 days for all visitors to Anguilla (and 7.6 for those staying in paid accommodation) and total expenditure per tourist arrival is some 30 percent lower than on Anguilla. In Puerto Rico, average daily expenditure is US\$ 230 but visitors stay for less than 3 days and average expenditure per tourist visitor is only half that achieved by Anguilla.

Average expenditure per tourist arrival across all of the Caribbean destinations examined, averaged 3.5 percent between 1994, and 1998, or some 1 percent in real terms. Anguilla was close to the middle of the range at 3.8 percent. It appears reasonable to assume that average spend per visitor will increase at a similar rate in real terms over the next 15 years or so, say by 15% by 2015. This assumption has been adopted for the appraisal of all airport development options formulated to meet the demands of the Low Density Tourism Development Scenario, i.e Wallblake Options 1 & 2 and Brimegin Option 1. Details of the impact on government revenues per tourist arrivals are summarised in Table 8.13.

Option 2 for Brimegin is designed to meet the needs of a High Density Tourism Development Scenario, which would transform Anguilla's tourism product into something closer to that currently offered by neighbouring St Maarten. It is unlikely that under these circumstances, Anguilla could retain the productive combination of a relatively high average tourist spend per day and a long average stay.

Visitors to high volume tourist destinations such as St Maarten and the Dominican Republic currently spend some 30 percent less than visitors to Anguilla. It has been assumed that the new large scale hotel accommodation associated with Brimegin Option 2, average expenditure – and hence government revenue – per tourist visitor would gradually fall to a level approximately one third lower than in the Low Density Tourism Development Scenario. Over time as the nature of Anguilla's tourism product changes, yields at the island's existing hotels would also fall to the level set by the newer hotels.

The rapid development of hotel accommodation in parallel with the major new international airport means that average tourist expenditure and hence, government

⁵ Figures 8.1 to 8.4 draw on information to be published in the Caribbean Tourism Statistical Report 1998, Caribbean Tourism Organisation.

revenue, would fall fairly quickly. By 2005 new hotels would account for 53 percent of all tourist rooms on Anguilla. This proportion would increase to 67 percent by 2010. Details of the projected impact on average tourist expenditure and government revenues per tourist arrival are summarised in Table 8.14.

Figure 8.1
Average Tourist Spend in US\$ per Day in 1998

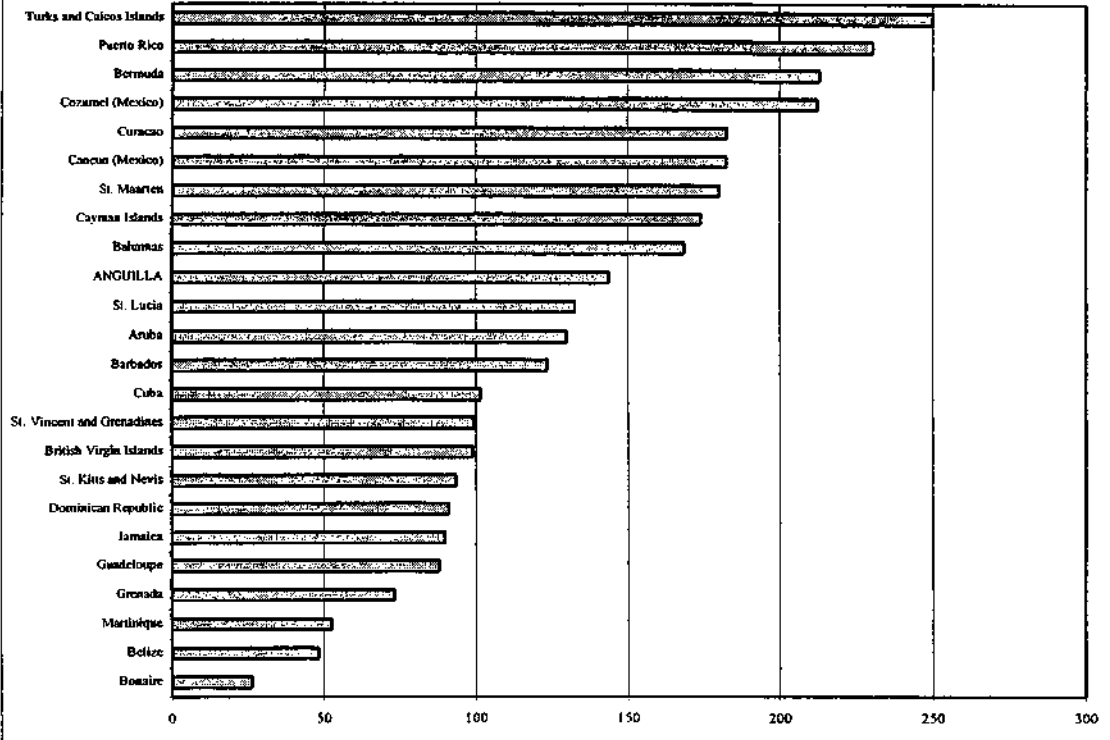


Figure 8.2
Annual Growth in Average Spend per Day

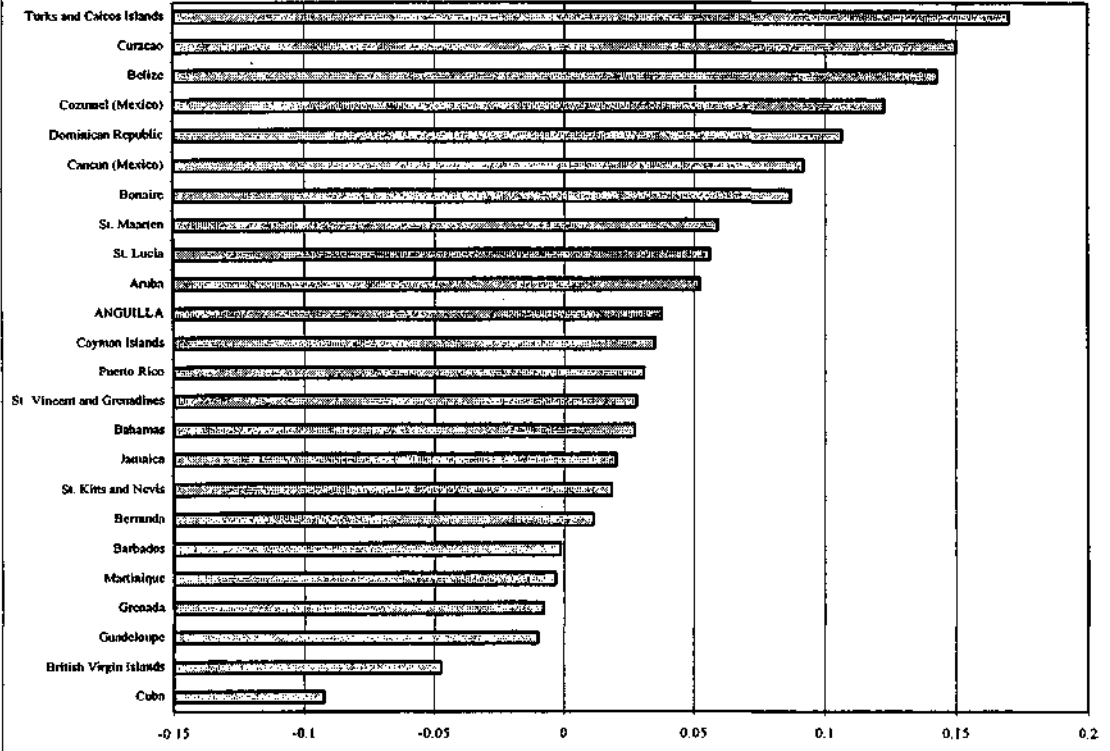


Figure 8.3
Average Tourist Visitor Stay in Days

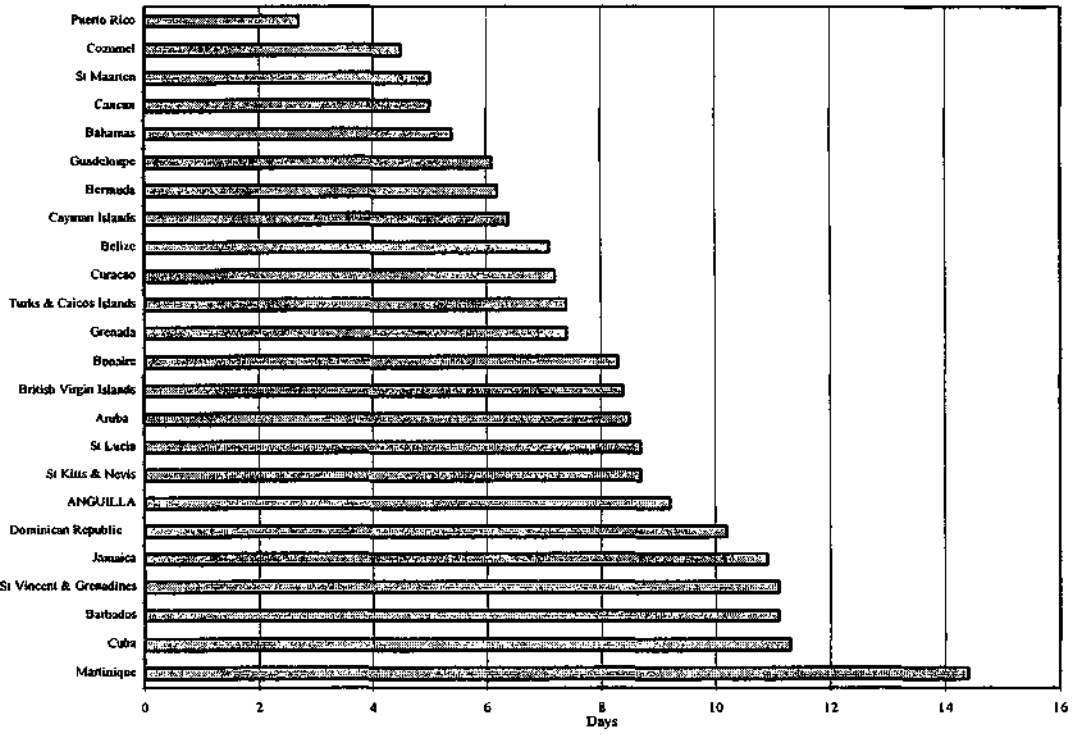


Figure 8.4
Average Spend per Tourist Arrival in 1998

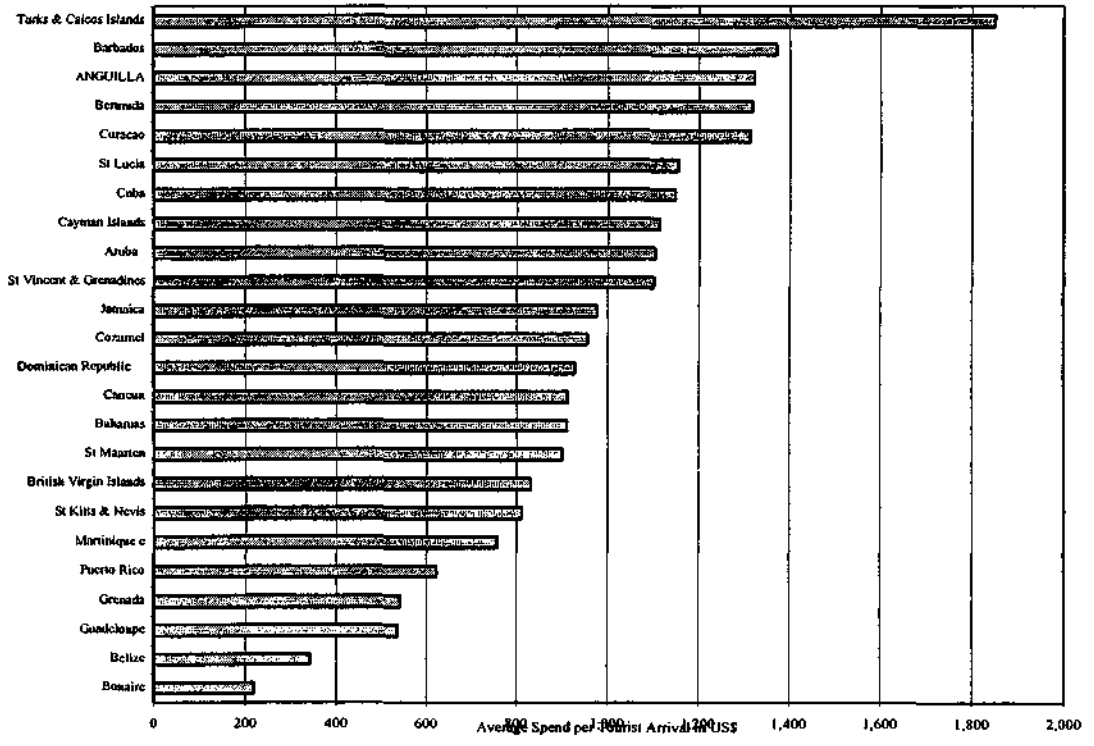


Table 8.13
Projected Changes in Tourist Expenditure and Government Revenues
Economic Costs at 1999 Prices

Year	Do Minimum	Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option2
Scale of Expenditure per Tourist Arrival Relative to Current Levels					
2000	1.00	1.00	1.00	1.00	1.00
2005	1.00	1.05	1.05	1.05	0.83
2010	1.00	1.10	1.10	1.10	0.73
2015	1.00	1.15	1.15	1.15	0.67
Average Expenditure per Tourist Arrival					
2000	\$1,276	\$1,276	\$1,276	\$1,276	\$1,276
2005	\$1,276	\$1,340	\$1,340	\$1,340	\$1,106
2010	\$1,276	\$1,404	\$1,404	\$1,404	\$1,018
2015	\$1,276	\$1,467	\$1,467	\$1,467	\$978
Government revenue per Tourist Arrival					
2000	\$137.50	\$137.50	\$137.50	\$137.50	\$137.50
2005	\$137.50	\$144.38	\$144.38	\$144.38	\$119.17
2010	\$137.50	\$151.25	\$151.25	\$151.25	\$109.67
2015	\$137.50	\$158.13	\$158.13	\$158.13	\$105.47

Note: The figures for Government revenue refers to the initial round of spending only.

Source: W.S. Atkins projections.

Table 8.14
Projected Tourist-Oriented Government Revenues
Economic Costs in US\$ '000 at 1999 Prices

Year	Do Minimum	Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option2
Accommodation Tax					
2000	1,490.4	1,490.4	1,490.4	1,490.4	1,490.4
2005	1,732.3	2,128.0	2,128.0	2,128.0	9,789.0
2010	1,927.8	2,928.4	2,928.4	2,928.4	12,535.2
2015	2,134.2	3,914.7	3,914.7	3,914.7	12,577.2
Customs Duties paid by Tourists and Tourist Oriented Businesses					
2000	2,823.9	2,823.9	2,823.9	2,823.9	2,823.9
2005	3,282.3	4,032.1	4,032.1	4,032.1	17,664.4
2010	3,652.7	5,548.6	5,548.6	5,548.6	21,591.8
2015	4,043.7	7,417.4	7,417.4	7,417.4	20,722.2
Customs Duties paid by Employees of Tourist Oriented Businesses					
2000	1,210.2	1,210.2	1,210.2	1,210.2	1,210.2
2005	1,406.7	1,728.0	1,728.0	1,728.0	7,570.5
2010	1,565.4	2,378.0	2,378.0	2,378.0	9,253.6
2015	1,733.0	3,178.9	3,178.9	3,178.9	8,881.0
Total					
2000	5,524.50	5,524.50	5,524.50	5,524.50	5,524.50
2005	6,421.30	7,888.10	7,888.10	7,888.10	35,023.90
2010	7,145.90	10,855.00	10,855.00	10,855.00	43,380.60
2015	7,910.90	14,511.00	14,511.00	14,511.00	42,180.40

Source: W.S. Atkins projections.

8.4.4 *Travel Benefits to Residents of Anguilla*

Only a small proportion of residents' journeys to and from Anguilla is made by air; the remaining travellers use the frequent ferry services between Blowing Point and Marigot on St Martin. This is not surprising since the air-fare between Anguilla and St Maarten is US\$40 compared to a ferry fare of US\$ 10 and the ferries operate a more frequent service that requires no advance booking.

The one category of journey for which travelling by air offers a more attractive option than the ferry is for passengers connecting with international flights operating to or from St Maarten. Allowing for airline check-in times on the one hand and the ferry crossing plus a taxi ride between Marigot and Princess Juliana International Airport on the other, the overall journey times by air and sea are comparable. Total journey costs are also comparable; the higher air fare being offset by the combined cost of the ferry, taxi and the US\$ 20 departure tax payable by non-residents at Princess Juliana International, which transfer passengers avoid.

The short flight between Anguilla and St Maarten is normally flown using a variety of small (9-19 seat) aircraft, some of which are operated by Anguillan charter carriers. None of the alternative airport development options would have any impact on these operations since the aircraft used can operate without constraint from the existing runway at Wallblake. Services to and from points within the Caribbean region are currently operated using twin-engined turboprop aircraft with up to 50 seats. In certain weather conditions, the most commonly used aircraft, American Eagle's 46 seat ATR-42, can only operate from Wallblake's existing runway with payload restrictions.

All of the proposed airport development options would remove the constraints on ATR-42 constraints and enable the larger ATR-72 aircraft to operate at reasonable load factors (Wallblake Option 1) or without restriction (all other options). Option 2 for Wallblake and both Brimegin options would also enable jet aircraft to operate directly between Anguilla and the southern United States. However, only the fully developed 3,200-metre runway facility proposed by CIEC Engineering for Brimegin would allow aircraft to fly directly between Anguilla and the remainder of North America or Europe.

There is no information available that identifies the purpose and ultimate origin or destination of residents travelling to or from Anguilla by air. It has therefore not been possible to estimate in any realistic fashion the incremental benefits that the alternative airport development options would confer on resident travellers. At the margin, resident passengers will receive a level of economic benefit from the improved airport facilities that exactly matches the charges paid. The average airport user charge paid therefore measures the minimum value of travel benefit enjoyed by each resident passenger. Travel benefits to resident air passengers have therefore been calculated in terms of their contribution to airport operating revenues, which are discussed below.

8.4.5 *Airport Operating Revenues*

Operational revenue streams for each of the airport development options were derived in the previous chapter. These comprised:

- Passenger service charge;
- Aircraft-related charges; and
- Commercial revenues.

Recast as a passenger service charge, the current airport departure tax effectively represents government revenue generated by the export of airport facilities to non-resident air passengers. As such, the incremental revenue generated from this charge is a legitimate economic benefit that can be attributed to the various airport development options. The same argument applies to aircraft-related charges. Those paid by foreign operators represent the export of airport facilities and services and as such are an economic benefit attributable to the relevant development option.

The revenue generated by airport charges ultimately paid by resident passengers is not normally treated as an economic benefit in its own right but as an abstraction from the travel benefits that resident air passengers obtain from the improved airport facilities. There is no indication that airport user charges are included in the tourist expenditure survey data produced by CTO and others. If they had been, introducing them again as a benefit under airport operating revenues would have involved an element of double counting.

For the reasons outlined above, it has not been possible to estimate the value of the travel benefits likely to be enjoyed by resident passengers who in any event are forecast to represent an increasingly minority share of total passenger numbers. Resident passengers may well receive a greater level of economic benefit from the improved airport facilities than that measured by the amount they pay in airport charges but the level of charges paid measures the minimum benefit enjoyed by each resident passenger.

Commercial revenues are either a simple rental payment for the use of space provided and maintained by the airport operator, a concession fee based on turnover – i.e. an abstraction from concessionaires' profits – or an agreed mixture of both. In all cases, incremental commercial revenue can be directly offset against incremental airport operating costs and therefore represents a legitimate economic benefit attributable to the various development options.

Table 8.15 summarises the economic benefit to the Anguillan economy generated by airport operating revenues over the appraisal period.

Table 8.15
Economic Benefit Represented by Airport Revenues
Economic Costs in US\$ '000 at 1999 Prices

Year	Do Minimum	Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
Passenger Service Charge					
2000	356.8	357.3	357.3	357.3	357.3
2005	414.6	957.1	957.1	957.1	5,021.7
2010	461.0	1,241.9	1,241.9	1,241.9	7,314.7
2015	510.2	1,573.9	1,573.9	1,573.9	7,944.2
Aircraft-related Revenues					
2000	26.0	26.2	26.2	26.2	26.2
2005	58.0	126.2	126.2	172.1	1,234.3
2010	76.2	192.7	192.7	259.5	2,246.0
2015	97.3	281.0	281.0	374.7	2,927.7
Commercial Revenues					
2000	97.2	97.6	97.6	97.6	97.6
2005	112.8	190.3	190.3	190.3	1,150.0
2010	125.3	240.7	240.7	240.7	1,669.3
2015	138.6	299.4	299.4	299.4	1,814.6
Total					
2000	480.0	481.1	481.1	481.1	481.1
2005	585.4	1,273.6	1,319.5	1,319.5	7,460.0
2010	662.5	1,675.3	1,742.1	1,742.1	11,230.0
2015	746.1	2,154.3	2,248.0	2,248.0	12,686.5

Source: W.S. Atkins projections.

8.4.6 *Wider Economic Benefits from Tourism*

Multiplier effects are often enlisted to enhance the projected economic benefits of airport development projects as a result of the secondary effects of tourist expenditure, airport operating costs etc. In practice, these secondary effects depend upon there being under-utilised labour and other resources available within an economy and seldom increase project benefits by more than 20 - 30 percent.

In the case of Anguilla, where there is very little unemployment, the impact of the multiplier would be even more muted. Once any slack in the existing tourist accommodation (of which foreign concerns own a large proportion) is taken up, any additional revenue from tourism will accrue largely to new and predominantly foreign investors in new hotels. Many of the immigrant workers required to staff the new hotels may remit a significant proportion of their wages overseas.

8.5 Economic Performance

8.5.1 Wallblake Development Options

On the basis of the assumptions outlined above, Wallblake Option 1 could be expected to achieve a project net present value of plus US\$ 8.9 million and minus US\$ 3.6 million at a discount rates of 7 percent and 11 percent respectively. The NPV at the central 9 percent discount rate would be just positive at US\$ 1.5 million and the Economic Internal Rate of Return would be 9.2 percent. Details are set out in Table 8.16.

The more expensive Wallblake Option 2 would perform less well because the extra capital costs are not matched by significant incremental operational and hence economic benefits over and above those provided by Wallblake Option 1. Project Net Present Value would range from minus US\$ 1.9 million at a discount rate of 7 percent to minus US\$ 14.8 million at a discount rate of 11 percent. At the central 9 percent discount rate, the NPV would be minus US\$ 9.5 million and the Economic Internal rate of return would be 6.6 percent, some 2.4 percentage points below the opportunity cost of capital. Details of this development option are also set out in Table 8.16.

Table 8.16
Summary of Economic Performance
Wallblake Development Options

Discount Rate	7 percent	9 percent	11 percent
Wallblake Option 1			
Net Present Value	US\$ + 8.9 m.	US\$ + 1.5 m.	US\$ - 3.6 m.
IRR	9.2 percent		
Wallblake Option 2			
Net Present Value	US\$ - 1.9 m.	US\$ - 9.5 m.	US\$ - 14.8 m.
IRR	6.6 percent		

Source: W.S. Atkins analysis.

The economic performance of the Wallblake development options is essentially a balance between the key project costs: land and property costs, initial capital costs and replacement capital costs, on the one hand and the key project benefit: enhanced Government revenues, on the other. Increased Government revenues from taxes and duties levied on tourism related goods and services are offset to some extent by the increased social costs that would be incurred as a result of importing labour to service an expanded tourism sector. Airport operating costs and revenues are small compared to other project costs and revenues.

The incremental cost and benefit streams associated with development Options 1 and 2 for Wallblake are summarised in Tables 8.17 and 8.18 respectively. Corresponding 'With Project', 'Do-Minimum' and 'Incremental' cost and benefit streams are illustrated in Figures 8.5 and 8.7. Figures 8.6 and 8.8 illustrate the annual and cumulative net present benefit stream of each development option.

Full details of the results of the economic appraisal of the Wallblake development Options are set out in Appendix 7.

Table 8.17: WALLBLAKE OPTION 1 - INCREMENTAL ECONOMIC COSTS AND BENEFITS

ECONOMIC APPRAISAL - CENTRAL ANALYSIS

Year	Annual Passengers	Annual Visitors	Government Revenues	Operating Result (1)			Capital Expenditure				Social Costs			Residual Values			Net Benefit (Cost)	
				Operating Revenue	Operating Costs	Operating Surplus	Net Land Costs	Capital Costs	Periodic Maintenance	Total Costs	Capital Costs	Recurrent Costs	Total Costs	Land	Assets	Debt	Annual	Cumulative
Units	'000	'000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
2000	0	-	-	0	2	2	-	-	-	-	-	-	-	-	-	-	2	2
2001	3	2	239	12	14	3	3,197	15,005	-	18,202	-	62	62	-	-	-	18,028	18,031
2002	5	4	503	25	28	3	-	10,003	-	10,003	-	127	127	-	-	-	9,630	27,661
2003	8	7	794	430	240	190	-	-	-	-	-	194	194	-	-	-	790	26,871
2004	11	9	1,115	473	256	217	-	-	-	-	-	264	264	-	-	-	1,068	25,803
2005	14	12	1,467	525	273	252	-	-	-	-	-	336	336	-	-	-	1,383	24,421
2006	18	16	1,848	574	293	281	-	-	-	-	-	442	442	-	-	-	1,687	22,734
2007	22	19	2,261	626	314	312	-	-	-	-	-	551	551	-	-	-	2,021	20,713
2008	26	23	2,707	682	337	345	-	-	-	-	-	664	664	-	-	-	2,387	18,325
2009	31	27	3,189	742	361	380	-	-	-	-	-	781	781	-	-	-	2,788	15,537
2010	36	31	3,709	805	387	418	-	-	-	-	-	901	901	-	-	-	3,226	12,311
2011	40	35	4,211	866	412	455	-	-	-	-	-	1,019	1,019	-	-	-	3,646	8,665
2012	45	39	4,749	931	438	493	-	-	-	-	-	1,142	1,142	-	-	-	4,101	4,564
2013	50	44	5,325	1,000	465	534	-	-	-	-	-	1,267	1,267	-	-	-	4,592	28
2014	56	48	5,941	1,073	495	578	-	-	-	-	-	1,397	1,397	-	-	-	5,122	5,150
2015	61	53	6,600	1,150	526	624	-	-	-	-	-	1,530	1,530	-	-	-	5,694	10,844
2016	61	53	6,600	1,150	526	624	-	-	-	-	-	1,530	1,530	-	-	-	5,694	16,539
2017	61	53	6,600	1,150	526	624	-	-	1,064	1,064	-	1,530	1,530	-	-	-	4,630	21,169
2018	61	53	6,600	1,150	526	624	-	-	-	-	-	1,530	1,530	-	-	-	5,694	26,863
2019	61	53	6,600	1,150	526	624	-	-	-	-	-	1,530	1,530	-	-	-	5,694	32,557
2020	61	53	6,600	1,150	526	624	-	-	-	-	-	1,530	1,530	-	-	-	5,694	38,252
2021	61	53	6,600	1,150	526	624	-	-	-	-	-	1,530	1,530	-	-	-	5,694	43,946
2022	61	53	6,600	1,150	526	624	-	-	-	-	-	1,530	1,530	-	-	-	5,694	49,641
2023	61	53	6,600	1,150	526	624	-	-	-	-	-	1,530	1,530	-	-	-	5,694	55,335
2024	-	-	-	-	-	-	-	-	-	-	-	-	-	1,037	8,781	-	9,818	65,153
Total	917		97,460	19,112	9,049	10,063	3,197	25,008	1,064	29,270	-	22,918	22,918	1,037	8,781	-	65,153	
NPV	7%		36,343	7,662	3,711	3,951	2,988	22,760	337	26,085	-	8,601	8,601	205	1,731	-	7,543	
	9%		28,408	6,125	2,988	3,137	2,933	22,185	246	25,365	-	6,736	6,736	131	1,110	-	686	
	11%		22,536	4,970	2,442	2,528	2,881	21,637	181	24,698	-	5,353	5,353	85	717	-	4,185	
Internal Rate of Return																		9.2%

Note (1) Operating result net of charges paid by residents.

Source: WSA analysis

Figure 8.5
Cost and Benefits Streams
Wallblake 1 Option

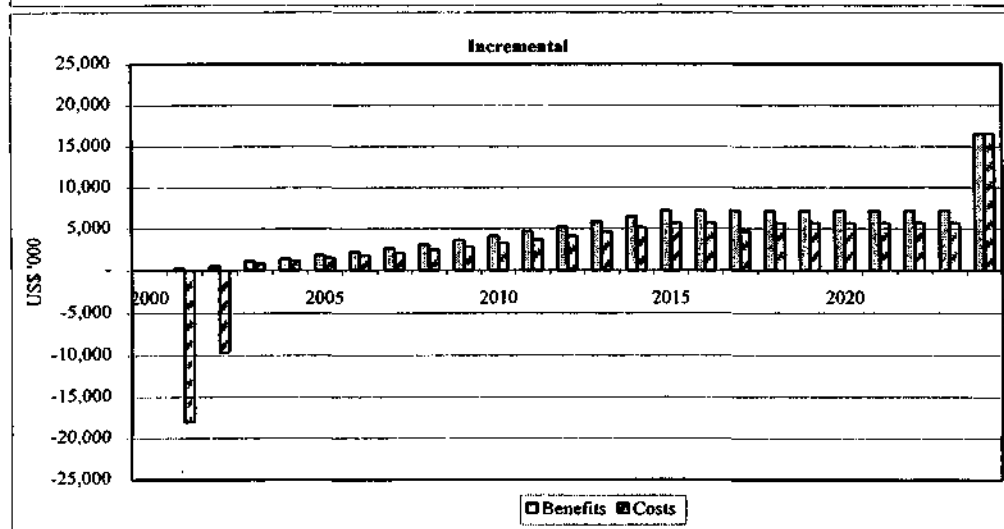
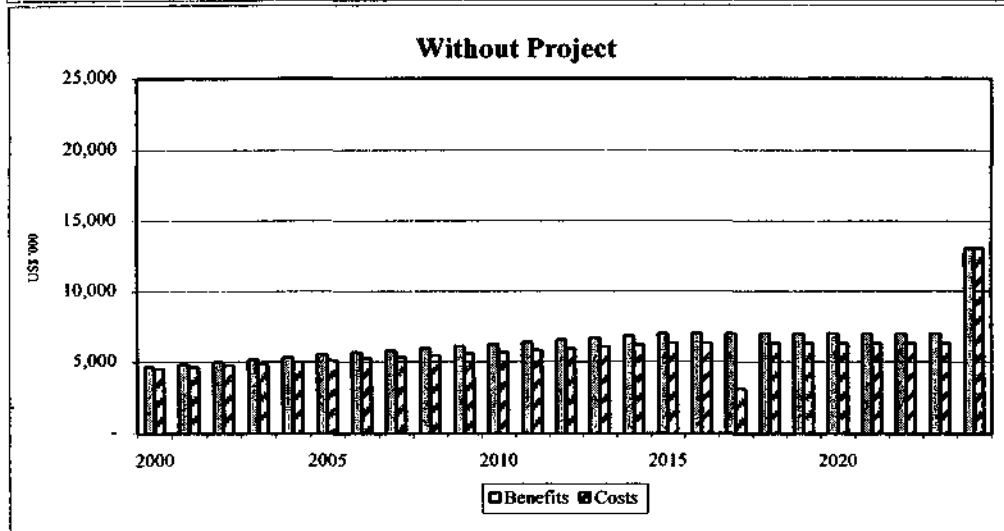
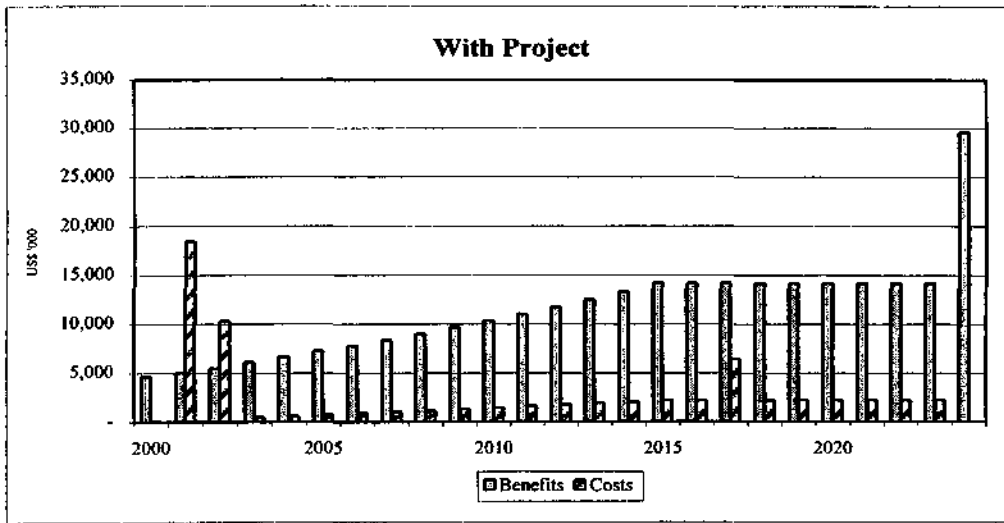


Figure 8.6
Annual and Cumulative Net Benefit
Wallblake 1 Option

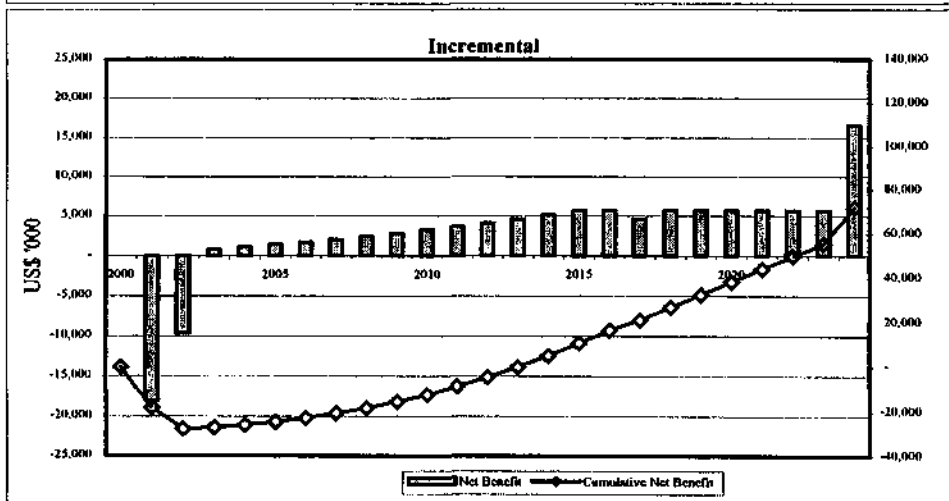
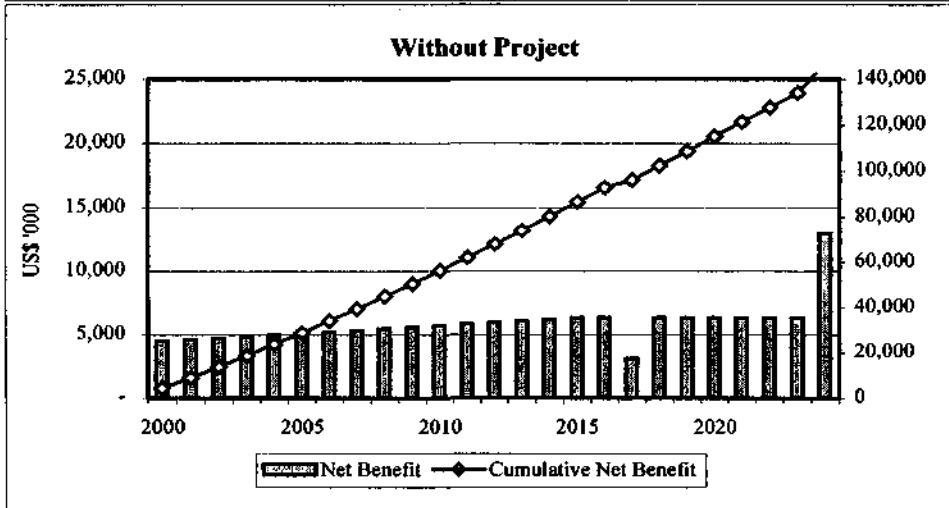
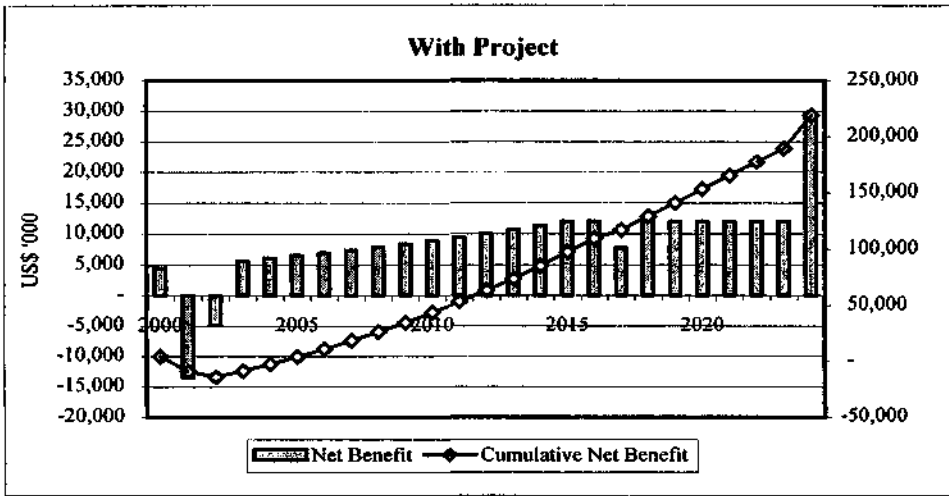


Table B.18 : WALLBLAKE OPTION 2 - INCREMENTAL ECONOMIC COSTS AND BENEFITS

ECONOMIC APPRAISAL - CENTRAL ANALYSIS

Year	Annual Passengers	Annual Visitors	Government Revenues	Operating Result (1)			Capital Expenditure				Social Costs			Residual Values			Net Benefit (Cost)		
				Operating Revenue	Operating Costs	Operating Surplus	Net Land Costs	Capital Costs	Periodic Maintenance	Total Costs	Capital Costs	Recurrent Costs	Total Costs	Land	Assets	Debt	Annual	Cumulative	
Units	'000	'000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
2000	0	-	-	0	2	2	-	-	-	-	-	-	-	-	-	-	-	2	2
2001	3	2	239	12	14	3	3,259	23,212	-	26,471	-	-	62	62	-	-	-	26,297	26,300
2002	5	4	503	25	28	3	-	15,475	-	15,475	-	-	127	127	-	-	-	15,101	41,401
2003	8	7	794	430	240	190	-	-	-	-	-	-	194	194	-	-	-	790	40,611
2004	11	9	1,115	473	256	217	-	-	-	-	-	-	264	264	-	-	-	1,068	39,544
2005	14	12	1,467	525	273	252	-	-	-	-	-	-	336	336	-	-	-	1,383	38,161
2006	18	16	1,848	574	293	281	-	-	-	-	-	-	442	442	-	-	-	1,687	36,474
2007	22	19	2,261	626	314	312	-	-	-	-	-	-	551	551	-	-	-	2,021	34,453
2008	26	23	2,707	682	337	345	-	-	-	-	-	-	664	664	-	-	-	2,387	32,066
2009	31	27	3,189	742	361	380	-	-	-	-	-	-	781	781	-	-	-	2,788	29,278
2010	36	31	3,709	805	387	418	-	-	-	-	-	-	901	901	-	-	-	3,226	26,051
2011	40	35	4,251	866	412	455	-	-	-	-	-	-	1,019	1,019	-	-	-	3,646	22,405
2012	45	39	4,749	931	438	493	-	-	-	-	-	-	1,142	1,142	-	-	-	4,101	18,304
2013	50	44	5,325	1,000	465	534	-	-	-	-	-	-	1,267	1,267	-	-	-	4,592	13,713
2014	56	48	5,941	1,073	495	578	-	-	-	-	-	-	1,397	1,397	-	-	-	5,122	8,591
2015	61	53	6,600	1,150	526	624	-	-	-	-	-	-	1,530	1,530	-	-	-	5,694	2,896
2016	61	53	6,600	1,150	526	624	-	-	-	-	-	-	1,530	1,530	-	-	-	5,694	2,798
2017	61	53	6,600	1,150	526	624	-	-	1,064	1,064	-	-	1,530	1,530	-	-	-	4,630	7,428
2018	61	53	6,600	1,150	526	624	-	-	-	-	-	-	1,530	1,530	-	-	-	5,694	13,123
2019	61	53	6,600	1,150	526	624	-	-	-	-	-	-	1,530	1,530	-	-	-	5,694	18,817
2020	61	53	6,600	1,150	526	624	-	-	-	-	-	-	1,530	1,530	-	-	-	5,694	24,511
2021	61	53	6,600	1,150	526	624	-	-	-	-	-	-	1,530	1,530	-	-	-	5,694	30,206
2022	61	53	6,600	1,150	526	624	-	-	-	-	-	-	1,530	1,530	-	-	-	5,694	35,900
2023	61	53	6,600	1,150	526	624	-	-	-	-	-	-	1,530	1,530	-	-	-	5,694	41,595
2024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,099	24,296	-	25,395	66,989
Total	917		97,460	19,112	9,049	10,063	3,259	38,687	1,064	43,010	-	-	22,918	22,918	1,099	24,296	-	66,989	-
NPV	7%		36,343	7,662	3,711	3,951	3,046	35,210	337	38,592	-	-	8,601	8,601	217	4,790	-	1,893	-
	9%		28,408	6,125	2,988	3,137	2,990	34,320	246	37,556	-	-	6,736	6,736	139	3,071	-	9,536	-
	11%		22,536	4,970	2,442	2,528	2,936	33,471	181	36,588	-	-	5,353	5,353	90	1,985	-	14,803	-
Internal Rate of Return																			6.6%

Note (1) Operating result net of charges paid by residents.

Source: WSA analysis.

Figure 8.7
Cost and Benefits Streams
Wallblake Option 2

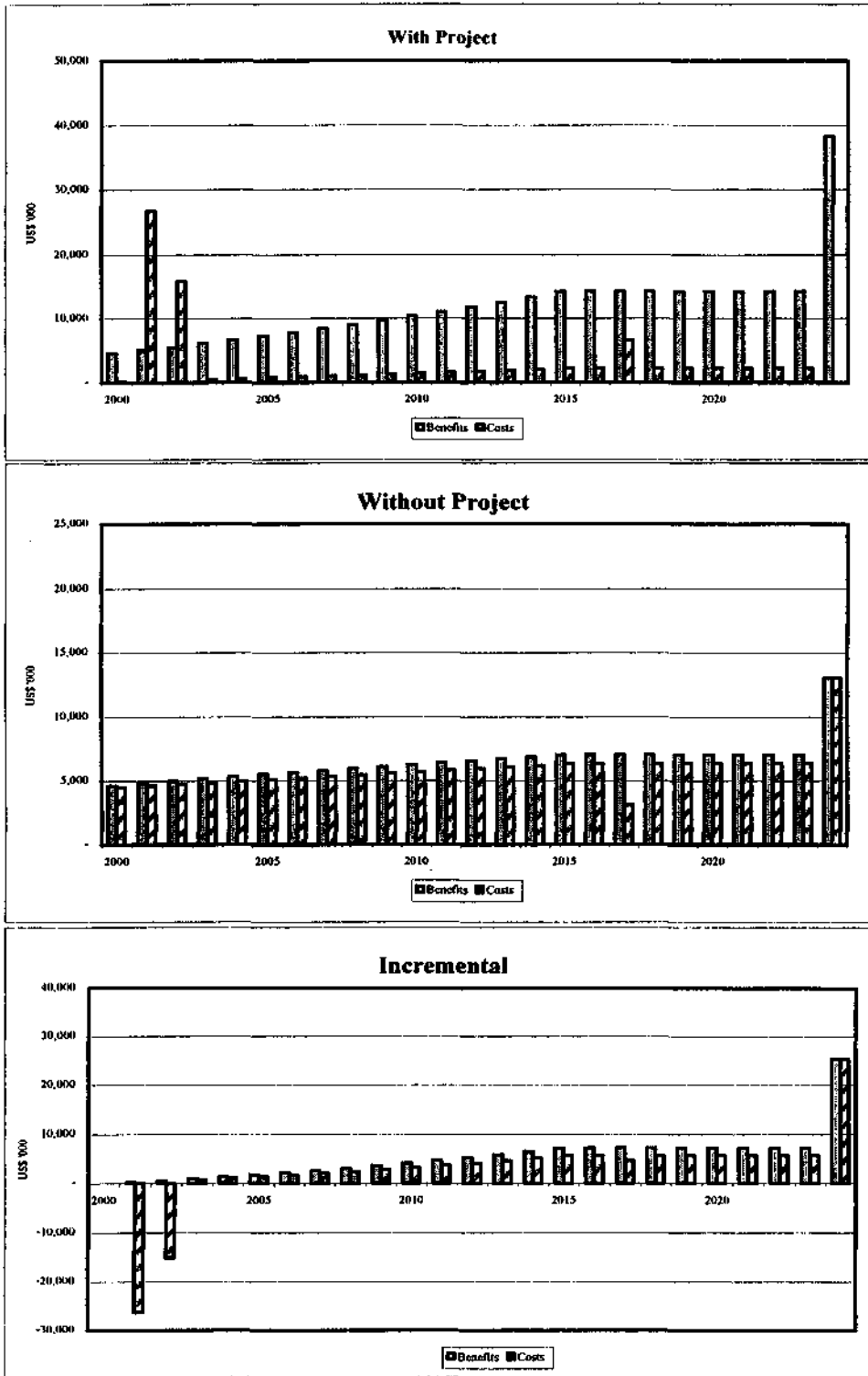
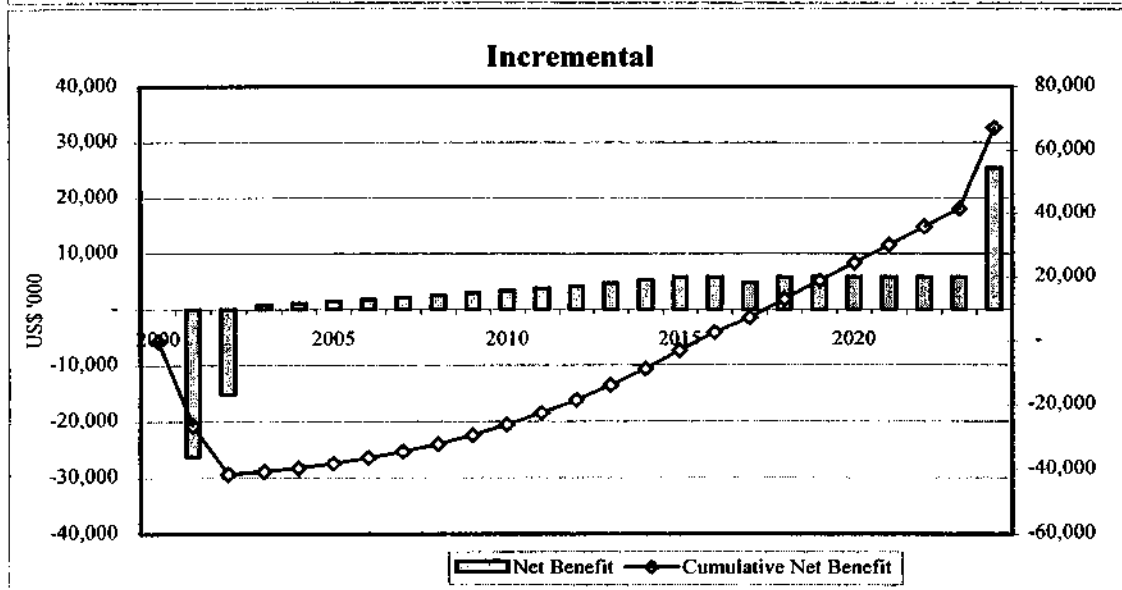
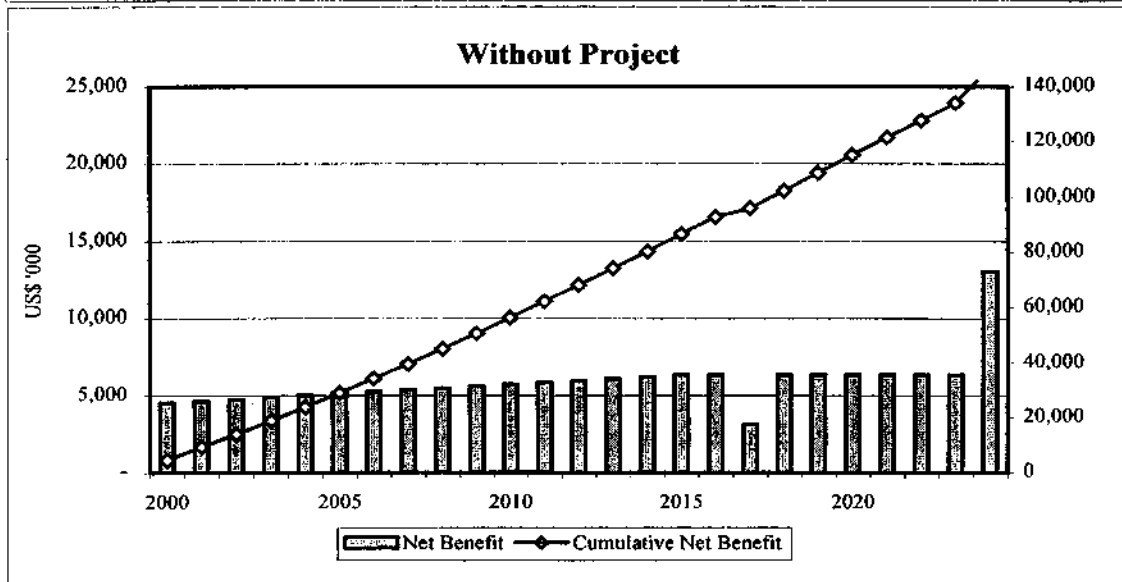
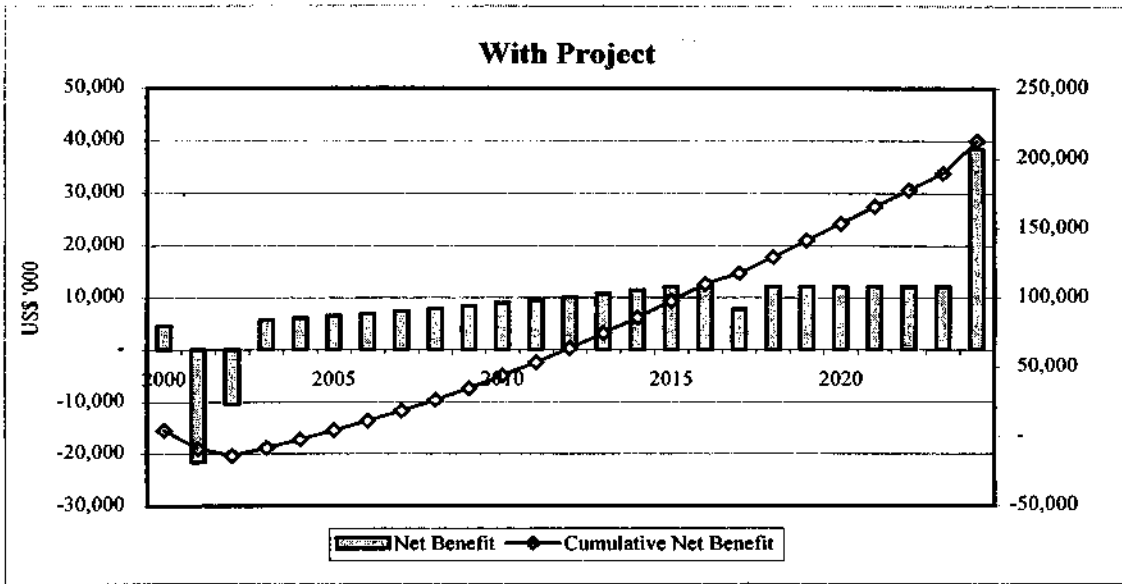


Figure 8.8
Annual and Cumulative Net Benefit
Wallblake Option 2



8.5.2 Brimegin Development Options

On the basis of the assumptions outlined above, Brimegin Option 1, the provision of a facility identical to the Wallblake Option 2 at Brimegin, could be expected to achieve a project net present value of between minus US\$ 63.9 million and minus US\$ 76.4 million at discount rates of 7 percent and 11 percent respectively. At the central 9 percent discount rate, the NPV would be minus US\$ 71.7 million. The Economic Internal Rate of Return would be 1.1 percent. Details are set out in Table 8.19.

The full Brimegin Option as envisaged by the French proposal (Option 2) would be significantly more expensive than any of the other options but would generate higher project benefits because of the greater scale of tourism and hence of government revenue from taxes and duties on tourist-related goods and services. The projected Net Present Value ranges from minus US\$ 2.9 million at a discount rate of 7 percent to minus US\$ 91.4 million at a discount rate of 11 percent. At the central 9 percent discount rate, the NPV would be minus US\$ 55.0 million. The likely Economic Internal Rate of Return is estimated to be 6.9 percent. Details of this development option are also set out in Table 8.19

**Table 8.19
Summary of Economic Performance
Brimegin Development Options**

Discount Rate	7 percent	9 percent	11 percent
Brimegin Option 1			
Net Present Value	US\$ - 63.9 m.	US\$ - 71.7 m.	US\$ - 76.4 m.
IRR	1.1 percent		
Brimegin Option 2			
Net Present Value	US\$ - 2.9 m.	US\$ - 55.0 m.	US\$ - 91.4 m.
IRR	6.9 percent		

Source: W.S. Atkins analysis.

The balance of costs and benefits varies significantly between Brimegin Options 1 and 2. Capital costs are much lower for Option 1 but then so are the project benefits, which are essentially the same as those associated with the much lower cost Wallblake development options. The relatively small scale of project benefits associated with Brimegin Option 1 renders its economic performance relatively insensitive to variations in the discount rate.

By contrast, the results for Brimegin Option 2 are very sensitive to the discount rate and reflect the fact that capital costs are incurred at the beginning of the appraisal period whilst benefits grow over time with the projected increase in tourist arrivals. A high discount rate reduces the present value of longer-term tourism benefits. A low discount rate enhances the relative value of longer-term benefits. The projected net present value of Brimegin Option 2 is positive at or below a discount rate of 6.9 percent. However, at the present time a discount rate of 6.9 percent may be more appropriate to a European country than a Caribbean island.

The incremental cost and benefit streams associated with development Options 1 and 2 for Brimegin are summarised in Tables 8.20 and 8.21 respectively. Corresponding 'With Project', 'Do-Minimum' and 'Incremental' cost and benefit streams are illustrated in Figures 8.9 and 8.11. Figures 8.10 and 8.12 illustrate the annual and cumulative net present benefit stream of each development option. Full details of the results of the economic appraisal of the Wallblake development options are set out in Appendix 7.

Table 8.20 : BRJMEGIN OPTION 1 - INCREMENTAL ECONOMIC COSTS AND BENEFITS

ECONOMIC APPRAISAL - CENTRAL ANALYSIS

Year	Annual Passengers	Annual Visitors	Government Revenues	Operating Result (1)			Capital Expenditure				Social Costs			Residual Values			Net Benefit (Cost)		
				Operating Revenue	Operating Costs	Operating Surplus	Net Land Costs	Capital Costs	Periodic Maintenance	Total Costs	Capital Costs	Recurrent Costs	Total Costs	Land	Assets	Debt	Annual	Cumulative	
Units	'000	'000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	
2000	0	-	-	0	2	2	-	-	-	-	-	-	-	-	-	-	-	2	2
2001	3	2	239	12	14	3	1,104	53,827	-	54,930	-	62	62	-	-	-	-	54,756	54,759
2002	5	4	503	25	28	3	-	41,865	-	41,865	-	127	127	-	-	-	-	41,492	96,250
2003	8	7	794	18	42	24	-	23,923	-	23,923	-	194	194	-	-	-	-	23,347	119,597
2004	11	9	1,115	527	280	247	-	-	-	-	-	264	264	-	-	-	-	1,098	118,500
2005	14	12	1,467	571	298	274	-	-	-	-	-	336	336	-	-	-	-	1,404	117,095
2006	18	16	1,848	623	317	306	-	-	-	-	-	442	442	-	-	-	-	1,712	115,383
2007	22	19	2,261	679	339	341	-	-	-	-	-	551	551	-	-	-	-	2,050	113,333
2008	26	23	2,707	739	361	378	-	-	-	-	-	664	664	-	-	-	-	2,421	110,912
2009	31	27	3,189	804	385	418	-	-	-	-	-	781	781	-	-	-	-	2,826	108,086
2010	36	31	3,709	872	411	461	-	-	-	-	-	901	901	-	-	-	-	3,269	104,817
2011	40	35	4,211	938	436	502	-	-	-	-	-	1,019	1,019	-	-	-	-	3,694	101,124
2012	45	39	4,749	1,008	462	546	-	-	-	-	-	1,142	1,142	-	-	-	-	4,153	96,971
2013	50	44	5,325	1,082	490	592	-	-	-	-	-	1,267	1,267	-	-	-	-	4,650	92,321
2014	56	48	5,941	1,160	519	641	-	-	-	-	-	1,397	1,397	-	-	-	-	5,186	87,136
2015	61	53	6,600	1,244	550	694	-	-	-	-	-	1,530	1,530	-	-	-	-	5,764	81,372
2016	61	53	6,600	1,244	550	694	-	-	-	-	-	1,530	1,530	-	-	-	-	5,764	75,608
2017	61	53	6,600	1,244	550	694	-	-	3,231	3,231	-	1,530	1,530	-	-	-	-	8,995	66,613
2018	61	53	6,600	1,244	550	694	-	-	5,943	5,943	-	1,530	1,530	-	-	-	-	179	66,792
2019	61	53	6,600	1,244	550	694	-	-	-	-	-	1,530	1,530	-	-	-	-	5,764	61,028
2020	61	53	6,600	1,244	550	694	-	-	-	-	-	1,530	1,530	-	-	-	-	5,764	55,264
2021	61	53	6,600	1,244	550	694	-	-	-	-	-	1,530	1,530	-	-	-	-	5,764	49,500
2022	61	53	6,600	1,244	550	694	-	-	-	-	-	1,530	1,530	-	-	-	-	5,764	43,736
2023	61	53	6,600	1,244	550	694	-	-	-	-	-	1,530	1,530	-	-	-	-	5,764	37,972
2024	-	-	-	-	-	-	-	-	-	-	-	-	-	420	62,256	-	-	62,676	24,704
Total	917		97,460	20,249	9,333	10,916	1,104	119,614	2,712	123,430	-	22,918	22,918	420	62,256	-	-	24,704	
NPV	7%		36,343	7,939	3,757	4,182	1,031	106,400	735	108,167	-	8,601	8,601	83	12,274	-	-	63,887	
	9%		28,408	6,295	3,005	3,290	1,012	103,092	513	104,618	-	6,736	6,736	53	7,869	-	-	71,732	
	11%		22,536	5,063	2,438	2,625	994	99,963	360	101,318	-	5,353	5,353	34	5,087	-	-	76,389	
Internal Rate of Return																		1.1%	

Note (1) Operating result net of charges paid by residents.

Source: WSA analysis.

Figure 8.9
Cost and Benefits Streams
Brimegin Option 1

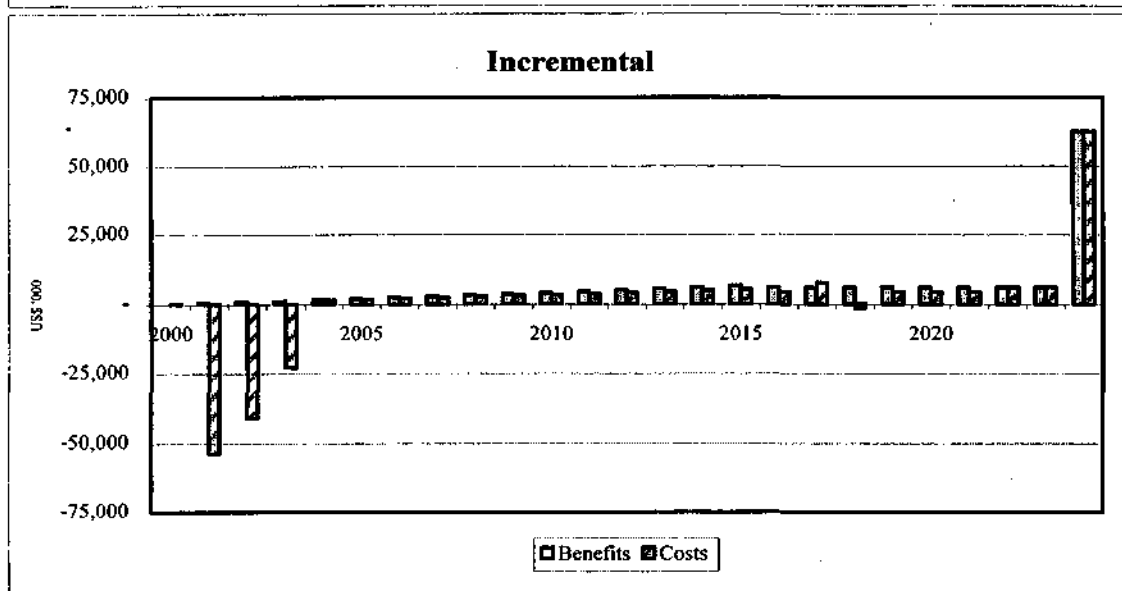
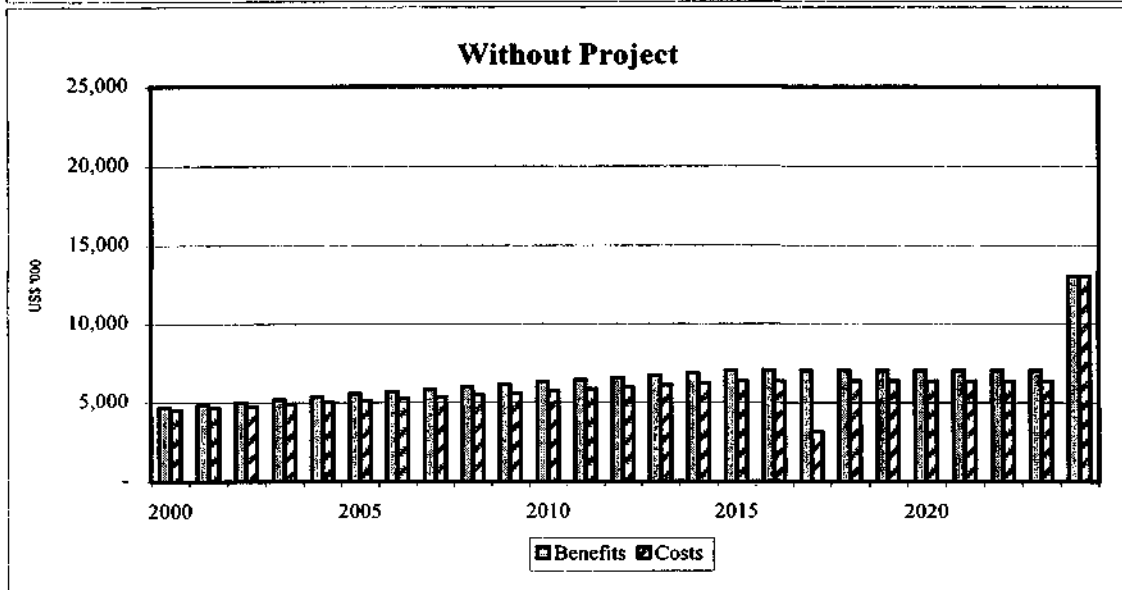
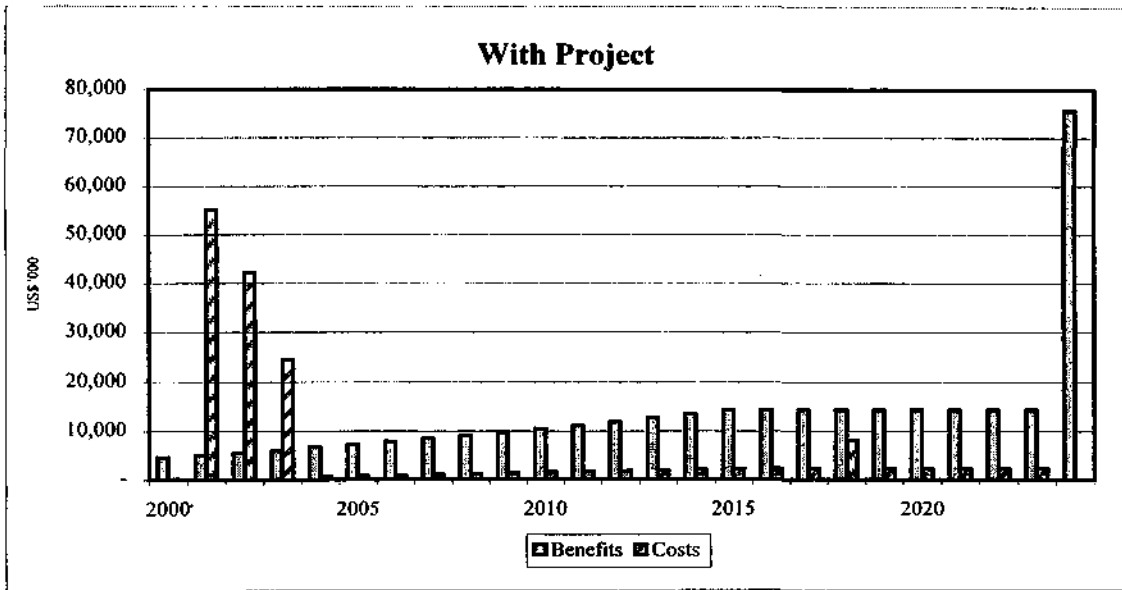


Figure 8.10
Annual and Cumulative Net Benefit
Brimegin Option 1

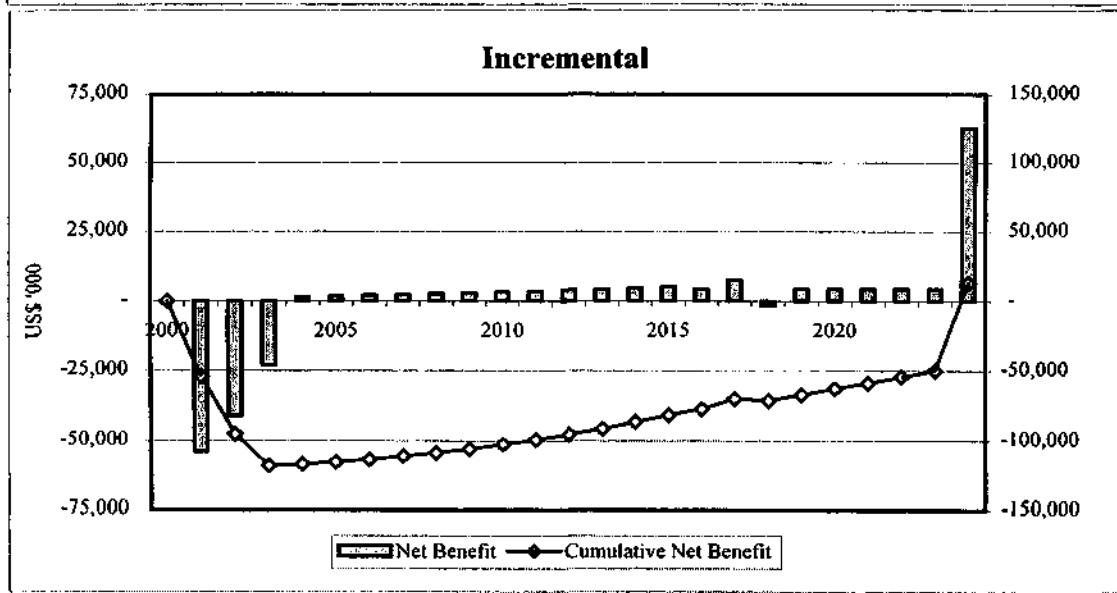
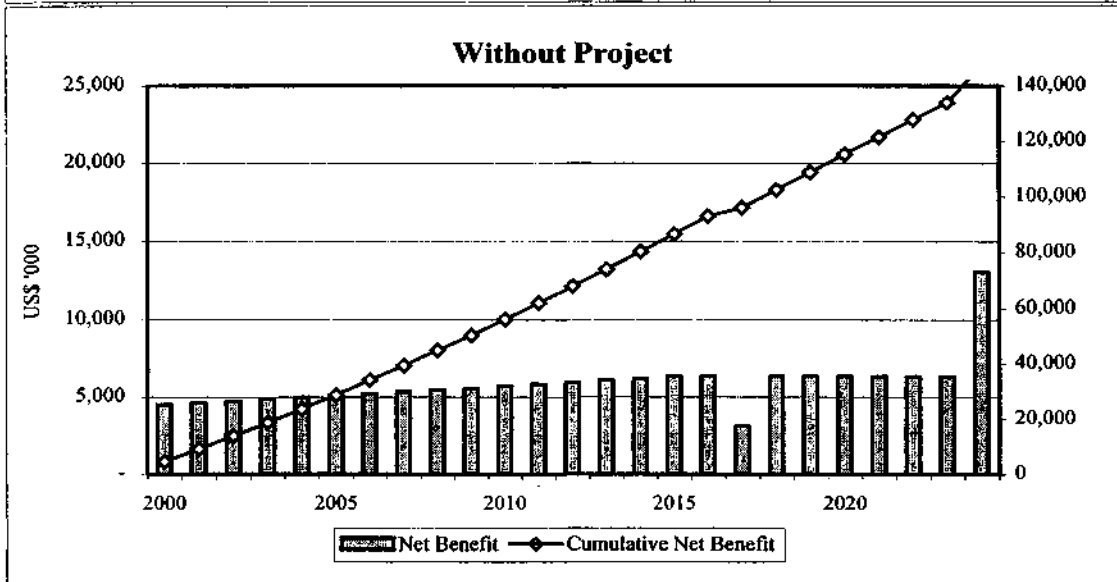
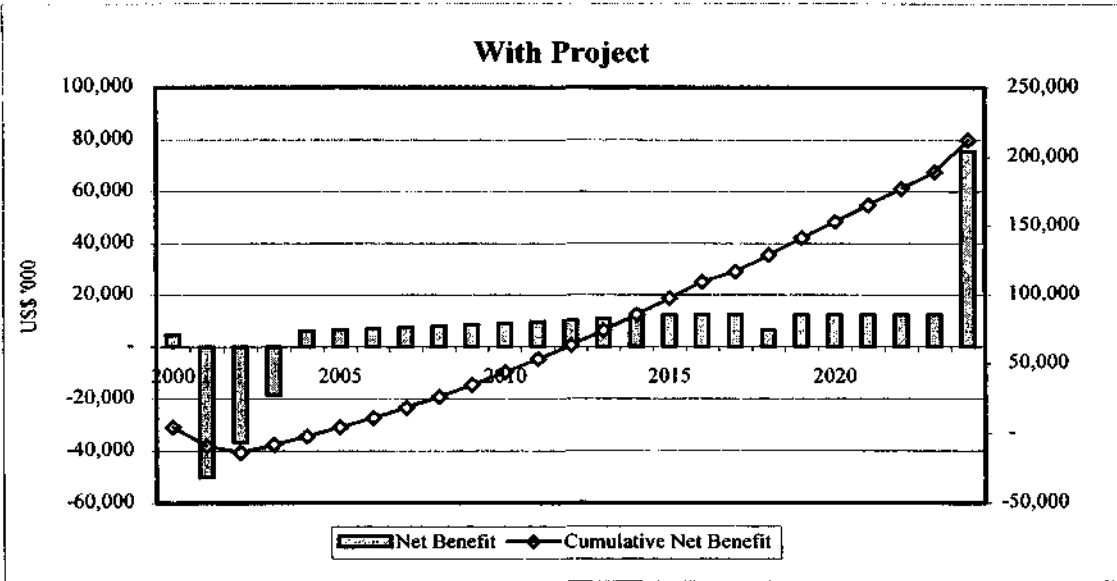


Table 8.21 : BRIMEGIN OPTION 2 - INCREMENTAL ECONOMIC COSTS AND BENEFITS

ECONOMIC APPRAISAL - CENTRAL ANALYSIS

Year	Annual Passengers	Annual Visitors	Government Revenues	Operating Result (1)			Capital Expenditure				Social Costs			Residual Values			Net Benefit (Cost)		
				Operating Revenue	Operating Costs	Operating Surplus	Net Land Costs	Capital Costs	Periodic Maintenance	Total Costs	Capital Costs	Recurrent Costs	Total Costs	Land	Assets	Debt	Annual	Cumulative	
Units	'000	'000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
2000	0	-	-	0	2	2	-	-	-	-	-	-	-	-	-	-	-	2	2
2001	3	2	2,299	12	14	3	28,702	138,423	-	167,134	-	-	62	62	-	-	-	164,900	164,902
2002	5	4	5,697	25	28	3	-	107,670	-	107,670	-	-	127	127	-	-	-	102,103	267,006
2003	8	7	10,684	18	42	24	-	61,526	-	61,526	-	-	194	194	-	-	-	51,060	318,066
2004	204	217	17,976	3,710	1,819	1,891	-	-	-	-	-	-	3,212	3,212	-	-	-	16,655	301,410
2005	400	426	28,603	6,846	2,867	3,979	-	-	-	-	-	-	6,226	6,226	-	-	-	26,355	275,055
2006	444	470	29,994	7,572	3,102	4,470	-	-	-	-	-	-	7,071	7,071	-	-	-	27,393	247,662
2007	488	515	31,450	8,310	3,337	4,973	-	-	-	-	-	-	7,969	7,969	-	-	-	28,453	219,209
2008	531	559	32,973	9,058	3,572	5,486	-	-	-	-	-	-	8,924	8,924	-	-	-	29,536	189,673
2009	575	603	34,567	9,817	3,806	6,011	-	-	-	-	-	-	9,939	9,939	-	-	-	30,639	159,034
2010	619	647	36,235	10,588	4,040	6,548	-	-	-	-	-	-	11,018	11,018	-	-	-	31,765	127,269
2011	629	658	35,844	10,856	4,096	6,760	-	-	-	-	-	-	11,370	11,370	-	-	-	31,233	96,036
2012	640	668	35,452	11,126	4,151	6,975	-	-	-	-	-	-	11,732	11,732	-	-	-	30,695	65,341
2013	650	679	35,059	11,400	4,206	7,194	-	-	-	-	-	-	12,103	12,103	-	-	-	30,149	35,191
2014	660	690	34,665	11,676	4,261	7,415	-	-	-	-	-	-	12,483	12,483	-	-	-	29,596	5,595
2015	670	701	34,270	11,955	4,315	7,640	-	-	-	-	-	-	12,873	12,873	-	-	-	29,036	23,441
2016	670	701	34,270	11,955	4,315	7,640	-	-	-	-	-	-	12,873	12,873	-	-	-	29,036	52,477
2017	670	701	34,270	11,955	4,315	7,640	-	-	3,231	3,231	-	-	12,873	12,873	-	-	-	32,267	84,744
2018	670	701	34,270	11,955	4,315	7,640	-	-	13,923	13,923	-	-	12,873	12,873	-	-	-	15,113	99,856
2019	670	701	34,270	11,955	4,315	7,640	-	-	-	-	-	-	12,873	12,873	-	-	-	29,036	128,892
2020	670	701	34,270	11,955	4,315	7,640	-	-	-	-	-	-	12,873	12,873	-	-	-	29,036	157,928
2021	670	701	34,270	11,955	4,315	7,640	-	-	-	-	-	-	12,873	12,873	-	-	-	29,036	186,964
2022	670	701	34,270	11,955	4,315	7,640	-	-	-	-	-	-	12,873	12,873	-	-	-	29,036	216,000
2023	670	701	34,270	11,955	4,315	7,640	-	-	-	-	-	-	12,873	12,873	-	-	-	29,036	245,036
2024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25,969	186,536	-	212,504	457,540
Total	11,890	-	679,923	208,610	78,183	130,426	28,702	307,628	10,692	347,022	-	-	218,292	218,292	25,969	186,536	-	457,540	-
NPV	7%	-	293,289	83,537	31,945	51,592	26,824	273,643	3,096	303,563	-	-	86,095	86,095	5,120	36,775	-	2,883	-
	9%	-	239,122	66,546	25,603	40,943	26,332	263,135	2,205	293,672	-	-	68,277	68,277	3,283	23,579	-	55,022	-
	11%	-	197,687	53,725	20,796	32,929	25,857	257,088	1,580	284,525	-	-	54,880	54,880	2,122	15,241	-	91,427	-
Internal Rate of Return																			6.9%

Note (1) Operating result net of charges paid by residents.

Source: WSA analysis

Figure 8.11
Cost and Benefits Streams
Brimegin Option 2

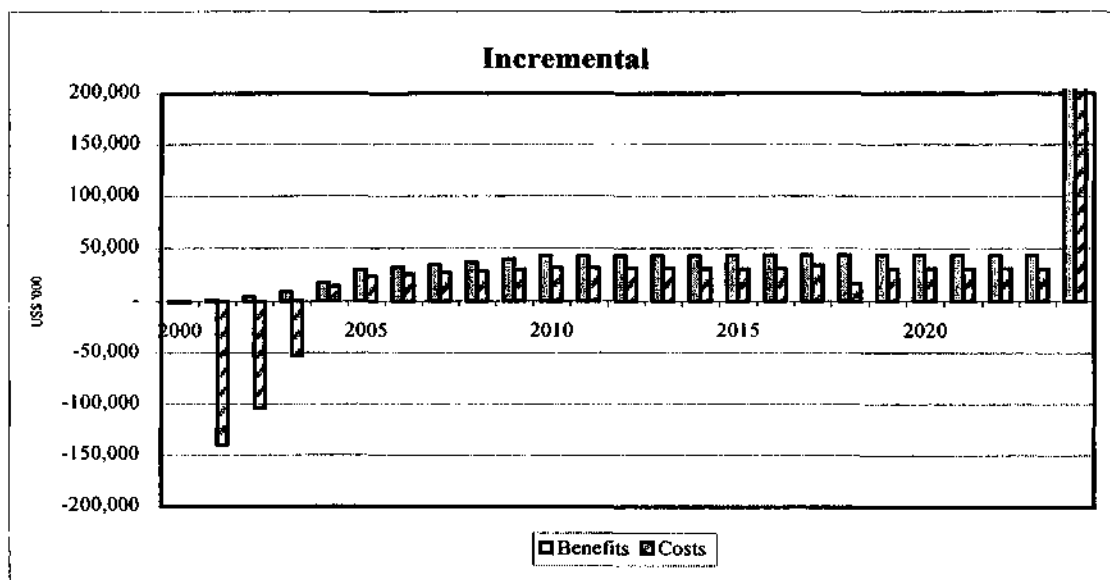
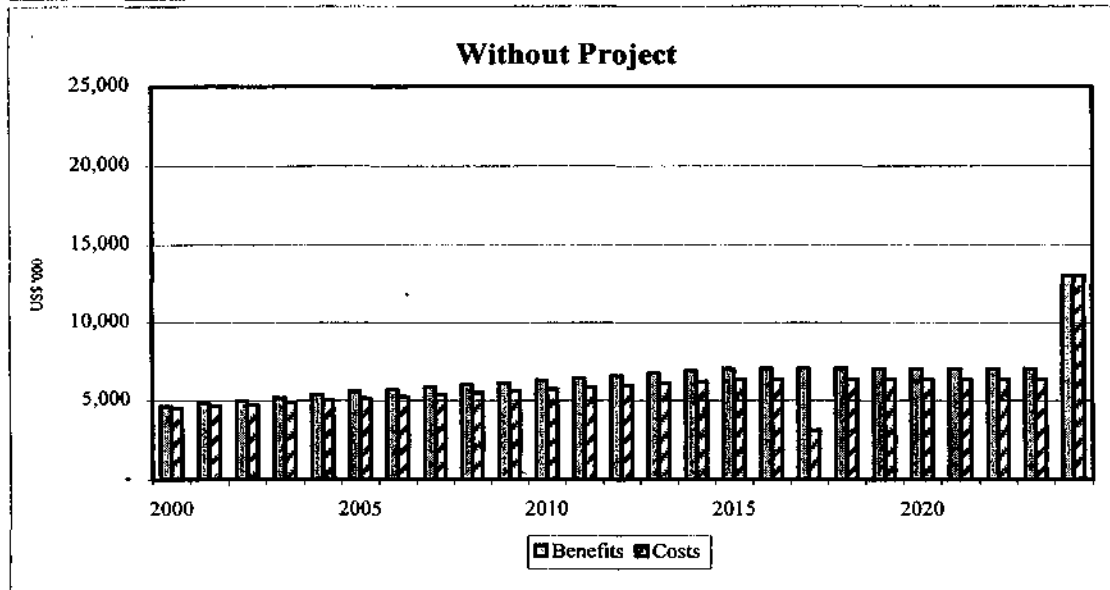
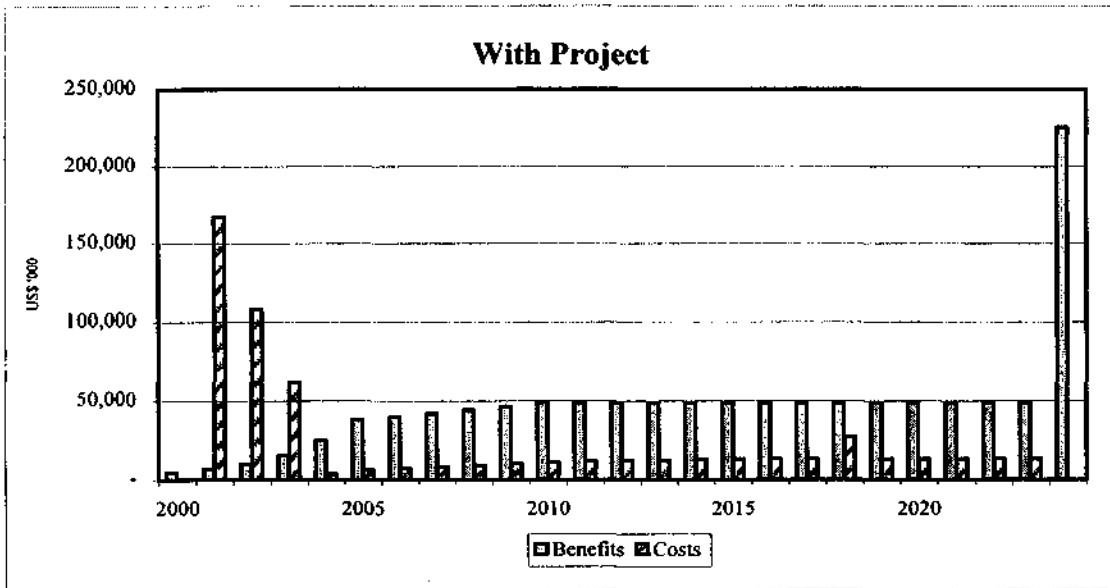
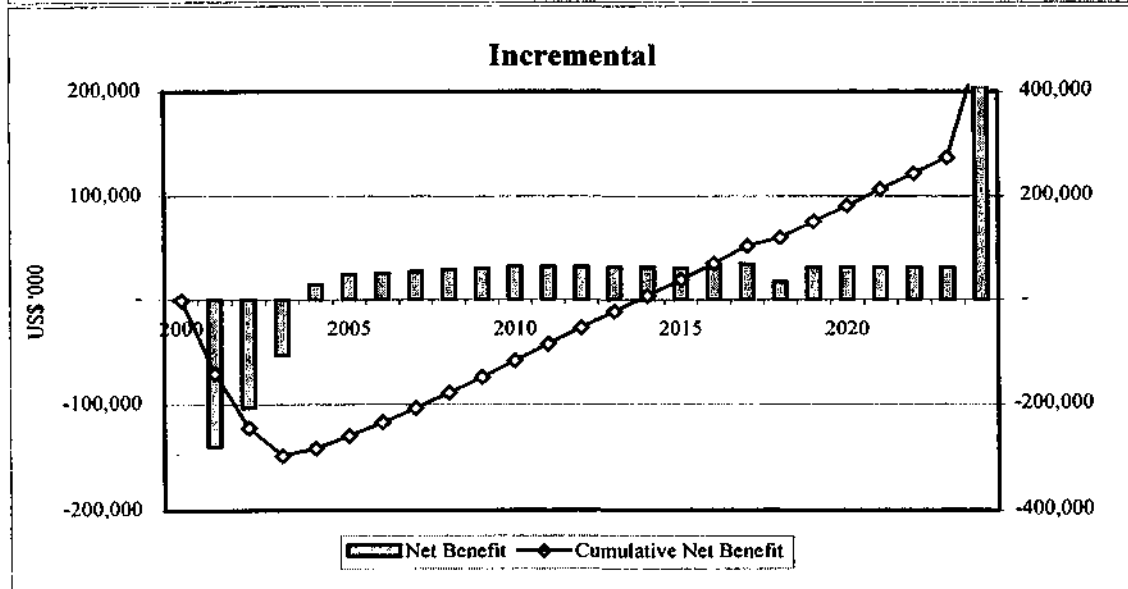
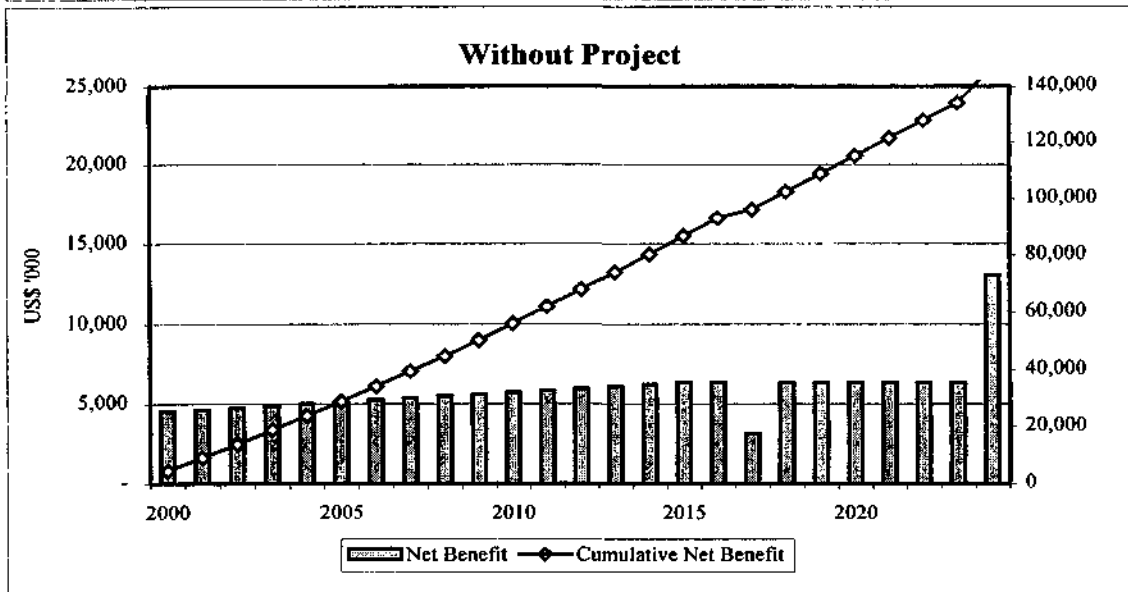
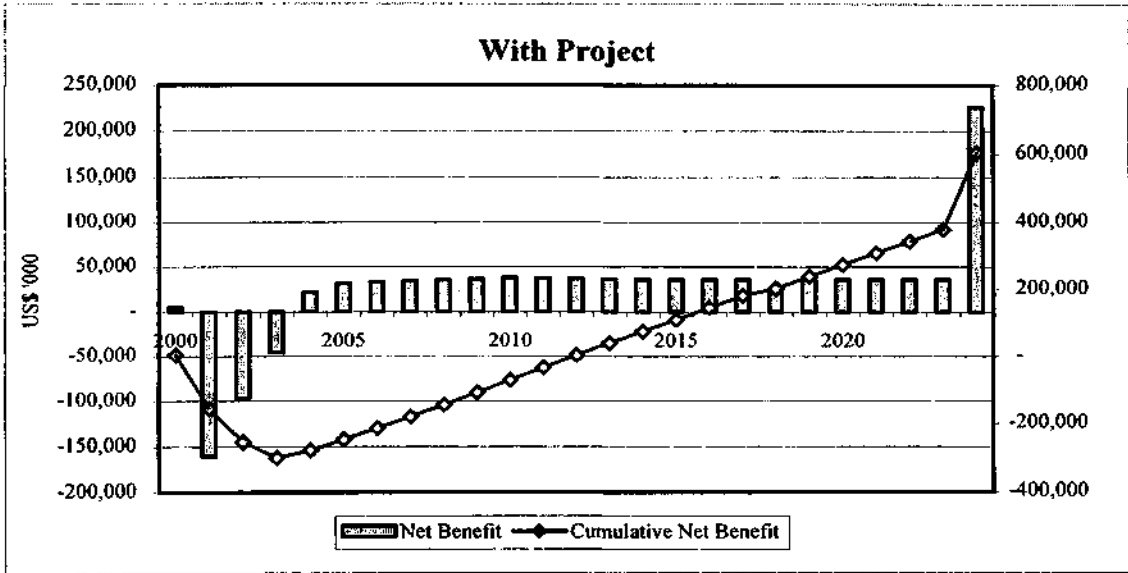


Figure 8.12
Annual and Cumulative Net Benefit
Brimegin Option 2



8.5.3 *Comparative Appraisal*

In economic terms, airport facilities on Anguilla exist primarily to serve the needs of the island's tourist industry. Aspirations and expectations for the future growth of the industry are modest, the general objective being to maintain Anguilla's position as a premium up-market destination. Within this context, the airport development proposal that generates the highest economic return is the one that incurs the lowest cost consistent with providing good quality access to the island by air from the main gateway between the Caribbean and the United States at San Juan Airport.

Option 1 for the development of Wallblake Airport removes the payload restrictions currently imposed upon American Eagle's ATR-42 aircraft in certain weather conditions and would enable the introduction of viable (but not entirely unrestricted) ATR-72 operations between Anguilla and San Juan as and when required.

Wallblake Option 2 would remove all restrictions on ATR-72 operations but at an incremental present value of project costs over Wallblake Option 1 of US\$ 12.2 million at the central 9 percent discount rate. This additional cost would not be offset by a corresponding increase in the present value of project benefits.

Providing the equivalent of Wallblake Option 2 at Brimegin appears to be a poor option in economic terms. At US\$ 105.3 million, the present value of the capital costs involved (at the central 9 percent discount rate) would be very high compared with the US\$ 38.3 million required at Wallblake. The present value of project benefits would be no higher than those generated by the much more economical Wallblake Option 1, which would continue to make full use of the existing airport's facilities.

The relative economic efficiency of the four competing development proposals is illustrated by the ratio of project NPV to initial capital costs. At the central 9 percent discount rate, these range from -0.04 for Wallblake Option 1 to -0.72 for Brimegin Option 1. This, together with the net present values and projected Economic Internal Rates of Return suggest that the competing development options should be ranked in the following order:

- Wallblake 1;
- Wallblake 2;
- Brimegin 2; and
- Brimegin 1.

The relative ranking of Brimegin Options 1 and 2 is based on CIEC Engineering's traffic projections for the larger option and takes no account of the risk involved in attempting to re-market Anguilla as a high-density tourism destination. It also has to be emphasised once again that the scale of hotel development required to render Brimegin Option 2 economically viable would run counter to the Government's strategy for the continued development of Anguilla as a premium high yield low density tourist destination and radically transform Anguilla's current development model.

Table 8.22 compares the relative economic performance of each of the alternative development options.

Table 8.22
Comparative Economic Performance
Anguilla Airport Development Options

Discount Rate	7 percent	9 percent	11 percent
Net Present Value in US\$ million			
Wallblake 1	+ 7.5	+ 0.7	- 4.2
Wallblake 2	- 1.9	- 9.5	- 14.8
Brimegin 1	- 63.9	- 71.7	- 76.4
Brimegin 2	- 2.9	- 55.0	- 91.4
Internal Rate of Return			
Wallblake 1	9.2 percent		
Wallblake 2	6.6 percent		
Brimegin 1	1.1 percent		
Brimegin 2	6.9 percent		
Net Present Value per Unit of Capital Expenditure			
Wallblake 1	+ 0.29	+ 0.03	- 0.17
Wallblake 2	- 0.05	- 0.25	- 0.40
Brimegin 1	- 0.59	- 0.69	- 0.75
Brimegin 2	- 0.01	- 0.19	- 0.32

Source: W.S. Atkins analysis.

Figure 8.13 plots cumulative project Net Present Value against time for each of the development options at discount rates of 7, 9 and 11 percent. It is clear from this figure that all four options represent very long-term investment projects and that the Brimegin options would involve a greater exposure to risk over a longer period than either of the Wallblake options.

The basic economic factors underlying the economic performance of each development option are illustrated in Figure 8.14. The top half of this figure plots the net present value of capital and maintenance costs against the take-off distance provided by each development option. It clearly identifies separate cost curves for each of the competing airport sites. The cost curve for Brimegin is both higher and steeper than the curve for Wallblake. This reflects the fact that both Wallblake options make use of the existing airport facilities whilst these would have to be reconstructed in full at Brimegin.

The bottom half of Figure 8.14 plots project net present value against take-off distance provided and shows that even when the greater economic benefits generated by the Brimegin Option 2 are taken into account, it is more efficient to develop the Wallblake site than to construct new facilities at Brimegin.

8.5.4 Conclusions

Three main conclusions arise from the economic appraisal of the alternative airport development options:

- That developing the existing facilities at Wallblake appears to be more economically attractive proposal than building a new facility at Brimegin;
- That a project based on Wallblake Option 1 could generate a positive economic return at a discount rate of 9 percent; and
- That the projected economic return on a major new international airport at Brimegin (Brimegin Option 2) is negative at a discount rate of 9 percent because of the scale of the costs and benefits involved, which are very sensitive to minor changes in cost and benefit assumptions, and
- That the scale of hotel development required to render Brimegin Option 2 economically viable would run counter to the Government's strategy for the continued development of Anguilla as a premium high yield low density tourism destination and radically transform Anguilla's current development model.

Another important conclusion is that Wallblake Option 1 outperforms the more expensive Wallblake Option 2 in all cases. This conclusion is slightly unfair to Option 2 because it assumes that although the more expensive option is required to provide for unrestricted ATR-72 operations, these aircraft would be able to operate at commercially acceptable load factors from Wallblake Option 1. Minor performance restrictions associated with Option 1 could translate either into higher fares to be paid by Anguillan residents and deducted from potential tourist expenditure on Anguilla itself, or a negotiation of lower user charges to reduce the operating cost penalty. A much more detailed assessment of the operational requirements of the ATR-72 aircraft than has been possible within the context of the current study would be needed to assess in detail the economic impact of any residual operating penalty associated with Option 1. However, the economic impact of the penalties associated with Option 1 would have to be quite large to overcome the significant difference in capital costs between the two options.

For any of the development proposals to generate incremental benefits, it has to be assumed that their implementation will change the situation; in this case, it will remove potential constraints on the natural growth of tourism arrivals on Anguilla. The analysis has excluded the absolutely worst case; i.e. that in which the air service between Anguilla and San Juan is withdrawn as and when American Eagle retires the ATR-42. In this situation, one or more smaller operators might be expected to step in with a suitable aircraft and although Anguilla would lose the undoubted marketing benefit of being part of the American Airlines network, tourist arrivals are unlikely to collapse. The positive economic results for the Wallblake Option 1 proposal are therefore not predicated on the drastic loss of tourism traffic following the withdrawal of air services. They do however, depend upon the assumption that existing operational constraints at Wallblake Airport would constrain the future growth in tourist arrivals and impose incremental costs on passengers that would reduce the average yield per tourist.

The Government of Anguilla has expressed concern that the collapse of the island's tourist industry would be a distinct possibility if and when American Eagle were to withdraw its service from Anguilla because the existing airport cannot accommodate the larger ATR-72 aircraft.

Understandably, American Eagle is either unable or unwilling at this stage to say whether it will withdraw services from Wallblake when its San Juan based Caribbean operation standardises on the larger ATR-72 aircraft. The ATR-72 would incur a 14-seat payload penalty at Wallblake if the available take-off and landing distances were not increased (compared to the 4-seat penalty incurred by the 46 seat ATR-42). However, seat-mile costs are likely to be lower and although American Eagle would obviously prefer to be able to operate into Wallblake without restriction, it is not clear that the carrier would choose to abandon Anguilla altogether in the Do-Minimum case.

However, given the uncertainty surrounding American Eagle's intentions, the Master Planning for any specific development option for Wallblake Airport will need to re-assess the then existing and future status of the American Eagle service and other existing or potential air services. It will also be necessary to review the likely impact of potential reductions in the level of service, including the threat of complete withdrawal of services to San Juan, on the future scale of tourist arrivals on Anguilla.

The next section goes on to examine the sensitivity of the results of the central economic appraisal to variations in key cost and benefit assumptions.

Figure 8.13
Comparison of Cumulative Project Net Present Values
All Options

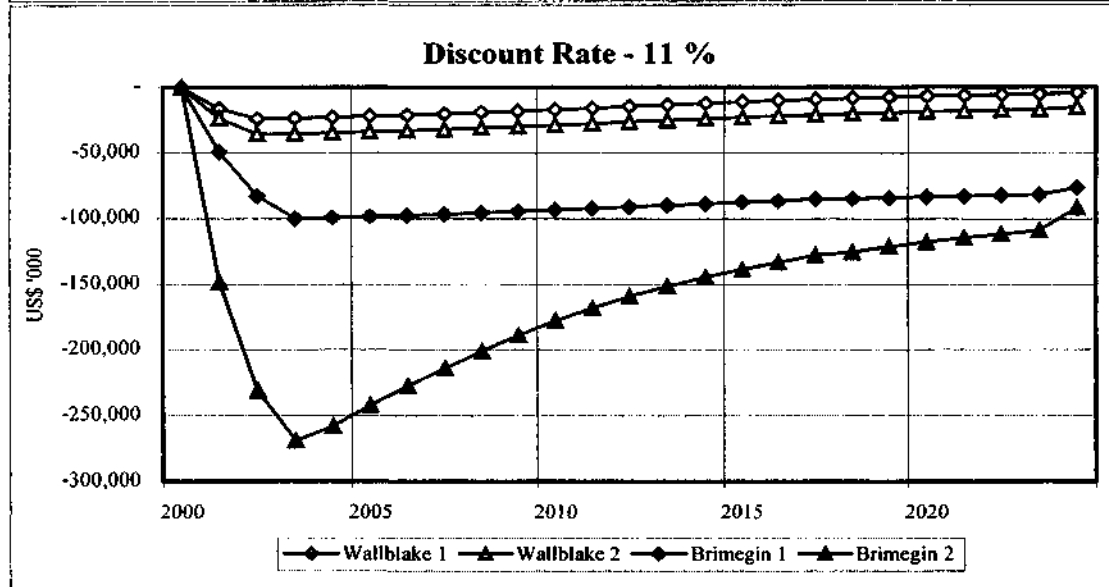
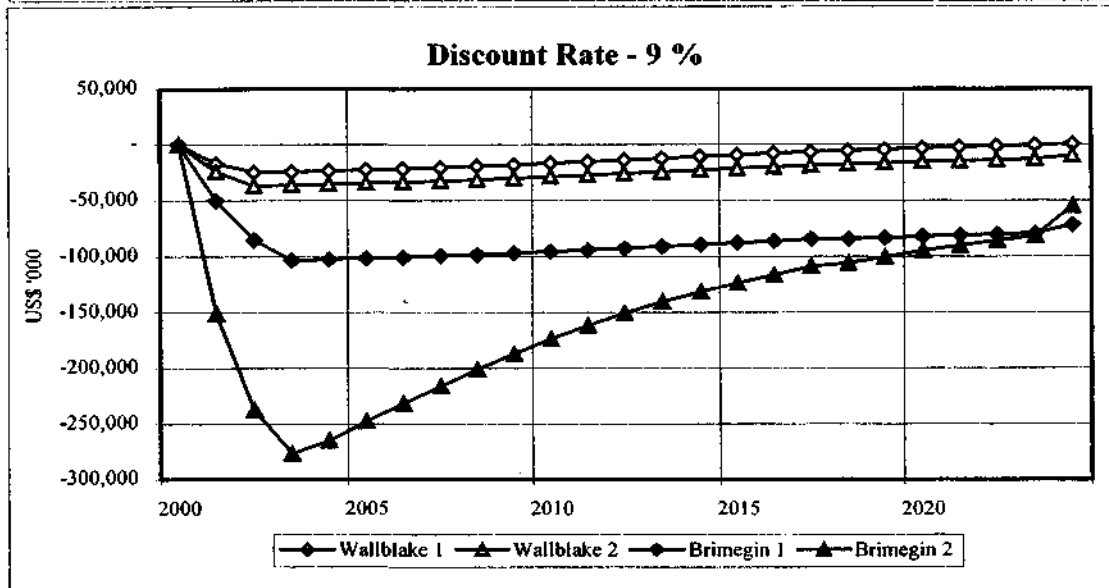
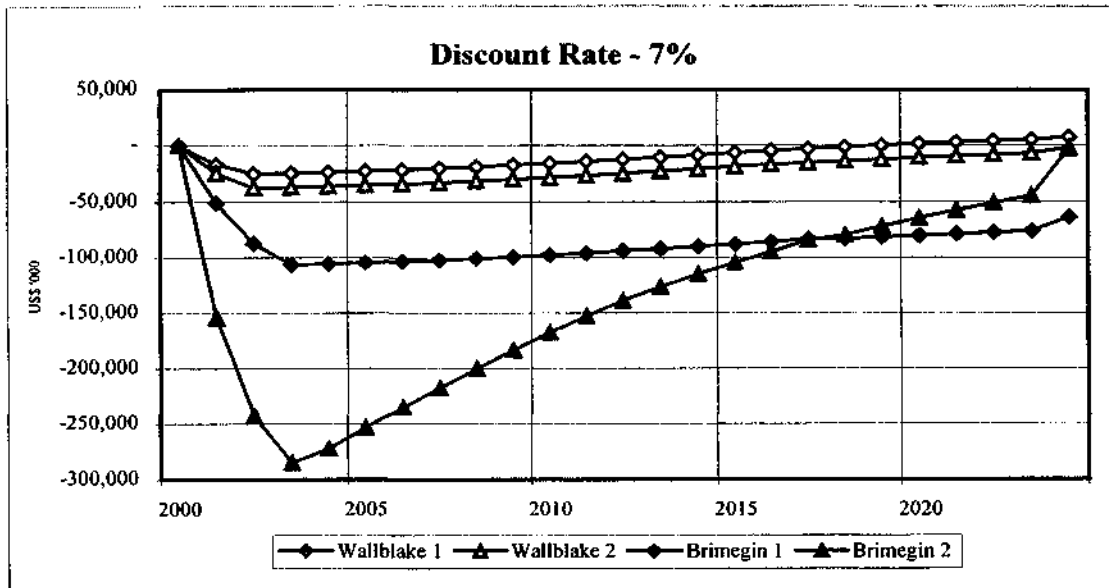
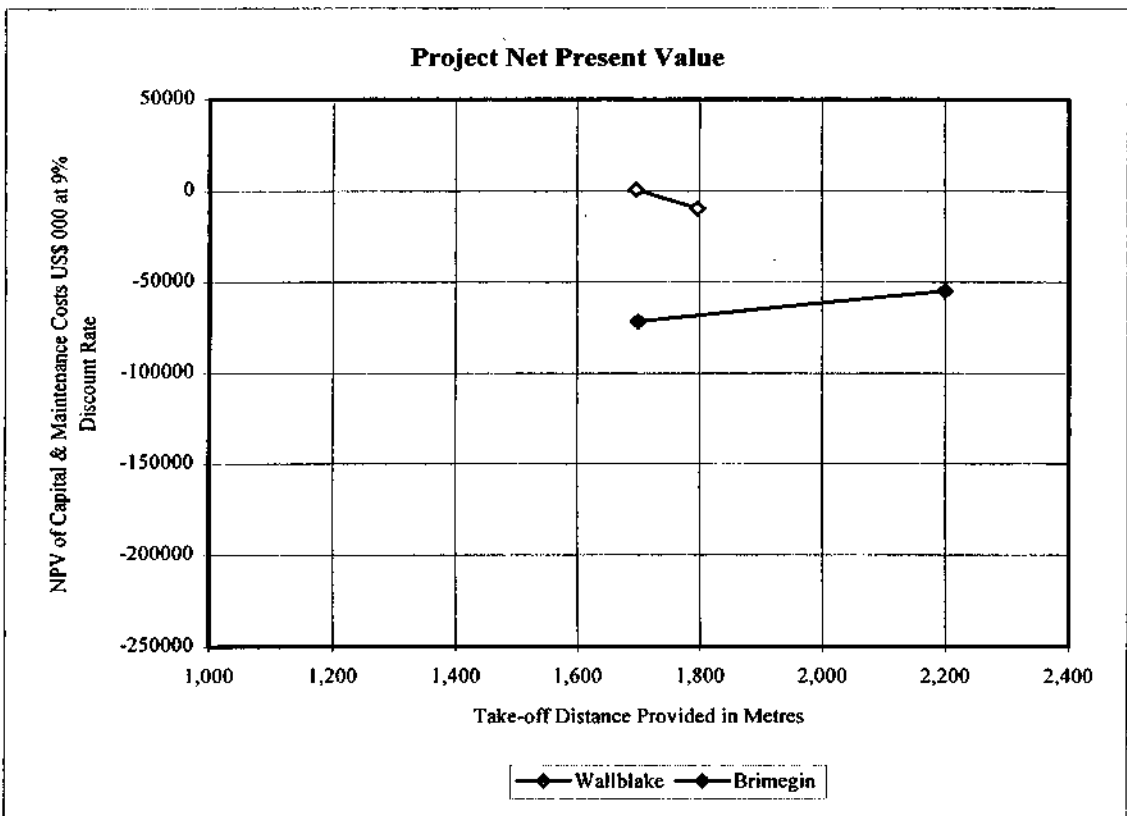
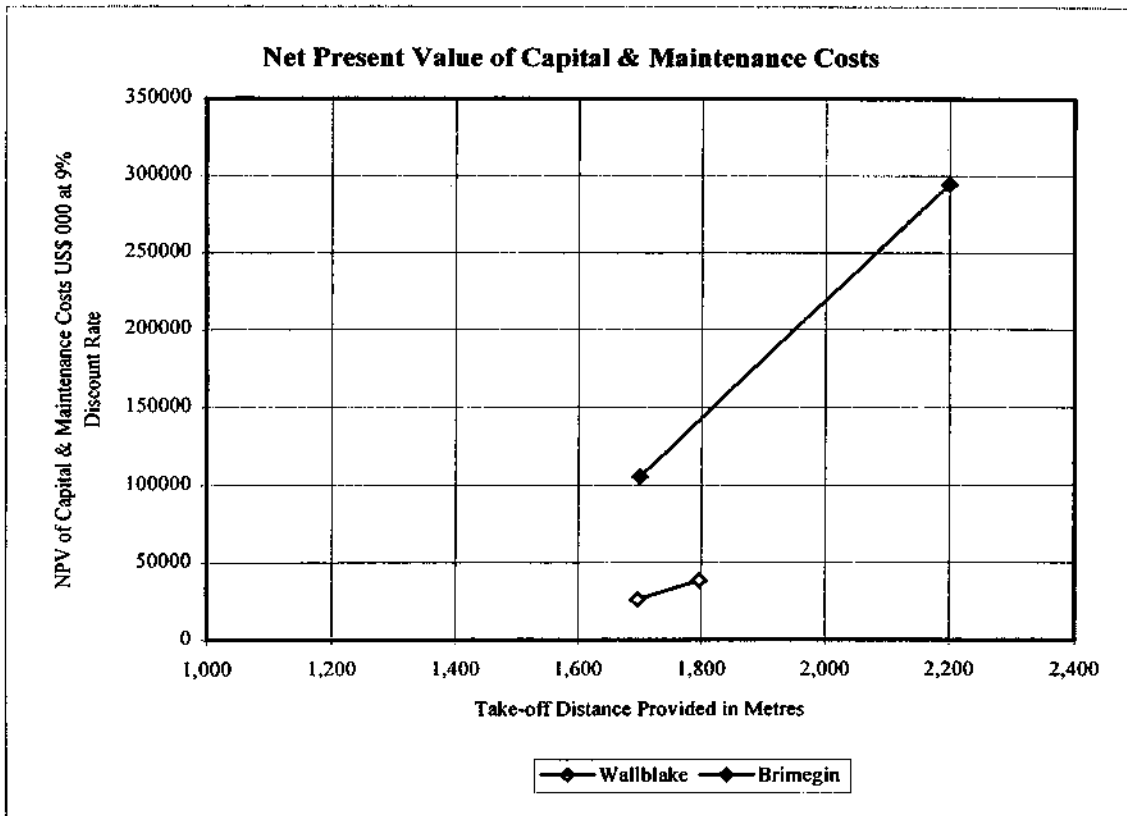


Figure 8.14
Relationship of Project Costs and Benefits to Take-Off Distance Provided



8.6 Sensitivity Analysis

8.6.1 General

Inspection of any of the tabular summaries of the incremental project costs and benefits presented above suggests that a sensitivity analysis examining the impact on each development option's economic performance arising from variations in key cost and benefit items should address the effect of:

- Variations in the value and treatment of costs and benefits associated with the acquisition and disposal of land ;
- variations in initial capital costs, including land and the consequent impact on replacement capital costs, routine maintenance and residual values;
- alternative treatments of residual asset values at the end of the 20-year appraisal period;
- variations in net Government revenues including the impact of incremental social costs to be met by the Government; and
- variations in the projected level of traffic.

Net present values are quoted throughout at the central 9 percent discount rate.

8.6.2 Variations in Land Costs and Benefits

The first sensitivity test excludes the cost of land acquisition from the cost benefit equation and in the case of the two development options for Brimegin, the benefits of releasing land at Wallblake for alternative uses. It reduces the present cost of Wallblake options by between US\$2.8 and US\$2.9 million and increases the positive return of Option1 from US\$ 0.7 million to US\$ 3.5 million. The net present value of Wallblake Option 2 remains negative at minus \$ 6.7 million. Excluding the value of land reduces project costs for Brimegin Option 1 by just US\$1 million but is worth US\$ US\$ 26.3 million in present value terms to Brimegin Option 2, which reduces but does not eliminate the negative present worth of this option.

Retaining land costs within the cost benefit equation and varying unit values by plus or minus 20 percent has a relatively minor impact on the economic performance of the smaller-scale options. It varies the net present value of the two Wallblake options by US\$ 0.6 million. The NPV of Brimegin Option 1 would change almost imperceptibly by US\$ 0.2 million whilst the position of the larger Brimegin Option 2 would vary by plus or minus US\$ 5.3 million.

The final sensitivity test of land values reduces the land-take of Brimegin Option 2 from the 280 hectares required by CIEC Engineering's Phase 1 proposal to the 125 hectares proposed by the current study. This action reduces the net present value of project costs for this option by US\$ 15.3 million. However, even with the significantly lower land-take, the net present value of Brimegin Option 2 remains

strongly negative at minus US\$ 39.8 million. Details of the sensitivity tests involving variations in land costs and benefits are set out in Table 8.23 and illustrated alongside the results of the other sensitivity tests in Figures 8.15 and 8.16.

Table 8.23
Sensitivity Analysis
Land Costs and Benefits
Net Present Value of Development Options
US\$ '000 at 9 percent Discount Rate

Sensitivity Test		Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
0.	Central Analysis	0.7	-9.5	-71.7	-55.0
1.1	Land Values Excluded	3.5	-6.7	-70.7	-28.7
1.2	Land Values - 20%	1.2	-9.0	-71.5	-49.8
1.3	Land Values + 20%	0.1	-10.1	-71.9	-60.3
1.4	Land Area - 55% (1)	0.1	-9.5	-71.7	-39.8

Note (1) In Sensitivity Test 1.4 the 55 percent reduction in land area to be acquired applies to Brimegin Option 2 only.

Source: W.S. Atkins analysis.

8.6.2 Variations in Capital and Maintenance Costs

Airport capital costs are the single largest cost item taken into account in the economic appraisal. Variations in capital costs affect not only the capital costs themselves but also periodic and routine maintenance costs and the residual value of project assets at the end of the appraisal period.

The present value of capital costs is significantly higher than the total net present value of the various development options. Typical variations of plus or minus 20 percent in estimated capital costs can therefore affect the economic viability of the individual development options to a considerable degree.

A 20 percent reduction in estimated capital cost improves matters all round. The positive return on Wallblake Option 1 would increase to US\$ 4.9 million and the scale of the negative NPVs on all other options would be decreased. The high cost Brimegin Option 2 would benefit significantly from a reduction in capital and related costs. A 20 percent reduction would reduce this option's negative NPV from minus US\$ 55.0 million in the central analysis to minus US\$ 1.7 million.

A 20 percent increase in estimated capital costs would increase the already negative results for Wallblake Option 2 and both Brimegin options. The NPV for Wallblake Option 1, the cheapest and therefore the option least vulnerable to the adverse effects of increased capital costs would switch from plus US\$ 0.7 million to minus US\$ 3.5 million. Details of the sensitivity tests involving variations in capital and related costs are set out in Table 8.24 and illustrated in Figures 8.15 and 8.16.

Table 8.24
Sensitivity Analysis
Capital and Maintenance Costs
Net Present Value of Development Options
US\$ '000 at 9 percent Discount Rate

Sensitivity Test		Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
0.	Central Analysis	0.7	-9.5	-71.7	-55.0
2.1	Capital Costs - 20 %	4.9	-3.3	-50.8	-1.7
2.2	Capital Costs + 20 %	-3.5	-15.8	-92.7	-108.4

Source: W.S. Atkins analysis.

8.6.3 *Variations in the Treatment of Residual Values*

Some airport assets including pavements and earthworks are semi-permanent in nature. If correctly maintained, they will retain a significant proportion of their original value at the end of the 20-year appraisal period. It is normal to take residual values into account as a benefit at the end of the appraisal period and discount them back to the present day. This procedure ensures that only the proportion of capital assets exhausted over the appraisal period is set against project benefits accruing over the same period.

A key assumption of the residual value argument is that the project is a going concern at the end of the appraisal period. Only if the project is expected to operate beyond the appraisal period is it reasonable to attribute some of the capital costs to subsequent years. If not, the only project asset to have any intrinsic value is the land the airport occupies. This sensitivity test examines the economic return on the various options if the residual value of capital assets is excluded from the equation.

Although applying a discount rate of 9 percent for 20 years reduces the present value of residual assets by a factor of 8, excluding them from the cost-benefit equation has a noticeable adverse effect on all but the least expensive Wallblake Option 1. The performance of Brimegin Option 2 is particularly badly affected.

Details of the sensitivity tests involving the exclusion of residual capital asset values are set out in Table 8.25 and illustrated in Figures 8.15 and 8.16.

Table 8.25
Sensitivity Analysis
Exclusion of Residual Asset Values
Net Present Value of Development Options
US\$ '000 at 9 percent Discount Rate

Sensitivity Test		Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
0.	Central Analysis	0.7	-9.5	-71.7	-55.0
3.1	Residual Values Excluded	-0.4	-12.6	-79.6	-78.6

Source: W.S. Atkins analysis.

8.6.4 Variations in Government Unit Revenues

Incremental Government revenue from tourism is the key source of economic benefit for each of the alternative development options. A 20 percent reduction in Government revenue per tourist arrival would reverse the positive return of Wallblake Option 1 from US\$ 0.7 million to minus US\$ 3.5 million and increase the negative NPV of each of the other options. Brimegin Option 2 would be particularly badly affected because of the scale of tourist arrivals involved in the High Density Tourism Development Scenario.

A 20 percent increase in government revenues per tourist arrival would benefit all development options but Wallblake Option 1 would still be the only option able to generate a positive economic return, up US\$ 5.7 million from the result of the central analysis to US\$ 6.4 million. Brimegin Option 2 would benefit significantly and the scale of its negative NPV would fall from minus US\$ 55.0 million to minus US\$ 7.2 million.

Details of the sensitivity tests involving variations in unit government revenues are set out in Table 8.26 and illustrated in Figures 8.15 and 8.16.

Table 8.26
Sensitivity Analysis
Government Unit Revenues
Net Present Value of Development Options
US\$ '000 at 9 percent Discount Rate

Sensitivity Test		Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
0.	Central Analysis	0.7	-9.5	-71.7	-55.0
4.1	Government Revenue - 20 %	-5.0	-15.2	-77.4	-102.8
4.2	Government Revenue + 20 %	6.4	-3.9	-66.1	- 7.2

Source: W.S. Atkins analysis.

8.6.5 Variations in Incremental Social Costs

Impact of variations in the estimated incremental social costs to be met by the Government of Anguilla is less acute than is the case for government revenues. A reduction of 20 percent from a central assumption of US\$ 800 per additional resident to US\$ 640 per additional resident would increase the economic return Wallblake Option 1 by US\$ 1.9 million to US\$ 2.6 million. This option's positive economic return would also survive a 20 percent increase in unit social costs. A 20 percent reduction in social costs would not reverse the negative NPV of any of the other options.

Details of the sensitivity tests involving variations in incremental social costs are set out in Table 8.27 and illustrated in Figures 8.15 and 8.16.

**Table 8.27
Sensitivity Analysis
Incremental Social Costs
Net Present Value of Development Options
US\$ '000 at 9 percent Discount Rate**

Sensitivity Test		Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
0.	Central Analysis	0.7	-9.5	-71.7	-55.0
5.1	Social Costs - 20 %	2.6	-7.6	-70.4	-16.8
5.2	Social Costs + 20 %	0.6	-9.6	-72.4	-40.4

Source: W.S. Atkins analysis.

8.6.6 Variations in Projected Traffic Levels

Under the central traffic forecasts for the Low Density Tourism Development Scenario, the total number of annual tourist arrivals is projected to increase at an average rate of some 5.75 percent per annum. A 20 percent variation in the total volume of passengers handled during the course of the appraisal period would be equivalent to a corresponding variation in average annual growth rate of approximately 1.25 percent to 4.5 percent and 7 percent respectively.

A reduction in projected traffic levels would affect government revenues, social costs and the benefits represented by airport operating revenues. An increase in traffic levels would enhance the scale of benefit from these sources. In each case the secondary effect on airport operating costs has been ignored.

A 20 percent reduction in projected volumes would reverse the positive NPV of Wallblake Option 1 from a central analysis value of US\$ 1.5 million to minus US\$ 4.1 million and increase the negative NPV of all other options.

Conversely, a 20 percent increase in traffic levels would enhance the result for Wallblake Option 1 and improve the position for all other options. Brimegin Option 2 would generate a positive return for the first time with an NPV of plus US\$ 7.5 million.

Terminal buildings and aircraft parking aprons may be slightly more crowded handling a 20 percent increase in passenger throughput but the runway and taxiway systems should be able to absorb the additional traffic without any difficulty. However, it should be borne in mind that a 20 percent increase in tourist arrivals would require a corresponding increase in the stock of tourist accommodation. Depending upon occupancy levels, this could amount to just under 400 additional hotel rooms in the Low Density Tourism Development Scenario and an additional 800 plus hotel rooms in the High Density Case (Brimegin Option 2).

Details of the sensitivity tests involving variations in projected traffic levels are set out in Table 8.28 and illustrated in Figures 8.15 and 8.16.

**Table 8.28
Sensitivity Analysis
Projected Traffic Levels
Net Present Value of Development Options
US\$ '000 at 9 percent Discount Rate**

Sensitivity Test		Wallblake		Brimegin	
		Option 1	Option 2	Option 1	Option 2
0.	Central Analysis	1.6	-8.6	-71.4	-28.6
6.1	Lower Traffic Growth	-1.8	-11.9	-74.7	-62.3
6.2	Higher Traffic Growth	5.0	-5.2	-68.0	5.1

Source: W.S. Atkins analysis.

Figure 8.15
Variation in Project Net Present Value with Sensitivity Test
Wallblake Options at 9 % Discount Rate

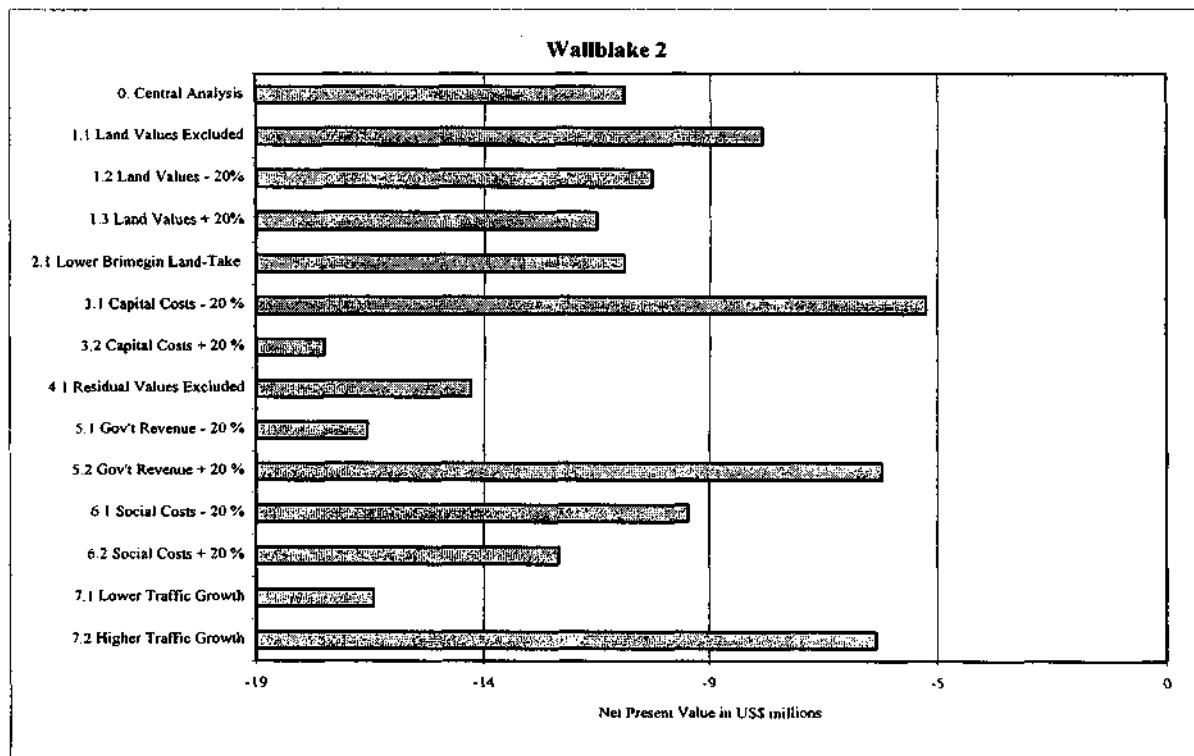
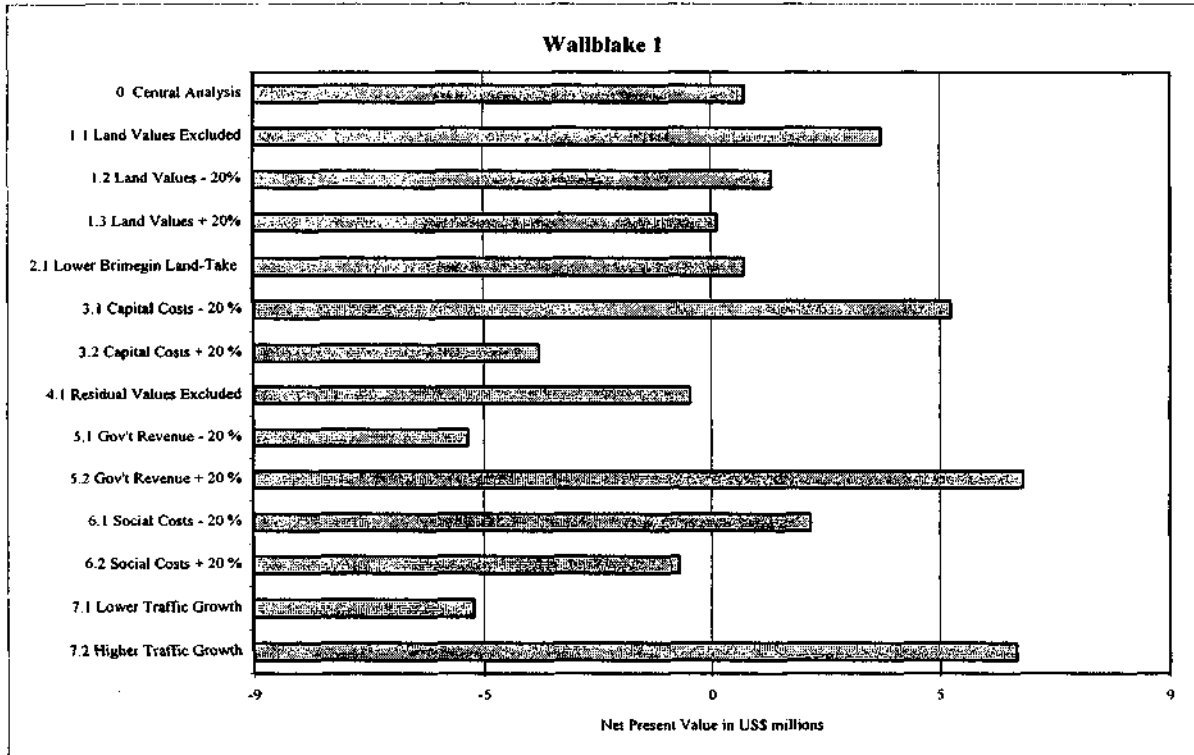
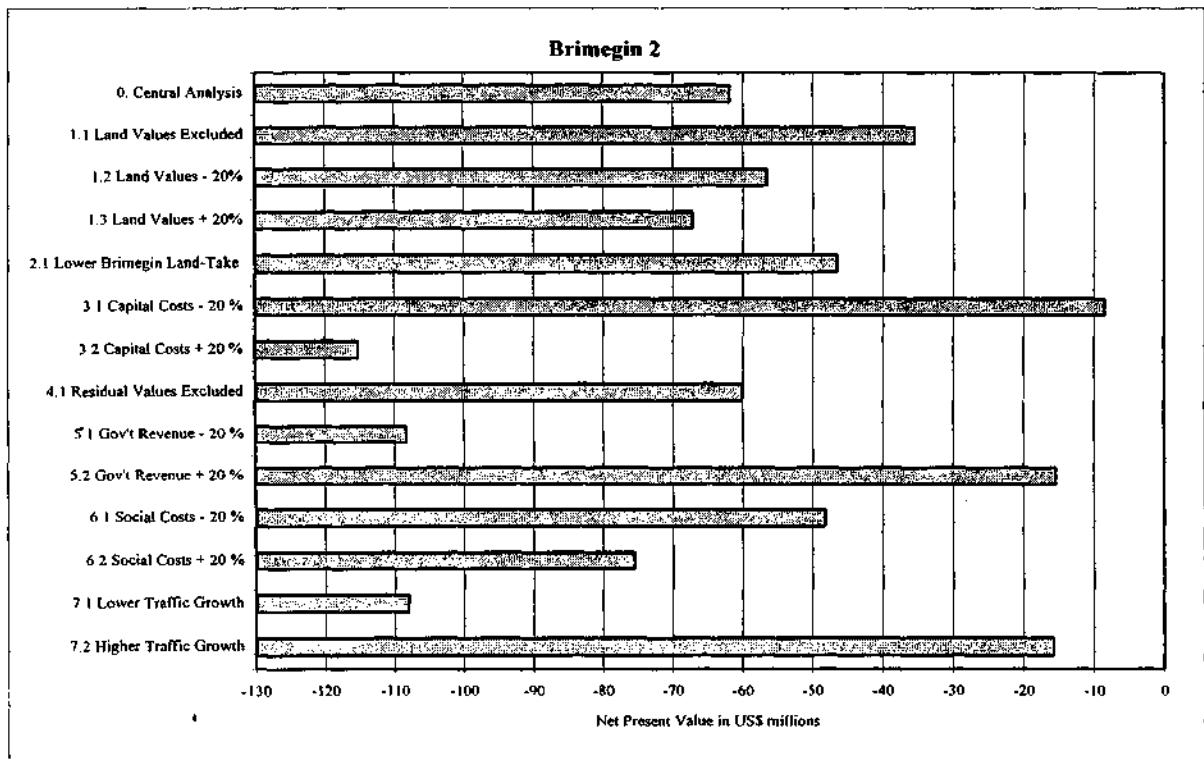
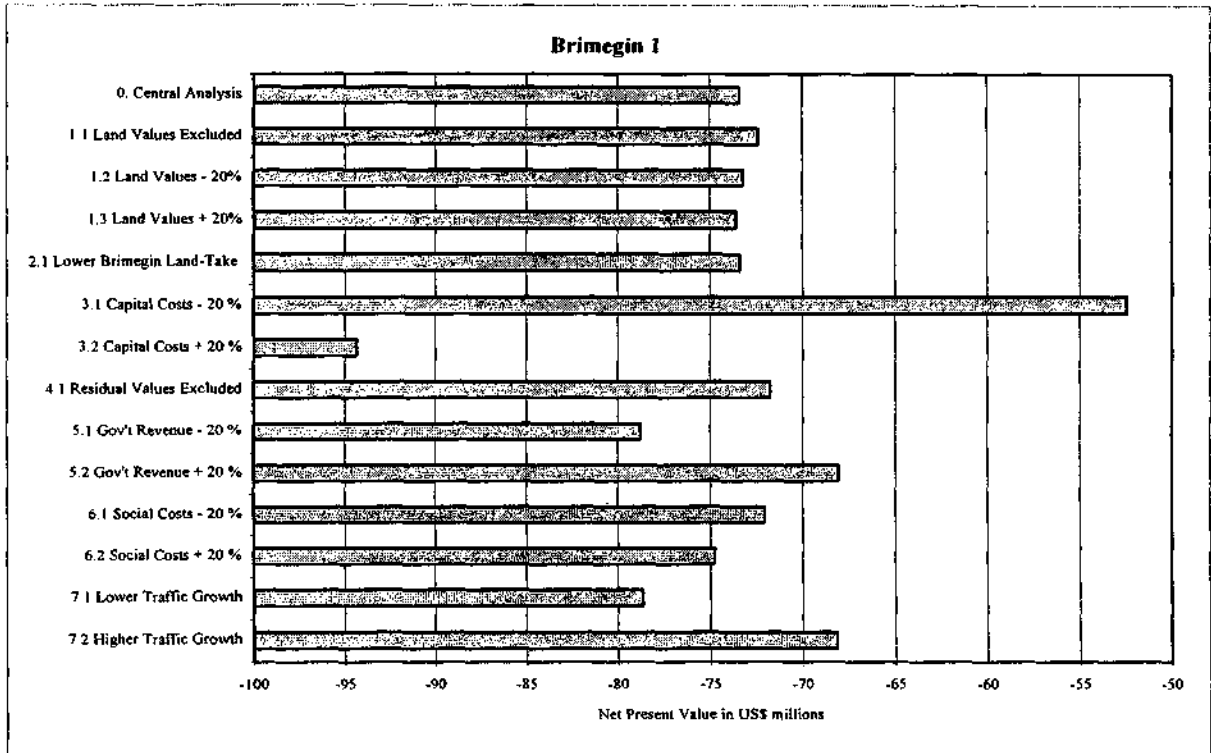


Figure 8.16
Variation in Project Net Present Value with Sensitivity Test
Brimegin Options at 9% Discount Rate



9.0 SOCIAL AND COMMUNITY ASPECTS

9.1 Social Profile

9.1.1 *Population*

At the time of the last census in 1992 the population of Anguilla was 8,960. The sex ratio between males and females is very even with approximately 50% male and 50% female. Recent population estimates by the Government Statistical Unit estimate the 1998 population at 12,394. The birth rate between 1988 and 1998 has declined from 20.5 to 14.8 per thousand, the death rate fluctuates between 5.4 and 8.6 per thousand. There has been a decline in the overall rate of natural increase over this period. The population increase over this period is in large part due to immigration of persons from other Caribbean islands (particularly Guyana, Santa Domingo, Dominica, St Kitts / Nevis, Montserrat), UK and the USA. There is a large dependent population with some 39% under 20 years of age and 11% over 60 years of age.

9.1.2 *Labour Force, Employment and Incomes*

In 1992 the labour force comprised 49% of the working population (4443 persons, of which 58% were males and 42% females). Ninety two percent were employed (94% of males and 91% of females). The unemployment rate was 7%. It is common practice however in Anguilla for individuals to have two or even three places of employment or sources of income.

The majority of employment is within the Production, Construction and Transport sector (32%) and in the Services sector (25%). The Clerical and Sales sector provides (20%) of jobs and the Professional and Technical sector (12.5%). There is a much higher proportion of women in the Clerical and Sales and Services sectors and a higher proportion of men in the Production, Construction and Transport sector.

Sixty percent of the employed labour force worked in the private sector and 18% in the public sector with 21% being self-employed. Seventy four percent of the employed labour force was Anguillan, 26% being non-Anguillan.

The majority of work permits are issued in the Production, Construction and Transport sectors (37% in 1992) and to a lesser extent the Services sector (30%). The number of work permits issued increased from 132 in 1987 to 557 in 1992.

There is no income tax on the island and it was continually reported by consultees that although the cost of living is high there is little poverty on the island but there is a growing sub-sector of the population that is economically deprived without experiencing extreme poverty. It is generally thought that poverty is confined to the elderly who may be ill, live in inadequate housing and have children overseas. A number of Anguillans do their shopping in St Martin, taking the ferry from Blowing Point. Car ownership is very high amongst the community, partly because there is no public transport service.

9.1.3 *Education*

There are 6 public and one private primary schools on the island and one secondary school. A new campus for the secondary school is under construction. There are 10

pre-school facilities. Enrolment is high as education is free up to secondary level. At the tertiary level there is a UWI School of Continuing Studies. The government pays fees for public sector employees but in the private sector individuals pay their own way. Bachelor degrees in Management or Education can be obtained as well as various certificates in public and business administration and education.

Whilst the CXC results are on a par with regional results there are some disturbing trends emerging in the education sector. Among these is the fact that many of the children of migrants have special needs. There has also been a recent increase in truancy and incidents involving weapons and drugs.

9.1.4 *Health*

There is one 36 bed government hospital and a number of clinics throughout the island. Facilities are however limited and serious cases have to be transported off the island. Treatment is not free but the government assists on a case by case basis. There is a reported need for the development of further facilities especially psychiatric care. It is also reported that the type of diseases common in the country are changing and are increasingly typical of those of more developed countries – ageing, obesity, hypertension and diabetes.

9.1.5 *Housing*

In 1992 there were 2,619 households. The average household size was 3.4 persons. Ninety percent of households have an electricity supply. Forty one percent have a water supply from cisterns whilst 32% have a water supply from both cisterns and a private piped supply. Most households own their property although migrants who have recently entered the country usually rent property in the first instance. Housing conditions for migrant workers are relatively poor with some living in abandoned structures without sanitation.

9.1.6 *Community Development and Welfare*

Anguilla prides itself on having a quiet, relatively crime free environment. The small population creates an atmosphere in which everyone is known and the society has traditionally been very close knit. This has however been changing over the years and a number of consultees consider that the spirit of community is now being lost due to the increasing emphasis on the acquisition of material wealth, the fact that parents are working most of the time and the increasing influence of both television and exposure to the culture and lifestyles of both wealthy foreign tourists and immigrant workers. Although reported cases of crime were on the increase to 1995, there is now a significant decline. Some consultees reported an increase in prostitution, primarily among migrant workers.

9.1.7 *Existing Land Use and Settlement at Wallblake and Brimegin*

Wallblake

The existing airport at Wallblake is located in a central part of the island to the south of, but in close proximity to the island's main settlement at The Valley. This is the commercial, social and administrative centre of the island and contains most of the

government offices, the main social, educational, community and cultural facilities and a large proportion of the islands commercial enterprises.

There are villages in the vicinity of the airport – George Hill to the west, Long Ground to the south, Ray Hill to the north-east and The Forest to the south-east. The majority of settlement is located around the western end of the airport with settlement being more sparse at and around the eastern end. There is a considerable amount of new construction and many buildings are under construction or semi-completed.

To the north-west of the runway along the main road from the terminal to the western part of the island there are a number of commercial properties including small retail outlets and restaurants / bars and to the north-east of the runway there are a number of garages and builders yards. On the south side of the runway there is a primary school at the Forest.

To the south of the runway is the island's electricity generating station which is fed by an oil pipeline from the bulk oil storage terminal immediately to the south.

The land at the extreme eastern end of the runway is open pasture to the south and scrub vegetation on the slightly higher land to the north. The land on which the airport is located is considered by the Department of Agriculture to be of relatively good quality being classified as sandy or clay loams. There is a limestone cavern at the eastern end of the runway which is a site of archaeological interest.

Land Use Planning Policy

Land use planning in Anguilla is governed by the Land Development Control Ordinance 1966. A new Ordinance has been prepared in draft and is currently being processed by the Attorney General. The current Ordinance does not make provision for the preparation of a Development Plan for the island but the Physical Planning Unit nevertheless produced a National Land Use (NLU) Plan in 1996. This has not yet been approved by Government but is used for development control purposes.

The NLU Plan covers the period 1995 to 2015. It is a strategic plan which defines a three level settlement hierarchy. The Valley is designated National Centre, whilst George Hill is designated a Local Centre. At the intermediate level a number of Sub-national Centres are designated. Blowing Point is designated a Growth Centre.

The strategy is to develop a mixture of residential, commercial and industrial development at selected locations across the island. Whilst The Valley is clearly planned to remain as the commercial, institutional and administrative centre of the island further development above and close to the aquifer will not be permitted unless the area is centrally sewered.

Other key proposals in the NLU Plan are to develop tourism at specified locations, to minimize the alienation of good quality agricultural land and to conserve biodiversity.

The main proposals of the Plan in the Wallblake area are:

- Medium density residential development to the east
- Industrial development to the south from the airport to the solid waste disposal site and bulk oil storage depot.

The main proposals at the Brimegin site are :

- A Conservation Area on the north part of the site (to protect the natural vegetation especially the tall trees and the iguanas)
- Heavy industry in the vicinity of the quarry
- Low density residential development in the remainder of the area.

Regarding the airport the Plan considers a number of problems with the existing facility including :

- the runway is cracked and uneven,
- the gradient gives poor visibility,
- the displacement of the runway's threshold,
- encroachment within 260 feet of the extended centre line, especially at the eastern end
- runway too short for ATR 42 with full passenger load,
- lack of refuelling facilities
- terminal infringes the transitional surface
- the raised ground inside the runway strip on the south-east side does not comply with ICAO obstruction standards
- infringements of power lines

The Plan recommends that any decision to relocate the airport should be preceded by a comprehensive financial and environmental feasibility study which identifies all alternative sites and examines the costs and benefits of each. The Plan proposes that the following options be evaluated :

- Extension of the runway to eliminate payload penalties on ATR 42
- Extension to 4,806 feet to accommodate ATR 72 aircraft without restrictions
- Relocation of the airport to a site at Brimegin, Corito or Lockrum.

9.2 Impact Assessment

9.2.1 Land Use and Property

Wallblake Area

A field survey was undertaken using 1:2000 scale plans of the Wallblake area to estimate the number of properties affected by the proposals and the area of land under different uses taken.

It is proposed that the runway be lengthened by some 600 metres at the eastern end. The width of the strip of land required is 150 metres. A zone of 60 metres is required at the western end plus a strip 90 metres long and 60 metres wide for the RESA.

Land is therefore required at both the eastern and western ends, the majority at the eastern end. Along the length of the runway most of the land required is on the north side.

The land use at the eastern end is a mixture of residential and commercial on the northern side, and pasture and scrubland to the east. It is estimated that about 25 plots will be affected either in total or in part by the proposals. It is also estimated that 12

properties fall within the boundary of the clearance area at this end. Of these 9 are residential and 3 commercial (garages and builders yards). Most of the buildings are small, single storey although two are large two storey dwellings. Additional property may be required to avoid infringement of the 1:7 clearance area. There are three properties in close proximity to the boundary of the clearance area on the north side at this end, two of which are dwellings (one large, two storey) and one commercial (building material supplies). There are three buildings in close proximity on the southern side, one of which is a small dwelling and the other two are a primary school.

The land use at the western end is a mixture of residential and commercial with a small amount of open pasture. It is estimated that about 36 plots will be affected by the proposals either in total or in part. It is estimated that 6 properties fall within the boundary of the clearance area. All six are small residential dwellings. Additional property may be required to avoid infringement of the 1: 7 clearance area. There are 7 residential properties in close proximity to the boundary of the clearance area on the south side and 13 properties at the extreme western end and on the northern side which may be affected. Of these 8 are commercial, being mainly shops and bars. Most are small single storey buildings although one is a large two storey commercial building.

Various options relating to re-profiling, land take and the strip end and runway end safety area would need to be re-evaluated during the design phase.

Brimegin Area

At the Brimegin site the land use is mainly grass and scrubland although extensive subdivision has taken place. The Valuation Section of the Department of Lands and Surveys undertook an assessment of the land and property to be acquired for development of the airport in June 1999. They estimated that 853.35 acres (347 hectares) would be affected consisting of 212 parcels. The size of the parcels ranges from 0.2 acre to 66 acres although most parcels are between 0.5 and 3 acres. Twenty existing buildings would be affected. The average value of the land was put at US\$ 43,427.58 per acre and the average value per house US\$ 136,646.65 although three properties are valued at over US\$300,000 The total value of the property required in the area was minimally estimated at US\$ 35,950,733.

9.2.2 *Impact on plans and policies*

The impact of the proposals at Wallblake on development plan proposals and policies is limited. The land at the eastern end of the runway is proposed for medium density residential use. However part of this area falls within an area where development is restricted due to the airport. There is unlikely to be any serious planning objection to the proposals here.

At Brimegin however, whilst part of the site is zoned for low density residential use, the proposals would conflict with the proposed Conservation Area on the north part of the site. In addition there would be conflicts with the existing and proposed industrial uses on and around the quarry site (eg proposal for an asphalt plant) as well as conflicts with the preservation of Fountains Cave and its setting. In addition the scale of the tourist development envisaged with the Brimegin Option 2 proposal is contrary to the proposals of the current development plan.

9.2.3 *Labour force and employment*

It is understood that there are currently approximately 60 employees at the airport. It is assumed that with the improvement in facilities proposed at Wallblake (including limited duty free shopping) this could be expected to rise by say 15 - 20 employees. The Feasibility study for the Brimegin proposal envisages permanent employment of some 50 persons (5 expatriate) and an additional 30 jobs for duty free shops. At both sites temporary construction workers will of course be required, but the number of workers required at Brimegin will probably be larger and the construction period longer. The Brimegin Option 2 proposal, most importantly envisages the construction of a large number of new hotels and suggests that direct employment in these hotels will be about 950 persons (mainly female) with further indirect employment in the tourist industry support services (mainly male). Construction employees for the new hotels would be required over a five year period.

The Brimegin proposals will result in the need to import large numbers of migrant workers due to the shortage of labour on the island. This is seen as undesirable by the majority of consultees and would be anticipated, based on experience on the island to date, to lead to further crime and social tensions with strains on both social and physical infrastructure. It would also lead to a dilution of the essential Anguillan character of the island with in the longer term the possibility of migrants outnumbering Anguillans.

9.2.4 *Disturbance - noise, vibration, odours, traffic*

Wallblake

The proposals at Wallblake will have an impact primarily on the communities in George Hill, Long Ground and Statia Valley. They will also have an impact on the commercial and administrative properties in The Valley, including the main government buildings on the south side of the town. There are already complaints from many residents regarding noise, vibration, interference with TV reception, and odours which can all be expected to increase with larger and/or more frequent aircraft. The proposals will however result in improved safety for the residents of the surrounding areas.

The impact in terms of increased traffic within these communities is unlikely to be significant – the main increases in traffic flows are likely to be along the main road from the airport terminal westwards. The commercial properties along this stretch of road could benefit in this respect.

It is assumed that the bulk of construction materials will come from the quarry to the north and the port at Sandy Ground. The former would result in heavy vehicles passing through North Side village and The Valley to reach the site, causing some disturbance to these communities. The site is however conveniently located in relation to the waste disposal site on the south coast and disposal could be effected without adverse impact on communities.

Brimegin

The Brimegin proposals would have an adverse impact on the communities at Little Dix and Welches to the east of the site. These are fairly densely settled rural communities and considerable opposition to the proposals could be anticipated. Noise levels, vibration, and odours in these areas would be significant, particularly with the size of the airport envisaged in Option 2. In addition there would be a significant impact on the properties in the north part of The Valley and the tourist development and beach facilities at Shoal Bay.

There would be a significant increase in traffic through The Valley as a result of tourists travelling from the airport to the main hotel developments in the west of the island.

Whilst it is assumed that the majority of construction materials would be from the quarry near the site any heavy materials imported via Sandy Ground would need to be brought through The Valley and the communities to the north of the town where roads are narrow. This would cause undesirable disturbance.

9.2.5 *Severance and Communications*

The proposals at Wallblake would result in the severing of the road at the eastern end of the runway which gives access from The Valley to Forest Bay, and the facilities at Corito. This road could either be realigned around the extreme eastern end of the runway extension or alternatively the connection could be forfeited with additional use being made of the road around the western end of the runway to give access to Corito. The latter would increase traffic flows through Georges Hill and Long Ground.

At Brimegin the proposals would sever the main access road to Shoal Bay from The Valley. Access to this area would need to be achieved via Welches and Island Harbour village. This would be a relatively long diversion and would increase traffic through these rural areas. The proposals would also sever the main road from the Valley to the rock quarry, block making plant and crusher facility, making access from this facility to most of the island to the south and west significantly longer and increasing traffic through Shoal Bay, Welches, Island Harbour, Deep Waters, Little Dix and Stoney Ground.

9.3 **Consultation**

9.3.1 *Methodology*

Extensive consultation was undertaken with stakeholders including NGO's, religious organisations, sample households from those likely to be directly affected, interest groups and the community at large, including hotel managers and managers of various business concerns. Primary stakeholders were identified through inquiries with relevant ministries and through general inquiries. The intention was to consult a cross section of interested parties. The following organisations were consulted :

- National Trust

- Department of Social Services
- Anguilla Beautification Club
- Anguilla Tourist Board
- Soroptimists
- Optimists
- Department of Education
- National Council of Women
- Department of Community Development
- Christian Council
- Youth Council
- Rotary Club
- Director of Medical and Health Services
- Hotel and Tourism Association
- National Farmers Association
- Co-ordinator of Women Affairs
- Representatives of residents likely to be affected
- Representatives of Spanish Town (migrant community)
- Chamber of Commerce

9.3.2 *General Issues*

The need for improvement of the existing airport was well recognised. The general view was that something has to be done as Wallblake is too small and planes have to cut back on the numbers of passengers that can be brought in. This appears to be seen as a waste and uneconomic. Most consultees recognised the need for improved safety, and greater reliability. Some commercial concerns noted the lack of any space for duty free shopping at the airport.

There seemed to be particular opposition to the dependence on St Martin and other international airports for the arrival of visitors. Dependency is clearly something that is not appreciated on the island.

There was almost total opposition to the construction of an international airport. The prospect of large plane loads of visitors arriving is viewed unfavourably primarily because it is considered that it would completely change the character of the island from one of up-market tourism offering a luxury product to one satisfying the mass tourism market, because the existing infrastructure (both physical and social) would be unable to cope, and because of the perceived adverse environmental impact and social impact of large numbers of tourists.

It is well recognised that the island has a limited carrying capacity and is fragile socially, culturally and environmentally. If tourism is to survive and flourish on the island it must be sustainable. It is felt that the Brimegin proposals threaten sustainability in all respects. It is also recognised widely that the development of the tourist industry can be better achieved through increasing occupancy levels at existing hotels and improving the quality of the environment of the island and its natural attractions rather than the construction of further hotel capacity.

There were very mixed views from the residents of the Wallblake area on relocation. Some would be happy and willing to move whilst others would be totally opposed to

the idea, particularly those on the northern side some of which have good views across the island. Some residents would be happy to move to another site within the same village. (see notes of meetings in Appendix) There is considerable attachment to family lands especially amongst older people.

A view frequently expressed was that sites other than Brimegin should be investigated, at least before a decision is made concerning the future expansion of Wallblake.

9.3.3 *Issues and concerns at Wallblake*

The main concerns with the expansion of Wallblake which were frequently expressed are as follows :

- Noise, particularly from aircraft taking off,
- Vibration, including damage to buildings,
- Odours,
- Pollution of water supplies, especially from fumes at the western end of the runway,
- Interference with TV reception,
- Safety, particularly from aircraft overshooting the runway,
- Longstanding talk about the need to relocate which has resulted in an element of blight in the area
- Stress from aircraft disturbance, especially to the old, sick and young babies,
- Frustration at not being able to develop land either because of the uncertainty of future development or because plots lie within restricted zones,
- Poor drainage in nearby areas as a result of the construction of the airport and runway

9.3.4 *Issues and concerns at Brimegin*

The main issues and concerns with the Brimegin proposal are as follows :

- Concern over the environment and in particular the need to protect Fountain Cave, the habitat of the Iguanas and the forest area to the north which is designated a Conservation Area in the National Land Use Plan and contains the few remaining wild fruit trees on the island,
- Uncertainty over the possibility of developing residential plots on approved subdivisions and a certain amount of planning blight,
- Opposition to the need for additional hotel development to support the larger airport because of pressures on water supplies, infrastructure, the natural and social environment, because of the possible loss of top class tourism and because of the resulting change in character to the island resulting from mass tourism development with further immigration and all the associated problems that is seen to bring such as crime and prostitution,
- Loss of grazing land,
- High costs of infrastructure development associated with the proposal and high costs for land assembly,
- Remote location particularly in relation to the major tourist development on the western part of the island and inaccessibility for employees.

9.4 Social Survey of Residents in Wallblake and Brimegin

9.4.1 Introduction

This report presents the results of an assessment of the views of the residents most likely to be affected by the expansion of the Wallblake airport or the development of a new airport at Brimegin. The four villages in the vicinity of the Wallblake airport are George Hill to the west, Long Ground to the south, Ray Hill to the north east and the Forest to the south-east. Little Dix and Welches are the two settlements most likely to be impacted by the Brimegin development.

A representative sample of the households in each of the communities was selected, and a brief survey was conducted to ascertain the views of the residents on the proposed developments. The main findings of the surveys were as follows:

Wallblake airport area overview

- The majority of the residents have lived in the area for more than 25 years.
- Only 7% of the sample work at the Wallblake airport.
- For those residents closest to the Wallblake airport, noise is the main impact, but most persons indicate that they have grown accustomed to this and the other nuisance factors.
- 50.6% of the respondents supported the idea of expanding the Wallblake airport. Their reasons were based on the fact that they believe that it would be the least cost option; the need for a bigger airport and the opportunities it would bring to Anguilla through tourism.
- The 40% who did not support the idea of expanding the Wallblake airport were concerned about noise and the impact on their property.
- 49% of the respondents were in favour of developing the airport at Brimegin because there is more space, there is very little housing development, it offers the opportunity for the development of an international airport, and it can increase tourism and economic benefits.
- 29% of the respondents who were against the idea of developing the airport at Brimegin based their objections on the cost it would take to build, the distance from town, the geology in the area, the private land ownership and the heritage features in the area.
- 37% of the sample were prepared to relocate if absolutely necessary. 48% were not prepared to move under any circumstances.
- 76% would require compensation in the form of house and land to the value of, or greater than what they currently own. 13.3% wanted money and 10.7% were unsure of what they would want or indicated that nothing would be enough.

Brimegin development area overview

- The majority of the residents have lived in the area for more than 25 years.
- 78.5% support the proposal to expand the Wallblake airport because they believe that it will be less costly, that the residents there are accustomed to the noise and other nuisance factors, that it would make Anguilla less dependent on neighbouring islands, it would be safer and there is existing infrastructure.

- 26% support the development at Brimegin because there is less housing development and there could be economic benefits.
- 74% disagree with the proposal to develop the airport at Brimegin because of the geology on the area, they believe that it would be very costly, they feel it would bring fundamental negative changes to the island and have negative impacts on their lives.
- The main impact that the residents are concerned about regarding the proposed airport development at Brimegin is the noise.

Taxi drivers overview

A meeting was held with twelve taxi drivers to determine their views on the airport development. There were two main positions:

- One group felt that a proper airport was needed no matter where or how, by all cost and on good ground, even if it is not at Brimegin.
- The other group was concerned that the development of an international airport would be detrimental to Anguilla, and that the island should maintain its up-market status because it offered something to the travellers that they can not obtain elsewhere.

Both groups were in agreement, however, with the need to upgrade the Wallblake airport because of the existing problems, i.e. the bump in the airstrip, the alignment of the runway, the need for fueling capacity, and the poor drainage.

More indepth details of the survey results are contained in the following sections.

9.4.2 The Wallblake airport area

The Department of Lands and Surveys estimate that 131 buildings will be impacted by the proposed expansion of the Wallblake airport. A 60% sample was taken in this area, targeting the properties in closest proximity to the airport (Table 9.1). The survey findings are tabulated below.

Table 9.1 Number of persons in sample households

Community	Adults	Children	Total Persons	Total Households
The Forest	26 (60.5%)	17 (39.5%)	43	8
George Hill	114 (68%)	54 (32%)	168	43
Long Ground	16 (53%)	14 (47%)	30	7
Statia Valley	43 (73%)	16 (27%)	59	17

As Table 9.2 shows, the majority of the residents have lived in the area surrounding the airport for more than 25 years.

Table 9.2 Length of residence

Community	Less than 10 years	10 – 25 years	More than 25 years	Total number of respondents
The Forest		1 (12.5%)	7 (87.5%)	8
George Hill	5 (12%)	8 (19%)	30 (69%)	43
Long Ground	2 (29%)	4 (57%)	1 (14%)	7
Statia valley	2 (11%)	4 (23%)	11 (65%)	17

Within these households, fourteen (14) adults, or 7% of the adults in the sample work at the Wallblake airport.

Table 9.3 Number of respondents employed at Wallblake airport

Community	Employed at airport	Total adults in sample
The Forest	3	26
George Hill	7	114
Long Ground	0	16
Statia Valley	4	43

The distribution of employment at the Wallblake airport is as follows:

Table 9.4 Distribution of employment

Department	Number employed
American Eagle	2
Fire Department	5
Aircraft company	1
Pilot	2
Security	1
Immigration	2
Other	1

The impact of the existing airport

When asked to indicate what type of impact the airport has had on their lives, noise was the leading concern.

- Problems are more acute when planes land from the east.
- Jets are noisy.
- The American Eagle flight at night wakes you up, and a jet almost landed 2 years ago.
- Noise is expected sometimes when they take short cuts over the house.

However, many of the respondents were quick to comment that they were accustomed to the noise and hardly noticed the other factors at all.

Table 9.5 Effects of airport on residents

Effects	The Forest	George Hill	Long Ground	Statia Valley
No impact	37.5%		14%	
Dust		21%		
Vibrations from planes	12.5%	44%	14%	6%
Noise	62.5%	65%	86%	25%
Odours	12.5%	49%		6%
Pollution of water		19%		
Interference with TV reception		28%		
Safety	12.5%	49%	14%	
Drainage				
Fumes			28%	
Construction		7%		6%

Odour was another factor that affected the respondents. They indicated that the extent of the problem depended on the wind direction or the size of the plane. One person reported that their sinuses were affected by the odour.

Vibrations from the planes passing overhead were reported by one respondent to have "cracked up" his house. Other respondents indicated that the intensity of the vibrations was linked to how low the planes were flying and the size of the plane.

According to the respondents, interference with TV reception depended on the direction of the take off and the size of the planes. The major safety concerns pertained to the possibility of planes overshooting the runway, or coming down on one of the buildings.

One area of increasing concern is the restriction on construction and the inability to build more than one-storey structures. Respondents raised the point that no approvals are being given for building in the area, and indicated that it is creating problems to persons who own land and wish to start their homes.

Only one respondent remarked on the length of time it takes to get to the main road because of the need to travel around the runway.

Opinions on Wallblake airport expansion

When asked for their opinion on the proposed expansion of the Wallblake airport, roughly half of the respondents were for the idea and half were against. Of the thirty-eight (38) respondents (50.6%) who were for the idea of expansion, the reasons were:

Least cost option

- It could happen. The government will be looking for the least expensive option. If it happens people will have to move and that will be costly. It could be beneficial.
- Good idea. Already established that it is cheaper to fix.
- The need for a bigger airport
- Has not heard about it, but airport needs to be bigger.

Advantages to Anguilla and to tourism

- They should for tourism.
- Yes extend ~ improve tourism. Maybe vibrations or reception TV from jets.
- Would be good for Anguilla.
- If it's done bigger planes can come in.
- There was substantive agreement with the proposal to expand to the east, and to have the take off over the sea:
- Better to expand towards the northeast.
- Might be the better thing to do. Have the take off over the sea.
- Best suggestion, can't go west.
- Better way to go east can't go west.
- Good idea. Let them touch down after they pass this area.
- It should be extended east.
- Yes that would be good. Extend going eastward.
- However, some respondents were concerned that the eastern end of the island was "swampy".
- One respondent was concerned about the cost and suggested upgrading rather than building a new airport.

The thirty (30) respondents (40%) in disagreement with the expansion of Wallblake were concerned about the following:

Noise

- More noise, more planes.
- Jets would be a problem.
- There might be an increase in noise.

The impact on the existing homes and buildings

- Would have to move houses.
- Would mean larger planes and therefore would be a problem. Would have to do a lot of construction and move the houses that are in the way.
- Can't because of homes.
- It is dangerous for George Hill.
- Should be condemned. Too many houses built up. A new airport should be built.
- An airport should not be too close to a residential area.

Some respondents wanted a completely new location:

- Rebuild at Scrub Island build a bridge. Keep it off mainland.
- No, I prefer for it to be moved to a new location.
- If funding is available, move it.

- One person felt that the airport should remain the same size, and another suggested that it be kept for small planes.
- Seven respondents offered no opinion or indicated that the government would do what they wanted to do no matter how they felt about it.

Opinions on the Brimegin development

With respect to the respondents' opinions on building a new airport at Brimegin, thirty-seven respondents (49%) were in favour of the idea and twenty-two (29%) were not. Of those in favour, the reasons given were:

More space

- Has more space therefore can build bigger airport.
- If there is more land there then yes.

Lack of housing in the area

- Yes, where there are no dwelling houses.
- Yes. Any area where there are no dwelling houses.

The opportunity for an international airport

- If the airport is built at Brimegin it would be international. This would generate more work, and therefore it would be beneficial.
- Improved tourism and economic opportunities
- Would be a good idea for tourism, especially to get bigger planes. Could also build a better building.
- Yes, it will help us economically. It will also create jobs.
- Some respondents agreed with the location but expressed concern about the cost of building the airport, the nature of the geology in the area and the distance to be travelled to reach the airport
- Would be ideal, however money would be an issue.
- Space- yes but rocky.
- Yes but further away.
- More tourist, but further away.

The twenty-two respondents who were against the idea of an airport at Brimegin were concerned about:

The cost

- Long time, costly
- No, finance
- It will take a long time and a lot of money

The distance

- Its too far.
- Too far away.
- Far.

The geology

- Brimegin has caves and might not be suitable

Land ownership

- Would be good to move it from Wallblake in the past but now Brimegin is also getting built up.
- If people have land at Brimegin the same problems that we're experiencing they'll have eventually.

There is no need for an international airport

- Don't need international airport.
- Not sure Anguilla ready for that right now.

Heritage features

- Too expensive, the fountain is located in that area
- I don't know if it's a suitable area due to the fountain being located there which should be preserved.

Find an entirely different site

- Disagree with removing it to Brimegin but a new site would be preferable. Brimegin should be preserved as a tourist area. Scrub would be preferable
- Better to build elsewhere
- A number of respondents were unable to comment because they were unfamiliar with the area

Relocation of residents

The survey sought to ascertain the willingness of the respondents to be relocated if it should be required by the airport expansion. Twenty-eight (37%) respondents indicated that they would do so if they absolutely had to, while thirty-six (48%) were adamant that they would be un-prepared to move.

The respondents who indicated that they would move, however reluctantly, made it clear that they would want to have a say in where they were moved to and that compensation would be a must.

The individuals who were not prepared to relocate, all felt very attached to the area.

- "Jesus I love it here"
- I would be sad.
- I would feel very bad.
- No, my navel string was buried here.

The remaining respondents were not prepared to comment or indicated that they had not given it any consideration.

The respondents were also asked to indicate what location they preferred, should they have to move. The answers varied considerably, but the majority once again confirmed that they would rather stay in the area.

Table 9.6 Preferred location for relocation

Preferred Location	Number of responses
Nowhere but here	51
Somewhere close	2
Don't know	3
Statia Valley	1
The Quarter	1
Little Harbour	4
The Valley	1
Northside	1
East area	2
Rock farm	2
Wallblake	2
South Hill	1
Stoney Ground	1
Pope Hill	1
Rock Farm	1
Shoal Bay	1

Within the context of this overwhelming desire to remain in the area, the respondents were asked what features of the area were attractive to them.

Table 9.7 What is liked about the area

Likes	The Forest	George Hill	Long Ground	Statia Valley
Quiet peaceful pleasant cool	7	5	3	4
Lived here all their life/grew up in the area	1	2	3	6
Purity/Privacy Not crowded	1	1		
Family Neighbours		2	1	1
It is central and is close to services – church, school, work	1	4	1	
Safety	1			
Beauty Scenery			6	
View of the sea and St. Martin		7	1	1
Watching the planes		3	2	
Memories/ Sentimental value		10		
Location		10		
Good Land		1		
Everything		2		1

The respondents were also asked to indicate the things in the area that were unattractive. These were:

- The soot/pollution and the noise from the power plant
- The flies from the landfill
- Their proximity to the proposed industrial site
- The planes and the busy highway
- The narrow roads and the potholes
- The fact that most of the land is private can cause access problems
- Mosquitos

Compensation

When asked about the level of compensation that would be required if they were relocated, 57 respondents, 76% of the sample requested house and land of a value equal to or greater than what they currently own. These were:

- Same level of land and house
- Land to replace land or building
- A comfortable home and a good location
- Two new houses
- A big house on the hill
- A house not smaller than the existing one
- A better house and it must be concrete. A quiet area
- Twice as much as what I have now
- I would like to be replaced with my present assets
- A good location with what I have presently and transportation
- Good land for gardening
- 10 respondents, 13.3% wanted to have money and 8, 10.7% were unsure or indicated that nothing would ever be enough compensation.
- A lot of money
- Pay me for what I own
- Half a million dollars (US)
- I would have to be given the means to build my own house
- There is no compensation enough
- Never thought about it
- Nothing
- Too big to mention

9.4.3 *Brimegin Development*

In Brimegin, the residents in the communities of Little Dix and Welches are those most likely to be affected by any airport development in that area. To this end, residents of Little Dix and Welches were interviewed to ascertain their concerns regarding the potential development.

23 households representing 113 persons were interviewed in Little Dix and 19 households representing 88 individuals were interviewed in Welches.

Table 9.8 Number of persons in household sample

Community	Adults	Children	Total
Little Dix	79	34	113
Welches	49	39	88

As Table 9.9 indicates, the majority of the residents in the area have lived there for more than 25 years. Most of them have lived in the area all of their lives.

Table 9.9 Length of residence

Community	Less than 10 years	10 - 25 years	More than 25 years	Total number of respondents
Little Dix	1 (4.35%)	5 (21.74%)	16 (69.57%)	23*
Welches	2 (10.53%)	3 (15.79%)	14 (73.68%)	19

* One non-response

Not many of the respondents work in the area, and of those who do so, the majority is involved in agriculture.

Table 9.10 Respondents who work in or near area

Type of work	Little Dix	Welches
Livestock	3	4
Crops	1	4
Agriculture (not specified)	1	1
Construction	3	
Other (not specified)	8	1
Tourism	1	1
TOTAL	17	11

Three individuals in the sample were employed at the Wallblake airport at the time of the survey, two in Little Dix and one in Welches. One is air traffic controller, another is a reservations clerk. One did not specify his/her type of employment.

Opinion on Wallblake airport expansion

There was overwhelming support for the extension of the airport at Wallblake. Of the forty-two (42) respondents, thirty-two (76%) indicated that they preferred the Wallblake site. Comments in support of the Wallblake airport were based on:

The fact that persons believe it to be the less costly option

- At the Wallblake airport all you have to do is relocate a few people from the area and extend the runway. It will be less costly.
- It should be extended. It will be less trouble than to buy land and survey and fill the caves.

- It is good idea because it would be less costly although some houses have to be moved.
- I agree for them to upgrade and extend the airport. It is the perfect spot. After the aircraft takes off it is going directly over the sea. It would be cheaper to relocate residents of George Hill who would be affected than to build a new airport.

People perceive that the residents in the areas around Wallblake are already accustomed to the inconvenience of noise etc.

- It's a good idea because people there accustomed to the noise and there won't be as much trouble.
- The airport would help to develop the town area. The people at George Hill are already accustomed to the air traffic already.
- They should extend the one at George Hill because the people are accustomed to the noise and vibration.

It would make Anguilla less dependent on the facilities in neighbouring islands.

- In light of the continuing development of the island, an expanded airport facility would render Anguilla less dependent on facilities in neighbouring islands.

Safety

- An extension is needed for the safety of all people, but the size is fine

Existing infrastructure

- I think that is the best decision. The building is already there, so just extend it.
- However, concerns were raised about the proper relocation of the persons in the affected area around Wallblake.
- It is OK if they have somewhere to put the people living in that area.
- The airport should remain in Wallblake. However, it should be upgraded and extended to accommodate larger aircraft. Persons affected by the noise etc. should be paid for their property and relocated.
- I believe that the airport should be extended. This would be less costly and the Wallblake area is a rather flat area. However, I do believe that provision would have to be made for the residents.
- It should be extended, but the people in George Hill who would be affected should be moved.
- Extending the present airport would mean less money to be invested but George Hill is a densely populated area and therefore quite a number of persons would be affected by the extra traffic, pollution etc. that would result from extending the present airport.
- My concern is about the people at George Hill. Despite this the people there are accustomed to the noise.

The six (14%) respondents not in favour of extension at Wallblake felt this way because it was inadequate or because of the number of residents who would be affected:

- Condemn it!
- They should not extend Wallblake airport. They should just make another one.
- There is not much room for extension.
- It should not be extended because there are too many houses in the area.
- I am concerned about the electrical lines in George Hill. I think the people in George Hill will be badly affected by noise, pollution, vibration and odour. My greatest concern is of a tragedy should occur many people will be hurt.
- This should not be done. My concern is about the people in George Hill and Wallblake area.

There was one query about what would be done with the old airport should a new one be built.

Opinion on the proposed Brimegin development

- Eleven (26%) persons agreed with the development of an airport at Brimegin. Six of these were from Welches. The main reason given was the fact that fewer persons would be affected.
- Yes it would be a good idea because there are less houses.
- Brimegin would be better area because it is less populated and so not many persons would be affected.
- I have no problem with this. I don't think we at Welches would be affected.
- Brimegin might be a better place because less persons would be affected by the pollution etc.

Some persons also recognised that there was a possible economic benefit:

- If it is an international airport, it means increase in tourism and more jobs for people living in Anguilla.

However, while agreeing with the idea there were still concerns about the cost and the effects that it would have on their lives:

- It can be built there, but the noise would be disturbing.
- It is not a bad idea, but it would be very costly because it would be a lot of work.

The thirty-one (74%) persons disagreeing with airport placement at Brimegin did so for the following reasons:

Inadequate geology

- None should be built. Inconvenient to build the airport on the north side of Anguilla. There are a lot of caves and deep holes. It would take over thirty years to build.

- The Brimegin area is an area filled with underground cavities which cannot take the vibrations of heavy planes, also it will destroy the fountain cavern which has a lot of history.
- The area geologically is not fit for such an undertaking

Too costly

- In Brimegin it will be too costly and take years. Don't build it in Brimegin
- It will be very costly to pay property owners for land in that area.
- It will be very costly to build a new airport and will take many years
- This is just pure ignorance. Seeing that it will take what the country doesn't have to build it.
- I do not like the idea of constructing a new airport in Brimegin. The area is not a strategic position for the airport. The construction of the airport will be very costly and Brimegin is a natural habitat for wildlife.
- It would be very costly and it will be a disturbance to my family and I
- It is a bad idea. Too expensive. Too many people will have to readjust or relocate

Fundamental negative change to the image of Anguilla and tourism

- Anguilla is a very small place. We surely don't need anything larger that can change the lives of our people. That is our safety. We are very comfortable with what we have.
- Seeing that Shoal Bay is one of Anguilla's best and most attractive beaches, building an airport here can have a negative effect on tourists who are vacationing. Therefore it is too close to Shoal Bay.
- This area should be developed for tourism - e.g. fountain cavern area.

Negative impact on their way of life

- Since I would be directly affected with noise and pollution, I would prefer for you to extend the one at George Hill. The people there are accustomed of the noise already.
- I don't want it to be built at Brimegin because I have young children who would be affected at some time with noise, vibration, odour etc.
- I don't think it is a good idea because I would be affected.
- My main concern is about the noise especially at night.

One respondent felt that more information would have been required prior to giving an informed input:

- The suggestion will have to be accompanied by the feasibility studies that have been submitted to the Government of Anguilla in order for more informed opinion to be reached.

Perceived impact of Brimegin development

When asked about the types of effects that the airport would have on their lives most of the respondents were concerned about the noise, vibrations from the planes and increased traffic through the area (Table 9.11).

Table 9.11 Perceived effects of Brimegin development

Effects	Little Dix	Welches
No impact		
Increased traffic	52%	74%
Change the character of the area	48%	53%
Dust	43%	53%
Vibrations from planes	70%	84%
Noise	74%	100%
Odours	43%	68%
Pollution of water	48%	58%
Interference with TV reception	43%	58%
Safety	39%	58%
Drainage	17.4%	11%
TOTAL RESPONDENTS	23	19

Some specific queries were raised about the access to Shoal Bay, and one respondent recommended that consideration be given to developing the airport on Scrub Island.

9.5 Terms of Reference For Social Impact Assessment

9.5.1 Background

This study of airport development options for Anguilla has concluded that the preferred option is the expansion of Wallblake airport. It is proposed to extend the runway by 600 metres at the eastern end to provide a total runway length of 1797 metres. Other improvements include the provision of refuelling facilities, and an improved and expanded terminal building together with improved drainage on the site. It is envisaged that these improvements will meet the aviation and transportation requirements for Anguilla for the foreseeable future and in particular, accommodate the ATR 72 American Eagle aircraft which are planned to be brought into operation in the near future.

The site lies on the south side of The Valley, the islands main commercial and administrative centre and there are four villages within the immediate airport area – Georges Hill, Long Ground, Statia Valley and The Forest. Development in these areas is primarily residential although there is some commercial development along the main access road to the terminal building and a primary school on the south side of the airport. The four communities will all be affected to some extent by the proposals.

There are a number of social development issues associated with the proposal. The main concern is the direct impact on people in the immediate vicinity of the runway and the requirements for relocation of premises within the airport clearance zone.

The second issue is the impact on these communities in terms of increased noise, vibration, odours and disturbance both during construction and operation. Thirdly there are considerations of the impact on the wider community on the island and in particular the effects on employment and the overall economy. These are expected to be largely beneficial.

The project is classified as Category B within the Social Development Handbook (ODA) 1993. Such projects are defined as having potential negative effects (as well as positive) on a significant number of people. For such projects social development advice is required, particularly in assessing whether effects can be minimised and proposals for compensation / mitigation are acceptable to the affected population and are both timely and effective (pg10-11, Social Development Handbook).

It is considered therefore in the particular circumstances of this project that a comprehensive social assessment will be required.

9.5.2 Purpose of the Assessment

The purpose of the study will be to assess the impact of the proposals on those likely to be affected either directly or indirectly, especially the communities in the immediate vicinity of the project site. It will also be necessary to identify and recommend measures to minimize any adverse effects.

9.5.3 Methodology and Tasks

The main tasks to be undertaken include :

- i) Identify those properties likely to be directly affected and families likely to be required to be relocated by the proposals. Consult with these and establish their concerns, priorities and desires regarding relocation.
- ii) Identify other properties / stakeholders in the vicinity of the project site likely to be affected as a result of noise, vibration, disturbance, severance etc. Liaise with the team undertaking the environmental impact assessment to establish the likely degree and extent of impact. Consult with these stakeholders and establish their concerns and views.
- iii) Consider the wider impact on the economy of the island as a whole particularly the effects of an improved facility on job opportunities, income levels and overall welfare.
- iv) Analyse the overall social costs and benefits of the project
- v) Prepare a social profile of the different groups within the population likely to be affected directly or indirectly by the proposals. This should include demographic and economic data. Special account should be taken of the role of the migrant community and the particular needs of the disadvantaged eg the elderly, disabled, or chronically sick.
- vi) Prepare a resettlement and compensation plan for the households to be relocated. The purpose of the plan is to ensure that households affected by the project are re-established on a sound productive basis. Current international guidance from funding agencies and aid organisations draws attention to the following principles which are now generally accepted for the design of resettlement schemes :

- All viable alternative project designs should be explored to avoid the need for resettlement, and when it cannot be avoided, to minimise the scale and impacts of resettlement
- Assistance should be given to the community in their efforts to improve former production levels, income earning capacity and living standards or at least restore them to levels they would have without the project.
- Displaced persons should be informed about their options and rights, consulted on options, compensated promptly and efficiently, assisted with relocation and given assistance and support during the transition period.
- Particular attention should be given to vulnerable groups
- Communities should be given opportunities to participate in planning, implementing and monitoring their resettlement

The plan should include :

- baseline socio-economic data on the affected population including information on incomes and employment and details of land, property and assets
- analysis of relevant legal and institutional framework and procedures relating to land and compulsory land acquisition
- analysis of the resettlement and compensation needs and requirements
- analysis of options for resettlement and compensation
- analysis of land availability for resettlement
- proposals for resettlement and compensation
- programme for resettlement
- estimated costs
- details of consultation undertaken
- implementation plan including organisational framework, proposed grievance procedures and proposals for monitoring and evaluation

Reference should be made to the guidelines given in the Social Development Handbook ODA 1993. Advice can also be sought from World Bank Operational Procedures 4.12 on Involuntary Resettlement. Consultations should be held with relevant government departments, including in particular the Department of Lands and Surveys and Department of Community Development.

- vii) Identify and assess options for avoiding, mitigating or compensating groups (other than those to be relocated) adversely affected by the proposals and recommend appropriate measures for mitigation of adverse impacts including possible changes to the design of the project.

10.0 COMPARATIVE AIRPORT STUDY: ANGUILLA

10.1 Environmental Issues

10.1.1 Review of Previous Airport Studies

Environmental information in previous studies is sparse though the feasibility study for the runway extension at Wallblake Airport undertaken for the ODA by Scott Wilson Kirkpatrick includes a brief comparative environmental assessment for 3 improvement options. For the maximum runway extension, the report concludes that no rare or special flora and fauna, or protected sites, would be affected and the vegetation lost to the proposal comprises common and widespread species found throughout the island. Access to Airport Cave, a site of archaeological interest, would probably be occluded by the runway embankment.

10.1.2 The CIEC report, *A New Anguilla Airport at Brimegin. Preliminary Technical and Economics Study Feasibility*, dispenses with environmental issues by concluding that there is no environmental impact given the “poor vegetation, flora and fauna...” on Anguilla. The Business Plan for the Anguilla Airport at Brimegin makes no mention of environmental issues.

10.1.3 The Anguilla Tourism Marketing Plan and Promotion Programme (by Cooper and Lyebrand Inc. for the Caribbean Tourism Organisation 1995) notes the potential for nature and heritage based tourism (e.g. the Arawak heritage, ornithology) and the existing low use of these resources. It makes the proposal for an active expansion in, and the wider promotion of, the eco- and heritage tourism product in Anguilla.

10.2 ENVIRONMENTAL DESCRIPTION OF THE AIRPORT SITES

10.2.1 Data on the existing environment have been obtained from a combination of the following sources:

- site inspections of both terrestrial and inshore marine habitats undertaken during a visit to Anguilla in early November 1999,
- from consultation with the Anguilla National Trust, the Agriculture Department and the Department of Fisheries and Marine Resource, and
- from the literature sources quoted in the list of References.

Brimegin

Landform and Drainage

10.2.2 The proposed runway alignment is centred on a shallow east-west valley. The land rises to Fountain Hill (55 m) in the north and to North Side around 58 m in elevation to the south. The land under the proposed runway alignment rises from around 25 metres by the coast to a higher central plateau at 38 m before descending in a series of terraces to land around 15 m high adjacent to Badcox Pond. Thick, fissured Miocene limestones form the solid geology. As a result of the geology and a relatively dry climate, there are no permanent surface watercourses. To the west, the land dips gently towards the rocky north-west coast; to the east, run-off water and percolating

ground water collects in the small lake, Badcox Pond. A quarry and fabrication works for the production of building blocks is present on the northern edge of the Brimegin site.

Flora and Fauna

- 10.2.3 The proposal area is characterised by an extensive tract of dense scrub, a woody growth of shrubs and small trees growing on a mosaic of surface outcrops of weathered limestone pavement and thin soil lenses. Deeper soils in the base of the shallow valley allow the growth of patches of grass sward within the shrub and tree cover. The plant community comprises over 20 principal native species of shrubs and small trees together with a number of grass and small herb species. There are areas of taller tree growth along the coast extending inland along the main valley. The predominant species include white cedar (*Tabebuia* sp.) pigeonwood (*Plumaria alba*), frangipani (*P. rubra*), five-finger tree (*Randia aculeata*), manchineel (*Hippomane mancinella*) and pitch apple (*Clusia rosea*). Orchids and bromeliads (*Tillandsia* spp) grow in the shaded habitats within the areas of taller growth. Additional species of the lower thorn scrub include sweet briar (*Acacia tortuosa*), bilbush (*Phyllanthus epiphyllanthus*), Christmas bush (*Comocladia dodonaea*), chinkwood (*Bourreria succulenta*), sages (*Lantana* and *Croton* sp.) and the cactuses *Melocactus inortus* and *Opuntia* sp.
- 10.2.4 The Brimegin area is one of only three sites in Anguilla noted for its biodiversity of native species though relatively little recent ecological research in the area appears to have been undertaken and it is unlikely that all species have been catalogued. It is one of only two sites remaining on the island with a community of native tall trees, the other being the small valley at Katouche Bay. It is the only site with a well developed shade community of orchids and bromeliads.
- 10.2.5 The extensive woody cover offers a good habitat for reptiles, bats inhabit the numerous limestone caves and the site is the last refuge on Anguilla for the Lesser Antillean iguana (*Iguana delicatissima*). A rare plant, endemic to Anguilla, *Rondeletia anguillensis*, known from a location on the east coast, has also recently been located in the coastal zone just to the south of the Brimegin site. The woodland habitats in the coastal area have been zoned for conservation in the proposed National Land Use Plan. The Anguilla Environmental Profile, 1993, recommends that this remaining natural habitat area be considered for protected status and the ecological importance of the area has been endorsed in a report from the U.K Joint Nature Conservation Committee, 1999. The National Parks Ordinance 1996 enables, under certain criteria, the acquisition of land in Anguilla for National Park status.
- 10.2.6 Badcox Pond at the eastern end of the proposed runway alignment is recorded as one of Anguilla's wetland sites (A Field Guide to Anguilla's Wetlands). It is a wintering site for often large number of ducks and stilts, it provides a roosting area for herons, egrets and pelican and a breeding site for stilts and killdeer. The pond is fed by run-off from the adjacent hills and by 8 springs along the SW shore. Further east, two other ponds, East End and Grey Pond, are also important for their bird populations.

Marine Habitats

- 10.2.7 The coastline at Brimegin is rocky with a series of low cliffs. On the rock substrates in the subtidal zone, scattered coral patches are present comprising the species *Porites astreoides*, *Dipora strigosa*, *D. clivosa* and *Acropora palmata*, in addition to a zooanthid *Polythicaribbea* sp., gorgonian sea fans and encrusting sponges. The presence of live *A. palmata* (Elkhorn coral) is notable as this species is suffering increased mortality in the Caribbean from coral bleaching. Of the fish species recorded, blue tang are common, ocean surgeon and sergeant major frequent with smaller number of parrotfish (*Scarus* and *Sparisoma* spp), grey angelfish, red hind, yellowtail snapper and, on the sand bottom, lizardfish. A number of caves and crevices in the limestone offer refuge for many fish species including shoals of the glassy sweeper. There is a weak coastal current from north-east to south-west.
- 10.2.8 Southwards along the coast at Little Bay, there is an area declared a Marine Park, notified for its seagrass beds which provide grazing for sea turtles and spawning grounds for yellowtail snapper, a species of commercial importance. It is thought that turtles continue to breed on some of the small beaches along the south Brimegin coastline. With the development of most of the beaches on the mainland for recreation, turtle breeding areas are now limited to the offshore islands.
- 10.2.9 To the north of Brimegin, at Shoal Bay, the extensive offshore coral reef meets the inshore waters of the coastline. Species of hard coral on the inshore reef include *Montastria annularis*, *Porites asteroides*, *P. porites*, *Siderastrea siderea*, *S. radians*, *Diploria strigosa*, *D. clivosa*, *Agarica agaricites*, *Mancia areolata*, *Colpophylla natans* and *Millepora complanata* with the remains of much dead *Acropora palmata*. It is considered (Department of Fisheries) that this reef is suffering from human impacts. A second mainland Marine Park has been declared at Shoal Bay to Island Harbour. Three other Parks have been notified to protect the offshore islands and marine habitats at Dog Island, Sandy Island and Prickly Pear.

Caves and Archaeology

- 10.2.10 To the north of the Brimegin site, is the Fountain Cave National Park, notified for its Arawak petroglyphs, artefacts and fossil flora and fauna. The cave system and its freshwater pools are habitat for a rare species of cave shrimp (*Stigiomysis holthusi*) and the rare funnel-eared bat (*Natalus stramineus*). Two other known archaeological sites are present on the south-west edge of the proposed airport site, in Limestone Bay and south-east of Blackgarden Bay. Both sites have yielded ceramics, stone tools and other artefacts.

Wallblake

Landform and Drainage

- 10.2.11 The existing airport at Wallblake is bordered to the north, west and south by dispersed housing and commercial developments with much green space and garden habitat between. To the east of the present runway, former arable land and grazing pastures extend along a broad shallow valley in an E-SE direction.

10.2.12 In common with the rest of the lower-lying land in The Valley, the airport overlies a groundwater aquifer, which was formerly used for the piped potable water supply. However, potable water is now supplied by a desalination plant at Crocus Bay. There is now, therefore the potential for the use of groundwater for agriculture but this resource is not currently utilised. Run-off water from the airport runway and car parks passes to soakaway though the system is prone to flooding during storm conditions.

Flora and Fauna

10.2.13 There are no records of any flora or fauna of special ecological importance in this area. Patches of Acacia and sea grape (*Coccoloba uvifera*) scrub have developed on the valley floor and there are remains of sisal plantations. The rocky limestone slopes on either side of the broad valley support a dense growth of shrubs forming a typical community that extends over the majority of the island where the intensity of land use is low. Some taller trees are present at the base of the slope, white cedar, loblolly and tamarind.

10.2.14 The open grasslands and scrub edges provide good general habitat for a number of common bird and insect species. Bird species noted include bananquit, black-faced grassquit, grey kingbird, pearly-eyed thrasher, ground dove, quail dove, turtle dove and swallow.

Archaeology

10.2.15 Sinna cave, in the valley side to the north-east of the existing runway, is a notified archaeological site. Human skeletal remains suggest the site may be an Arawak burial site but further excavation work remains to be done.

Other Environmental Issues

10.2.16 Local air quality is an issue of concern to some local residents who report hydrocarbon and particulate contamination from aerial fallout into domestic water collection systems. The island's electricity generating plant on the southern edge of the runway is a point source of aerial and noise emissions from the oil-fired generators. The issue of noise in relation to the proposals for airport development is considered in detail elsewhere in this report.

10.2.17 A summary of existing environmental conditions at the two proposal areas is given below in Table 10.1. Conditions relating to community and social issues are considered elsewhere in this report.

Table 10.1 Summary of Existing Conditions

PROPOSAL SITE	NATURAL RESOURCE OR ENVIRONMENTAL FACTOR	QUALITIES
Brimegin	Land-use planning	Area along the coast zoned for wildlife conservation. Central area zoned for industry (currently quarrying/cement works) Eastern area zoned for housing developments
	Agriculture	Marginal land, limited areas of grazing in central valley but little used.
	Air quality	Good air quality, no significant sources of emissions of potential pollutants. Vehicle emissions negligible. Quarry is likely to give rise to local dust emissions.
	Noise regime	Low ambient noise in the coastal area with the sound environment dominated by wind and wave noise. Quarry operations audible at some distance depending on wind direction and topography. Minimal road noise from occasional vehicles
	Terrestrial Wildlife/Nature Conservation	Identified as one of only three areas on Anguilla important for ecology/biodiversity.. One of two remaining area of native tall trees and the only site for Lesser Antillean iguana. Badcox Pond on the eastern edge of the site known for its roosting and wintering bird populations.
	Marine habitats/resources	Rocky shore habitats, coral patches, some inshore fishing. Good quality habitats. Marine Park to the south, good inshore coral reef to the north
	Water Resources	No known resources though Badcox Pond to the east receives run-off and springline inputs from this area.
	Archaeology	Fountain Cave to the north of the proposal site is an important Arawak Site and declared a National Park. Other Amerindian sites on the southern edge of the proposal site. No other recorded sites within the proposal area though numerous caves known.

PROPOSAL SITE	NATURAL RESOURCE OR ENVIRONMENTAL FACTOR	QUALITIES
Wallblake	Land-use planning	Housing/commercial to the north, west and south of the existing airport. Former agricultural land to the east. Alternative land uses pending airport development decision
	Agriculture	Airport developed on prime agricultural land. Prime land remaining to the east, currently under grass..
	Air Quality	Existing airport reportedly gives rise to hydrocarbon and particulate emissions with effects on some local domestic water collection facilities. Point source emissions from electricity generating plant to the south of the runway and diffuse emissions from traffic.
	Noise regime	Noise emissions in relation to aircraft type and movements. Significant local contributions to background noise from regular traffic movements on surrounding roads and from the electricity generating plant.
	Terrestrial Wildlife/Nature Conservation	No known special interest. Land in shallow valley to the east with grassland/scrub mosaic and semi-natural scrub formations on the valley slopes
	Marine habitats/resources	None within the proposal area
	Water Resources	Run-off water passes to soakaway. Situated in an aquifer protection zone but ground-water not currently suitable for potable supply.
	Archaeology	Airport Cave to the north-east of the existing runway recorded as a probable Amerindian burial site. Probably within the proposal area. Other sites recorded further to the east beyond the proposal site.

10.3 Comparative Environmental Effects

Brimegin

- 10.3.1 The development of the Brimegin site will clearly result in major changes to the environment of the north-west of Anguilla. Apart from recent quarrying activities, the intensity of land-use in this extensive area is very low and appears to have been so in recent historical times. The vegetation consequently retains a highly natural character and is dominated by a variety of native plant species. Areas of taller woodland in the valleys near the coast are considered to form the best remnants of Anguilla's natural vegetation and the biodiversity of this area is high. The area offers the last refuge for the native iguana.
- 10.3.2 In addition to the nature conservation interest, the area, in conjunction with the Fountain Cave National Park, has considerable potential for the development of interpretative nature trails for both educational and eco-tourism purposes. While it may be possible, and desirable, to retain a strip of vegetation within the coastal zone, the airport development, together with its access roads, would severely compromise the nature conservation value of this extensive area and the eco-tourism and educational potential. It is more likely that the interest would be lost altogether in addition to the probable loss to Anguilla of key species of flora and fauna.
- 10.3.3 The potential impacts on hydrogeology and water movements need further investigation to clarify the effects of construction. The volume and quality of the water inputs into Badcox pond to the east of the proposed runway could be at risk and the nature conservation interest of that site would be reduced by both the possible interception of the water supply and by noise and visual disturbance to wildlife from aircraft movements. There are additional wetland sites to the east where birds would be exposed to disturbance from aircraft in the take-off flight path.
- 10.3.4 During construction there would be a potential risk of pollution into the marine environment with consequences for the varied marine life along this section of coast and possibly the Marine Park to the south, in line with the prevailing coastal current. The following requirements would need to be met in order to reduce the risk of pollution of the coastal seas to a minimum:
- Good working practice during construction with regard to storage of materials and the disposal of coastal site run-off to sealed collection lagoons,
 - the retention of a naturally vegetated zone along the coast,
 - the collection and re-use of all run-off and waste water from the airport site during its operational life
 - fuel stores to be constructed above-ground and monitored for leakages,
 - containment facilities for accidental fuel spills.
- 10.3.5 There would clearly be major changes to the air quality and noise regime currently experienced in the Brimegin area with particular noise effects in residential and resort areas to the east of the runway. Noise issues and other social impacts are considered in further detail elsewhere in this report.

10.3.6 There would be a number of contingent future environmental impacts arising from the large increase in visitor numbers that an international airport would allow. This would be related to the development of new resort areas, an increased use of recreational facilities, a higher demand for resources such as potable water (a limiting resource in Anguilla), additional pressures on fishery resources, and the impacts of waste disposal. The majority of impacts would be concentrated on the coastal zone and would be likely to include the following:

- Loss of coastal sand-dune and scrub communities to resort development,
- Increased pressure for alternative development of the coastal wetlands with consequences for wetland plant and bird communities,
- Potential for over-use of fishery and shellfishery resources for the local restaurant trade,
- Increased pressure for marine disposal of run-off water from coastal developments with possible adverse consequences for inshore sea-grass or coral communities,
- Increase in the demand for potable water from desalination technology with subsequent impacts on the marine environment from the disposal of concentrated brine,
- Increased human pressures on sensitive ecosystems, e.g. coral reefs, turtle nesting beaches, bird nesting areas.

10.3.7 Overall, the impact of the airport proposal at the Brimegin site is severe with respect to nature conservation and wildlife and there are potential impacts on other resources that demand carefully designed mitigation measures. There is a high potential for future environmental impacts arising from the increase in visitor number and the resulting demand on the island's limited resources

Wallblake

10.3.8 The runway extension at Wallblake results in land-take to the east of the existing runway and a smaller area to the west. The main area taken comprises former farmland with remaining areas of pasture and developing patches of scrub. The north eastern edge of the extended runway would result in some loss of the dense shrub habitat at the base of the valley slope. There is, however, an extensive area of this habitat type along the remainder of this extensive valley so that the overall ecological impact is unlikely to be significant. There is scope for positive habitat management and landscape planting around the perimeter of the airport, which will compensate for the minor extent of habitat loss.

10.3.9 The proposals would encroach further onto land of relatively good agricultural quality. The land is little used at present apart from being lightly grazed by low numbers of goats. While the runway extension would result in some loss of land with potential agricultural use, there is considerable scope for the re-cultivation of abandoned farmland or lightly used land with agricultural potential at this site and elsewhere in Anguilla. In this context, the impact of the proposed extension on the agricultural sector seems slight.

10.3.10 The works may result in disturbance to the Airport Cave archaeological site and the runway embankment is likely at least to occlude the entrance. In this case, an archaeological excavation within the cave should be undertaken prior to construction.

- 10.3.11 Refurbishment of Wallblake Airport will offer the opportunity to improve the facilities for the collection, storage and disposal of run-off water from the runway and car parking areas. Water should be retained for use in landscape irrigation. Water quality should be analysed and monitored with respect to hydrocarbon contamination and heavy metal content before any use in agricultural irrigation.
- 10.3.12 Relocation of properties adversely affected by the present operation and the extended runway will reduce the overall impacts of noise, air quality and consequent impacts on domestic water catchments from aerial fallout at these receptor sites.
- 10.3.13 The provision of construction fill for the runway extension may have significant local impacts at the site of extraction which, on Anguilla, may lead to unacceptable loss of land and wildlife habitat. The environmental consequences of extraction and supply of fill requires further investigation.
- 10.3.14 With mitigation of the above impacts, the overall environmental impact of the extension at Wallblake is low, though community effects in relation to noise remain a significant issue.
- 10.3.15 As the extension at Wallblake would permit only a modest extension in the size of aircraft using the runway and hence, a modest increase in visitor numbers, the contingent impacts of this development proposal on tourism resources on Anguilla seem slight.
- 10.3.16 A summary of the comparative environmental effects of the two proposals is given in Table 10.2 below.

Table 10.2 Summary of Comparative Environmental Impact.

PROPOSAL SITE	NATURAL RESOURCE OR ENVIRONMENTAL FACTOR	POTENTIAL IMPACTS	POTENTIAL FOR MITIGATION AND IMPACT SUMMARY*
Brimegin	Land-use planning	Loss of area along the coast zoned for wildlife conservation. Restricts area zoned for industry (currently quarrying/cement works) and severs access to the works. Limits the area in the east zoned for housing developments and compromises further residential/tourist development under the eastern flight-path. Housing affected	Little effective mitigation possible. New access roads needed for airport and quarry access. Alternative areas may be zoned for housing with possible secondary environmental consequences. Major impact
	Agriculture	Little impact as the land is marginal	Minor impact
	Air Quality	Potential decline in air quality with local increases in hydrocarbon and NO _x emissions	Little mitigation possible apart from limiting the development of receptor communities. Moderate impact
	Noise Regime	Major increase in noise in relation to aircraft type and movements affecting airport and surrounding areas and the approach and take-off flight paths.	Little mitigation possible apart from limiting the development of receptor communities Major impact
	Terrestrial Wildlife/Nature Conservation	Major loss of woodland/scrub biodiversity, possible extinction on Anguilla of the Lesser Antillean iguana. Probable loss of bat caves. Noise disturbance to bird habitat on Badcox Pond. Safety implications in relation to bird-strike.	No effective mitigation possible for habitat loss. Iguana may be translocated to Katouche but area here is limited. Severe impact

PROPOSAL SITE	NATURAL RESOURCE OR ENVIRONMENTAL FACTOR	POTENTIAL IMPACTS	POTENTIAL FOR MITIGATION AND IMPACT SUMMARY*
Brimegin contd.	Marine habitats/resources	Potential construction impacts from run-off into the marine environment affecting rocky shore habitats, coral patches, and fishing resources. Potential impacts on Marine Park to the south due to longshore currents. Fallout of aerial pollutants, risk of accidental fuel spillages.	Retention of naturally vegetated coastal strip, control of construction operations, collection and re-use of run-off and waste water for irrigation. Containment facilities for accidental fuel spillages Minor impact
	Water Resources	Potential for run-off pollution into Badcox Pond to the east and severance of springline inputs into the pond. Aerial fallout pollution may affect domestic water catchment systems.	Collection and re-use of run-off water for landscape irrigation. Containment facilities for accidental fuel spillages. Ensure water supply to Badcox pond. Limits to housing developments in airport area. Minor impact
	Archaeology	No known direct impacts but archaeological watching brief recommended in view of probable loss of caves.	Archaeological investigations of any detected sites. Minor impact

PROPOSAL SITE	NATURAL RESOURCE OR ENVIRONMENTAL FACTOR	POTENTIAL IMPACTS	POTENTIAL FOR MITIGATION AND IMPACT SUMMARY*
Wallblake	Land-use planning	Loss of alternative land-use potential on land take for the runway extension. Housing affected	Re-location and resettlement of affected households Moderate impact
	Agriculture	Further loss of prime agricultural land to the east of the existing runway. Approx.. 5 ha of land-take.	Many areas under-utilised in Anguilla. Effective agricultural development elsewhere would compensate for loss. Minor impact
	Air Quality	Small-scale increase in emissions in relation to the increase in aircraft movements. Aerial fallout may continue to affect domestic water catchment systems	Re-settlement would reduce the number of receptor households Minor impact
	Noise Regime	Small-scale increases in mean noise levels in relation to the frequency/ periodicity of aircraft movements. Potential for peak noise reduction from new generation of aircraft.	Re-settlement would reduce the number of receptor households Noise regulations could favour use of quieter aircraft. Minor to moderate impact
	Terrestrial Wildlife/Nature Conservation	Minor losses of grassland and scrub-edge habitats at the base of the valley slopes.	Peripheral areas could be zoned for nature conservation/ parkland use. Minor impact
	Marine habitats/resources	No direct impacts anticipated.	No impact

PROPOSAL SITE	NATURAL RESOURCE OR ENVIRONMENTAL FACTOR	POTENTIAL IMPACTS	POTENTIAL FOR MITIGATION AND IMPACT SUMMARY*
Wallblake Contd.	Water Resources	Potential for pollution of groundwater during construction and operation.	Efficient collection and re-use of run-off water in landscape irrigation would improve on existing regime No impact
	Archaeology	Possible loss of or disturbance to Sinna Cave or its access.	Pre-construction excavation within cave with preservation of any finds. Minor impact

* Impacts are judged to be Severe (large-scale impact or loss of resource), Major, Moderate, or Minor change from the existing situation, or no impact if no significant change is anticipated.

10.4 SUMMARY

10.4.1 On strict site criteria the Brimegin proposal would result in a higher environmental impact in view of the strong likelihood of a severe loss of Anguilla's biodiversity. In addition, there are a number of scattered residences around the south western end of the proposed runway, and a greater number impinging on the proposal site to the east. The eastern flight path would affect a number of residential areas and a section of coastline zoned for an expansion of tourist facilities. The environmental changes that would arise would be significantly different from the existing conditions. The large increase in visitor numbers that would arise on completion of the project would have its own environmental consequences elsewhere on the island.

10.4.2 The proposals are, however, not strictly comparable as the significant direct and indirect environmental impact of the Brimegin proposals arise from the scale of the planned development in comparison to a modest expansion of the existing facility at Wallblake. The environmental consequences for the Wallblake proposals focus attention on the need, already existing in some cases, to minimise disturbance to the local population with respect to noise, air quality and safety. The main mitigation effort should be directed at resettlement where necessary and an improvement in local facilities such as water supply or noise insulation. With adequate mitigation of community impacts the direct environmental impacts of the proposals are minor. Indirect impacts will arise mainly from the need for the provision of construction fill.

Aircraft Noise

10.4.3 The comparative impacts of the development options on the island, and their likely noise impacts on its residents have been undertaken using the Federal Aviation Administration's Integrated Noise Model (INM), version 6.0. This is computer model which allows the graphical representation of the 'footprints' of various aircraft at scales which can then be used to study the effect upon any residential properties under the flight-path of landing and departing aircraft. In order to assess the worst case scenario a wide range of aircraft, including those that are, and are proposed to be, used at the current airfield at Wallblake have been used to assess an extension of the existing airfield, and the development of a new airport at Brimegin. The aircraft used in the assessment are:

Gates Learjet 35
ATR 72
Boeing 737
Boeing 747

(Within the INM database the Hawker Siddeley (British Aerospace) HS748 is the direct replacement for the ATR 42 and 72 aircraft.

10.4.4 The full range of aircraft have been used in the assessment of the Brimegin site, as the runway is proposed to be some 2200 metres in length initially, with potential for extension to 3200 metres. This would theoretically be capable of accommodating aircraft as large as the Boeing 747. The proposed redevelopment of the Wallblake facility, as it would only extend the runway by approximately 600 metres, would result in a runway that could only be used by the Learjet and the ATR 72; hence only these aircraft have been assessed for this site.

10.4.5 Both the existing and potential runways fall on an East – West axis, it has been assumed that both the approach and departure tracks for both airstrips run in straight lines towards and away from the runways. The traces for the two runways are therefore comparable.

10.4.6 The traces that have been produced indicate the SEL 90dB footprint of the arriving and departing aircraft

10.4.7 The assessment that has been undertaken has inspected the effect of all of the take-off 'footprints' of the aircraft listed above. These have been printed onto a 1:50,000-scale map of the island to assess the likely effect of upgrading the existing airport against the proposed development of the site at Brimegin and are included in Appendix 5. What becomes immediately apparent when this exercise is undertaken is that the development and use of a runway at the Brimegin site could, potentially, have a greater effect on the island, due to the capability to handle larger aircraft.

10.4.8 From the assessment of the traces against the prevailing ground conditions and level of development surrounding the two possible runways, it can be seen that the development of the site at Brimegin would directly affect less populated areas on the island than the redevelopment of the existing facility at Wallblake. This site is already heavily constrained by the housing that already nearly surrounds it. Use of any aircraft from this runway will affect a considerable amount of the populated areas

of Rey Hill, George Hill and North Hill Village. The use of the same aircraft from Brimegin site would affect less densely populated areas such as Deep Waters and Welches Hill. With the use of noisier aircraft, such as the Learjet 35 or the Boeing 747, the area affected by the SEL 90dB footprint covers part of North Side, Wattices, Deep Waters, Welches Hill, Mount Fortune, and East End Village before heading into the Caribbean over Gibbon Point. These are areas that are, on the whole, far less densely populated. They also avoid the tourist areas on the North Coast, and the majority of Savannah Bay. In this respect therefore, the proposal to provide a new airport at Brimegin would provide noise benefits, removing the existing aircraft noise from the areas around Wallblake and The Valley, and placing them in an area which is populated by fewer people.

10.5 SCOPE OF WORK FOR AN ENVIRONMENTAL ASSESSMENT

Brimegin

- 10.5.1 Should the decision be made to continue with the option for the development of an international airport at Brimegin, a full Environmental Assessment (EA) will form one of the studies required to assess the impact of the project. The assessment should conform to the standards and requirements of the major lending institutions and would be expected to comply with the legislative requirements of the 1997 EC Directive on Environmental Assessment (97/11/EC)
- 10.5.2 The scope of the EA should be wide-ranging and include both the direct consequences of construction and the longer-term impacts in relation to airport operation and the impact of increased visitor numbers.
- 10.5.3 The EA should include proposals for mitigation to reduce or obviate any identified adverse impacts and monitoring of appropriate environmental variables should be proposed where the data obtained will allow remedial action to be undertaken as necessary.
- 10.5.4 Full consultation with statutory authorities, NGOs and local experts will be expected. Allowances will need to be made for the lack of easy access to many parts of the study area for the purposes of detailed biological or other survey work.
- 10.5.5 The study should examine the following issues in sufficient detail so as to accurately determine the likely impacts of the project and to enable the design of appropriate mitigation.

Planning and Land Use

- 10.5.6 Impacts on plans and policies, effects on existing and potential future alternative land-use, contingent impacts of activities and programmes displaced by airport construction e.g. the probable effects of housing development elsewhere on the island, severance of existing access routes, details of proposals for, and impacts of, new roads. Requirements for construction material and fill and the impacts of resourcing these requirements (e.g. impacts of additional quarrying operations)

Landscape

- 10.5.7 Visibility of the proposals from centres of population, tourist resort areas and individual dwellings. Assessment of impact on the landscape character, visual impacts on the coastline. Landscape mitigation design

Flora and Fauna

- 10.5.8 Survey work to assess the type and distribution of plant community types, location and population estimates for all uncommon or rare plant species encountered. Assessment of the ecological importance of the community in the context of Anguilla. Population census for, and the distribution of, the Lesser Antillean iguana, survey for bats and bat habitat, bird survey including importance of the site for breeding, migratory and wintering birds, the likelihood of accidents from bird strike, impact of airport development on biodiversity. Mitigation proposals.

Marine Habitats

- 10.5.9 Existing conditions in relation to marine and intertidal flora and fauna, inshore water quality, fisheries. Potential impact of construction and operation and mitigation design proposals. Assessment of secondary impacts on the coastal zone of Anguilla from an increase in visitor numbers facilitated by the airport operation

Hydrogeology and Water Resources

- 10.5.10 Impacts of construction and operation on drainage and springline flows into coastal areas and into Badcox pond. Mitigation design for prevention of pollution from runoff and domestic waste water. Design proposals for the prevention of groundwater contamination during construction and from operational fuel stores. Assessment of demand for, and impacts upon, water resources arising from an increase in visitor numbers facilitated by the airport operation

Air Quality and Noise

- 10.5.11 Existing baseline conditions in relation to air quality and noise. Modelling studies as necessary to determine changes to air quality and to predict the operational noise regime. Requirements for mitigation (e.g. regulation of aircraft movements, flying times, noise insulation) and proposals for monitoring should be considered.

Traffic

- 10.5.12 Impacts of construction traffic and operational impacts of new roads and the generated traffic on existing communities in terms of noise and vibration, air quality and safety.

Archaeology

- 10.5.13 Consultation to be undertaken to assess the likelihood of archaeological impacts with new survey work commissioned if required. Design of a watching brief.

Community Issues

10.5.14 Impacts on the human community not covered above, e.g. property blight and demolition, severance issues

Wallblake

10.5.15 The proposals for the runway extension at Wallblake may, according to the discretion of the local planning authority, not require a full environmental assessment to be undertaken. There are however, a number of environmental issues that required further study and local consultation to identify the optimum approach. The following areas are identified for further work.

- Noise Assessment. A study of the existing noise regime and the prediction of the expected regime after runway extension. This relates to the provision of mitigation (see below)
- Community issues in relation to property demolition, noise and air quality. An assessment of the need for mitigation is required which may include relocation and resettlement, noise insulation and improvements in water supply where catchments are affected by aerial fallout
- Hydrology and drainage. Improvements in the drainage regime are required together with an enhanced capacity for water treatment and re-use to minimise any risk of groundwater contamination.
- Archaeology. A precise assessment of the impact on the site at Airport Cave is necessary. In the event of damage to, or loss of the site or its access, a pre-construction excavation at the site should be undertaken.
- Impacts of Construction. Assessment of construction noise and impacts of construction traffic should be studied with the aim of minimising disturbance to human communities. The source of construction fill should be identified and the resulting impacts determined of quarrying, extraction and transport. Alternative sources of fill should be identified where unacceptable damage may arise from quarrying operations on Anguilla

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11.0 COMPARISON OF OPTIONS

11.1 Introduction

Development Options are discussed in Section 6 of this report.

This section compares the costs and economics of the options chosen for analysis. Two sub-options are considered for the Wallblake developments: one assuming that the fill for the runway reprofiling is imported, the second that only 30% of fill is imported and that 70% is obtained from local sources.

The reason for the two options is that any fill that is exposed to the atmosphere will have to have significant mechanical strength to withstand the heavy rainfall often encountered. However, not all the embankments proposed will need material of such high calibre; the core of the embankment, for example, could be formed of lower grade material such as is available free of charge, it is understood, from the Corito Waste Disposal Area.

Thus, we have costed two options, one with the embankment constructed in total with high quality imported material, the second with a core of local, lower quality fill with only the external slopes and upper surface of high quality imported material.

11.2 Options

The following options are chosen for the analysis:

Wallblake :

- a) do nothing - ie - maintain and operate present airport with no substantial development costs.
- b) reprofiling of runway from the top of the "Lump" in the runway (referred to as "chainage 520") towards the western end, increasing runway longitudinal gradient to 1.5% positive towards the west. This gives an obstacle free environment for take offs on runway 28, and does not require any displaced threshold for landings on runway 10. It produces an overall runway length from the existing 28 end of the runway of 1097 metres.
- c) as in (b) above, but instead of 1.5% slope from chainage 520, a level runway profile from that point towards the west is constructed. Because of obstacles this involves the displacement of the western end of the threshold of 80m.
- d) a 600m runway extension towards the east. This comprises 450 feet of runway proper, plus a paved area of 60m representing the runway strip end, plus 90m of paved area representing the Runway End Safety Area (RESA). The total end-to-end paved runway, including the displaced threshold at the western end and the paved strip area and paved RESA is therefore

$$1097\text{m} + 450\text{m} + 60\text{m} + 90\text{m} = 1697 \text{ metres}$$

This gives a landing distance available on runway 10 of :

$$1697 - 60 - 90 - 80 = 1467 \text{ metres}$$

since none of the displaced threshold, paved strip end or RESA can be taken into account. It also provides a take off run available on runway 28 of 1697 metres, since the paved strip end, RESA and the western end displacement may all be included in the calculation.

Brimegin:

- e) construction of a 2200 x 45m runway, with associated pavements, navigational aids, buildings etc. in a costing of the CEIC Engineering SA study "The Anguilla 2002 Project".
- f) in order to compare like-with-like, the construction of a 1700 x 30 metre runway, with associated infrastructures, in order to compare the Wallblake Airport development proposals with replacing it with a new airport at Brimegin.

11.3 The costed comparison of these options is shown in summary form in Section 7.5.2.

12.0 KEY STAKEHOLDER REVIEW

12.1 Stakeholders

The Terms of Reference for the study require that the main stakeholders affected by Anguilla airport development be identified, and interviewed to provide a rapid and informal assessment of their views on the development option of expanding the Wallblake site or building a new airport at Brimegin.

The following are identified as key stakeholders:

- the Anguillan Government (GoA)
- the general Anguillan population
- the airlines and aircraft operators
- local businesses

A summary of these views are given below. Details are provided in the section of this report dealing with the Social Issues and the appended interviews records.

12.2 The Anguillan Government

For the purpose of this report GoA was considered to comprise:

- politicians, past and present
- civil servants

and these groups were interviewed.

The general view among the politicians was that construction of a new facility at Brimegin would be a high cost, high risk project which, if it were to fail could have serious effects on the future economy of the island. It was recognised that, for a new Brimegin airport to be economically viable, a considerable increase in tourism would need to be achieved.

Only one or two politicians spoke in favour of the Brimegin scheme, although even those acknowledged the difficulties associated with the larger increase in tourists to make it viable. These few argued that these difficulties could be managed, and that Anguilla needed increased tourism.

Most of the senior civil servants favoured expansion at Wallblake over the new site option. They considered that a better airport facility was necessary to retain and sustain tourism growth rates, but were particularly aware of the infrastructural costs of the larger increase in tourist numbers a new large airport would bring.

The majority view of both civil servants and the politician was for a preferred option to develop Wallblake if possible in a contained and affordable way consistent with the development of the "up market" tourist sector, which was a Government objective.

A notable minority however, took a more bullish view on Brimegin expansion and considered the impact of rapid expansion needed to support a new international

airport was a necessary spur in achieving higher standards of living and ensuring the long-term future.

The Director of Off-Shore Finance expressed his support for a longer runway, since some of the participants in this sector were wealthy and liked to visit the Island using their own private jet aircraft.

The Director of the Department of Agriculture considered that an improvement in air freight facilities could encourage agriculture by providing export opportunities of higher value crops in times of surplus. He also pointed out that the Brimegin site was on marginal land, used only for some cattle grazing whilst Wallblake is on prime agricultural land with potential for re-use.

12.3 The Anguillan Population

The social interviewing carried out across the population is detailed in Section 9 of this report. A large cross section of the population, organisations and institutions were consulted. There is almost total opposition to the construction of a large new international airport. Most interviewees recognised the need for airport improvement, but preferred those at Wallblake.

Of the people likely to be effected by expansion at the Wallblake site, 50.6% supported development, and 40% did not. The latter were mainly concerned with increase in noise and the impact on their property.

Of those that would be affected by Brimegin development 78.5% supported the proposal to expand Wallblake Airport on the grounds of less cost, availability of existing infrastructure and other reasons. 26% supported development at Brimegin because of less housing development there and perceived economic benefits. 74% disagreed with development at Brimegin because of cost, the geology of the area and fundamental negative changes to the social fabric of the Island.

12.4 The Airlines and Aircraft Operators

The major scheduled airlines servicing Anguilla are American Eagle, Liat and Winair.

American Eagle has as discussed elsewhere in the study, medium term plans (5-6 years) to replace the current 44 seat ATR42 with the larger ATR72. To operate effectively out of Wallblake, the ATR72 would need a longer runway. The ATR 42 already operates under some restrictions in certain weather situations. The American Eagle senior management do not wish to be seen as imposing any airport development solutions on the GoA. Introduction of the ATR72 is still some years away, and it has no plans to introduce the Regional Jet type of aircraft into the Caribbean. However, the local American Eagle management very much wants an improvement in runway length since, even if only on a few occasions per year, it has to offload booked passenger in some numbers in certain weather conditions. This, of course, causes them embarrassment, but they also claim that it negatively affects the tourist image of the island.

They would prefer airport improvements anywhere, but do not see the need for a larger airport at Brimegin if the Wallblake site can be adequately developed.

Liat and Winair are more or less adequately serviced by the present airport (although they, like American Eagle, would like some upgrading of airfield lighting, navigational and approach systems) Liat intends to upgrade from its present Dash 8-100 aircraft to larger Dash 8-300's, but can operate them adequately from the present runway.

There are three or four privately own aircraft based at the airport, including a Citation 1 jet. Their operators can use the present facilities (but would also like some upgrading of lighting and nav aids).

The smaller charter companies based on Anguilla - Air Anguilla, Trans Anguilla and Tyden Air operating mostly 9 seat Islander aircraft are also adequately served by the present airport. However, various senior management members of both Air Anguilla and Trans Anguilla expressed themselves in favour of a new airport at Brimegin, on the ground that it would lead to increased passenger numbers, and therefore more charter business for themselves and increased business opportunities such as introducing new aircraft types, new routes and perhaps facilities as such as aircraft maintenance.

12.5 Local Business

Local business is of course dominated by the tourist industry. Most hoteliers interviewed wished to see Wallblake developed to provide better and more reliable facilities, but were against development at Brimegin. An extreme view, but one reflected in other hoteliers opinions, was that he would have to sell his up-market hotel (450 US\$/night) within a few years of Brimegin opening, since the down-market sector it would have to promote to become viable would ruin Anguilla's image and drive him out of business on the island.

The Tourist Board took a neutral view on airport development options. It stressed that airport improvements were needed, but the justification should not be based on growth of tourism, which must be based on economic planning which takes into account the needs of Anguilla and its focus on up-market tourism.

13.0 CONCLUSIONS

13.1 It is concluded that only one of the development options (Wallblake Option 1) is marginally viable. This is based on certain assumptions of discount rate and that Anguilla will require an airport with a longer runway at some time in the future.

13.2 The reasons for this conclusion are:

- the present runway length limits the useful payload of the main type of aircraft using the airport, ie the ATR 42 on the important San Juan - Anguilla route. Although only on limited number of occasions, these limitations can then be severe. It is considered that this limitation is of sufficient significance to impede the growth of tourism into Anguilla, particularly in the up-market sector which the GoA intends to continue to promote.
- American Eagle, one of the most important of the regional carriers servicing Anguilla, intends to introduce the larger ATR 72 to replace the ATR 42, and the present runway length does not allow the former to operate economically. Although the change of aircraft type is not likely to occur for another 5-6 years (according to American Eagle), it is considered unlikely that the airline would continue to service Anguilla with the smaller aircraft if all other destinations were capable of receiving the ATR 72.

13.3 If it is accepted that the longer runway is desirable at Anguilla, and that none of the development options evaluated are justified on economic grounds, then the least-cost development option is the logical choice.

13.4 Development options at the Wallblake Airport site are significantly cheaper than any of the development options at the Brimegin site.

13.5 In summary the development costs of the options are:

		US\$Millions (rounded)
Wallblake:	Eastern Extension: Import all fills	30.0
	Eastern Extension: 30% import fills	25.0
	Western regrade (flat runway) : import all fills	16.0
	Western regrade (flat runway) : 30% import fills	14.0
Brimegin;	2200 m runway	308.0
	1700 m runway	120.0

13.6 The financial and economic analyses gives the following results for each option:

13.6.1 *Financial Conclusions*

Wallblake Airport consistently reports a substantial operating deficit. This is partly because of the low level of passenger throughput but also because the main sources of revenue generated by the airport, the Passenger Departure Tax, goes directly into the

Government's general revenue fund is not accounted for as part of the airport's operating revenue.

The Passenger Departure Tax should be recast as a Passenger Service Charge and the resulting revenue retained by the airport operator. An increase in the level of passenger service charge paid by non-resident passengers from US\$10 to US\$20 would mirror recent increases at the corresponding charge at Princess Juliana International Airport, St Maarten and could be justified as and when any of the alternative development proposal are implemented.

The only development option able to generate an operating surplus during the course of the appraisal period would be the major new airport at Brimegin (Brimegin Option 2).

None of the development options would be able to make any significant contribution towards annual debt service charges estimated at:

- Wallblake Option 1 US\$ 3.5 million;
- Wallblake Option 2 US\$ 5.4 million;
- Brimegin Option 1 US\$ 16.6 million;
- Brimegin Option 2 US\$ 45.8 million.

The scale of operating and capital subsidy required by each of the development options over the first 20 years of operation is summarised in Table 13.1.

**Table 13.1
Scale of Subsidy Required**

Option	Do Minimum	Wallblake 1	Wallblake 2	Brimegin 1	Brimegin 2
	US\$ '000	US\$ '000	US\$ '000	US\$ '000	US\$ '000
Operating subsidy					
Average Annual	765.3	212.3	212.3	213.6	132.8
Cumulative	18,367.8	5,094.3	5,094.3	5,125.7	3,186.3
Per Passenger	US\$6.11	US\$1.30	US\$1.30	US\$1.31	US\$0.21
Capital subsidy					
Average Annual	103.0	1,728.2	2,524.6	7,150.9	15,205.9
Cumulative	2,472.1	41,476.4	60,589.9	171,621.2	364,942.4
Per Passenger	US\$0.82	US\$10.60	US\$15.48	US\$43.84	US\$24.58
Total subsidy					
Average Annual	868.3	1,940.4	2,736.8	7,364.5	15,338.7
Cumulative	20,839.9	46,570.7	65,684.2	176,746.9	368,128.7
Per Passenger	US\$6.94	US\$11.90	US\$16.78	US\$45.15	US\$24.79

13.6.2 Economic Conclusions

The main economic costs associated with the alternative development options comprise the cost of acquiring land, airport capital and periodic maintenance costs and the incremental social infrastructure costs required to meet the needs of an expanded resident population.

The main economic benefits of the alternative development options comprise government revenues from duties and taxes levied on accommodation and other tourist oriented goods and services. Current average government revenues of US\$ 137.50 per tourist arrival are projected to increase by 15 percent in real terms over the period to 2015 if Anguilla continues to develop as an up-market destination. Average government revenues per tourist arrival would fall by 15 percent in real terms if the high-density tourism development strategy associated with Brimegin Option 2 were to be pursued.

Wallblake Option 1, the lowest cost option, is the only one of the four alternative development options that is likely to return a positive economic return with a net present value estimated to be US\$ 1.5 million at a discount rate of 9 percent. Details of the economic return on all options are summarised in Table 13.2

The economic performance of all options would benefit significantly from lower capital costs, higher tourist arrivals, or higher unit revenues per tourist arrival but reasonable (+/-20%) variations in a positive direction are insufficient to render Wallblake Option 2 or Brimegin Option 1 economically viable.

Because of the scale of costs and benefits involved, the potential economic return on Brimegin Option 2, the major new international airport at Brimegin, is very volatile. It could be positive with a favourable combination of lower capital costs, higher tourist arrivals or higher unit revenues per tourist arrival but for all reasonable variations about the central cost and revenue assumptions, Brimegin Option 2 would always be outperformed by the more cost-effective Wallblake Option 1. Wallblake Option 1 is also the development proposal most closely suited to the continued development of Anguilla as a low-density upmarket tourist destination.

**Table 13.2
Summary of Economic Performance**

Discount Rate	7 percent	9 percent	11 percent
Wallblake Option 1			
Net Present Value	US\$ + 8.9 m.	US\$ + 1.5 m.	US\$ - 3.6 m.
Internal Rate of Return	9.5 percent		
Wallblake Option 2			
Net Present Value	US\$ - 1.9 m.	US\$ - 9.5 m.	US\$ - 14.8 m.
Internal Rate of Return	6.6 percent		
Brimegin Option 1			
Net Present Value	US\$ - 63.9 m.	US\$ - 71.7 m.	US\$ - 76.4 m.
Internal Rate of Return	1.1 percent		
Brimegin Option 2			
Net Present Value	US\$ - 2.9 m.	US\$ - 55.0 m.	US\$ - 91.4 m.
Internal Rate of Return	6.9 percent		

Source: W.S. Atkins analysis.

- 13.7** It is also concluded that, in addition to the financial costs and economic factors not justifying the much longer runway needed to service Boeing 737 and 747 types, the environmental and social issues also balance out in favour of the smaller development at Wallblake. The use of larger aircraft types would have to be justified by significant increases in tourist volumes, which would require major investment in additional hotels, water supplies, sewage systems, roads, housing and other infrastructure.

To generate such increases in tourism, the market would inevitably have to move down-market towards the mass market that is needed to operate the larger aircraft economically.

This would be contrary to the GoA declared lined policy of wishing to promote and retain the upper end of the market. This policy was also approved by the majority of Anguillians interviewed. Only a few of the local airline operators are in favour of the major developments that would be associated with a longer runway for use by B737-747 aircraft types, on the grounds that this would lead to increased business for themselves, not that they needed long runway lengths for their present or projected aviation activities.

- 13.8** The environmental issues also balance out in favour of development at Wallblake. At both sites, natural resources and environmental factors are mostly of a minor or insignificant nature. However, land use at Brimegin is classified as having a major impact, whilst it is only classified as having a minor impact at the Wallblake site.

The effect on wildlife and nature conversation has a "severe" impact at Brimegin, and only "minor" at Wallblake.

The environmental effect of noise is more complex. Whilst development at Wallblake with the larger Boeing 737/747 aircraft would, not surprisingly, have a major impact on the aircraft noise climate, a like-with-like comparison using smaller aircraft show that more people would be effected at the Wallblake site than at Brimegin. The Wallblake site is classified as having a "minor to moderate" impact due to aircraft noise. On all environmental issues therefore, apart from that of aircraft noise, the Wallblake site is preferred to Brimegin.

- 13.9** The social issues also favour development at Wallblake. The social interviewing and surveys showed majority support for development at Wallblake, and majority opposition for a new airport at Brimegin. Of those interviews conducted in the area proposed for the Wallblake airport developments, roughly half were for the development and half against.

The concerns of those against expansion (40%) were mainly related to increases in noise disturbance, and the possibility of larger, noisier aircraft.

Other concerns were that Wallblake Airport was close to residential areas, and that some people would have to re-locate.

14.0 RECOMMENDATIONS

- 14.1 It is recommended that it is accepted that Anguilla will need airport improvements to be made in the short-medium terms to sustain its tourist growth.
- 14.2 Development of a major new international airport at Brimegin is not recommended because the growth of tourism required to support the project would run counter to the Governments's strategy for the continued development of a premium high yield low density tourism product and radically transform Anguilla's current development model.
- 14.3 The first phase development at Wallblake Airport (the eastern extension) should be the subject of a commitment to give confidence of other development and the timing of the development will need to take into account American Eagles' intention to phase out the ATR42 and replace it with the ATR72, possibly within 4-5 years.
- 14.4 Once the commitment is given to proceed with the first phase, the proposed second phase can be re-evaluated to determine the overall benefits that may be achieved, and the time frame of the second phase be co-ordinated with that of the first phase. The possible future extension by a further 250m at the eastern end can also be re-evaluated in the context of the phase 1 and phase 2 decisions.
- 14.5 The other facilities at Wallblake should be expanded in line with the forecast traffic increases, in a timescale to service the longer runway and phased according to the recovery period necessitated by the 1999 hurricanes.
- The facilities to be expanded include the passenger terminal building, apron parking areas, navigational aids, approach/runway airfield ground lighting, and airport drainage.
- 14.6 Once the commitment has been given to develop the Wallblake site, further detailed Social and Environmental Assessment should be carried out.
- 14.7 Irrespective of development decisions, the possibility of introducing a re-fuelling concession on the airport should be re-evaluated as a matter of urgency to attempt to alleviate some of American Eagles performance problems.
- 14.8 Also, charges, revenues and tariffs accruing to the airport should be re-examined and updated to levels more consistent with those in the region. This review should be carried out in conjunction with a review of the Airport Departments organisation and structure in order to up-date and improve it to conform with international airport standards.

APPENDIX 1

INTERVIEW NOTES/LIST OF INTERVIEWEES

APPENDIX 1

INTERVIEW NOTES/LIST OF INTERVIEWEES

**APPENDIX 1
INTERVIEWS**

MEETING WITH MR. JULIAN HARRIGAN, PERMANENT SECRETARY, SOCIAL SERVICES, & A RESIDENT OF THE WALLBLAKE AREA.

Impact of Wallblake airport on residents

In the early days the planes arriving in Anguilla were not very noisy, nor were they emitting excessive fumes. This has changed with the size of the aircraft, especially since LIAT introduced the Twin Otters (these use octane and kerosene) and the Dash 8s. There are now more noisy and odourous planes coming to Anguilla.

Persons who live in the flight path have problems with their water supply.

The vibrations from larger aircraft rattle windows.

When planes pass over they interfere with TV reception and hearing is impossible.

Mr. Harrigan has a spectacular view of the island, and has no desire to relocate. However, he recognises the need for a new airport, and his preferred alternative is Scrub Island. In his opinion it is flat and near enough to Anguilla to be linked by a bridge. He indicates that in the past there had been an airstrip. However, illicit traffic led to its destruction the government as a means of control. The land on the island is privately owned.

Health services

Mr. Harrigan believes that the management structure of the hospital needs to be changed. He feels that it should be a statutory body, instead of being a department of government. The current management structure in his opinion and experience allows for too much political interference. There is also inefficiency because the extensive governmental bureaucracy makes decision making at the hospital difficult.

The current political difficulties in the country are causing problems in accessing funds for supplies and equipment.

The hospital is expanding into new areas. For example, dialysis equipment has been ordered.

The country is facing new health issues, i.e., aging, obesity, hypertension and diabetes.

Mental health cases in Anguilla are primarily psychotic. The main cause, according to Mr. Harrigan, is the fact that people are driven by the need for economic affluence and some of them experience mental collapse in the process.

Unfortunately, some mental patients are being kept in prison. There is therefore a need for a psychiatric facility.

There are not many options for person with disabilities.

Migration

The migrant population and the returning residents are the main source of population increase in Anguilla. In particular the Indian population in Guyana and Santo Domingo.

There are some controls on migration, but Mr. Harrigan believe these to be discriminatory against West Indians and biased towards North Americans.

Education

There is one secondary school under construction – Campus B of the existing Comprehensive School. The enrollment is approximately 1200.

There is a University of the West Indies (UWI) School of Continuing Studies. Mr. Harrigan is the resident tutor. The government pays the fees for civil servants. The cost is US\$171 per subject per semester. Persons can complete Bachelor degrees in Management or Education, as well as the Certificate in Public Administration, the Certificate in Business Administration, the Certificate in Education and the Administrative Professional Secretaries programme at the School. All other degrees require eventual entry into the UWI campus for completion.

All of the tutors at the Continuing School have masters or doctoral degrees.

Emerging social issues

There is some gang-related crime. There is a need for money to be invested in youth programmes.

Allocation for social services

In 1998, the government allocated the following for social services:

1,267,789	Ministry
10,376,063	Education
6,094,465	Secondary health
3,660,023	Primary health
1,877,648	Community Development & Welfare

The government needs more revenue. In Mr. Harrigan's opinion, options include income tax, social services levy and increased options for tourists.

**MEETING WITH MR. ALBERT LAKE, BUSINESS-MAN AND OWNER OF
PROPERTY IN BRIMEGIN.**

Wallblake expansion versus new airport at Brimegin

Mr. Lake has a life-stock farm as well as a building material plant (sand, cement, asphalt) in the Brimegin area.

In his opinion, the airport at Wallblake should be extended. There is no need for a new one to be developed at Brimegin.

Property owners at Black Garden, near the Brimegin site, have been prohibited from developing their land. Developers who want to sub-divide land for housing can not get permission. The Planning Board will not give permission because the area is earmarked for airport development. However, the government has not requested any purchasing rights. In Brimegin the government does not own any land and would have to purchase it from the owners.

He feels that Wallblake should be lengthened by acquiring lands on the approach side, i.e. the government should cut the land on the west side over Sandy Ground. This, he says, will be easier, because on the east side there is a deep valley and it would mean filling in about 30 feet to level it to create a runway.

Mr. Lake says that Anguilla has become too costly. There is no price or labour control. The country's tourism will be jeopardised by lower priced countries. Moreover, Anguilla needs to give tourists more for their money.

"The British government should have a bigger say in the livelihood of Anguillans."

MEETING WITH THE ANGUILLA BEAUTIFICATION CLUB (ENVIRONMENT)

Present were:

Lady Josephine Gumbs
Sir Emile Gumbs (former Chief Minister)

The Anguilla Beautification Club was started to take a stand on, and promote tree planting in the country.

Expansion of Wallblake airport versus construction of a new one at Brimegin

Lady Josephine feels that extending the Wallblake airport would be advantageous because the current one is too small—planes have to cut back on passengers and cargo depending on the circumstances.

However, to build an international airport at Brimegin would require too many rooms to support it and Anguilla would have to import labour. This would lead to problems, i.e. increased schools, public facilities, water supply, etc. The island is too small to support this. Mass tourism would spoil the character of the island, and Anguilla would lose the top class tourism that it is known for.

In any case, why go to the expense of starting over when we could extend the existing one – especially if it would be less costly and more timely.
There are caves at Brimegin that could present a problem.

Sir Emile would also prefer the expansion of the existing airport to accommodate the bigger jets out of America.

He indicates that in the past he has spoken to the Vice President of American Airlines who informed him that they sell a high proportion of first class seats to Anguilla and would like to be able to go directly to Anguilla with the first class service. These planes would require an additional 1200 feet of runway.

In his opinion, the Chief Minister wants to develop an international airport to get jets in from New York and an increase in the number of hotel rooms in Anguilla.

However, he pointed out that the newest hotel development on the island can not even get an adequate labour force, and are currently having to take persons away from other hotels.

The country is losing teachers who are going into hotel management.

Employment

People work two or even three jobs because of the lifestyles they want to live. Anguilla has a high ratio of cars, televisions, computers, washing machines – luxury items. Part of this is the demonstration effect of tourism -- locals want to copy the lifestyles of the visitors.

Many civil servants work at night in hotels.

The cost of living in Anguilla is high, and prices are high, for example, local restaurants price their food at tourist levels; most places charge in \$US, except perhaps for food in supermarkets. Yet the retail sector is flourishing.

Alternative industries

Fishing is a big industry, especially on weekends and at night. It is commercial, not recreational.

Migrant labour

There is a serious increase in migrant labour, especially persons from Santo Domingo, Dominica and St. Kitts.

Emerging social issues

The country is witnessing an increase in prostitution – some among the migrant population and young Anguillan females.

MEETING WITH THE ANGUILLA NATIONAL TRUST

Present were:

Ms. Ijahnya Christian – Executive Director
Ms. Celine Fantino – OCOD Volunteer
Ms. Andrea Lamboo – OCOC Volunteer

Relationship between St. Martin and Anguilla

There is a good relationship between Anguillians and St. Martin except on the issue of movement of visitors.

There is a heavy reliance on day-trippers from St. Martin.

There is some political sensitivity because Anguilla has considered placing an environmental levy on visitors, including day-trippers and St. Martin has indicated that they would be inclined to increase the departure tax.

There is also the issue of St. Martin marketing some of Anguilla's Cays as part of their tourism product without providing any benefits to Anguilla.

Domestic travel market

The majority of local Anguillan travel is via ferry to St. Martin.

Anguillians living abroad travel home in August for Carnival and the boating event. They also travel in December for Christmas.

Extension of the Wallblake airport

The communities in the vicinity of the airport are, George Hill, Long Ground, Stacia Valley and the Forest.

The community next to the airport is a well-established typical Anguillan community.

If offered a good price and similar or better housing than what they currently have, most residents would probably be inclined to relocate.

Construction of an airport at Brimegin

The proposed site is within one of Anguilla's remaining green areas as identified in the Landuse Development Plan 1995-1996.

It is a habitat for iguana.

It is also close to the Fountain, the Arawak ceremonial site which contains a petroglyph of "Jocahu", the Chief Deity, giver of casava. It is the second of only two sites to have such an artifact, the other being in Cuba. Unfortunately that one was removed and sent to the Smithsonian. The Anguilla National Trust wishes to apply for World Heritage Site status for the Fountain. The development of an airport at Brimegin should not damage this site or its chances at the World Heritage Listing.

Brimegin is one of the remaining areas for wild fruit trees.

Poverty and marginalised communities

There is no clear definition of poverty in Anguilla.

The migrants from Santo Domingo are a marginalised group. Most work in construction. Some of them offer services such as bars, shoe repairs, radio repairs.

Women are another marginalised group. It is evident in the dearth of females in top management positions. They are concentrated in traditional sectors, e.g., head teachers of schools.

Anguillian tourism

The product needs to be diversified. Heritage is one area that could be explored.

There are not many local owners of hotels, and local ownership is primarily in the smaller hotels.

Persons who work in the tourism sector stay at home during the low season.

Education

Education is provided free to secondary level, but children must purchase their textbooks.

Access to post-secondary is mainly for persons in the public sector. In the private sector individuals would have to be in the correct position for the opportunity to study further, e.g. chef and management.

MEETING WITH BISHOP ERROL BROOKS – PRIEST OF THE ANGLICAN CHURCH AND CHAIR OF THE CHRISTIAN COUNCIL.

Social issues

In the past there was spirit of community in Anguilla more so than now. People had an interest in each other's welfare. There has been a move away from this and an increasing emphasis on the acquisition of material wealth. People have two jobs to get rich – i.e. increased material wealth.

In the past children wanted to get an education, now they want to acquire material possessions. They prefer to quit school and get a job, especially in the tourism industry.

There is a breakdown in family life. There is no parental supervision because parents are working two or even three jobs. Therefore, the TV supervises the children and determines the values and culture that are inculcated.

Gangs are being formed, e.g. at Blowing Point. There is an increase in violence, especially among youth, e.g. at the Secondary School.

The Anglican church has 2 pre-schools, one in the Valley (119 children), and one on the eastern side (20 children).

The church does do some moral education, through addresses to schools. However, this is infrequent.

There is also the issue of returned criminals from the US, i.e. persons of West Indian origin who commit crimes in the US, are deported to the region, and bring with them the negative attitudes and behaviours.

On occasion the church has been invited to make input on policy issues, but the ideas are not always implemented.

Expansion at Wallblake versus construction at Brimegin

The problem at Brimegin would be the high cost of infrastructure development. It would mean more migrant labour, and therefore, additional housing, roads, water, social services, schools, etc.

Poverty

It is mainly among older folk, i.e. illness, inadequate housing conditions, limited food, children abroad and no support.

MEETING WITH COMMUNITY DEVELOPMENT & WELFARE

Present were:

Ms. Daphe Hodge	Chief Community Development Officer
Mr. Clive Smith	Deputy Chief Community Development Officer
Mr. Ivor Hodge	Youth Officer
Mr. Alkins Rogers	Sports Officer & President of the Anguilla Civil Service Association

Medical services

The medical services are not up to date. Persons have to be shipped out for major surgery. If these individuals have no insurance, it is a problem. Government assists on a case by case basis. The Barbados hospital is the preferred location.

If visitors get sick they go via St. Martin to the U.S. or to Barbados, once they have the resources. Without resources, the government has to assist.

If persons suspect that they might have HIV/AIDS they get tested in St. Maarten because they do not want persons to know that they have tested positive. Therefore, it is difficult to obtain accurate statistics on HIV in Anguilla.

Anguilla is experiencing increases in lifestyle diseases – diabetes, hypertension, heart attack, obesity.

Social issues

The number of men having to provide child maintenance is on the increase. Women are purchasing property and men are paying child support.

Among some of the migrant population housing is a problem – some have no proper toilet facilities. They live in Spanish Town; some in abandoned structures, e.g. houses and garages without sanitary facilities.

Prostitution has begun to affect the youth – in their drive for material things.

The television is raising children because parents are working two and three jobs. Values are not being passed on, and there is significant influence from outside. Children are in school with youth from Montserrat, Guyana, etc.

Access to tertiary level education is not easy.

Transportation

There is no public transport service, so transportation is a problem. If you don't own a car you have to hitch a ride.

Hotels have to provide a bus service for their workers, mainly the migrant population.

Salaries and wages

It is not possible to pay the loan for a home and a car on one salary in Anguilla.

Labour is expensive because of the rates paid by the hotel industry. A mason will charge approximately EC\$150 - \$200 per day, labourers earn EC\$120 - \$140 per day.

Sports

Anguilla was hoping to host one-day international cricket. Apart from the difficulty in acquiring funds to improve the cricket facility, the travel logistics were a problem. The equipment had to be flown to St. Maarten and then put on a barge to Anguilla. This required too much time and expense to make the one-day feasible.

The main sports are cricket, football, tennis, basketball and volleyball is now being developed. There is also going to the beach, boat racing and the carnival.

Youth

Children are being spoilt by parents who want them to have more advantages than they had themselves.

Youth do not see the relevance of sports. There is insufficient corporate support for it to be financially viable. They do not see the point of trying for athletic scholarships. There is no pressure to get a job, their parents will support them until the job they want comes along—the “party” will find a job for them.

Migration

An increasing portion of the labour force is from across the Caribbean – teachers, police, doctors, nurses.

Migration means new cultures coming in. There is an increase in crime stealing, fights, and it is mostly among the immigrants. There is no screening of the migrants.

MEETING WITH MR. ROLAND HODGE, DIRECTOR, DEPARTMENT OF FISHERIES AND MARINE RESOURCE

The fishing industry

The four main fishing areas are in Island Harbour, Cove Bay, Sandy Ground and Blowing Point.

The fishing industry is subsistence, it is not highly commercialised. It is almost entirely trap fishing – reef fish from shallow waters to deep slope snappers. There is also some fishing done by perpendicular drop lines.

The Fisheries Department have just completed an exploratory project on long-lining that has proved to be successful, and looks very positive from an economic perspective. The Fisheries department wants to introduce long-lining to the fishermen to diversify and ease the stress on the reef stocks.

The country is experiencing problems with lobster stocks. This is due to both over-fishing as well as the after effects of Hurricane Luis.

The Fisheries Management Plan is now being finalised.

Linkages between the Tourism and Fishing Industries

There have been no conflicts as yet.

Recreational fishing is not currently a big thing but is part of the future plans, especially during the summer season. The experience with the long-lining has showed this to be promising. Marlin catches have been good.

There is currently some small scale sports fishing, but not by persons with real experience.

The Board of Tourism sees fishing as part of tourism's future.

One individual had tried to start a sports fishing activity in the past, but it is not currently operational.

Extension of Wallblake

The effects of the flights on the residents is of concern. If the airport is extended, there will be an increase in traffic and more problems.

Brimegin

The cost to acquire the land will be high.

There are caves that have not been mapped. However, persons who tend livestock in the area would know about them.

MEETING WITH THE HODGE FAMILY – PROPERTY WEST OF THE RUNWAY

Problems experienced

When the planes are coming in to land, they fly low over the house and it feels as if they will land on the house.

The fumes from the planes when they rev their engines are also problematic. The fumes from the aircraft have contaminated his water supply in his cistern and the family now has to purchase water.

The vibrations from the planes rattle the windows and have damaged the roof and ceilings.

Position on relocation

The family has lived in the area since 1959 before the airport was as developed as it is now. The airport has been developed westward in the past (beyond Hannas Rd.)

The issue of relocation of residents has been going on for years and the owner is “sick of it.” Mr. Hodge has written letters to the government (both the leader and deputy) and he has received no response. His wife is quite ill and is being made worse by the planes that fly overhead. He is disillusioned by the treatment from government.

The family is prepared to move. The sister, who lives next door, has been moved. (See newspaper article). He owns land on the North side of the island and would like the government to move his house there in the immediate short term. The authorities can eventually provide him with a piece of land to replace the piece in Wallblake, when they are able.

MEETING WITH THE ANGUILLA TOURIST BOARD

Present were:

Clive Carty – Chairman of the Tourist Board (Travel Agent)
Amelia Vanterpool-Kubisch – Executive Director, Tourist Board
Marvin Saunders – (labour)
Ambrose Richardson – (taxi driver)
Mel Franklin – (Air Anguilla, air taxi)
Eustace Guishard – General Manager, Cap Jaluca Hotel
Arendelle Lewis – Inter Island Hotel

Policy of the Anguilla Government on Tourism

The policy of the Government of Anguilla vis-à-vis tourism embodies the following three elements:

- A focus on the up-market tourist.
- The provision of a range of accommodation for every level of tourist.
- To consciously avoid mass tourism.

There is no tourism development plan. There is a policy and a marketing strategy.

Tourist Board's position on tourism growth

Visitor arrivals have grown faster than number of rooms.

Winter is the peak season for arrivals. Summer arrivals are low, approximately 30%, much lower than the regional average of 60%. September is the lowest month.

The new airport or the expansion of the existing one must not be tied to an increase in tourism. Tourism growth must be based on an overall economic plan that takes into account the needs of Anguilla, e.g. the growth of the labour force.

Tourist board's position on a new airport

Anguilla must have access to all of the main gateways in the Caribbean, including Antigua, San Juan and Barbados. The country must not rely on St. Maarten to receive visitors.

Anguilla must have improved airport facilities whether an expansion of the existing one or a new one. That is for the consultant's report to decide.

The new airport has been proposed because the current one is inadequate and the expansion of the old one may cost as much as building a new one.

In order to increase room occupancy levels, there is a need for more airline seats.

In the past fears of taxation to support the new airport development stalled the process.

Thus far the Tourist Board has not done anything substantial on financing for the expansion or building of a new airport. It has been connected to an increase in hotel rooms.

The Tourist Board is encouraging the re-establishment of the night ferry service to deal with the overflow of persons created by the limitations of the airport.

The new airport could act as a feeder to St. Maarten.

It could also offer bulk storage for fuel, or the trans-shipment of cargo.

St. Maarten/Anguilla conflict

The fact that visitors must go through St. Maarten to reach Anguilla is a problem. Members of the tourist board state that persons have even been discouraged from continuing their journey to Anguilla and encouraged to stay in St. Maarten.

In the hurricane that wiped out St. Maarten and the Virgin Islands. Flights could not land in St. Martin, Antigua or the Virgin Islands to connect with Anguilla. This created a problem of accepting hurricane relief assistance.

**MEETING WITH THE ARINDELLE FAMILY – PROPERTY IMMEDIATELY
EAST OF THE END OF THE WALLBLAKE RUNWAY.**

Problems experienced

Planes from the east are the most noisy.

There was Pan Am some years ago that tried to land at Anguilla, mistaking Wallblake for Julianna, St. Maarten.

A plane has on one occasion passed the fence.

When the rain falls their land floods because of poor drainage from the airport.

One of the relatives has land in the area, but can not get permission to build.

Relocation

They are prepared to move, but would like to stay in the village.

MEETING WITH THE OPTIMISTS CLUB

Present were:

Michael Skellekie (Teacher)
Charmaine Sasso (Market Research Analyst)
Chrispen Gumbs (Police Officer)
Marian Egel (Secretary)
Michelle Roberts (Teacher)
Chanelle Petty (Barrister at Law)
Marva Gumbs (Product Development and Research Officer (Tourism))
Monica Hodge (Manager Insurance Company)
Clemont Bethel (Senior Clerical Officer)
Laureen Bryan (Officer Manager)
Ingrid Fullington (Teacher)
Avon Carty (Marketing Communications Executive)
Art Egel (Teacher/ migrant from the U.S.)
Carmen Hackett-Samuel (Hotel worker)
Jerome Roberts (Stores Controller)
Brian Corbett
Curtis Richardson (Math teacher)
Othlyn Vanterpool (Fisheries Officer)

Wallblake airport

One of the problems with Wallblake airport is that visitors sometimes have to overnight in Puerto Rico because of delayed flights and missing the connection to Anguilla, or because conditions in Anguilla would not permit landing or take-off.

If the Wallblake airport is extended there is only one house to move. On the other hand, the land in Brimegin is owned by a number of persons. There are also ecological and heritage features in Brimegin that could be damaged by the development of an airport in the area, e.g. The Fountain, Applehole Cave.

From a domestic point of view, commuting through St. Maarten is not an inconvenience, it is a long time habit/tradition.

The likelihood of someone who is in transit through St. Maarten to Anguilla, staying there and not continuing their journey is very unlikely, because their clientele is very different.

The persons who will be dislocated by the airport development in Wallblake will not be happy to relocate, especially the older folk. Anguillans are very attached to their land, and money might not be a motivational factor.

There is a security factor with the residents at Wallblake – there was a plane crash in the late sixties, early seventies.

Persons travelling from the Julianna airport in St. Maarten, who travel from Anguilla to St. Maarten by ferry have to pay US\$20 departure tax at the airport.

The option of Scrub Island as a location for the new airport would be expensive.

There is some concern about the French proposal and the number of hotel rooms recommended.

Tourism

Anguilla needs to redefine its target market for tourism. This has not be done since 1979-1980 when it was defined as upscale, family oriented, 20 – 30 room facilities, buildings not taller than coconut trees. Since then the word has spread and there have been other kinds of visitors, e.g. day-trippers. Questions need to be addressed such as are we making enough from the upscale tourism? Can it provide sufficient employment?

Insufficient money is being put into market research.

Everything needs to be revamped.

Whereas everywhere else in the Caribbean the UK market is increasing, it is declining in the Anguilla.

While commuting through St. Maarten might not be a problem for locals, it is a sad sight to see journey-tired visitors hoisting their luggage onto the ferry and then having to wait at customs because there is only one customs officer. Customs is a real problem, they harass locals.

There is a lack of a variety of services to the tourism industry.

Social issues

There is a need for an increase and improvement in the quality of jobs in Anguilla.

The cost of living is high and most persons have two jobs, some as many as three.

There are insufficient options for participation for Anguillans, especially the youth. Children do not know Anguilla. Need to develop heritage sites so that children and Anguillans can learn more about their country.

**MEETING WITH YOLANDE RICHARDSON, CHIEF EDUCATION OFFICER AND
CHAIR, NATIONAL COUNCIL OF WOMEN**

Education in Anguilla

The enrollment in schools for 1998-99:

- Primary, six public and one private school 1508 + 58
- Secondary, 1 school, new campus under construction 1159
- Pre-schools, 10 per-schools 475

The CXC results are on par with the regional results.

The majority of the children with special needs are among the migrant populations. The ration of migrant to local children in remedial reading is 6:4.

In the comprehensive school, there are issues with truancy and fights.

About 1 or 2 incidents per year of children with weapons or drugs, including alcohol.

The government needs added revenue. It can hardly afford teachers and equipment.

Teachers are lost to the government service.

Women's affairs

Women's groups include the Soroptimists, church groups, the friends of the hospital.

Women are not marginalised.

There is a craft shop that was started by the National Council of Women to assist unemployed women. It has not been doing very well, and many women have gone out on their own.

Wallblake airport

There is one resident who had to move.

The planes affect building development, e.g. there can be no two-storey buildings in the area.

Brimegin

Wallblake is easily accessible, Brimegin is more difficult to access.

Public transport system

There is no public transport system, but not for lack of trying. Anguillans do not like paying.

MEETINGS WITH THE SOROPTIMISTS

Present were:

Lydia Gumbs	Rendezvous Hotel
Molly K Hodge	Sandy Hill
Dawn Hodge	US Air Force
Irma Richardson	Long Bay
Alecia Ballin	North Hill
Blondell Rodgiers	Forest Bay

Tourism is the mainstay of the island. However, the airport is also needed for locals. You can miss a connecting flight in Puerto Rico because the American Eagle could not land in Anguilla to collect you.

The authorities should find a better site without houses and limitations and allow for bigger planes and room for expansion.

There is need another good airline in Anguilla, the Eagle has too much of a monopoly.

Prior to building a new airport, the old one still needs to be upgraded in the short term.

Wallblake hurts tourism because of the travel time it takes to get there.

People like living in Wallblake, it is near the town. However, the planes are stressful especially to the elderly, the ill and babies.

Wallblake is an established community and people will resist having to be relocated. There must be flexibility in whatever is built for the future needs. There should not only be a quick fix solution for today.

The health services need a good administrator and a community board.

INTERVIEWEES

Hon H Hughes, Chief Minister
Carl Thomas, Chief Pilot Trans Anguilla Inc
Edgar Richardson, Manager, Air Anguilla
Secretary, Tyden Airlines
Sir Emile Gumbs, Former Chief Minister
Hon. Osborne Fleming, Leader of the Opposition
Hon. Victor Banks, Member of the Opposition
Hon. Albert Hughes, Minister of Infrastructure, Communications and Utilities
Mr. R Bossons, Private Pilot
Mrs M Hodge, Station Manager American Eagle
Mr. Remington Lake, Airport Manager, Wallblake
Mr. Elmet Hughes, Permanent Secretary
Mr. John Lawrence, Overseas Finance Project
Mr. Steven Fahie, Permanent Secretary Ministry of Economics and Planning
Mr. Anil Skuppyo, Attorney General
Mr. Claude Brookes, Anguilla and Greater Caribbean Association, Slough, UK

APPENDIX 2

TERMS OF REFERENCE

APPENDIX 2

TERMS OF REFERENCE FOR A COMPARATIVE FEASIBILITY STUDY

1. Background Information

- 1.1 Wallblake Airport is the only airfield serving the island of Anguilla. It has a paved runway 1,097 metres long and 30.5 metres wide with terminal approach via taxiways and apron. The western runway threshold is displaced by 122 metres. The airport has a terminal building and control tower which were built in 1988, limited firefighting equipment, airport approach aids, navigational aids and night landing facilities.
- 1.2 It is not an international airport, but provides regular services to a number of Caribbean destinations by regional carriers. All passengers travelling to Anguilla from outside the Caribbean must connect at international airports on nearby islands. Many passengers from North America transfer in San Juan-Puerto Rico, and others in St Maarten.
- 1.3 Currently, American Eagle operate the 44 seater ATR 42 from San Juan. Using the existing runway in dry weather the plane operates with a 4 seat payload penalty, and in wet conditions its payload is reduced to only 28 passengers. To eliminate these restrictions the runway length would need to be increased to 1,200 metres and 1,280 metres respectively. American Eagle is planning to introduce the 64 seat ATR 72 to all its Caribbean destinations over the next 5 to 10 years. In any weather conditions, the existing runway would impose a 14 seat payload penalty on the aircraft.
- 1.4 Since the early 80's the Government of Anguilla (GoA) has been considering the construction of a new airport at Brimegin on the north side of the island. The site was examined in a study funded by HMG in January 1983. However, the final report made no firm recommendation that it was suitable for development.
- 1.5 In March 1993 HMG commissioned a second study to recommend the most practical and economic way of developing the existing runway at Wallblake to accept direct unrestricted flights by regional carriers from San Juan and other Caribbean international airports. A number of development options were identified and costed, which covered various combinations for extending and re-profiling the existing runway. Regardless of any decision which might be taken on these, the runway needed to be resurfaced at an early date to avoid its further deterioration.
- 1.6 In February 1995, a decision was made not to extend the runway but to explore and advance the construction of a completely new airport at Brimegin. As a consequence, HMG was requested to provide financial assistance to place an asphalt overlay on the existing runway, as an interim measure to allow the continued use of Wallblake Airport for a further period of 7 to 10 years. The runway was subsequently overlaid with 40mm of Marshall Asphalt in April 1998.
- 1.7 GoA continues to see merit in constructing a new airport at Brimegin, but is prepared to be guided by the findings and conclusions of the Comparative Study.
- 1.8 In July 1998 the Government formally accepted an offer of assistance from HMG for a consultancy to examine the justification, and compare the economic cases, for:

- i) An airport development strategy embracing the Brimegin proposal identified in the 1983 study, and
- ii) An airport development strategy based on the maintenance and development of the existing facility at Wallblake.

1.9 Funding for the consultancy, but not the subsequent design and capital works, will be provided by HMG's Department for International Development (DFID).

2.0 Requirements of the Consultancy

2.1 A consultancy is now required to examine the above two development cases and recommend which GoA should take forward for implementation. The consultants terms of reference for this are as follows:

- i) Review all existing data and literature on options for Anguilla's airport development, including in particular the 1983 Brimegin and 1994 Wallblake reports, and to update the technical, financial and economic data contained in them.
- ii) Investigate the extent to which the existing airport facilities impose a constraint on tourism, air cargo export development and other national development objectives. This shall include, inter alia, a critical assessment of passenger flows, the number and type of flights using the airport, and the ability of existing facilities to absorb the forecast increase in number of flights and passengers.
- iii) Assess realistic projections for future passenger and cargo traffic flows over the next fifteen years and whether existing facilities are likely to impose any constraints. The consultant will also discuss with current and prospective airline operators their plans for servicing Anguilla and for replacing aircraft.
- iv) Appraise which of the two airport development strategies are warranted by the projected increase in demand and, if so, devise and appraise the two strategies for the next fifteen years, designed to accommodate forecast traffic demand at minimum economic cost, having due regard for considerations of safety, noise pollution, proximity to centres of population and compatibility with national planning objectives. Following this appraisal the consultant shall recommend which of the options GoA should take forward for implementation.

2.2 For each option the consultant will:

- i) Consult all GoA departments, statutory and non-statutory parties, and community groups representing individuals that might be affected by the development.
- ii) Identify and quantify the full costs and benefits to GoA, the airline operators and local businesses and the community, of the two options compared with the current situation.

- iii) Undertake a full sensitivity analysis of the options and base case, ie explore the sensitivity of each to changes in traffic growth scenarios and other key risk factors, eg increased capital costs.
- iv) Provide estimated airport revenue and operating costs and expected nett recurrent costs to GoA, based on assumed traffic flows over a fifteen year horizon, and undertake financial and sensitivity analyses of each option to evaluate their financial sustainability. In addition, the consultant shall also examine alternative revenue raising measures and recommend a range of tariffs and other charges for services for the operation of the facility.
- v) Provide estimates of the total capital costs of the two development options and associated infrastructure development.
- vi) Undertake such tests as are necessary to confirm that the existing ground at Wallblake and Brimegin poses no geotechnical problems for any airport development which might take place. Although topographical surveys will not be required at this stage the consultant should satisfy himself that the survey information obtained during the 1983 and 1993 studies is of sufficient accuracy.
- vii) Identify reliable sources of aggregates which will be available in sufficient quantities and could be used for concrete and asphalt work.
- viii) Carry out an initial environmental screening of the two development options being considered. The screening will identify the potential direct and indirect environmental consequences of the proposed investments. Inter alia, the impacts of runway embankments, proposed drainage systems, increased aircraft activity and noise, immediate construction effects and greater tourism pressure on Anguilla's natural resource base should be considered. If it is concluded that a full EIA is required, the consultant should propose terms of reference for an Environmental Impact Assessment (EIA) to be implemented during the detailed design phase. The consultant will refer to DFID's Manual of Environmental Appraisal when carrying out the initial screening and preparing the terms of reference for an EIA.
- ix) Identify the key primary stakeholders most affected by the project and make a rapid, informal assessment of their views on the two options of: (i) developing operations at Wallblake, and (ii) constructing a new airport at Brimegin and ceasing operations at Wallblake. The assessment should also consider the impact on employment (including airport workers), resettlement, productive land and accessibility. The assessment shall include consultations with women and poorer people.
- x) Analyse primary stakeholders' preferences and concerns relating to the project and show how these can be addressed in the recommended design option. If appropriate, the consultant will propose terms of reference for a more intensive Social Impact Assessment. (SIA) to be implemented during the detailed design phase. The consultant will refer to DFID's Social Development Handbook in completing this part of the study.

- xi) Carry out a social analysis of current air transport users (who is travelling by air, for what purpose, to which destinations and at what cost) who would obtain direct benefit from the project.
 - xii) Examine the Anguillans expectation of the project benefits and consider how much of this can be achieved.
- 2.3 Two private investment companies; one Dutch, Aruba-Anguilla Development NV, and the other Société de Développement et d'Investissement d'Anguilla, have each shown interest in constructing a new airport at Brimegin, which would be capable of taking fully loaded Boeing 737s (Dutch proposal) or 747s (French). GoA has signed a memorandum of Understanding (MoU) with each company and as part of this agreement they have each produced reports into the development of the site. The Dutch issued a 'Business Plan' in March 1998, and the French a 'Feasibility Study' in December 1999. The consultant will be required to examine each document and comment on their contents and recommendations.
- 2.4 Subject to further definition and costing, carry out any other work in connection with the project as may reasonably be required of the consultant.
- 3. Duration of Consultancy**
- 3.1 It is proposed that the overall duration of the consultancy will be for nine weeks and involve a total maximum estimated input of one hundred staffdays. Three weeks will be allowed in Anguilla for the necessary field work and a further six weeks at their home base for mobilisation, data analysis and the preparation of the report.
- 4. Reporting**
- 4.1 The consultant will be required to produce the following reports:
 - i) **Draft Final Report.** Three copies of the draft final report shall be issued to GoA and three copies to DFID.
 - ii) **Final Report.** On receiving comments on the draft report from GoA and DFID the consultant shall provide five copies of the final report to GoA and five copies to DFID in London.
- 5. Locally Provided Support Facilities**
- 5.1 The Ministry of Finance and Economic Development and the Ministry of Infrastructure, Communications and Utilities (MICU) will be jointly responsible for liaison with the consultant. The first point of contact for formal communication between the consultant. The first point of contact for formal communication between the consultant and GoA will be the Permanent Secretary MICU.
- 5.2 MICU will provide all documents, data, reports, statistics, information and maps at the disposal of the Government which the consultant may require for the purposes of the technical assistance.
- 5.3 As much notice as possible should be given by the consultant to the Permanent Secretary MICU when making arrangements to use the above services and facilities.

APPENDIX 3

SITE INVESTIGATIONS

APPENDIX 3

SITE INVESTIGATIONS

Wallblake 26 October 1999

With the aid of a JCB backhoe, four trial pit excavations were dug at chainages 1565m, 1665m, 1765m and 1865m; all chainages being relative to chainage 0 at 10 threshold. The purpose of these trial pit excavations was to extend the SWK investigation with a view to extending the runway ultimately to 1795m.

Trial pit 1	Chainage	1565m	0-800mm depth brown/dark brown topsoil with cobbles of limestone. at 800mm solid limestone encountered.
Trial pit 2	Chainage	1665m	0-100mm depth brown/dark brown topsoil at 100mm solid limestone encountered.
Trial pit 3	Chainage	1765m	Solid limestone at surface
Trial pit 4	Chainage	1865m	Solid limestone at surface

Brimegin 27 October 1999

Trial pits were dug at locations 1, 2, 3 and 4, corresponding approximately to the proposed terminal building and along a line parallel and to the south of the proposed runway at chainages 0m, 600m, and 1300m from the western threshold. Surface inspections were carried out at location 5 (at approximately chainage 1600m) and along location 6, a break line through the vegetation towards the eastern threshold.

Trial Pit 1	Chainage	-	Solid limestone encountered at surface.
Trial Pit 2	Chainage	0m	0-600mm depth brown/dark brown topsoil with cobbles and boulders of limestone. At 600mm, solid limestone encountered.
Trial Pit 3	Chainage	600m	Solid limestone encountered at surface
Trial Pit 4	Chainage	1300m	Solid limestone encountered at surface.

At location 5, a large cave was evident, approximately 5m x 6m in plan with a depth of approximately 15m. The walls of the cave appeared to be solid with few 'blowholes' or intrusions. Reportedly, these caves are evident in several places.

A surface inspection was conducted along location 6, a break line in the bush approximately 800m in length. The surface of the ground is consistently massive limestone, hard and grey in colour with creamy patches, with no evidence of topsoil other than in very small pockets contained in small pockets in the limestone surface. The bush is consistently heavy across the whole area and would be a significant cost item to clear.

Geotechnical Issues

From our examination of the existing ground conditions at both the Brimegin and Wallblake sites and a review of previous reports, we conclude that the massive limestone evident on the Brimegin site represents a typical Karstic limestone which will contain several solution cavities, whilst the material of Wallblake is predominantly topsoil over solid limestone.

It is extremely likely therefore that excavation of material on the Brimegin site will reveal further unknown cavities; an extensive site investigation would be necessary to identify as many of these as possible in advance of any significant excavation operations commencing.

Although the limestone in the Wallblake area is not known for any similar cavities, it is likely that some may exist, although it does not show evidence of being a similarly massive limestone mass as exists at Brimegin. Indeed, excavations for borrow material in the areas adjacent to Wallblake show a different material, being bands of hard limestone consisting of very weak to weak cemented clayey material interspersed with loose to medium dense calcareous silt. However, the trial pits attempted at chainages 176S and 186S encountered solid limestone, unable to be loosened by a JCB bucket. Again, an appropriate site investigation earthworks' operation.

In conclusion, the material at Wallblake is less likely to pose as high a risk as that at Brimegin, geotechnically, although it would be prudent to conduct site investigations for either case.

Aggregate Considerations

A review of likely sources of aggregate on Anguilla capable of being used in concrete and Marshall asphalt mixes, revealed a single source, that of the existing rock quarry to the north of the proposed Brimegin site, adjacent to the road between North Side and Shoal Bay Village.

The quarry face indicates a moderately strong, highly fractured, fissured, light brown limestone. There is evidence of porosity and some solution cavities. The material is not reable and is face blasted to stockpile.

The raw, blasted material is handled through a primary jaw crusher, screens and a secondary core crusher. The material so treated is well shaped, low flakiness index stone with little sign of excessive porosity and is produced in three sizes, 14-20mm, 10-14mm and 6.3-10mm.

There is a further set of crushing and grading plant that has been relatively recently installed to deal with smaller size, sand fractions; the product of this plant goes to the adjacent block making plant.

Although there must be some porosity in the crushed material, it is not evident on an inspection by eye. There are no laboratory facilities on Anguilla to test the material but it is opined that a blend of material from the two plants, blending the several single sized stockpiles with the sand fractions, would form the basis of a good, stable Marshall asphalt mix. The material is essentially sound with a good shape and with proper blending would most probably generate a mechanically stable graded crushed stone, suitable therefore for both concrete and Marshall asphalt (to be used for runway surfacing).

It would be prudent to conduct relatively extensive testing on the materials to ascertain porosity, and bitumen affinity; the degree of porosity encountered would affect the pentagemix which might be variable. This would not constitute an insurmountable problem.

In conclusion, it is our opinion that the existing rock quarry could provide a good source of crushed material which, with adequate washing and blending, would produce good quality material adequate for concrete and bituminous bound mixes. Clearly, before any significant production were to be commenced, extensive testing would be required but it is most likely that the source of local stone will be adequate and much cheaper than imported material.

APPENDIX 4

AIRPORT LOCATION AND LAYOUT DIAGRAMS

