GLOUCESTERSHIRE AIRPORT

GLOUCESTERSHIRE AIRPORT
FIVE-YEAR PLAN
2006 to 2011
(Abridged Version)

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GLOSSARY OF TERMS

AVGAS	Aviation gasoline. Petroleum formulated and approved for use in piston engined aircraft.
Cloudbase	The height above ground level of the lowest cloud.
Code 2 runway	The classification number for runway 27/09. This specifies lateral, longitudinal and sloping surfaces associated with the runway, which are required to be free of obstacles. The maximum take-off distance for a Code 2 runway is 1,319 metres and the maximum landing distance is 1,199 metres.
GA	General Aviation. Air traffic that does not include scheduled or charter services.
Glideslope	The signal transmitted by an ILS to inform a landing aircraft whether it is above or below the correct glidepath to the runway.
ICAO	International Civil Aviation Organization. A body that promotes understanding, safety and security through co-operative aviation regulation.
ILS	Instrument Landing System. The system used in commercial aviation to deliver aircraft accurately to a position close to the runway from where a successful visual landing can be made.
JET A1	Kerosene formulated and approved for use in gas turbine and diesel engined aircraft.
LDA	Landing distance available on a runway. This may be considerably less than the length of the paved surface, as dictated by the obstacle environment close to the runway and the requirement for RESA provision.
Localizer	The signal transmitted by an ILS to inform a landing aircraft whether it is left or right of the runway centreline.
Medium waveband	A radio signal in the 30 kHz to 3 MHz range of the radio spectrum.
Meteorological visibility	The horizontal distance through which objects can be seen in the prevailing weather conditions, as reported to aircraft by the appropriate air traffic control unit.
Minimum descent height	The minimum height above the runway which an aircraft is permitted to descent without having sufficient visual reference to allow it to land safely.
Movement	A take-off or landing.

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NDB	Non-Directional Beacon. A simple ground-based radio transmitter allowing an aircraft to determine the relative bearing of the transmitter to itself.
RESA	Runway End Safety Area. The clear area at each end of a runway where an aircraft can be brought safely to a halt in the event of it overshooting or undershooting during a landing, or in the event of an abandoned take-off.
Runway 27/09	The designator for the main landing runway at Gloucestershire Airport. The number specifies the direction of the runway relative to magnetic north. Runway 27 is in a westerly direction of 270 degrees, while runway 09 is in an easterly landing direction of 90 degrees.
SRA	Surveillance Radar Approach. Ground-based radar equipment, enabling a controller to guide an aircraft to a position from where a successful visual landing can be made.
TRL	Transport Research Laboratory.
UHF	Ultra High Frequency. The radio waveband used by the glideslope transmitter of an ILS.
VHF	Very High Frequency. The radio waveband used by the localizer transmitter of an ILS.

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CHAIRMAN'S FOREWORD

In the ten years since the adoption of the Beddows Report of 1995, the Airport has seen substantial growth. A turnover of £1.3M and profit of £84K in 1994/95 have increased to £2.5M and £200K, respectively, in 2003/04. Through this success the Board has also been able to provide the shareholders with increasing dividends.

Owing to further regulations and rising competition, the Company is now at a crossroads, facing a stark choice of whether to become an increasing economic force or sink back to the decay and oblivion faced ten years ago.

In 2001, the Board of Directors issued to the shareholders a development strategy for 2002 to 2007. As a result of that strategy, the shareholders commissioned reports from the University of Gloucestershire and the Transport Research Laboratory, both of which supported the continuation and growth of the Airport. To address the findings of these reports and tackle the economic challenges ahead, the Board of Directors now present a new five-year business plan.

This plan proposes the expenditure of a maximum of £2.1M over the next five years, including a capital injection of £1.6M. This will create a safe, fully compliant Code 2 runway (as at London City Airport and others), equipped with an industry standard precision approach landing aid.

The 2002 to 2007 strategy contained thirteen key objectives, six of which have been completed, one deferred and one is still in progress. The other five objectives were to start after 2004 and are included within this plan. The objectives met are:

- The radar has been upgraded.
- A new and improved relationship with the emergency services has been established with the Airport being represented on the County Emergency Planning Committee.
- The letting of Meteor Business Park has now been completed.
- Third parties, one of which supports employment in the maintenance of helicopters used by the emergency services, have built two hangars.
- The aviation fuel management facility has been upgraded.
- The building at the rear of the main apron has been removed, freeing up space for more aircraft parking outside the terminal building.

It is against this successful background that the Airport Board of Directors commends the 2006 to 2011 plan. The Board is of the firm belief that economic benefits to both the Airport business and the local economy will be substantial.

David Cook
Chairman of the Board

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SECTION 1: EXECUTIVE SUMMARY

INTRODUCTION

The five years covered by this plan are the period 1 April 2006 to 31 March 2011. This section summarises the major capital expense projects proposed for operational development during this period, together with the forecast additional income derived from this work over the same period.

OPERATIONAL DEVELOPMENT WORK

The operational development work proposed in this plan removes major obstacles from the approaches to either end of the main runway, constructs a Runway End Safety Area (RESA) at the end of runway 27 and installs an Instrument Landing System serving runway 27.

Operational Benefits

- Improve safety by removing obstructions from the runway ends and provide the recommended 120 metres RESA at the Western end of runway 27.
- Improving the current landing distance available (LDA) on runway 27, making it suitable for a wide range of popular business aircraft.
- Allow unrestricted take-off performance from runway 09 for a similarly wide range of aircraft.
- Permit the installation of an Instrument Landing System (ILS) on runway 27.

Financial Benefits

- With the commissioning of the ILS on runway 27, home-based and visiting instrument training traffic could be expected to increase dramatically, almost immediately. This would generate additional income through instrument approach and landing fees.
- The improvements to the runway declared distances could be expected to quickly attract larger business aircraft that cannot currently use, or are severely restricted in their use of, the Airport. This would generate additional income through landing fees and fuel sales.

SECTION 2: INTRODUCTION

BASIS FOR PLAN

This plan is based principally on the findings and recommendations of the Transport Research Laboratory (TRL) report entitled 'The Present and Future role of Gloucestershire Airport', published in May 2004.

The plan also draws on the South West Regional Assembly consultation document 'Shaping the Future of Cheltenham and Gloucester to 2026', published in January 2005, subsequent to the TRL report. This has identified the requirement for up to 45,000 additional houses, with supporting transport infrastructure.

A recent Civil Aviation Authority study has revealed that the number of air passengers using regional airports in the South-West has increased by more than 370% since 1990. This growth also indicates that there is likely to be strong demand for a local airport to serve Gloucestershire in the years to come.

In relation to the TRL report, it should be noted that while the report makes a thorough evaluation of the commercial potential of Gloucestershire Airport, it makes no reference to the limitations imposed on the recommended developments by the current landing approach facilities at the Airport. A key element to the success of the plan is therefore the provision of the industry standard Instrument Landing System (ILS) on the main landing runway.

ABOUT ILS

Unless weather conditions are exceptionally good, business and commercial arrivals to all airports, land using instrument approach procedures. These are designed to deliver the aircraft to a position close to the runway from where it can make a successful visual landing.

Currently, Gloucestershire Airport offers two types of instrument approach procedure. One is based on a simple non-directional radio beacon (NDB) located on the Airport and the other uses the Airport's surveillance radar approach (SRA) equipment. Both these facilities are classified as non-precision approach aids because they can only tell pilots whether they are to the left or right of the required track – the descent path to the runway has to be deduced by the pilots using their knowledge of the distance remaining.

In the case of the NDB procedure, the medium wave band signal, on which guidance is based, is highly susceptible to a number of errors, including weather interference. Because of its inaccuracy, the minimum permitted meteorological visibility and

minimum descent height for using it are high. For example, an aircraft landing on the runway 27 at Gloucestershire is limited to a minimum visibility of 1,400 metres and a minimum descent height of 600 feet above ground level. In weather conditions worse than these, landing is not possible, and aircraft have to divert. For these reasons, the NDB approach procedure is now largely obsolete for commercial operations. Its use is now largely limited to that of basic airport locator aid or to allow holding patterns to be flown when landing is delayed for any reason.

The SRA procedure is somewhat more accurate but is still subject to interference by rain and rain bearing clouds, as well as spurious returns from terrain and ground based structures. It also suffers from the drawback that a ground controller is required throughout the approach to pass instructions to the aircraft. This requires the use of a dedicated radio channel, with the controller able to handle only one aircraft at a time.

It is unfortunate that the weather conditions causing the most interference to both the NDB and surveillance radar tend to be those where these aids are most needed by landing aircraft.

The ILS is now the standard approach aid for airports handling significant commercial flying operations throughout Europe and the developed world. ILS is classified as a precision approach aid because it provides both lateral and descent path guidance to the pilots. It is highly accurate and works in the VHF and UHF radio bands. These bands are not susceptible to weather or terrain interference. ILS also does not depend on a ground controller having to guide each aircraft in turn, so a dedicated speech radio channel is not required and aircraft can be brought in to land much more efficiently.

Aircraft using the ILS can typically land successfully in moderate fog conditions when the visibility is around 600 metres or cloud base is as low as 200 feet above ground level. This allows undisrupted and safe commercial operations for the vast majority of days of the year.

The provision of ILS must now be regarded as a necessity for airports offering commercial pilot training and aiming to attract more than a small number of regular business or scheduled flights.

While it is possible (and desirable) for an ILS to be available for both landing directions on the main runway, the Westerly direction (runway 27) is proposed for the initial installation. Because the prevailing wind direction is Westerly, this would allow the system to be available for more than 75% of landings.

BENEFITS OF ILS TO THE AIRPORT

The installation of an ILS would generate immediate and significant income for both home-based and visiting commercial training operations at the Airport.

Because ILS is the standard approach aid, home-based operators (such as Aeros, Specialist Aviation Services and Bond Air Services) as well as regular visitors (such as the Oxford Air Training School) are required to train students thoroughly in its use. Currently, these operators have to go elsewhere for this training. With the increasing

scheduled traffic at Birmingham, Bristol and Cardiff, ILS locations with training slots available are becoming increasing scarce. Oxford Air Training School currently travel as far as the Channel Islands to obtain the use of an ILS.

The ILS would also provide the precision approach capability essential to attract the development of the business, charter and scheduled services potential recognised in the TRL report.

CALENDAR

This five-year plan relates to the following financial years, each commencing 1st April:

Year 1: 2006/2007
Year 2: 2007/2008
Year 3: 2008/2009
Year 4: 2009/2010
Year 5: 2010/2011

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Gloucestershire Airport is a successful General Aviation airport located in a prime business location with potential direct access from the M5/A40 junction, only 250 metres away.

The Airport currently handles around 90,000 movements per year. The annual turnover averages around £2.5M, comprising £2M from the flying operation and £500K from commercial property. Operating expenditure is typically around £2.3M.

The business income of the Airport is derived from five main sources:

- Property letting.
- Landing fees.
- Passenger handling fees.
- Hangarage.
- Fuel sales.

Property income is largely fixed, with rent increases generally following five yearly lease reviews. New property developments are limited by planning consents on the Green Belt and the need to avoid operational conflicts.

Landing fees, hangarage and fuel costs must remain competitive, with increases generally being kept in line with those of competing airports. Increasing movement numbers increases income, through landing fees, passenger handling, fuel sales and, to a lesser extent, hangarage. While there is some scope for this, the number of aircraft using the Airport during fine weather is already approaching the maximum that can be handled safely. During poor weather, movements tend to be limited to the business aircraft and commercial pilot training traffic.

The scope for significant increases in current income sources is therefore limited at present.

SECTION 3: OPERATIONAL DEVELOPMENT

PROBLEMS LIMITING OPERATIONAL DEVELOPMENT

It is a commonly held misconception that the problem limiting the development of Gloucestershire Airport is the length of the main runway, 27/09. This runway is actually 1,419 metres in length, which is adequate for Public Transport operation of most business jets.

The difficulty is the presence of physical obstacles at either end of the main runway which have to be safely cleared by aircraft taking off and landing. These have three major effects:

- They reduce landing distance that the Airport is permitted to declare for runway 27 to only 997 metres. This imposes serious limitations on the type and/or the payloads of aircraft that can land on this runway, especially in wet conditions.
- They restrict the take-off performance of aircraft departing on runway 09. For example, a 36-seater Shorts 3.60 aircraft can take off with a full passenger load on runway 27, but loses 10 passengers from its payload whenever the surface wind conditions require the use of runway 09.
- They prevent the installation of an Instrument Landing System (ILS), owing to its more stringent safety requirement for obstacle clearance.

The overall effect of these obstacles means that the regular operations of most fully loaded business jets capable of seating more than 19 passengers are not possible.

WHAT IF WE DO NOTHING?

Runway 27 does not currently meet the International Civil Aviation Organization (ICAO) requirements for its Code 2 designation for two reasons:

1. The obstacles presented by Bamfurlong Lane and Bank View farm penetrate the specified approach surfaces from the existing runway threshold.
2. The current Runway End Safety Area (RESA) is only 90 metres, instead of the recommended 120 metres.

The Airport operates under a variation allowing it to retain its declared landing distance of 997 metres for runway 27. Without a programme of work to address the safety issues, the Civil Aviation Authority will inevitably require the declared landing distance available to be reduced to approximately 870 metres.

This will result in a further loss of high market end traffic of approximately 1,350 movements annually. This equates to a loss of revenue of approximately £135,000 in landing fees and £200,000 in fuel sales.

The situation is exacerbated by changing rules, which require the Airport to increase its number of air traffic controllers and fire fighters from 2005.

By necessity, airport charges must remain high to support the levels of service currently provided. These will become increasingly uncompetitive with neighbouring private airfields (such as Kemble), which only provide the basic levels of Air Traffic Control and fire service required for club flying. Flying schools will find it increasingly difficult to attract new business and some operators will be encouraged to move away.

The overall effect will be to make the Airport unprofitable in its present form. Air Traffic Control and the Airport Fire Services would need to be scaled down to a level compatible with basic club flying only. Gloucestershire Airport would lose its present 'super-GA' status, and the ability to develop its commercial aviation potential would be lost for a generation.

THE WAY FORWARD

The management believe that the Airport should have three principal aims:

- To expand the business, thereby increasing its turnover and profitability for the benefit of the shareholders.
- To provide direct and indirect employment for more people in Gloucestershire.
- To provide a better service for the community.

Because there is limited scope for achieving these aims from current income sources, the key to increasing revenue from the flying operation is therefore to:

- Increase the number of aircraft operating when the weather is not suitable for private pilot training and recreational aircraft.
- Increase the number of commercial training flights.
- Increase the revenue from each movement by attracting larger aircraft. These generate higher landing fees, increased passenger/freight handling charges and purchase more fuel.

To achieve this requires work to remove the major obstacles at both ends of the main instrument runway 27/09, construct a Runway Extension Safety Area (RESA) at the Western end and install an Instrument Landing System on runway 27. Much of the background to the obstacle work has been well documented in previous reports but, since it is central to the plans presented in this document, it is beneficial to review it here.

Western End

67 metres beyond the Western end of the runway, the land falls away sharply to Norman's Brook. Beyond this lies the property of Blenheim House, which comprises a house and extensive outbuildings forming a kennels business.

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The current RESA for runway 27 is limited to 90 metres (instead of the recommended 120 metres), and this is achieved only by designating otherwise usable runway surface as part of the RESA. The runway therefore has a minimum length RESA, which terminates in a sharp drop to the brook – a far from ideal situation for an overrunning aircraft to encounter.

The recommended 120 metres RESA can be achieved by constructing a culvert for the brook, removing the Blenheim House buildings and re-routing the present public footpath that follows the course of the brook. This would also release some existing runway surface to be allocated as part of the landing distance available for the runway.

This work would have the additional benefit of removing obstruction hazards to aircraft landing in the opposite direction, on runway 09. This would allow 09 to meet the requirements for a precision approach runway, permitting the installation of an Instrument Landing System on this runway at a later date.

Eastern End

To the Eastern end of the runway is a rising land bank, carrying Bamfurlong Lane. Although the bank in itself is not a major problem, there is a requirement to add 4.8 metres to the ground elevation to allow for the possibility of high-sided vehicles passing as aircraft land. The overall height then forms a penetrating obstacle to the specified approach safety surface to runway 27. This difficulty extends to the Airport entrance road and the access road leading down to Bamfurlong hamlet, which themselves become penetrating obstacles.

Also located in this area are the old farmhouse and outbuildings of Bank View Farm, which similarly penetrate the approach surface, adding to the safety hazard.

One effect of these obstacles is to require the touchdown point for runway 27 to be displaced well down the runway, effectively reducing the landing distance available to only 997 metres. A further, less well-documented consequence of these obstacles is to impose a serious restriction on the performance of such aircraft types having to take-off from runway 09. There is a requirement for departing aircraft to be able to clear obstacles in the climb-out path with one engine inoperative. The analysis done on the performance of the Shorts 3.60 aircraft, by a prospective start-up operation, showed that it could take off with a full passenger load on runway 27, but lost 10 passengers from its payload whenever the surface wind conditions required the use of runway 09.

These problems can be addressed by demolishing the farm buildings, relocating the airport entrance road away from the runway and introducing traffic control on Bamfurlong Lane. A further benefit would be to allow runway 27 to be classified as a precision approach runway, permitting the installation of the ILS, described earlier.

Benefits

The combined effects of the work at the Eastern and Western ends of the runway would be to:

- Greatly improve safety by removing obstructions from the runway ends and provide the recommended 120-metre RESA at the Western end of runway 27.
- Improve the landing distance available on runway 27 from 997 metres to almost 1,165 metres, making it suitable for a wide range of popular business aircraft.
- Allow unrestricted take-off performance from runway 09 for a similarly wide range of aircraft.
- Permit the installation of an Instrument Landing System on runway 27.
- Allow runway 09 to meet the safety requirements for a precision approach runway, permitting the future installation of an ILS at this end of the runway, as developing traffic justifies it.

YEARS 1 AND 2

Years 1 and 2 of this plan deal with the major capital expense projects associated with the Eastern and Western ends of the main runway, as described above. The work at each end can be regarded as of equal importance, with the full benefits only being derived when both ends are completed. The proposed work plan is as follows:

Western End

- Construct a replacement dwelling and outbuildings for Blenheim House on land within the Airport boundary, adjacent to Poplar Cottage. Demolish all current Blenheim House buildings. Tewkesbury Borough Council have indicated support for this proposal, in principle.
- Culvert Norman's Brook and raise the land level to that of the runway.
- Grade the land to create a 120-metre RESA surface on the reclaimed land, extending to the Cheltenham Road.
- Erect a security fence and re-route the footpath (which currently follows the course of Norman's Brook), around the outside the new RESA.
- Reallocate the acquired land to Cheltenham Borough and Gloucester City councils.

Fig. 1 shows the proposed site for Blenheim House and the new RESA construction.

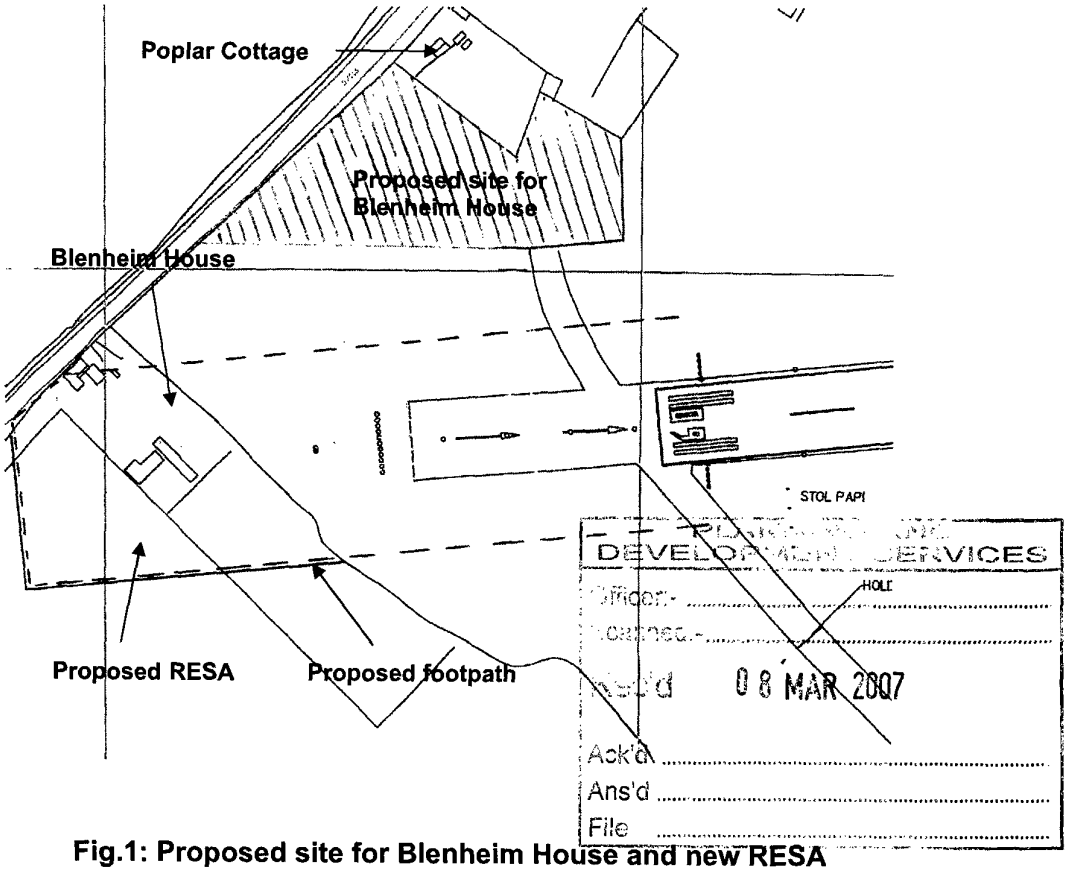

Fig.1: Proposed site for Blenheim House and new RESA

Eastern End

- Relocate the infringing Bank View Farm buildings on to lower lying land to the north east of the property.
- Construct a new Airport entrance road to a location to the South of Airport inn.
- Install Air Traffic Control operated traffic signals on Bamfurlong Lane and the access road leading to Bamfurlong hamlet. The Civil Aviation and County Highways Authorities have indicated their approval for such a scheme, in principle.

Fig. 2 shows the proposed entrance road and traffic signals.

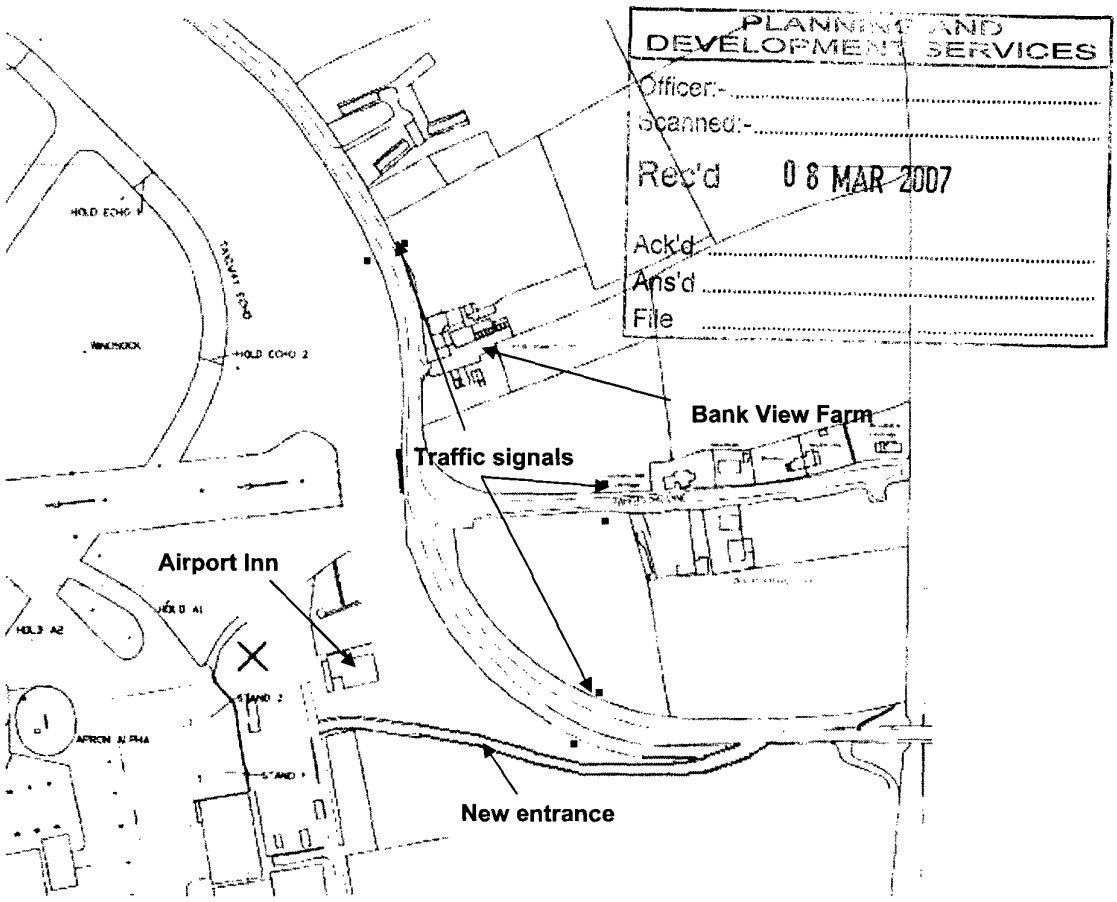

Fig. 2: Proposed relocated entrance road and traffic signals

Instrument Landing System

- Install ILS to comply with full Category 1 requirements.
- Install approach lighting.
- Revise runway markings.

Note: *The ILS cannot be commissioned until the work programme at both ends of the runway is largely completed. The reasons for this are:*

1. *Commissioning it before the Eastern end work is undertaken would cause the landing distance available for runway 27 to be reduced to about 640 metres, due to the continued presence of Bank View Farm.*
2. *Part of the ILS aerial system must be installed at the Western extreme of the runway 27 RESA. This area would not be established until the work at the Western end is completed.*

SECTION 4: OPERATIONAL PROPERTY

While potential for new development sites in the operational areas of the Airport is limited, a possible site has been identified to the North of the Jet Testing Station, in the main operational area to the Southeast of the Airport.

The company is currently taking advice on the planning possibilities in this area.

An established aircraft engineering business is looking to expand during 2007 and would be likely to take a ground lease for a 22,000 to 25,000 sq. ft. hangar on this site. Remaining areas could be developed when suitable tenants are identified.

Fig. 3 shows the proposed development area with possible hangar configurations.

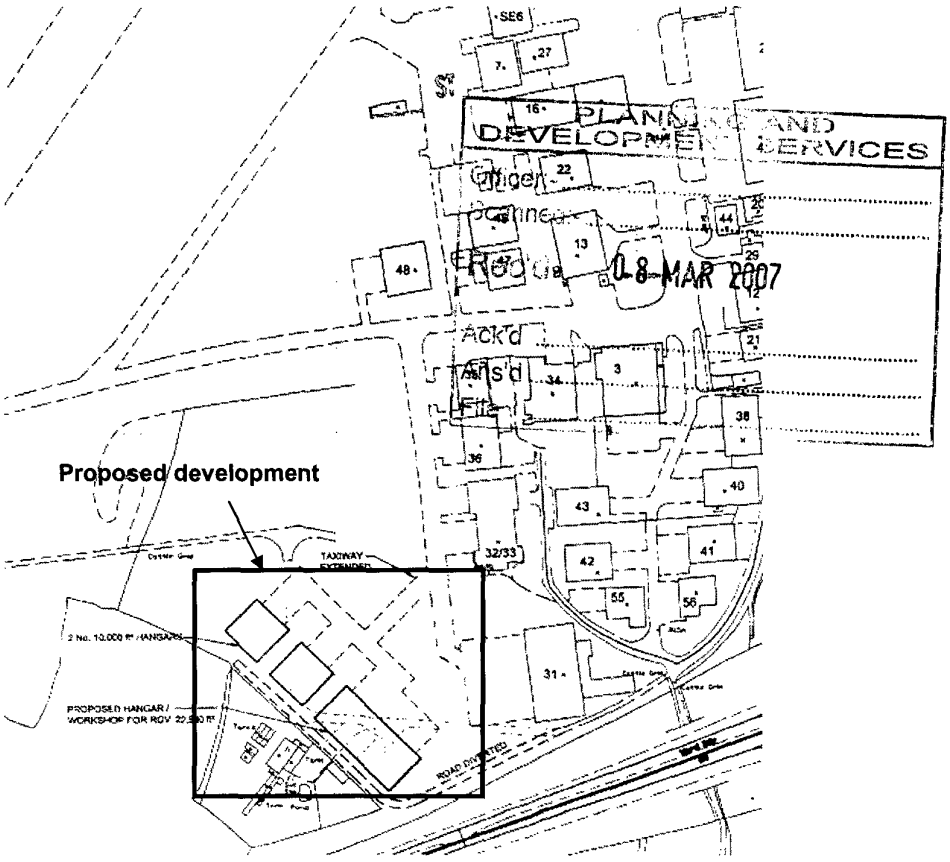

Fig. 3: Proposed new development site