

Department for Transport

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**RHASS - Edinburgh  
Airport**

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Potential Long Term  
Development Options

**FINAL**

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Potential Long Term Development Options  
Beyond 2030

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340,000ATM Options

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265,000ATM Options (2030)

## 1. STUDY OBJECTIVES

### 1.1 Introduction

The work documented in this report was carried out by Arup in conjunction with our work in the Royal Highland Showground (RHSG) Study (see report RHASS / Edinburgh Airport Potential Development Options to 2030). The RHSG Study explored the relationship between the Royal Highland Showground and Edinburgh Airport as each expands in the period to 2030. In carrying out this work it was recognised that the options developed for the design year 2030, should be evaluated in the context of what opportunities and constraints are imposed or provided beyond this date. Therefore, at the suggestion of the public sector partners (Department for Transport, the Scottish Executive and the City of Edinburgh Council), all of whom were asked to consider the post 2030 development implications of different options, a set of 'Long Term Potential Development Options' (i.e. post White Paper period) was developed.

### 1.2 Study Objectives

The objective of this parallel study was to consider the land use requirements for a range of airport developments with appropriate terminal, landside and support facilities, which could accommodate traffic growth up to 340,000 ATMs, broadly the maximum capacity of the parallel runway arrangement included in Option 8A of the Scottish Consultation Documents. No passenger forecasts have been developed beyond the 2030 forecasts in the Regional Air Service (RAS) studies, but assuming traffic growth is maintained at around the same rate as in the later years of the RAS forecasts, then it might be anticipated that the 'Ultimate Capacity' traffic levels could be reached in the next 50 to 60 years.

### 1.3 Strategic Land Use

The range of options developed sought to consider the influence of a number of variables, with each option making different compromises or trade-offs but maintaining the same basic space requirements for the RHSG and accommodating the same traffic levels at the airport. The key variables considered were:

- The level of operational flexibility and efficiency of the airport system;
- The possibility of maintaining the existing crosswind runway;
- The extent to which the Royal Highland Showground facilities are affected;
- The area of land available in the south east corner of the site for a potential high quality commercial HQ development; and
- The investment costs needed to develop the options.

### 1.4 Option Development

The following options were developed, each based on the parallel runway arrangement provided in the RAS studies, but with a number of options also including the continued use of the existing Turnhouse crosswind runway, as proposed by BAA in their consultation response. The options are illustrated in Figures 1 to 6 at the end of this report.

*Option 8A Revised (340,000ATM)* - is a logical development and expansion of the Option 8A RAS 2030 development, which seeks to provide an efficient, balanced and flexible airport site, but closes the crosswind runway and requires the relocation of the RHSG.

*Option 8D (340,000ATM)* – maintains the full RHSG site in its current location, closes the crosswind runway and allows airport expansion basically only to the east of the current terminal site.

*Option 8G (340,000ATM)* – seeks to minimise impact on the RHSG site (but allows some intervention along the northern edge) and maintains the crosswind runway.

*Option 8I (340,000ATM)* – provides an efficient, balanced and flexible airport site, maintains the crosswind runway but requires the partial relocation of the RHSG facilities.

*Option 8L (340,000ATM)* – maximises the value of the site in the south east corner and minimises the impact on the RHSG site, but closes the crosswind runway and requires early preparation to move cargo and maintenance facilities to a new location.

*Option 8M (340,000ATM)* – maximises the value of the site in the south east corner with modest impact on the RHSG site and maintains the crosswind runway but again requires early preparation to move cargo and maintenance facilities to a new location.

Each of these ‘Ultimate Development Options’ can be developed for the different 2030 options considered in the RHSG study as follows:

<b>‘Potential Long Term Development’ Options</b>	<b>2030 RHSG Options</b>
Option 8A revised (340,000ATM) – Figure 1	Option 8A revised (265,000ATM) – Figure 7
Option 8D (340,000ATM) – Figure 2	Option 8D (265,000ATM) – Figure 8
Option 8G (340,000ATM) – Figure 3	Option 8G (265,000ATM) – Figure 9
Option 8I (340,000ATM) – Figure 4	Option 8I (265,000ATM) – Figure 10
Option 8L (340,000ATM) – Figure 5	Option 8D (265,000ATM) – Figure 8
Option 8M (340,000ATM) – Figure 6	Option 8G (265,000ATM) – Figure 9

The 340,000ATM options were shown as sketches in the RHASS/Edinburgh Airport: Potential Development Options to 2030 report, but have been fine-tuned to produce the CAD drawings contained in this report. No long-term option has been developed for 8K. A variation of option 8A might be a potential option for developing 8K.

The 2030 RHSG options are also provided in Appendix B as Figures 7 to 10.

## 1.5 Assessment of options

Each of the options was assessed qualitatively against the list of key variables that was used in option development:

- The level of operational flexibility and efficiency of the airport system;
- The possibility of maintaining the existing crosswind runway;

- The extent to which the Royal Highland Showground facilities are affected;
- The area of land available in the south east corner of the site for a potential high quality commercial HQ development; and
- The investment costs needed to develop the options.

## 2. PLANNING BASIS FOR OPTIONS

### 2.1 Airport Development

The sizing requirements of the airport facilities in terms of terminal building area, number of aircraft gates and area occupied by other airport facilities are identical in all of the options. These have been based on the planning parameters documented in the Arup Edinburgh and Glasgow Airports Regional Air Service (RAS) Study 3 Part A (Section 5) then scaled up proportionally based on a traffic throughput of 340,000 ATMs rather than the 265,000 ATMs used as a basis for the 2030 RAS development options. In effect, this results in each component of the airport being approximately 28% greater in size or number than the RAS 2030 options. It is recognised that this is a simplified approach which does not consider any changes to aircraft mix or size at this 'ultimate' level of traffic throughput, but it is considered that this simplification will yield adequate results for the purposes of this study.

#### 2.1.1 Runway and taxiway

For all of the options a new parallel runway (06L/24R) and its taxiway system is provided to the north of the existing main runway (06R/24L) as provided in the RHSG 2030 options. With the runway operating in independent segregated mode, the parallel runways have been calculated as having a maximum potential sustainable annual throughput of 340,000ATMs.

#### 2.1.2 Terminal Building and Stands

The terminal building is expanded to approximately 155,000m<sup>2</sup> and a total of approximately 94 aircraft stands are accommodated on site.

#### 2.1.3 Airport Support Facilities

A total of 7,735 short term and 26,265 long-term car parking spaces are included to support the airport. Approximately 70% (18,385) of the long-term car parking spaces are located within the site boundary identified on the drawings, with the remaining 7,880 spaces located off-site. A total area of 77 ha is included in the option for on site support facilities. Expanded cargo facilities (43 ha) and maintenance facilities (31 ha) are included in each layout.

#### 2.1.4 Surface Access

All options include a direct highway link to the M8 as well as two separate access roads from the A8 to the airport. The proposed tunnelled heavy rail link with an integrated terminal station is also included in each option. For referencing purposes, we have included on the plans the alignment for the proposed tram included in the recently released planning consultation documents, but have not at this stage integrated the tram into the development proposals.

### 2.2 RHSG Development

As in the RHASS/Edinburgh Airport Potential Development Options to 2030 study, all the options developed maintain an equivalent area of land for the Royal Highland Showground. The development of options considered that if an area of land was impacted it had to be replaced by an equivalent area. The showground is composed of two main areas: the core area, which is used as the main exhibition area, and the non-core area, which is used for supporting activities such as the public market and car parking. The core area represents an area of approximately 51ha and the non-core corresponds to 69ha for a grand total of 120ha.

### 3. DESCRIPTION OF OPTIONS

In the following section we have described the key features of the 'Potential Long Term Development Options' and provided a high level summary assessment relating to the key attributes listed in Section 1.5. An explanation of the differences between the '340,000ATM' and the 'RHSG 2030' (265,000ATM) development options from which they are derived is also provided.

#### 3.1 Option 8A revised (340,000ATM)

##### 3.1.1 Description

This option represents the possible long-term expansion of Option 8A (put forward in the Scottish Consultation Document) in its revised form. The revised form was developed during the Royal Highland Showground Study and assumes the closure of the existing crosswind runway (12/30). The Royal Highland Showground is relocated to the east of its current location, leaving only small areas of land to the immediate west of the existing airport access road and adjacent to the Gogar roundabout available for potential commercial development. The Option 8A Revised (340,000ATM) plan is provided in Appendix A as Figure 1 and the RHSG 2030 Option 8A revised is included in Appendix B as Figure 7.

Generally the airside is similar to the RHSG 2030 Option 8A, except the taxilane arrangement is extended to support the pier extension. Both piers on the east and west sides of the terminal are extended to accommodate additional aircraft stands. Extending the remote stand areas provided in the 2030 phase allows the additional remote stand requirement to be accommodated. The terminal processing area is expanded to the west end of the terminal.

Cargo facilities are expanded to the south of their 2030 Option 8A location, which requires the relocation of some support functions. These are relocated further south, which also allows for the expanded support facilities to be accommodated. Provision for additional maintenance facilities has been provided to the north of the northern runway (06L/24R).

##### 3.1.2 Summary Assessment

This option for airport development represents a well balanced airport plan, incorporating all the operational efficiency and flexibility advantages of the Option 8A presented in the Scottish Consultation Document. Aircraft stands are located in an efficient location, a short distance from the runway system. A dual parallel taxiway system is provided to ensure operational flexibility.

Relocation of the entire RHSG site is required. The new site is shown on the plan as being along the southern boundary of the site. The new site allows the core and non-core activities to be located adjacent to each other. However a portion of the non core area is separated by the access road and would be linked to the other areas by a pedestrian bridge.

The airport expansion and RHSG relocation leaves only 62ha (approximately) of land available for commercial development on two rather fragmented sites, therefore reducing the potential to attract a high quality HQ development.

The incremental expansion of the airport can be achieved with minimal abortive costs from unnecessary short-term relocations of facilities and therefore will have relatively low impact on the airport operation throughout the construction of the various increments. The main 'staging' costs are likely to include the relocation of various areas of surface parking for the airport and the showground.

## 3.2 Option 8D (340,000ATM)

### 3.2.1 Description

This option represents the long-term expansion of the RHSG 2030 Option 8D, which preserves the integrity of the existing Royal Highland Showground site and requires closure of the existing crosswind runway (12/30). Retaining the RHSG site forces the airport facilities to expand to the southeast, resulting in new passenger facilities further away from the runways. Only a small portion of land to the southeast of the airport remains available for potential commercial development. The Option 8D (340,000ATM) plan is provided in Appendix A as Figure 2 and the RHSG 2030 Option 8D is included in Appendix B as Figure 8.

In this option there is only a single taxiway to the western end of runway 06R/24L, which potentially could cause some taxiing delays. Apart from this the taxiway arrangement is similar to the other options. A new satellite is proposed to support additional contact gates, which will be connected to the terminal building via an underground people mover or pedestrian link. Additional remote aircraft stands are located at each end of the satellite. Additional terminal processing area is achieved by extending to the southeast of the terminal.

The introduction of the new satellite and stands requires the relocation of some of the cargo facilities and support functions. The relocated cargo facilities and expanded cargo facilities are located further to the south. This forces the relocation of support facilities which are moved to the extreme south of the site along the A8. Provision for additional maintenance facilities has been provided to the north of the northern runway (06L/24R).

### 3.2.2 Summary Assessment

Preserving the integrity of the showground means that the RHSG can continue to operate on the same site as it does today. However this forces the airport expansion to occur only to the southeast resulting in an unbalanced facility with extended taxiing distances between runways and aircraft stands. The majority of the stands can be supported by a dual dead-end taxilane system, but a limited number will only have single taxiway access, which will increase the potential for delays. This arrangement also relies on the introduction of a satellite to accommodate the additional contact stands, which will be difficult to incrementally phase and will be both costly and, due to the necessary passenger connection, potentially disruptive to construct.

The area of site remaining for potential commercial development is minimal with approximately 89ha of land available in the southeast corner.

The phased incremental expansion to this option includes various 'abortive' works. This principally includes the relocation of cargo and support facilities.

### 3.3 Option 8G (340,000ATM)

#### 3.3.1 Description

This option represents the long-term expansion of the RHSG 2030 Option 8G, which preserves the integrity of the core area of the existing RHSG site but allows a limited area of the northern edge of the non-core RHSG site to be available for airport expansion. This area of the RHSG site, used for car parking, is relocated to the south of the A8. The Option 8G (340,000ATM) plan is provided in Appendix A as Figure 3 and the RHSG 2030 Option 8G is included in Appendix as Figure 9.

The existing crosswind runway (12/30) is maintained for Visual Flight Rules (VFR) operations and the runway taxiways in the RHSG 2030 Option 8G remain unaltered. Expansion of the airport facilities beyond 2030 is forced to occur mainly to the southeast along the crosswind runway, which places these new passenger facilities relatively remotely from the main runways.

The additional aircraft stands are provided along a new satellite and at remote stands in this southeast expansion area. The satellite can be accessed by a ground level people mover system. A single taxiway, parallel to the crosswind runway is provided to service all the stands to the east of the existing terminal as well as the crosswind runway. This could cause considerable potential for delay when the crosswind runway is in use and not available as a taxiway. Additional terminal processing area is provided by expanding to the west.

Cargo facilities are expanded at their current location, requiring some landside facilities to be relocated on the eastern side of the Fife line. Maintenance facilities would also need to be relocated to make way for the new satellite, with provision for expanded facilities being made on the northern side of the main northern runway (06L/24R).

Only a small area of land to the southeast of the airport remains available for potential commercial development.

#### 3.3.2 Summary Assessment

Maintaining the crosswind for operational use and minimising the impact on the showground again forces much of the apron expansion to occur to the southeast, where it is somewhat remote from the main runways. Thus a greater proportion of the stands are serviced by a single taxiway and taxilane than the other option, when the crosswind runway is not available as a taxilane. Under these circumstances there is high potential for taxiing congestion. The introduction of a satellite can be achieved with at grade connections. This reduces the cost and disruption to operations during construction and is more desirable than a below grade solution as far as passenger service standards are concerned. However, this will introduce efficiency and operating cost penalties compared to a compact connected pier solution and makes phased incremental build difficult.

Only the northern strip of the RHSG is impacted by the airport expansion with the core area remaining unaffected. Land is required for the displaced car parking and is provided to the south of the A8.

Approximately 54ha of land is available for commercial development in the southeast corner of the site.

The phased, incremental expansion to this option includes various 'abortive' works, principally involving the relocation of the maintenance facility and some support facilities.

## 3.4 Option 8I (340,000ATM)

### 3.4.1 Description

This option represents the long-term expansion of the RHSG 2030 Option 8I, which requires some relocation and significant reconfiguration of the RHSG core site, and relocation of much of the non-core activities, principally to a site to the south of the A8. The Option 8I (340,000ATM) plan is provided in Appendix A as Figure 4 and the RHSG 2030 Option 8I is included in Appendix B as Figure 10.

The existing crosswind runway (12/30) is maintained for Visual Flight Rules (VFR) operations. Partially relocating the RHSG allows the introduction of contact stands to the south of the western pier, which is serviced by dual taxilanes.

This option enables a balanced terminal area expansion with both piers extended to accommodate the additional contact stands and terminal processing areas provided through expansion of the eastern end of the terminal. Additional remote stands are also provided adjacent to those shown in the previous phase (RHSG 2030). Generally no modification is required to the airside compared to the 2030 plans except modifying the taxilane arrangement to support the pier extension. Again, as in Option 8G, only a single taxiway parallel to the crosswind runway is provided to service all the stands to the east of the existing terminal as well as the crosswind runway. This could cause significant potential for delay when the crosswind runway is in use and not available as a taxiway.

No significant area of land remains available for potential commercial development except a small area adjacent to Castle Gogar access road. Additional facilities for cargo and the provision for relocated and expanded maintenance facilities are provided to the north of the northern runway (06L/24R). An increased area for support facilities is located adjacent to the Gogar roundabout.

### 3.4.2 Summary Assessment

Partial relocation of the showground enables a more balanced terminal area development to be achieved in the long term. However, maintaining the crosswind runway could create the potential for significant taxiing delays when this runway is operational.

This option requires some relocation and significant reconfiguration of the core RHSG activities and relocation of much of the non-core area, which will have to be relocated south of the A8.

A significantly reduced area of approximately 25ha of land would be left available in the central southern edge of the site for potential commercial development.

Abortive costs incurred when expanding from the 2030 RHSG phase will be minimal, and restricted mainly to the relocation of some of the maintenance activities.

## **3.5 Option 8L (340,000ATM)**

### **3.5.1 Description**

This option represents an alternative expansion route for the RHSG 2030 Option 8D, which seeks to maximise the development potential for the land in the southeast corner of the site, but, in order to avoid substantial abortive expansion then relocation of cargo, maintenance and support facilities, is likely to require early construction of the new northern runway. The Option 8L (340,000ATM) plan is provided in Appendix A as Figure 5 and, for reference, the RHSG 2030 Option 8D is included in Appendix B as Figure 8.

Like Option 8D (340,000ATM), Option 8L (340,000ATM) preserves the RHSG site as it currently exists. The terminal and apron configuration is essentially similar to Option 8D (340,000ATM), but the arrangement of remote aircraft stands has been adjusted slightly to reduce the land area requirements in the southeast corner. The key difference is that all the cargo and maintenance facilities are located to the north of the main runways. In order to do this and to avoid the substantial additional abortive cost of moving these facilities, the planned relocation would need to be considered before any significant expansion of the current cargo area or relocation of the maintenance facilities to this area. However, due to the airside access requirements, it would make little sense to relocate to this area without also constructing the new runway and taxiways, implying that the runway might need to be constructed before the traffic demand dictates that it is needed.

### **3.5.2 Summary Assessment**

Operationally, the airport would be similar to Option 8D (340,000ATM), with the same potential impacts on efficiency resulting from expansion only to the southeast and somewhat remote from the main runways. Similarly, the RHSG site is retained and is unaffected in this option.

The plan provides a significant increase in land available for commercial development, with approximately 141ha located along the A8 boundary of the site. However, in order to release this land and avoid substantial abortive costs, the new northern runway may have to be delivered early. This would require more 'up-front' investment.

## **3.6 Option 8M (340,000ATM)**

### **3.6.1 Description**

This option represents an alternative expansion route of the RHSG 2030 Option 8G, which seeks to increase the area of land available for commercial development in the southeast corner of the site. Like Option 8G (340,000ATM), it retains the core area of the RHSG in its current location and retains the crosswind runway (12/30). The Option 8M (340,000ATM) plan is provided in Appendix A as Figure 6 and, for reference, the RHSG 2030 Option 8G is included in Appendix B as Figure 9.

As in Option 8G, the potential development land is maximised by relocating the entire cargo and part of the maintenance facilities to the north of the new northern runway. This has exactly the same implication on the potential need to construct the new runway early.

The terminal and airside arrangement is broadly similar to Option 8G (340,000 ATMs), but the remote satellite is located to the east of the retained crosswind runway and will require a below grade rather than surface connection.

### **3.6.2 Summary Assessment**

Operationally, this option is likely to be better than Option 8G (340,000 ATMs) as the satellite is located closer to the main runways, and it is not reliant on the single taxiway to the west of the crosswind runway for access. The satellite arrangement itself is likely to be relatively costly and difficult to implement incrementally. The operational flexibility of retaining the crosswind runway is preserved in this option.

Only the northern strip of the RHSG is impacted on by the airport expansion with the core area remaining unaffected. However, land is required for the displaced RHSG car parking and is provided to the south of the A8.

A modest 79ha (approximately) of land is available for commercial development adjacent to the Gogar roundabout. Early delivery of the new northern runway might be needed to avoid substantial abortive costs. This would require more 'up-front' investment.

#### **4. SUMMARY**

The following table provides a summary of the key attributes of each of the 'Potential Long Term Development Options'.

<b>Summary Items</b>	<b>Option 8A Revised (340,000ATM)</b>	<b>Option 8D (340,000ATM)</b>	<b>Option 8G (340,000ATM)</b>	<b>Option 8I (340,000ATM)</b>	<b>Option 8L (340,000ATM)</b>	<b>Option 8M (340,000ATM)</b>
<b>Airport Layout</b> Summary of expansion required to take 2030 option from 265,000 to 340,000 ATMs	Piers extension; Some showground parking and maintenance relocation, Additional maintenance north of runway 06L/24R	New satellite with underground Automated People Mover; Partial cargo relocation, Additional maintenance north of runway 06L/24R	New satellite with surface Automated People Mover; Partial maintenance relocation and additional maintenance north of runway 06L/24R	Piers extension; Some showground parking and maintenance relocation; Additional cargo and maintenance north of runway 06L/24R	Early construction of runway required; New satellite with underground Automated People Mover; Complete cargo and maintenance relocation north of runway 06L/24R	Early construction of runway required; New satellite with underground Automated People Mover; Complete cargo relocation and additional maintenance north of runway 06L/24R
<b>Airport Operational Flexibility</b>	<b>Positive:</b> Almost all the stands are serviced by dual taxiway system minimising the risk of delay. Stands also located in good proximity of runaway system	<b>Slightly Negative:</b> There is a greater proportion of single taxiways, and the cul-de-sacs potentially increase the risk of delay. Remote stands are provided only on one side of the terminal building. High proportion of stands located remotely from runway system.	<b>Negative:</b> Only a single taxiway is available to the east of the terminal during operation of runway 12/30. The single taxiway layout potentially increases the risk of delay. Significant proportion of stands located remotely from main runways.	<b>Slightly Positive:</b> Only a single taxiway is available to the east of the terminal during operation of runway 12/30. The single taxiway layout potentially increases the risk of delay. However fewer stands are serviced by the single taxiway than in Option 8G. Stands also located in good proximity of main runaway system.	<b>Slightly Negative:</b> There is a greater proportion of single taxiways, and the cul-de-sacs potentially increase the risk of delay. Remote stands are provided only on one side of the terminal building. High proportion of stands located remotely from runway system.	<b>Neutral:</b> Two single taxiways are available to the east of the terminal during operation of runway 12/30. The single taxiway layout potentially increases the risk of delay. However the impact is reduced compared to option 8G. High proportion of stands located close to the main runways.
<b>Runway Flexibility</b>	<b>Slightly Negative:</b> Crosswind runway closed	<b>Slightly Negative:</b> Crosswind runway closed	<b>Slightly Positive:</b> Crosswind runway retained	<b>Slightly Positive:</b> Crosswind runway retained	<b>Slightly Negative:</b> Crosswind runway closed	<b>Slightly Positive:</b> Crosswind runway retained

Summary Items	Option 8A Revised	Option 8D	Option 8G	Option 8I	Option 8L	Option 8M
<b>Passenger convenience</b>	<b>Positive:</b> All the additional contact stands can be accommodated at the terminal through the extension of both piers. Bussing stands located in the vicinity of the terminal providing short bus journey to the stand.	<b>Negative:</b> Some additional contact stands are accommodated at the satellite with below grade connection. Remote stands located some distance from the terminal providing longer bus journey to the stands.	<b>Slightly Negative:</b> All additional contact stands are accommodated at the satellite, but accessed via an at grade connection. Remote stands located some distance from the terminal providing longer bus journey to the stands.	<b>Positive:</b> All the additional contact stands can be accommodated at the terminal through the extension of both piers. Remote stands located in the vicinity of the terminal providing short bus journey to the stands.	<b>Negative:</b> Some additional contact stands are accommodated at the satellite with below grade connection. Remote stands located some distance from the terminal providing longer bus journey to the stands.	<b>Negative:</b> All additional contact stands are accommodated at the satellite with below grade connection. Remote stands located some distance from the terminal providing longer bus journey to the stands.
<b>Royal Highland Showground Site Layout</b>	<b>Negative:</b> Requires the complete relocation of the Royal Highland Showground	<b>Positive:</b> Maintains the existing layout of the Royal Highland Showground	<b>Slightly Negative:</b> Requires the relocation of only a small portion of the non-core area of the showground	<b>Negative:</b> Requires the complete relocation of the Royal Highland Showground	<b>Slightly Negative:</b> Requires the relocation of only a small portion of the non-core area of the showground	<b>Positive:</b> Maintains the existing layout of the Royal Highland Showground
<b>Development Land Potential</b>	<b>Slightly Negative:</b> 62ha remain available for development	<b>Slightly Positive:</b> 89ha remain available for development	<b>Slightly Negative:</b> 54ha remain available for development	<b>Negative:</b> 25ha remain available for development	<b>Positive:</b> 141ha remain available for development	<b>Slightly Positive:</b> 79ha remain available for development
<b>Development cost differences of major items to expand from 265,000ATM to 340,000ATM options</b>	<b>Very Positive:</b> Relocation of 3.5ha of maintenance facilities and 12ha of support facilities	<b>Slightly Negative:</b> Satellite with underground people mover  Relocation of 12ha of cargo facilities and 13ha of support facilities	<b>Slightly Negative:</b> Satellite with surface level people mover  Relocation of 17ha of maintenance facilities and 8ha of support facilities	<b>Very Positive:</b> 7ha of maintenance facilities relocated	<b>Negative:</b> Satellite with underground people mover  Early construction of new northern runway or up to 33ha of cargo and up to 24ha of maintenance facilities relocated	<b>Negative:</b> Satellite with underground people mover  Early construction of new northern runway or up to 33ha of cargo facilities relocated

## 5. CONCLUSIONS

The long-term airport expansion plans presented in this report provide a range of possible ways that the airport could be developed depending on the strategic land-use priorities chosen for the surrounding site. The key drivers for the choices that need to be made include:

- What priority should be given to allowing the airport room to expand flexibly and in as operationally efficient a manner as possible?
- How important is the benefit of the increased flexibility of airport operations achieved by retaining the crosswind runway?
- What priority should be given to maintaining all or part of the RHSG in its current location in the short and long term?
- What strategic value does the commercial development of the adjacent land have, and how should it be prioritised relative to development of the airport and the RHSG?
- What private and public funding is available to deliver the plans?

It is recommended that a long-term strategic land-use master plan of not just the airport but the area around it be developed so that these questions may be addressed and a long-term framework for the future development of the area provided.

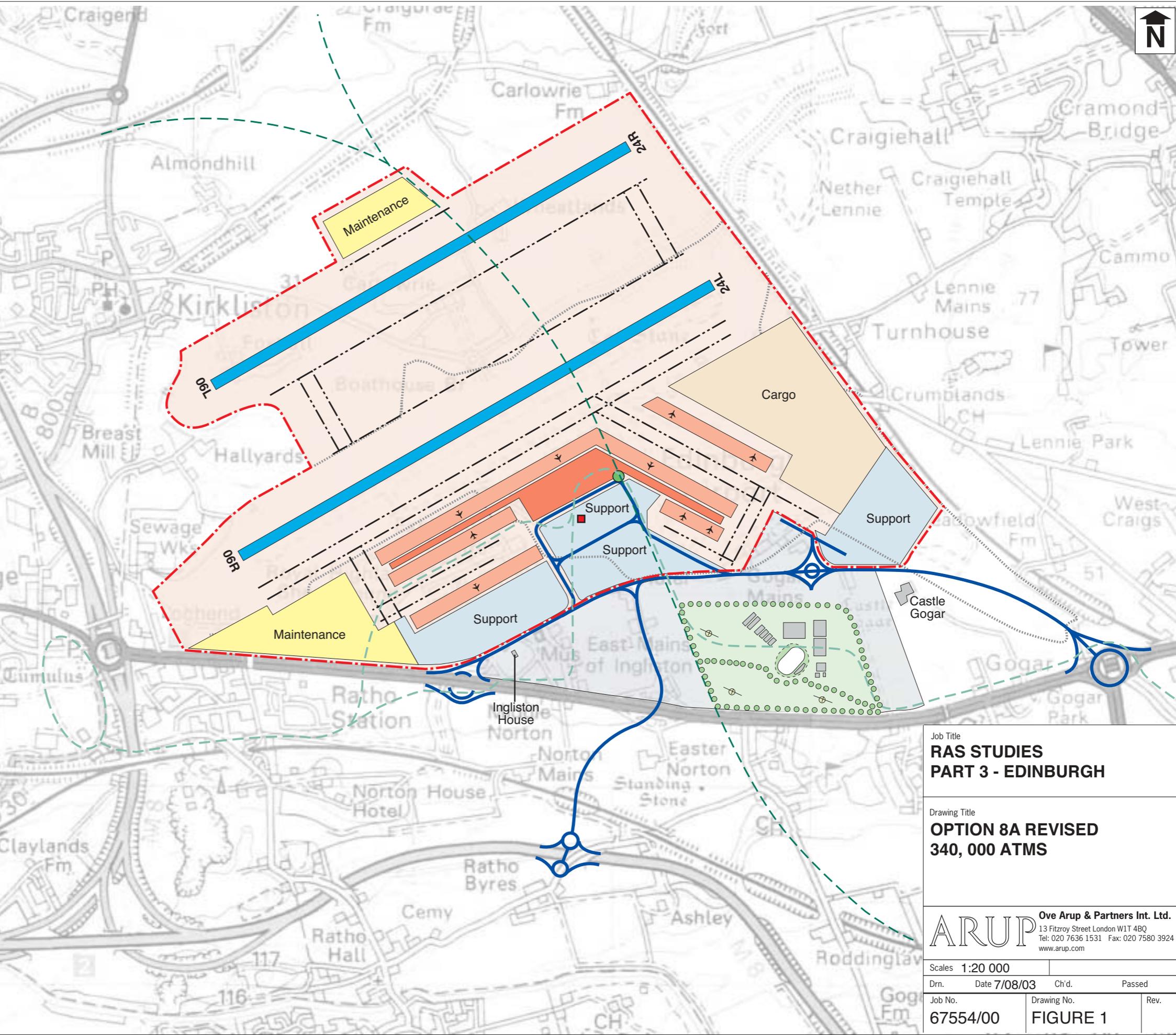
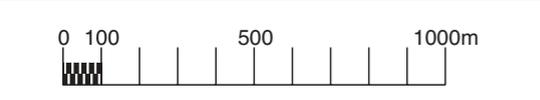
APPENDIX A

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**340,000 ATM Options**



- LEGEND**
- Runway
  - Terminals
  - Aircraft stand
  - Cargo
  - Support
  - Maintenance
  - Royal Highland Showground Core area
  - Royal Highland Showground other uses
  - New airport boundary
  - Existing airport boundary
  - Heavy rail
  - Taxiway/taxi lane
  - Road access
  - Tram route, consultation proposal (includes 2 alternative alignments)
  - Proposed Air Traffic Control
  - Railway Station



Job Title  
**RAS STUDIES  
 PART 3 - EDINBURGH**

Drawing Title  
**OPTION 8A REVISED  
 340, 000 ATMS**

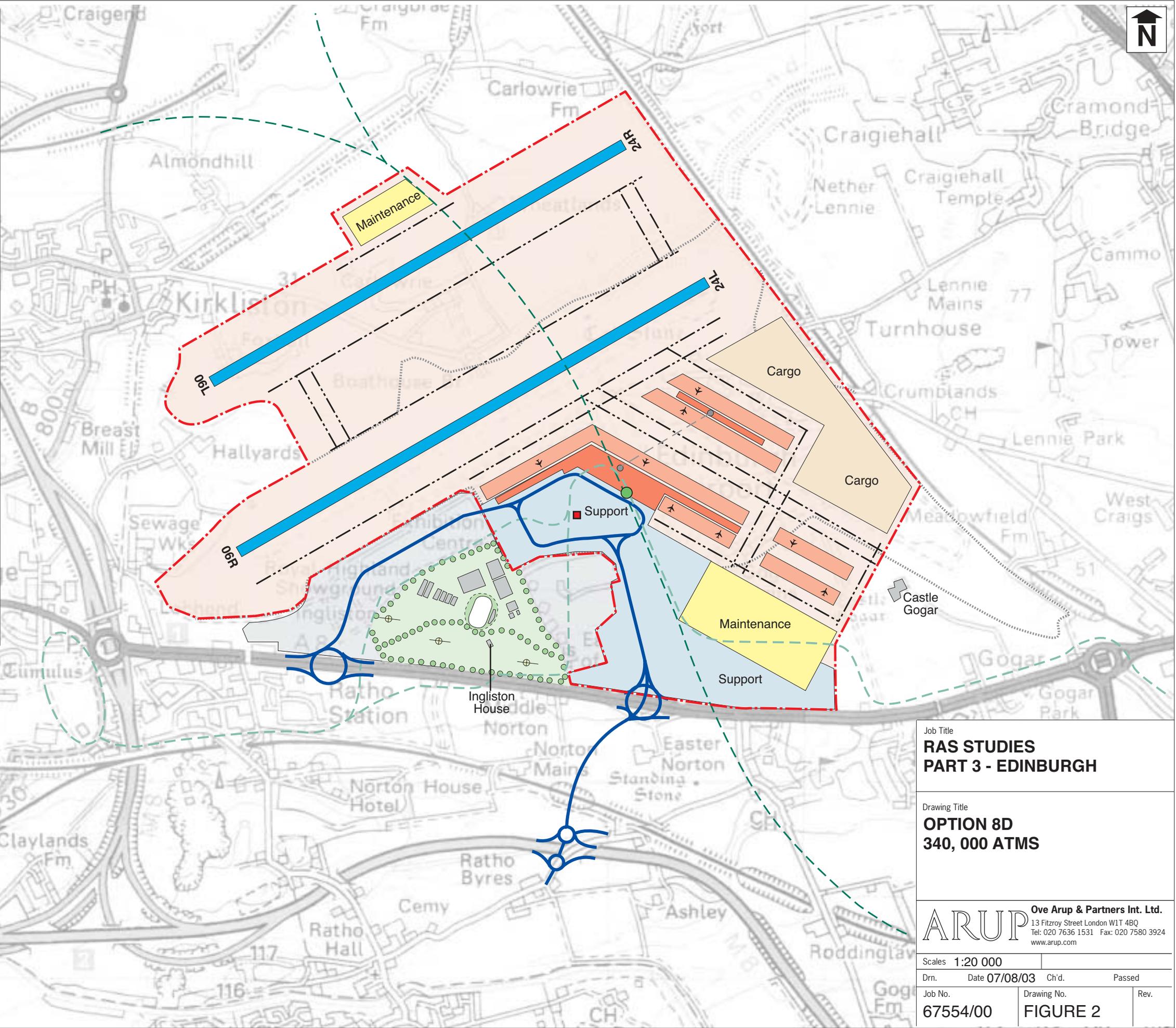
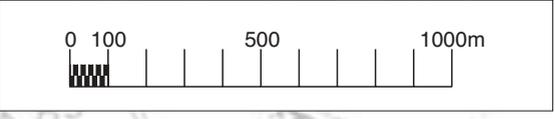
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Scales 1:20 000		
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67554/00	FIGURE 1	

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ED1/5/9/03

- LEGEND**
- Runway
  - Terminals
  - Aircraft stand
  - Cargo
  - Support
  - Maintenance
  - Royal Highland Showground Core area
  - Royal Highland Showground other uses
  - New airport boundary
  - Existing airport boundary
  - Heavy rail
  - Taxiway/taxi lane
  - Road access
  - TIE Proposed tram route (includes 2 alternative alignments)
  - Underground APM
  - Proposed Air Traffic Control
  - Railway Stations



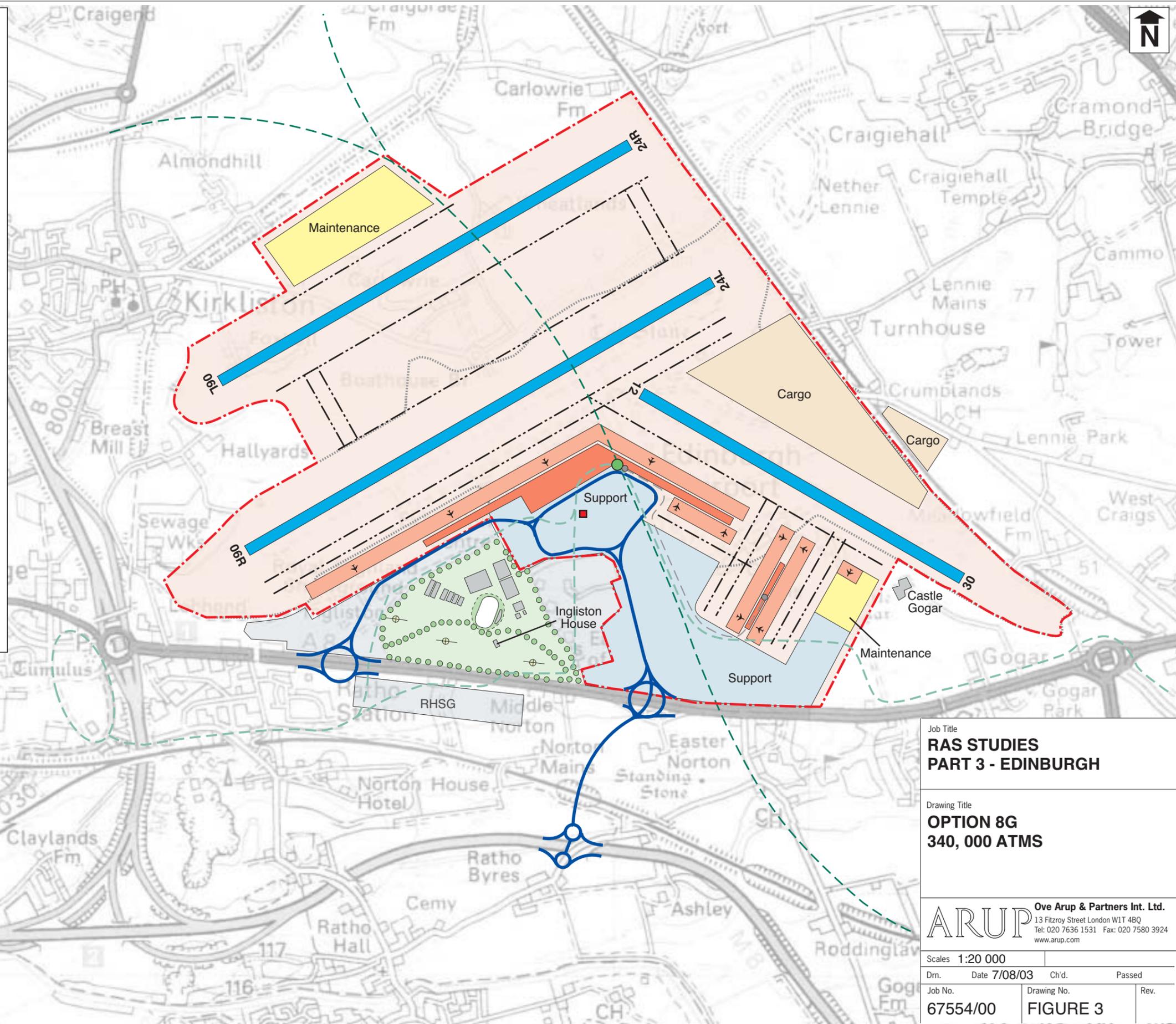
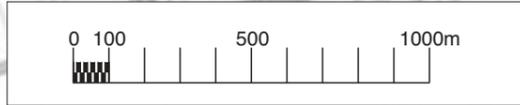
Job Title		
<b>RAS STUDIES PART 3 - EDINBURGH</b>		
Drawing Title		
<b>OPTION 8D 340, 000 ATMS</b>		
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Job No.	Drawing No.	Rev.
<b>67554/00</b>	<b>FIGURE 2</b>	

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ED1/5/9/03

**LEGEND**

- Runway
- Terminals
- Aircraft stand
- Cargo
- Support
- Maintenance
- Royal Highland Showground Core area
- Royal Highland Showground other uses
- New airport boundary
- Existing airport boundary
- Heavy rail
- Taxiway/taxi lane
- Road access
- Tram route, consultation proposal (includes 2 alternative alignments)
- Surface APM
- Proposed Air Traffic Control
- Railway Station



Job Title  
**RAS STUDIES  
 PART 3 - EDINBURGH**

Drawing Title  
**OPTION 8G  
 340, 000 ATMS**

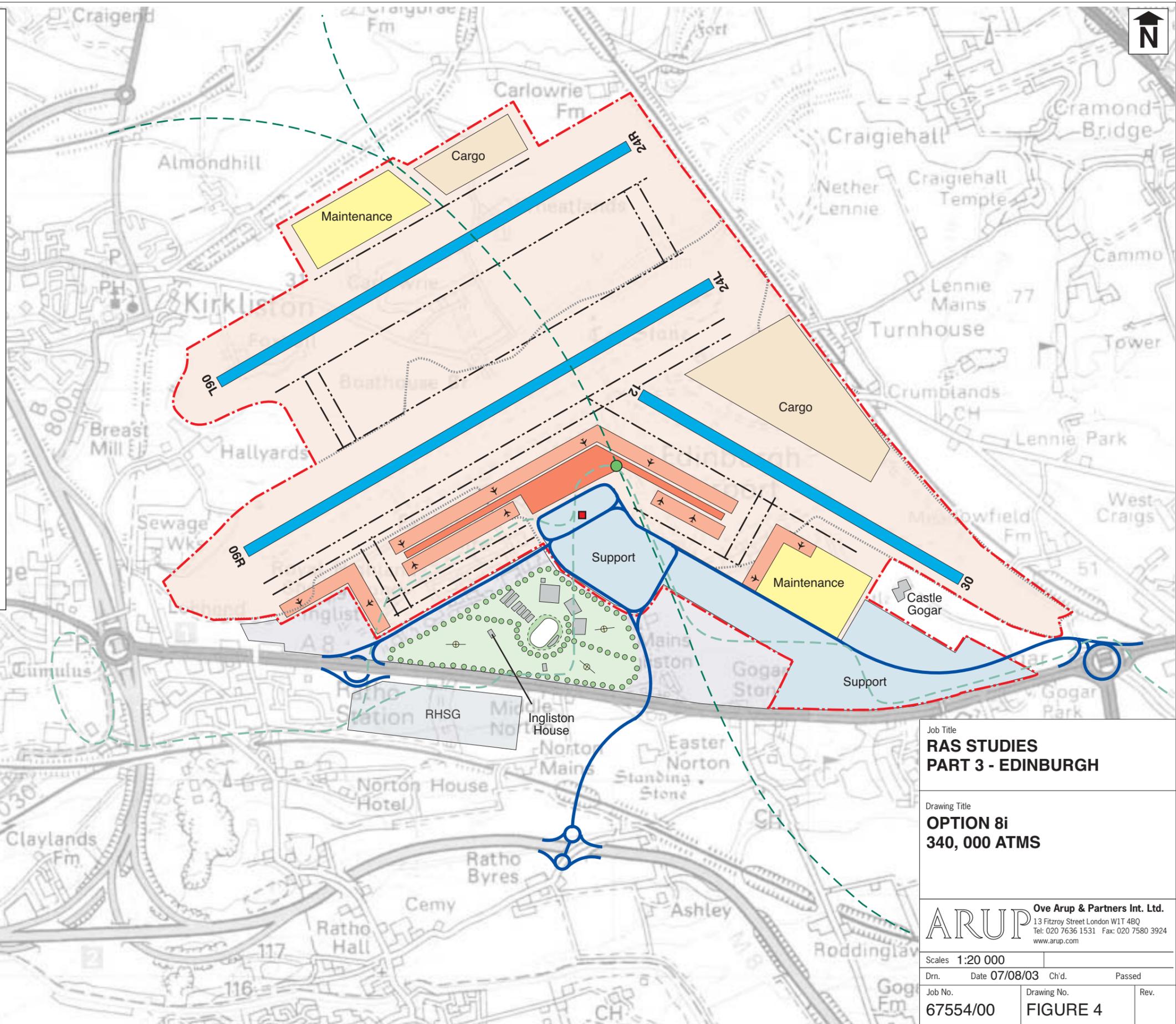
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Job No. 67554/00	Drawing No. FIGURE 3	Rev.	

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ECLT/5/9/03

- LEGEND**
- Runway
  - Terminals
  - Aircraft stand
  - Cargo
  - Support
  - Maintenance
  - Royal Highland Showground Core area
  - Royal Highland Showground other uses
  - New airport boundary
  - Existing airport boundary
  - Heavy rail
  - Taxiway/taxi lane
  - Road access
  - Tram route, consultation proposal (includes 2 alternative alignments)
  - Proposed Air Traffic Control
  - Railway Station



Job Title  
**RAS STUDIES  
 PART 3 - EDINBURGH**

Drawing Title  
**OPTION 8i  
 340, 000 ATMS**

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Scales 1:20 000			
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Job No. 67554/00	Drawing No. FIGURE 4	Rev.	

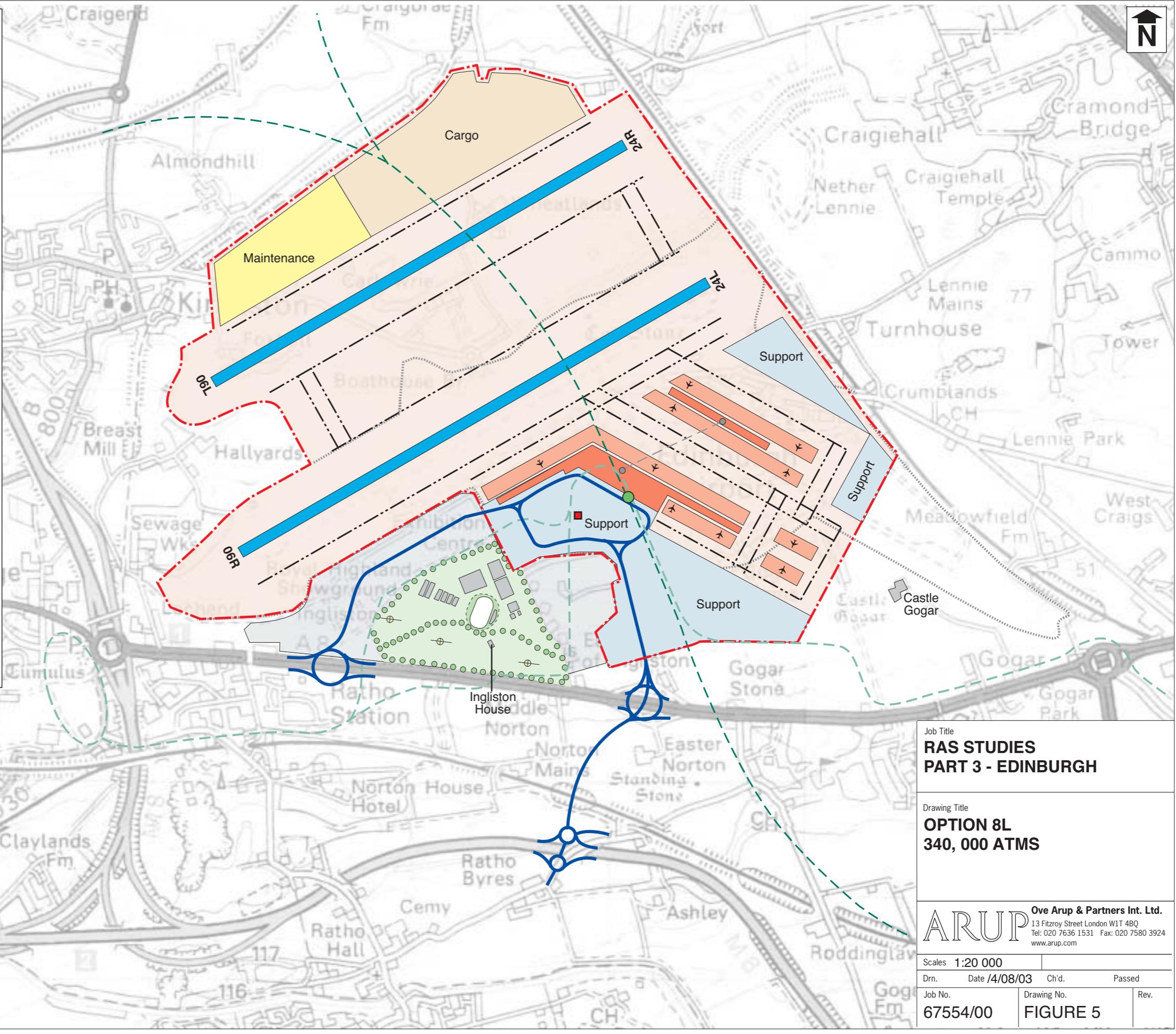
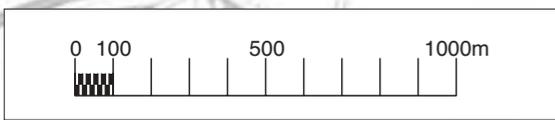
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ED1/5/9/03



**LEGEND**

- Runway
- Terminals
- Aircraft stand
- Cargo
- Support
- Maintenance
- Royal Highland Showground Core area
- Royal Highland Showground other uses
- New airport boundary
- Existing airport boundary
- Heavy rail
- Taxiway/taxi lane
- Road access
- TIE Proposed tram route (includes 2 alternative alignments)
- Underground APM
- Proposed Air Traffic Control
- Railway Stations



Job Title  
**RAS STUDIES  
 PART 3 - EDINBURGH**

Drawing Title  
**OPTION 8L  
 340, 000 ATMS**

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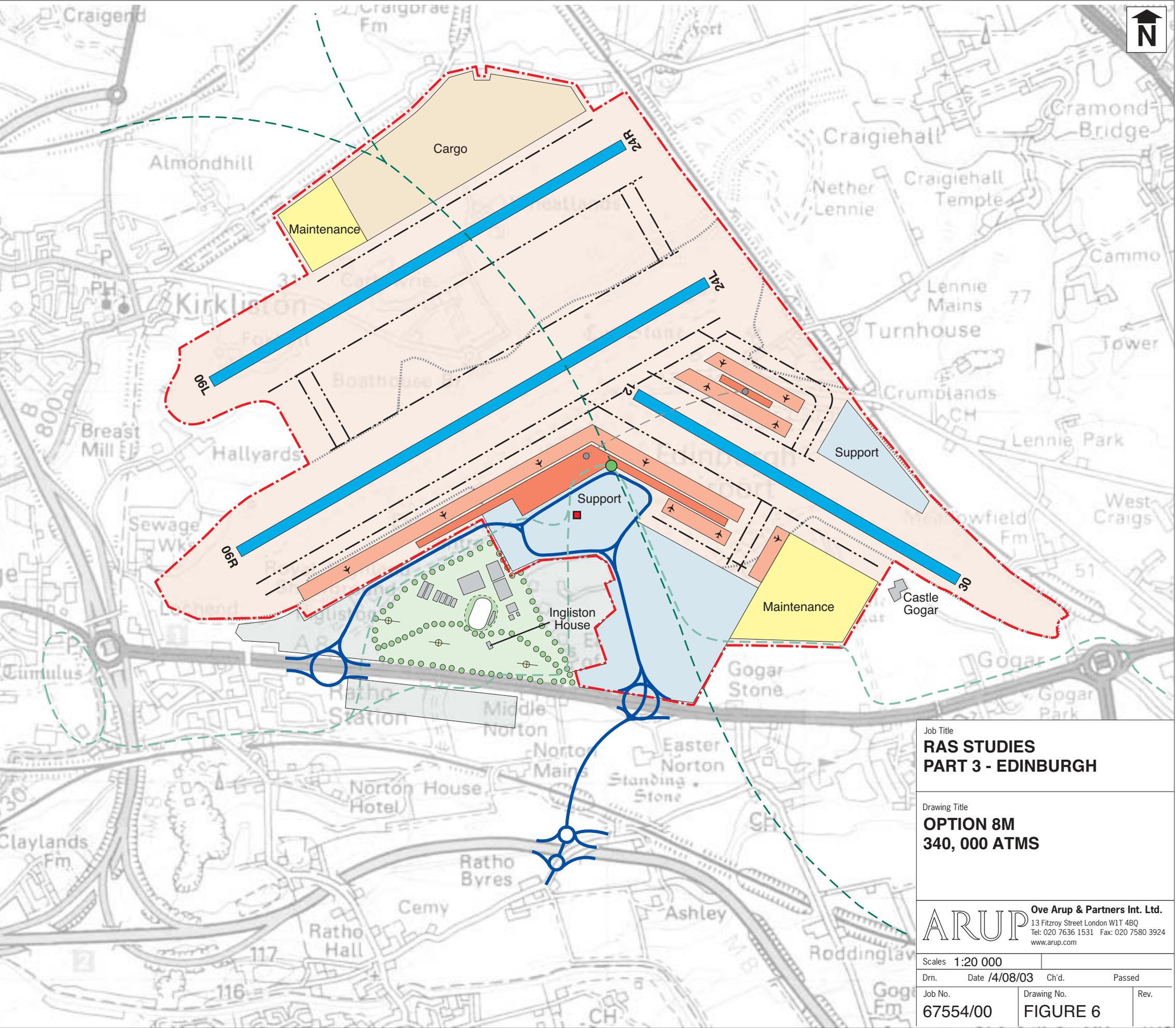
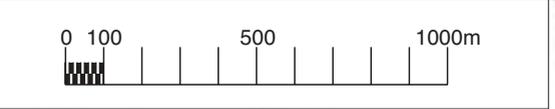
Scales 1:20 000			
Drn.	Date /4/08/03	Ch'd.	Passed
Job No.	Drawing No.	Rev.	
<b>67554/00</b>	<b>FIGURE 5</b>		

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ED1/6/9/03



- LEGEND**
- Runway
  - Terminals
  - Aircraft stand
  - Cargo
  - Support
  - Maintenance
  - Royal Highland Showground Core area
  - Royal Highland Showground other uses
  - New airport boundary
  - Existing airport boundary
  - Heavy rail
  - Taxiway/taxi lane
  - Road access
  - Underground APM
  - TIE Proposed tram route (includes 2 alternative alignments)
  - Proposed Air Traffic Control
  - Railway Stations



Job Title  
**RAS STUDIES  
 PART 3 - EDINBURGH**

Drawing Title  
**OPTION 8M  
 340, 000 ATMS**

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Scales 1:20 000		
Drn.	Date /4/08/03	Ch'd. Passed
Job No. <b>67554/00</b>	Drawing No. <b>FIGURE 6</b>	Rev.

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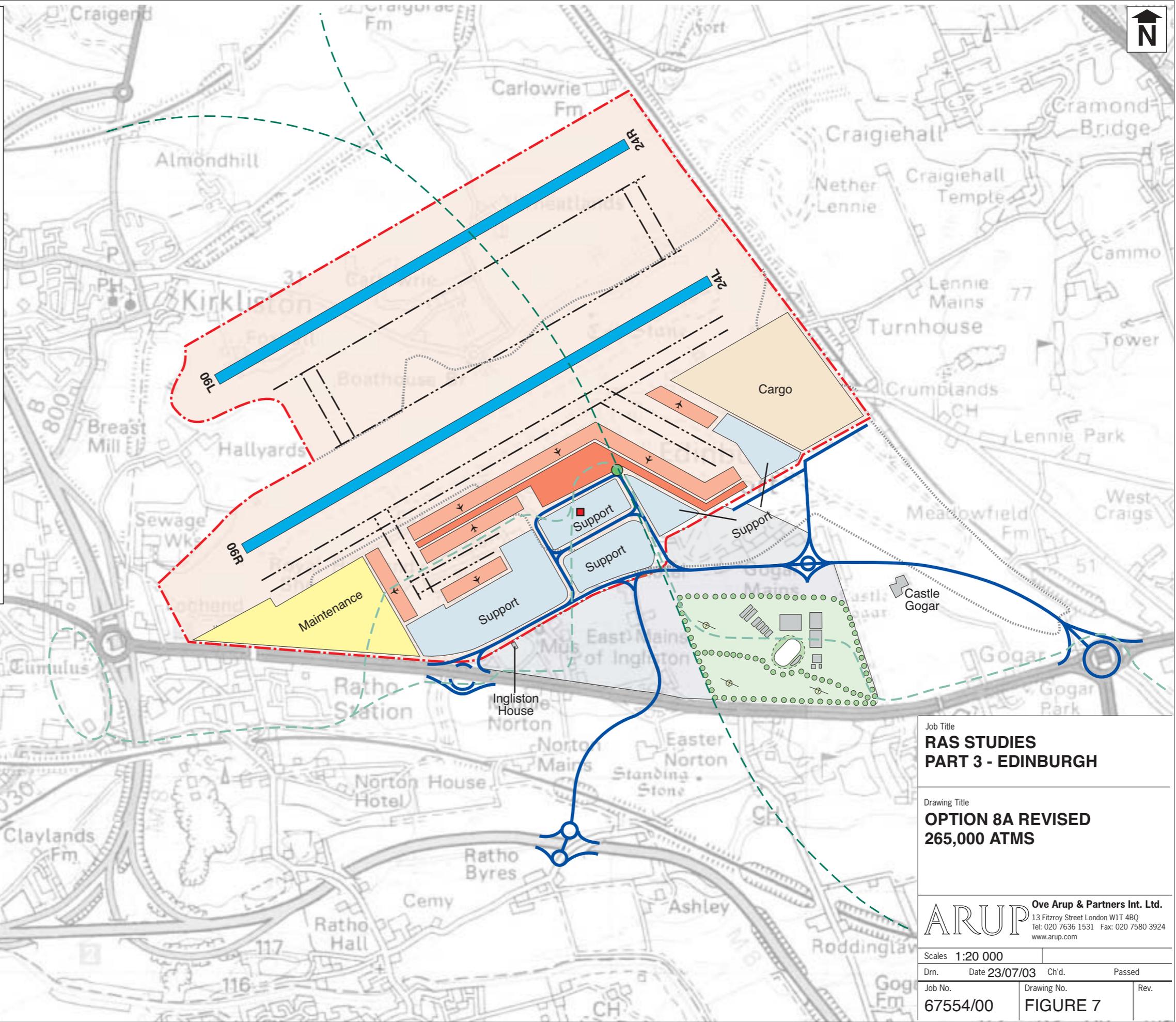
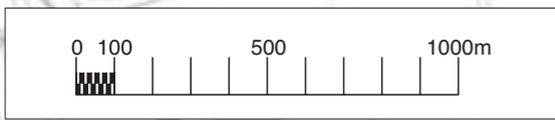
ED17/5/03

APPENDIX B

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**265,000 ATM Options  
(2030)**

- LEGEND**
- Runway
  - Terminals
  - Aircraft stand
  - Cargo
  - Support
  - Maintenance
  - Royal Highland Showground Core area
  - Royal Highland Showground other uses
  - New airport boundary
  - Existing airport boundary
  - Heavy rail
  - Taxiway/taxi lane
  - Road access
  - Tram route, consultation proposal (includes 2 alternative alignments)
  - Proposed Air Traffic Control
  - Railway Station



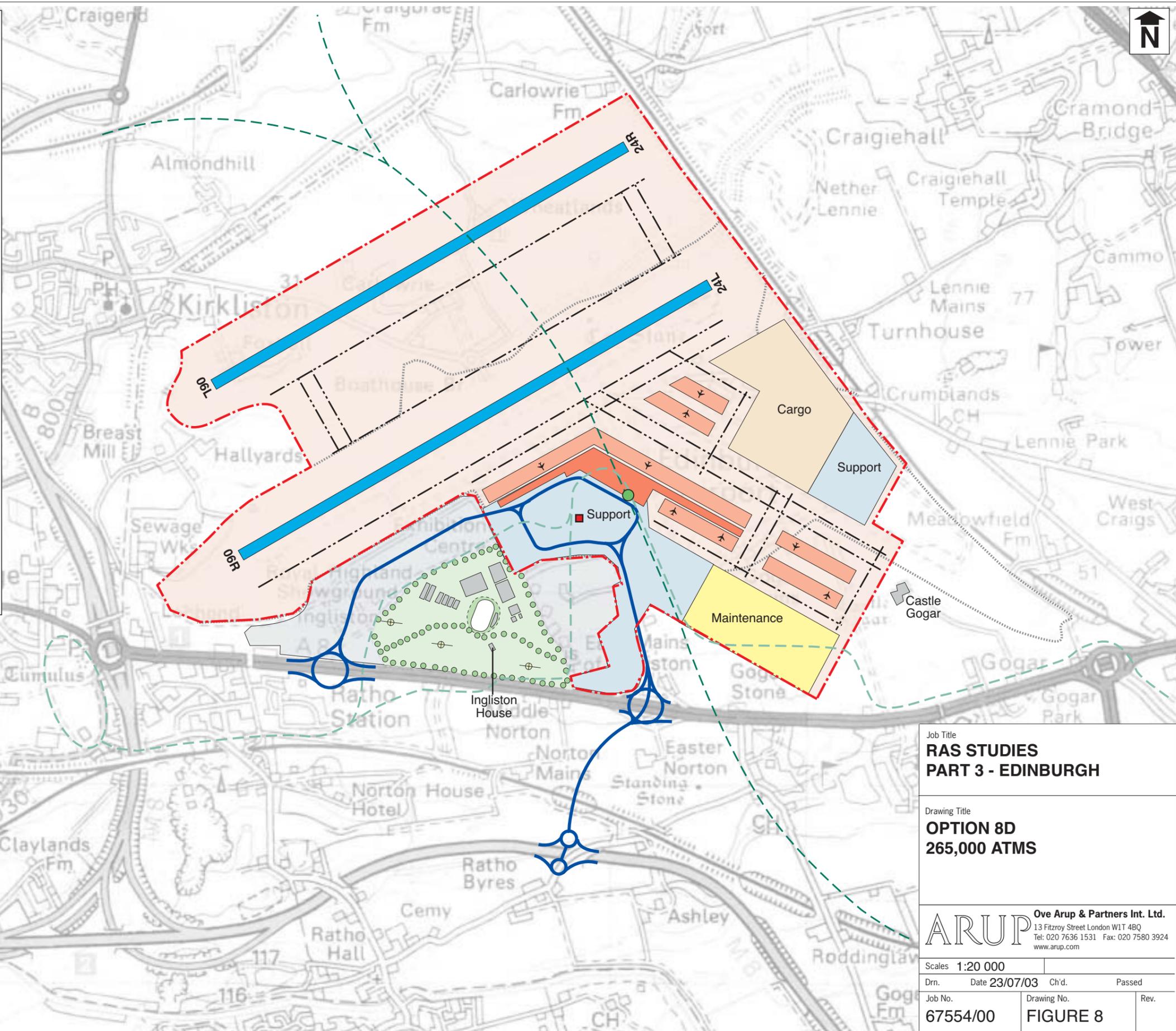
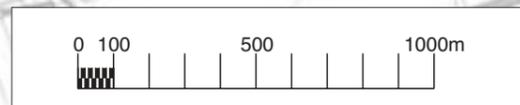
Job Title			
<b>RAS STUDIES PART 3 - EDINBURGH</b>			
Drawing Title			
<b>OPTION 8A REVISED 265,000 ATMS</b>			
<b>ARUP</b> <small>Ove Arup &amp; Partners Int. Ltd. 13 Fitzroy Street London W1T 4BQ Tel: 020 7636 1531 Fax: 020 7580 3924 www.arup.com</small>			
Scales 1:20 000			
Drn.	Date 23/07/03	Ch'd.	Passed
Job No.	Drawing No.	Rev.	
<b>67554/00</b>	<b>FIGURE 7</b>		

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30/06/09/2020

**LEGEND**

- Runway
- Terminals
- Aircraft stand
- Cargo
- Support
- Maintenance
- Royal Highland Showground Core area
- Royal Highland Showground other uses
- New airport boundary
- Existing airport boundary
- Heavy rail
- Taxiway/taxi lane
- Road access
- Tram route, consultation proposal (includes 2 alternative alignments)
- Proposed Air Traffic Control
- Railway Station



Job Title  
**RAS STUDIES  
 PART 3 - EDINBURGH**

Drawing Title  
**OPTION 8D  
 265,000 ATMS**

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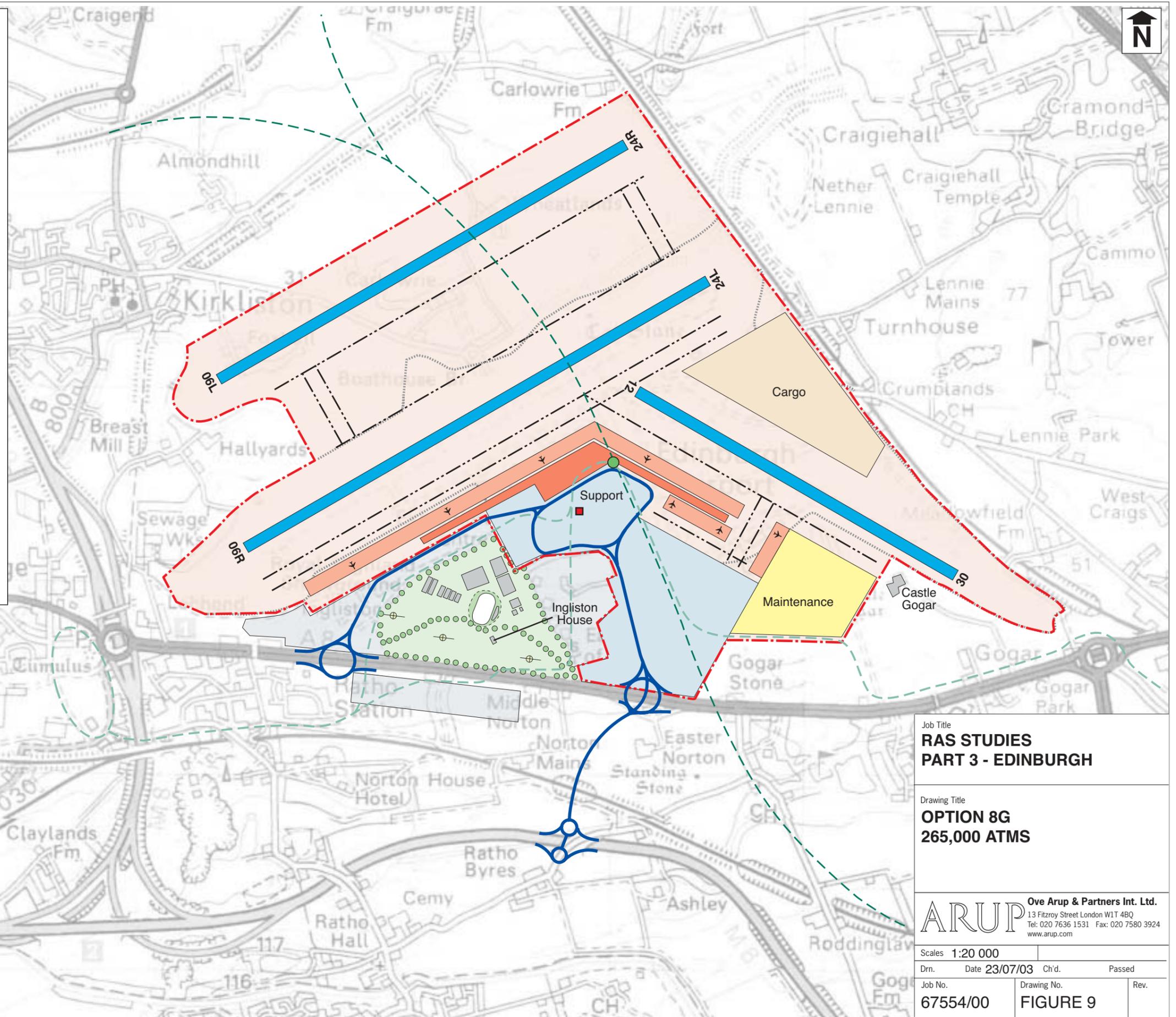
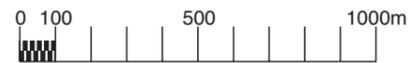
Scales 1:20 000			
Drn.	Date 23/07/03	Ch'd.	Passed
Job No. 67554/00	Drawing No. FIGURE 8	Rev.	

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ED2/5/9/03

**LEGEND**

- Runway
- Terminals
- Aircraft stand
- Cargo
- Support
- Maintenance
- Royal Highland Showground Core area
- Royal Highland Showground other uses
- New airport boundary
- Existing airport boundary
- Heavy rail
- Taxiway/taxi lane
- Road access
- Tram route, consultation proposal (includes 2 alternative alignments)
- Proposed Air Traffic Control
- Railway Station



Job Title  
**RAS STUDIES  
 PART 3 - EDINBURGH**

Drawing Title  
**OPTION 8G  
 265,000 ATMS**

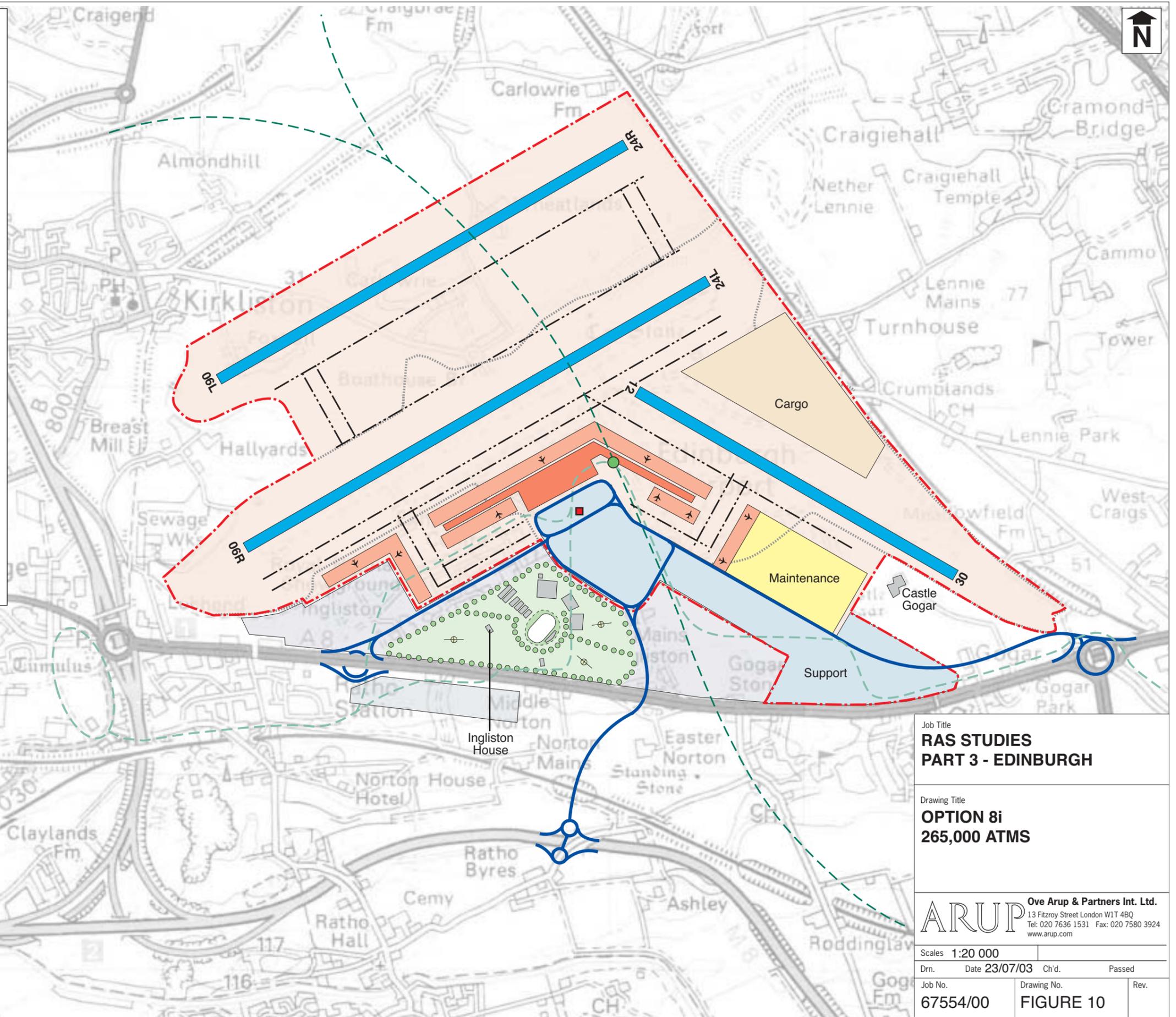
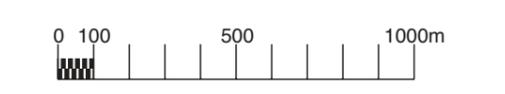
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Job No.	Drawing No.	Rev.				
67554/00	FIGURE 9					

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ED2/5/03

- LEGEND**
- Runway
  - Terminals
  - Aircraft stand
  - Cargo
  - Support
  - Maintenance
  - Royal Highland Showground Core area
  - Royal Highland Showground other uses
  - New airport boundary
  - Existing airport boundary
  - Heavy rail
  - Taxiway/taxi lane
  - Road access
  - Tram route, consultation proposal (includes 2 alternative alignments)
  - Proposed Air Traffic Control
  - Railway Station



Job Title  
**RAS STUDIES  
 PART 3 - EDINBURGH**

Drawing Title  
**OPTION 8i  
 265,000 ATMS**

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Scales 1:20 000		Drn.		Date 23/07/03	Ch'd.	Passed
Job No.	Drawing No.	Rev.				
67554/00	FIGURE 10					

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