Luton Rising
Our airport.
Our community.
Our planet.

February 2023

London Luton Airport Expansion

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Volume 7 Other Documents

7.03 Design and Access Statement

Appendix B - Part 3 of 4 (Chapter B4)

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7.03 DESIGN AND ACCESS STATEMENT APPENDIX B – SIFT REPORTS PART 3 OF 4 (CHAPTER B4)

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B4 Sift Report 3

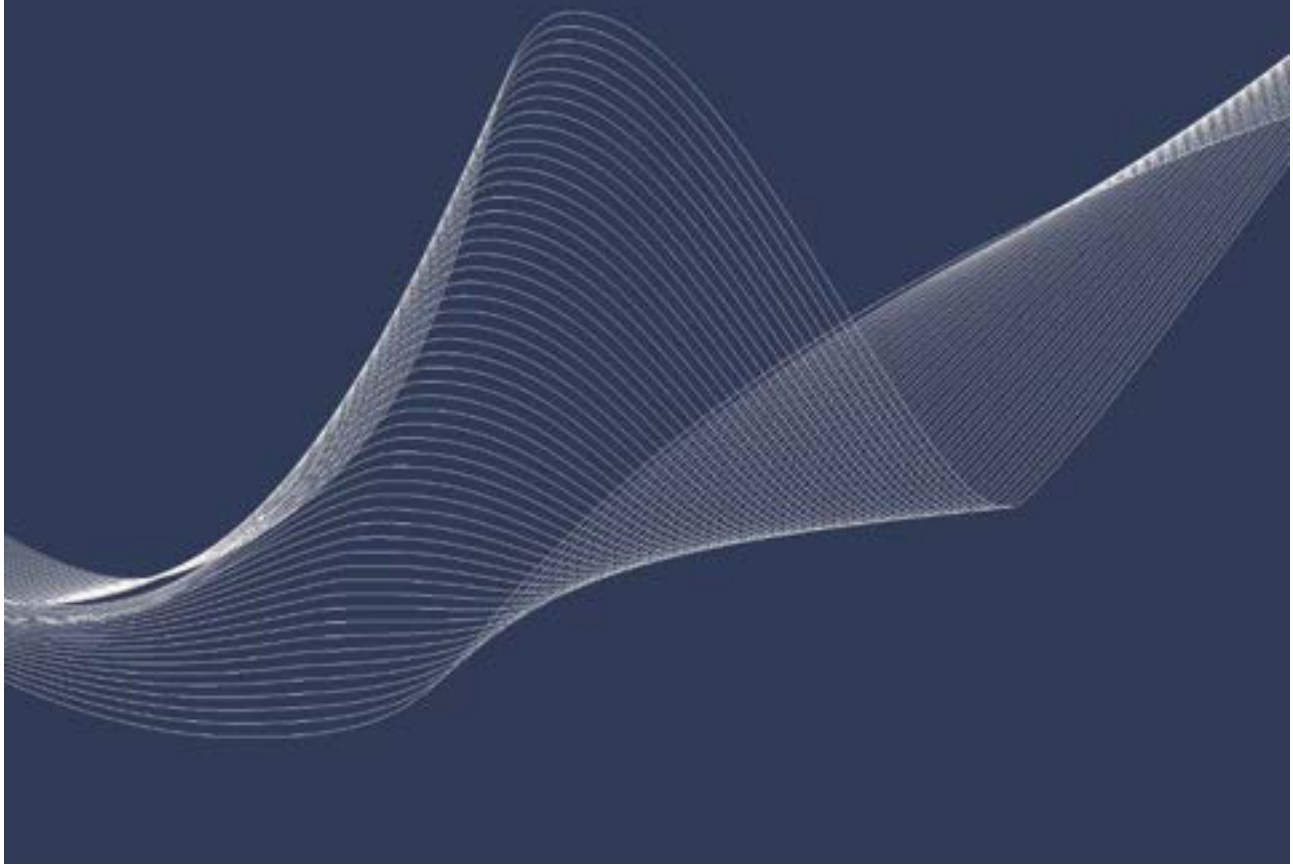
London Luton Airport Ltd
A Luton Council company

Luton Airport Expansion Project

London Luton Airport Limited (LLAL)

February 2019

Sift 3 Report, Final



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1 INTRODUCTION

1.1 Project overview

1.1.1 London Luton Airport (LTN) is the fifth largest airport in the UK and has also been the UK's fastest growing major airport over the last five years. At its present rate of growth, it is expected to reach its current permitted capacity of 18 million passengers per year during 2020. Its owner, London Luton Airport Limited (LLAL) set out a clear vision and plan for LTN's growth in its Vision for Sustainable Growth 2020-2050 published in December 2017:

"To make the best use of the existing runway at LTN to provide the maximum benefit to the local and sub-regional economy; to deliver good levels of service; and to actively manage environmental impacts at the local and wider levels in line with our commitment to responsible and sustainable development." (Ref 1.1)

1.1.2 To enable the delivery of this vision, LLAL has commissioned a multi-disciplinary consultant team to prepare a strategy for growth for LTN. As the proposals are of a scale that they are recognised to be a Nationally Significant Infrastructure Project (NSIP), LLAL apply for a Development Consent Order (DCO) under the Planning Act 2008. As part of this strategy, the Project team has undertaken a masterplanning process to develop alternative options for the expansion of the airport and to appraise these against a range of factors. This includes Government Aviation Policy, the full spectrum of economic, social, environmental and physical considerations, and LLAL's corporate vision for LTN.

1.1.3 This appraisal process for LTN has 'sifted' alternative options using a multi-stage appraisal methodology to identify which options should be taken forward or no longer considered. This sifting process is described further in Section 1.2 below.

1.1.4 The first two stages of the sift process have now been completed and the outcomes reflected in the options included in the non-statutory consultation which was held during the summer of 2018. The first two stages of sift (Sift 1 and Sift 2) are covered in two separate reports published in draft as part of the consultation, and now in final form alongside this report on Sift 3. This third stage of sifting takes into account the findings from the non-statutory consultation and additional work that has been undertaken on option development since Sift 2.

1.1.5 This report should be read in conjunction with the Non-Statutory Consultation Feedback Report. The latter sets out the overall findings from the non-statutory consultation; this report considers consultation responses to the extent that they were directly relevant to the sift process and sift criteria and notes where they have informed the back-checking of sifts 1 and 2 and the options for the Sift 3 appraisal.

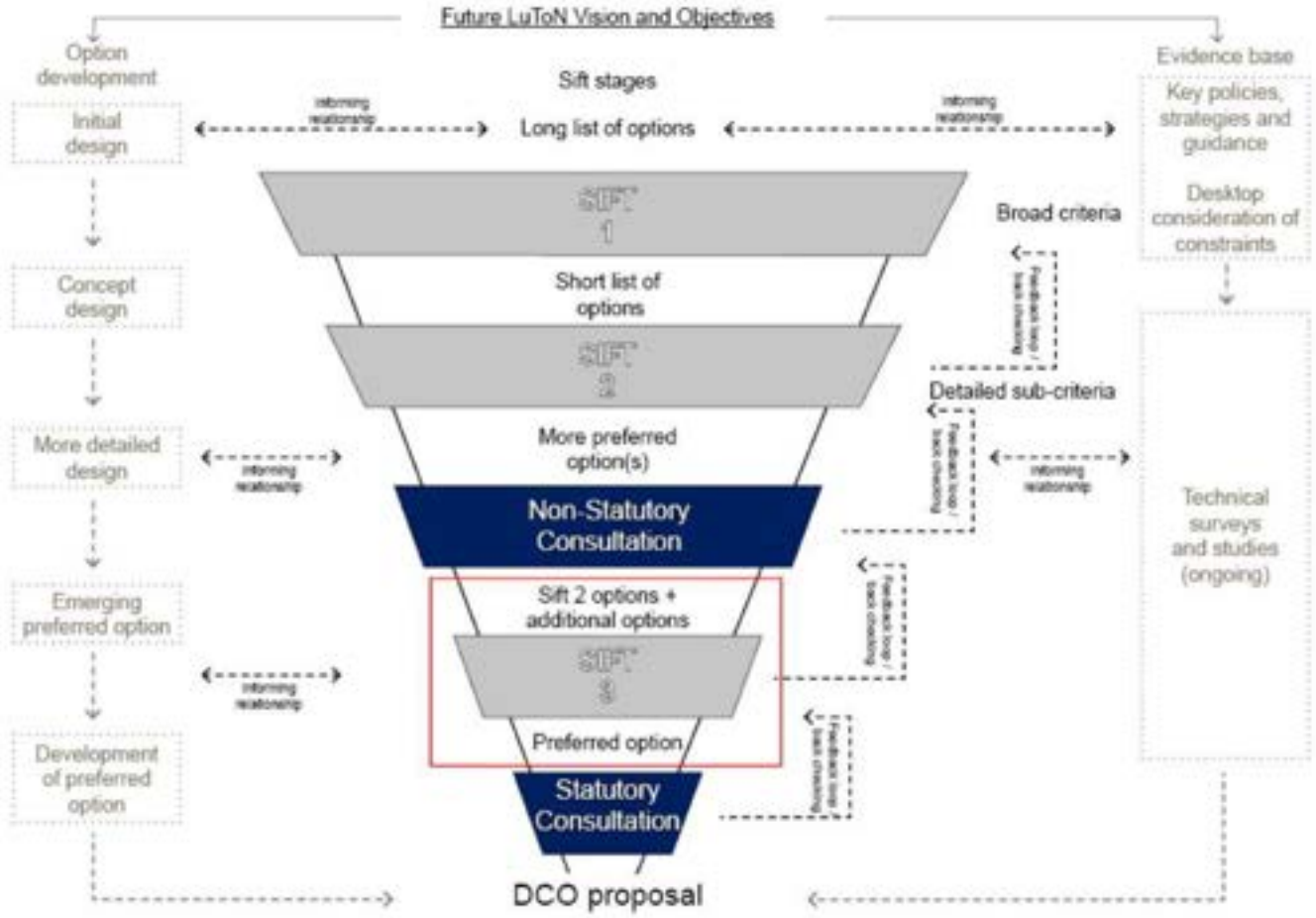
1.2 Overview of the sift process

1.2.1 The DCO process requires robust evidence to demonstrate that a range of options and their potential impacts have been considered, appraised, and then either discontinued or refined and progressed. Whilst the overall approach and key principles have been set out in detail in the earlier sift reports, we set out below an overview of the main stages of the sift process and the key outcomes.

1.2.2 The sift methodology comprises a three-stage process as illustrated in **Figure 1.1**. overleaf and is as follows:

- **Sift 1** – the purpose of the first sift was to undertake an initial appraisal of the long list of options to produce a short list of preferred options to recommend to the LLAL Board. Options were considered against a set of high level, qualitative criteria chosen to meet key Project objectives - strategic, economic, social, environmental, surface access, deliverability, operational viability and cost - and either recommended for further consideration and design development or discontinued at this stage. This stage has been completed and is covered in the Sift 1 Report.
- **Sift 2** – the purpose of the second sift was to appraise the options which remained under consideration after Sift 1. These options had the benefit of further analysis and understanding compared to Sift 1 and there had been some initial design development in order to inform the optioneering process, with some additional informational available for each option. As such, the appraisal process was designed to an improved level of detail than in Sift 1. As with Sift 1, the options that performed most strongly against a range of criteria (based on the Sift 1 criteria with further refinement) after Sift 2 were presented as the most preferred options during the non-statutory consultation in summer 2018. This stage has also been completed and is covered in the Sift 2 Report.
- **Sift 3** – taking into account feedback received from the non-statutory consultation process and additional information which has become available since Sift 2, the Sift 2 option families and additional options were revised and appraised in Sift 3 in line with the process summarised in **Figure 1.1** and explained further in Chapter 3. The aim of Sift 3 was to identify the preferred option family to be developed and taken forward to statutory consultation. The Sift 3 process is documented in this report, but should be read alongside the Non-Statutory Consultation Feedback Report.
- **Post Sift 3** – Sift 3 marks the completion of the sift process. Thereafter, the preferred option will be refined and developed. This will result in a masterplan for development of the airport which will form the basis of the proposal that will presented at statutory consultation, expected to take place in the autumn of 2019.

Figure 1.1 Sift components and the relationship with the wider project



1.3 Feedback loop / back-checking

1.3.1 The sift process is not a fixed or static process. An important element of the sifting of options is a feedback loop and back-checking which enables the LLAL consultant team to revisit appraisals when additional information emerges and/or as options evolve. It has always been the intention of the sift process to include this element of revisiting earlier appraisals to confirm our approach and findings in the light of additional information or evidence gathered as part of the option development process. Therefore as part of Sift 3, a back-check of the Sift 1 and 2 appraisals and criteria for all topics has been undertaken to confirm that the sift 1 and 2 appraisals remain valid in the light of consultation feedback and additional information arising from further technical work undertaken since Sift 2.

1.3.2 This process is set out in further detail in **Chapter 3** and the outcomes summarised in **Chapter 4**.

1.4 Outcomes of Sift 1 and 2

1.4.1 In Sift 1, three option families with different arrangements of terminal buildings, apron and other required facilities to support the achievement of around 240,000 annual aircraft movements handling up to 36-38mppa, were appraised. These were:

Option 1 – new terminal and apron capacity to the north of the runway, either:

- Option 1a – with two terminals;
- Option 1b – a single terminal complex to the west of the site;
- Option 1c – a single terminal complex to the east of the site.

Option 2 – new terminal and apron capacity to the south of the runway.

Option 3 – new terminal development with runway changes, either:

- Option 3a – realigning the runway;
- Option 3b – extending the existing runway;
- Option 3c – adding a new runway.

1.4.2 **Figure 1.2** overleaf shows the three Sift 1 option families.

Figure 1.2 Options appraised at Sift 1

1.4.3 Sift 1 was undertaken in the autumn of 2017 and appraised these seven options against a set of high level, qualitative criteria. One of these option families consisted of a two terminal option with either: a realigned (option 3a); extended (option 3b); or additional runway (option 3c). This option 3 family was not considered to be consistent with Government policy to make the best use of existing runways. In addition, all option 3 sub-options also performed very poorly on deliverability in relation to financial and technical viability on account of delivering capacity ahead of demand (second runway) and the large amount of earthworks required. The latter also increases the estimated cost of the project, as does the fact that the second runway and realigned runway sub-options would both require acquiring land outside of LLAL ownership.

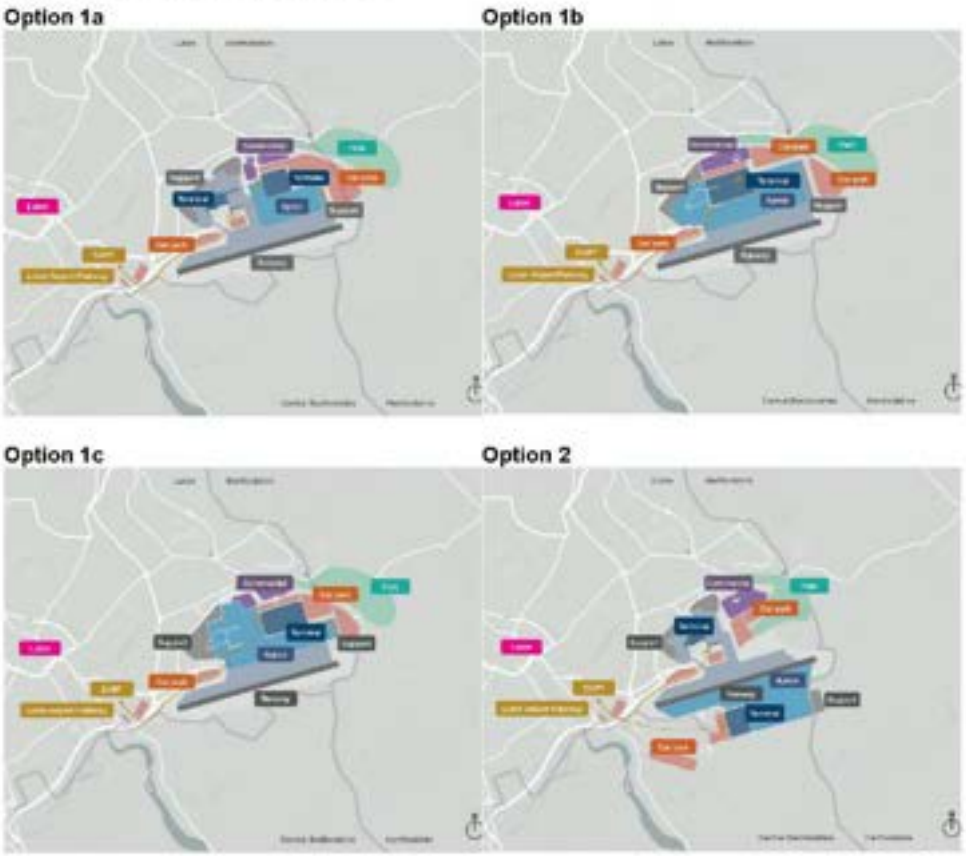
1.4.4 As a result of the factors noted above, the option 3 family was discontinued at that stage. The four remaining options – two single terminal building options and two double terminal building options – were considered as being more aligned with the overall project vision and objectives, including complying with Government policy, and were taken forward into Sift 2.

1.4.5 Following Sift 1, the remaining four options were developed further as follows:

- **Option 1a** – new terminal and apron capacity to the north of the runway, resulting in two terminals north of the runway;
- **Option 1b** – a single terminal complex to the west of the site;
- **Option 1c** – a single terminal complex to the east of the site;
- **Option 2** - new terminal and apron capacity to the south of the runway, with two terminals; one north and one south of the runway.

1.4.6 **Figure 1.3** overleaf shows the four Sift 2 options that were appraised.

Figure 1.3 Options appraised at Sift 2



1.4.7 Sift 2 was undertaken during winter/spring 2018 and its findings indicated that only one option was considered to be much less favourable than the other options. This was option 2, which represents a new terminal building and all associated infrastructure south of the existing runway. It was recommended that this option should be discontinued at this stage, subject to the outcome of the non-statutory consultation during summer 2018.

1.4.8 Option 1a performed better against the majority of the sift criteria than the other options and was considered the most preferred at this stage and presented as such during the consultation. This was because the option performed most strongly in relation to strategic fit, economic benefits, deliverability (within the context of the current concession, attractiveness to future concessionaires and not requiring additional land beyond current LLAL holdings), operational viability and cost benefit.

1.4.9 In environmental terms, option 1a performed in line with the options 1b and 1c given its similar spatial extent, and performed better than option 2

on noise, landscape and visual impact, and heritage, although marginally worse for water resources and air quality.

1.5 Overview of the consultation process

1.5.1 In summer 2018, LLAL held a consultation on proposals to expand LTN by making the best use of the existing runway. The consultation was an early-stage, non-statutory consultation on the strategic proposals. The principal objective was to seek feedback from the public, businesses, public bodies and other organisations and interest groups, so that we could reflect this feedback in our decision-making in selecting a preferred option and in developing a better scheme for both the airport and its local communities.

1.5.2 Pre-application consultation is a key part of the DCO process, and the non-statutory consultation was the first of two consultation stages for the project. The second consultation will be a comprehensive statutory consultation under the Planning Act 2008 and is planned for autumn 2019.

1.5.3 A separate report, the Non-Statutory Consultation Feedback Report, has been prepared which covers the consultation process and findings in detail. A summary is provided below.

1.5.4 The non-statutory consultation began on Monday 25 June 2018 and ended on Friday 31 August 2018. Throughout this period, all consultation materials were available online as well as at local libraries and council offices. Members of the public and other interested parties were invited to engage with the proposals, and submit their comments and answer questions on a feedback form. Twenty public consultation events were organised across the region.

1.5.5 Consultation materials included a detailed consultation document (Ref 1.2), a summary document and a consultation form, as well as a website containing the same information and allowing online feedback. The consultation materials summarised the work undertaken to date, the key issues identified, the options under consideration and the emerging more preferred option. The feedback sought to understand respondent's priorities, their opinions on the preferred option, and key impacts that should be considered in relation to a range of factors (e.g. earthworks, surface access, air quality and noise, landscape and visual impact, heritage, etc.). The consultation also included the draft Sift 1 and 2 Reports covering the first two stages of appraisal, as technical background documents.

1.6 Relationship between the non-statutory consultation feedback and Sift 3

1.6.1 The purpose of Sift 3 was to undertake a further appraisal of the options presented in the non-statutory consultation, taking into account the non-statutory consultation feedback in relation to the sift process as well as further technical work undertaken since Sift 2. Based on this consideration of all of the available evidence, the Sift 3 process is intended to lead to the

selection of the proposed scheme to be developed further and ultimately taken forward to statutory consultation.

1.6.2 This report covers the process and findings from Sift 3 which were undertaken following an analysis of the consultation feedback, during late 2018/early 2019.

1.7 Structure of this report

1.7.1 This report is set out in five further chapters as follows:

- **Chapter 2** provides an overview of the new and revised options developed since Sift 2;
- **Chapter 3** outlines our methodology for back-checking Sifts 1 and 2 and undertaking Sift 3;
- **Chapter 4** summarises the findings of the back-checking exercise that was undertaken in relation to Sifts 1 and 2;
- **Chapter 5** provides an overview of the Sift 3 appraisal findings; and
- **Chapter 6** sets out the outcomes of Sift 3 and next steps.

2 DEVELOPMENT OF NEW AND REVISED OPTIONS

2.1 Overview

2.1.1 Since Sift 2, ongoing scheme development, additional information and consideration of views expressed during consultation has led to further development of the options, as outlined below. The two main changes for appraisal at Sift 3 are:

- Development of a new sub-option, option 1d, which retains Wigmore Valley Park in its current location; and
- Revision of the Sift 2 option layouts to achieve a target capacity of 32mppa, as opposed to 36-38mppa as originally considered in Sifts 1 and 2.

2.1.2 These design developments, and the reasons for taking them, are described below.

2.2 Feedback from the consultation

2.2.1 Detailed consultation findings covering a wide range of aspects of the expansion are set out in the Non-Statutory Consultation Feedback Report; whilst a summary of issues emerging from the consultation in relation to the strategic objectives and sift appraisals is set out in Chapter 4.

2.3 Development of a new option for consideration based on consultation feedback

2.3.1 One of the concerns raised as part of the consultation regarding the options proposed for the north-side of the existing runway was the impact on Wigmore Valley Park. In response a new sub-option, option 1d, was developed as part of the 'northern' option family, which accommodates expansion north of the existing runway, whilst retaining Wigmore Valley Park entirely in its current location.

2.3.2 Option 1d (**Figure 2.1**) includes a new terminal and apron capacity east of, and avoiding, Wigmore Valley Park, therefore pushing the airport development further east compared to option 1a.

2.3.3 This option provides a second terminal building north of the existing runway. It would be built in a phased approach in line with passenger demand. Similar to option 1a, the construction of a second terminal builds on the existing capacity of 18mppa of the current terminal building (T1), bringing the overall potential capacity to a maximum 36-38mppa between the two terminals.

2.3.4 As well as the development of the terminal building, the option covers the concurrent development of the airfield infrastructure, the associated surface access enhancement into the airport, the necessary enabling works and extension to the mass transit system. By avoiding Wigmore Valley Park, the option pushes the development both beyond current

LLAL's land ownership and into the Green Belt to the very edge of Breachwood Green and Darleyhall.

Figure 2.1 Option 1d

2.4 Further technical work and the decision to move to 32mppa capacity

2.4.1 Since Sift 2, further technical work has taken place (much of which is still ongoing) to inform the development proposals and add to the project's evidence base. This has included:

- More detailed simulation analysis on aircraft movements which confirms the capability of the runway and taxiway configuration as 50 aircraft movements per hour (240,000 per annum).
- Further ecological, arboricultural, agricultural and soil surveys work has been undertaken for habitats and protected species.
- Engagement has begun with environmental technical stakeholders.
- A significant number of traffic related surveys (volume, direction, speed, journey time etc) have been undertaken on the highway network surrounding the airport.
- Initial surface access modelling work to further understand the projected demand on the road network, alongside a study of potential junction improvements.
- A Public Right of Way (PRoW) survey has also been undertaken to determine the number of users potentially affected by the proposed expansion.
- Further work on identifying biodiversity, open space and mitigation requirements.

- Further work on potential landform and earthwork solutions.

2.4.2 In the main, this additional work, informed by the response to consultation, is not considered by the technical leads to affect either the order of preference of options established at Sift 2 or to change the approach to Sift 3.

2.4.3 The options considered in Sift 1 and 2 were assumed to be capable of supporting the airport expansion up to 36-38mppa, with each option appraised on this basis, in line with LLAL's vision for best use of the runway. However, our subsequent assessments, informed by the responses to consultation on this issue, have indicated that the scale of highway capacity enhancement required to achieve 36-38mppa would be beyond the scope of the current project.

2.4.4 As a result of these considerations, LLAL has decided to pursue a DCO application for a target capacity for the expansion of the airport of 32mppa, subject to further detailed assessment and modelling.

2.4.5 Reducing the target capacity for the purposes of the DCO application from 36-38mppa to 32mppa also has a number of beneficial effects on the potential impacts of the scheme, most notably limiting the need for development within the Green Belt which may be required to support the earthworks and host some comparatively minor associated development (e.g. surface car parking). Where the development of further design options evolves over time so the general principles and protections within these and other environmental policies will continue to exercise an influence on the capacity for airport expansion.

2.4.6 Revised layouts of the options appraised at Sift 2, showing 32mppa versions of each option, are presented in **Section 3.4** below.

2.4.7 Revised layouts of the options considered at Sift 1 were not developed on the basis that the technical leads were satisfied that there could be no difference in the outcome of Sift 1 had the options been appraised on the assumption of a capacity of 32mppa. This is primarily because the discounted option family, option 3 - two terminals with either: a realigned; extended; or additional runway – was not consistent with Government policy to make the best use of existing runways. It also performed poorly compared to the other option families in terms of deliverability in relation to financial and technical viability (particularly delivering capacity ahead of demand, an issue which is only worsened assuming a capacity of 32mppa) and the large amount of earthworks required.

2.5 Revised options

2.5.1 The options appraised at Sift 2 were revised to achieve a lower targeted capacity of 32mppa and are shown in **Figure 2.2** overleaf. They are as follows:

- **Option 1a** – two terminals to the north of the runway scaled back to a 32mppa scheme. As well as the scalability of the terminal, airfield and

associated airport infrastructure, the development stays within the Green Belt limits.

- **Option 1b** – a single terminal to the north of the runway located to the west of the site scaled back to a 32mppa scheme. As well as the scalability of the terminal, airfield and associated airport infrastructure, the development stays within the Green Belt limits.
- **Option 1c** – a single terminal to the north of the runway located to the east of the site scaled back to a 32mppa scheme. As well as the scalability of the terminal, airfield and associated airport infrastructure, the development stays within the Green Belt limits.
- **Option 1d** – a new scheme that seeks to avoid Wigmore Valley Park in its entirety, pushing the new terminal building further east and within North Hertfordshire and thereby encroaching significantly on the Green Belt.
- **Option 2** – second terminal located south of the runway scaled back to a 32mppa scheme.

Figure 2.2 32mppa layouts

Option 1a

Option 1b

Option 1c

Option 1d

Option 2

3 METHODOLOGY

3.1 Overview

3.1.1 The process for Sift 3 involved several activities and inputs, including a back-check of Sifts 1 and 2, consideration of consultation feedback and any additional technical evidence or changes to policy and guidance which has emerged since Sift 2. These inputs have been used by the technical leads to:

- Back-check Sifts 1 and 2 taking into account consultation feedback and additional technical work/changes to guidance;
- Review, consider and decide whether any changes should be made for Sift 3 and develop additional options as necessary; and
- Having regard to the above two inputs, undertake a third sift, 'Sift 3', involving the re-appraisal of the options selected for Sift 2, subject to any modifications or additions identified, with the aim of identifying a preferred option.

3.1.2 The criteria used in Sifts 1 and 2, the basis for the appraisal levels and the scoring approach adopted is set out in more detail in Chapter 2 of the Sift 2 Report. This report includes the sift criteria used for Sift 3 in **Appendix C**, but otherwise does not restate the rationale for the criteria or appraisal process save to identify where changes were made to criteria or scoring used in Sift 2. The rationale for the sift criteria, including the relevant key policies, strategies and guidance, are set out in Chapter 3 and Appendix B of the Sift 2 report.

3.2 Back-check of Sifts 1 and 2

Review of consultation feedback

3.2.2 Following the end of the consultation period, the LLAL team collated the feedback including 892 completed responses. This information – including individual responses – was fed into a comprehensive response log and sent, along with a summary report on the consultation findings, to the technical leads responsible for each sift criteria (as per Sift 2) to review.

3.2.3 Each technical lead was provided with a template to record their response covering:

- A summary of main issues raised during consultation in relation to their technical area of expertise;
- Whether their analysis of the issues raised affected their appraisal in Sifts 1 and 2; and
- Whether their analysis of the issues raised required an adjustment to their approach or criteria for Sift 3.

3.2.4 The key findings are covered in **Chapter 4**.

3.2.5 In parallel with this, the sift team undertook an independent review of the responses to cross-check findings with those of the technical leads.

Review of additional work and changes to guidance/policy since Sift 2

3.2.6 In addition to a review of the consultation feedback, technical leads were asked to consider whether any additional work that had been undertaken since Sift 2, or changes to relevant guidance or policy, would change either their earlier appraisals or their approach to Sift 3. This is covered in further detail in **Chapter 4**.

Back-check process

3.2.7 The consultant team undertook a review of the appraisals conducted to date in order confirm the findings of the first two stages of the sift process remained valid having regard to the consultation feedback and additional technical work undertaken since Sift 2. This is summarised in **Chapter 4**.

3.3 Appraisal of new option 1d alongside sift 2 options

3.3.1 Following option development which took place after sift 2 and consideration of the consultation feedback, a new option 1d (described in **Chapter 2**), was developed and subsequently appraised as part of Sift 3 alongside the existing Sift 2 options, all assuming a targeted capacity of 36-38mppa. This is summarised in **Chapter 5** (full tables in **Appendix A**).

3.4 Re-appraisal of all options at 32mppa

3.4.1 Based on additional work on surface access constraints undertaken since Sift 2 – as explained in **Chapter 2** - a set of revised options (including option 1d) with a lower targeted capacity of 32mppa were developed and appraised as part of Sift 3. This appraisal is summarised in Chapter 5 (full tables in **Appendix B**).

4 BACK-CHECKING OF SIFTS 1 AND 2

4.1 Overview

4.1.1 The Sift 1 and 2 Reports were published in draft in June 2018. This section provides an overview of how a review of the consultation feedback was undertaken and used as part of the back-check process to confirm the appraisal of options in Sifts 1 and 2 remained valid.

4.2 Review of consultation feedback

4.2.1 For the purposes of the sift process, each technical lead responsible for their respective sift criteria was asked to provide an overview of the responses made by consultees in relation to their particular area of expertise and considered whether it changed their appraisal in either stage of sifting. These are summarised in **Table 4.1** overleaf.

4.2.2 Key themes raised at consultation were in relation to noise, flightpaths, air quality, surface access, climate change, and impact on Wigmore Valley Park, as well as expansion generally of the airport. Relatively few comments specifically referred to the sifting process, or to a preference for one of the options presented in the consultation over another

4.2.3 Because the sift process is aimed at appraising options and arriving at a preferred option, issues raised which apply equally across all options will not necessarily affect the options selection process, and so will not impact on the outcomes of Sifts 1 and 2. However, that does not mean these issues will not be considered and addressed in the development of the identified preferred option. Chapter 5 of the Non-Statutory Consultation Feedback Report contains LLAL's response to consultation feedback, including an indication of how LLAL intends to address concerns raised during the consultation.

Table 4.1 Summary of key issues by strategic objective

Sift Criteria	Summary of main issues and comments raised by consultees (technical and wider responses)	Does this affect the Sift 1 appraisal?	Does this affect the Sift 2 appraisal?
Strategic objective O1: Compliance with Government Aviation Policy			
S1 Consistent with making best use of the existing runway	A key theme in the non-statutory consultation was a challenge to the need for LTN to make best use of its existing runway in the light of expansion at other London airports and/or due to environmental concerns. There was some support for: • Realigning the runway to take flightpaths and noise away from their location. • Relocating the runway to the south or providing a second runway to relocate noise and, in the latter case, to offer scope for respite • A second runway to ensure that LTN provides for longer term capacity expansion beyond that being proposed. In addition there was some opposition to a second runway or any option which safeguarded the scope for expansion to the south in the longer term.	Points made regarding a realigned or relocated runway, including the provision of a second runway, are relevant to Sift 1. However, taking these comments into account does not change the overall appraisal as the same policy considerations would apply, i.e. there is policy support for making best use of LTN's existing runway. A second runway is inconsistent with that policy and a realigned runway only partly consistent.	Taking these responses into account there is no change to the appraisals undertaken at Sift 2 as all options appraised on the best use of the existing runway, with other options having been ruled out at Sift 1 as inconsistent with Government policy on making the best use of exiting runways.
Strategic objective O2: To identify a scheme that is likely to be capable of being consented and secured through a DCO			
S2 In broad conformity with national and local town planning policies and capable of attracting the consents required	A broad spectrum of concerns were raised with the principal considerations centring on: • National / local planning policy; • The project need case; • The New Century Park and employment land; • The impact on Green Belt areas; • Environmental impacts – in particular noise/statutory nuisance, etc; and • Surface access and transport considerations.	The concerns raised during non-statutory consultation do not result in a change to either Sift 1 or Sift 2 appraisals as those appraisals considered these aspects in relation to current national, strategic and local planning policy positions and reflected these in the appraisal of the options. Options which on balance were in broad conformity with national town planning policies with a lesser impact on the Green Belt (such as options 1a, 1b and 1c) scored more positively than those which required comparatively more development (such option 2, 3a and 3b) or large scale structures in the Green Belt (option 3c).	

Sift Criteria	Summary of main issues and comments raised by consultees (technical and wider responses)	Does this affect the Sift 1 appraisal?	Does this affect the Sift 2 appraisal?
Strategic objective O3: To provide additional capacity and connectivity in line with the assessment of need			
S3 Increase capacity both airside and landside to achieve target increase up to 36-38mppa	Respondents to the non-statutory consultation challenged the need to provide an increase in capacity of up to 36-38mppa and also the ability to deliver this increased throughput from the existing runway, particularly in terms of safety.	As regards responses challenging the need for expansion of the airport, see the comments above in relation to Strategic objective O1. A regards capacity and safety, simulation modelling has shown that 50 movements per hour can safely be delivered on the existing runway, which can ultimately deliver 36-38mppa. As a result, no change is proposed to ether the Sift 1 or Sift 2 appraisals as a result of these concerns, although a 32mppa option has been appraised for other reasons.	
Strategic objective O4: To maximise the potential economic benefits to the regional, sub-regional and local economies			
S4 Deliver economic benefits nationally and regionally	The economic benefits arising from the development, in particular the benefits to areas outside of Luton, were queried by the respondents. The concerns raised also included consideration of the UK's tourism deficit and whether it is right to expand LTN to allow more UK residents to travel abroad.	The question of a tourism deficit is not normally addressed at the individual airport level as this is a national issue and limiting growth at LTN would not necessarily result in fewer UK residents travelling abroad. In any event, the ability to travel abroad is more often seen as a 'social good' and the Government does not have any policy which seeks to restrict overseas travel in order to improve the balance of payments. The effect of any tourism deficit is also not included within WebTAG and, in any event, it is virtually impossible to identify the net economic impact as it is not possible to be certain how much of this income would be retained in the UK, i.e. it might simply be used to purchase imported goods in any event. In any event, further consideration of the UK's tourism deficit would not differentiate between the options given all are assumed to provide the same additional capacity. As such there is no change to the Sift 1 or 2 appraisals.	
S5: Increase job opportunities for the people of Luton and the surrounding areas	As part of the concerns regarding the economic benefits arising from the development, the number of jobs predicted to be supported by the airport and its growth were queried.	The presented figure for jobs created by the proposed development is being refined but even if this changes this will not differentiate between options providing the same capacity, other than in relation to points already noted during Sift 1 and 2 regarding single and double terminal options and development to the south of the runway. Therefore no changes to the Sift 1 or 2 appraisals are required. The options were also appraised on the access to employment opportunities and not the overall projected number of jobs generated by the development.	

Sift Criteria	Summary of main issues and comments raised by consultees (technical and wider responses)	Does this affect the Sift 1 appraisal?	Does this affect the Sift 2 appraisal?
Strategic objective O5: To maintain and where possible improve the quality of life for Luton's residents and the wider population			
S6: Promote positive benefits and minimise adverse impacts on local communities	The main concerns raised in relation to the S6 sub-criteria included the proposed development's impact on: noise (including consideration of impacts on sleep and wider health and well-being), air quality, replacement open space and the ability to attract new jobs to the area. With regard to community in a broader sense, comments also highlighted Wigmore Park as an important community asset that should be kept in its current location. There were also a number of respondents who outlined future engagement opportunities with local groups to help develop the expansion proposals.	These concerns were all considered during the Sift 1 and 2 appraisals. Access to employment and training opportunities, as well as impacts on residential amenity, are considered important factors in determining levels of health in the local communities. The appraisals also made the assumption that each option would be delivered in line with current employment strategies to maximise the benefits and to ensure the benefits reach relevant groups. Overall, the appraised impacts on Noise (S7) and Air Quality (S8) are considered to be outweighed by the positive impacts on health, wellbeing and quality of life, and remain the same as considered in the Sift 1 and 2 Reports.	
Strategic objective O6: To minimise environmental impacts and, where practicable, to actively mitigate and manage any potential environmental effects			
S7: Noise impact	Noise was set out as a key consideration in the non-statutory consultation document, recognised as one of the largest impacts of the airports operation, and was one of the most frequent concerns expressed in the responses received. Responses to the consultation focused on the impact of any increases in aircraft movements resulting in increased noise including as a result from: operational procedures; flightpaths and times, notably night flights; the impact of future aircraft technology; and proposed sound insulation schemes. Noise comments also broadly fell into the categories of ground noise, road traffic noise and aircraft noise, including vibration. Furthermore, comments were also raised in response to current levels of noise, the airport operator's Noise Action Plan and current noise monitoring and the noise envelope ahead of the expansion.	Of the comments received, the topic of adverse levels of noise resulting from ground noise (i.e. aircraft taxiing and ground running) is the only one that differed between options and therefore affected the selection of a preferred option. Consideration of how the different building layouts would affect the propagation of noise was covered in Sift 1 and 2 for each option sifted. As a result, it is considered that ground noise has been suitably addressed and no change to the Sift 1 or 2 appraisals are proposed. Continued consideration of how the propagation of ground noise can be limited will be given as the masterplan develops.	

Sift Criteria	Summary of main issues and comments raised by consultees (technical and wider responses)	Does this affect the Sift 1 appraisal?	Does this affect the Sift 2 appraisal?
S8: Air quality	As outlined above for noise, air quality was also a key consideration in the non-statutory consultation document. The potential impacts on air quality identified by the respondents included increased aircraft emissions but also increased road traffic resulting from expansion leading to increased road vehicle emissions. Furthermore, there was deemed to be insufficient details on the strategies and management plans for air quality monitoring, alongside calls to ensure the air quality monitoring procedures are adequate and should include the AQMAs at Hitchin and in Bedfordshire.	The air quality issues and comments raised during the non-statutory consultation do not relate to specific options in the sift process and instead address the impacts of expansion as a whole. Furthermore, the relevant factors, notably increased traffic and aircraft movements, were considered in both the Sift 1 and 2 appraisals and therefore no change is proposed to either report.	
S9: Natural habitats and biodiversity	Respondents to the non-statutory consultation highlighted the importance that biodiversity pledges are adhered to during the project. The main concerns with regard to natural and habitats and biodiversity impact as a result of the expansion centred on the loss of habitat and wildlife by building on Wigmore Park, with some stating that the expansion should be located on the adjacent farmland. It was also suggested that LLAL should pursue the multifunctionality of new habitat and open spaces being provided as part of the expansion in partnership with local stakeholders and organisations.	While many of the consultation comments had an ecological aspect to them, there were no comments or questions specifically on the approach to the S9 assessment or surveys being undertaken to inform the EIA or the development of the masterplan. The comments focused on the impact on existing habitat and wildlife which formed the key element of the natural habitats and biodiversity appraisals conducted during Sift 1 and 2. As a result, no change is proposed to either the Sift 1 or 2 appraisals although option 1d, which addresses concerns about Wigmore Valley Park, was considered as part of Sift 3.	
S10: Carbon emissions	The increase in Air Traffic Movements (ATMs) originating from LTN caused concern with regard to increased carbon emissions, particularly in relation to the UK carbon emissions reduction targets and the role of the Paris Agreement. The resulting increased impact on climate change and increase in greenhouse gas emissions, alongside comments on the availability of carbon emission-reducing technology, were also key themes in the respondent's comments.	The main issues raised during the non-statutory consultation related to this sift criterion were the increased climate change impacts of aviation carbon emissions, and to a lesser degree those arising from surface access journeys. All sift options are assumed to increase passenger numbers / ATMs to the same level, resulting in increased greenhouse gas emissions from additional aircraft, which is already considered in the Sift 1 and 2 Reports hence no further changes are required.	
S11: Water resources S12: Flood risk	Within the non-statutory consultation responses, there were general comments made by multiple stakeholders that emissions to surface and groundwater receptors must be included in the main environmental assessment. Comments were also made in relation to flooding, including the consideration of flooding hazard and how off-site emissions would be managed under such extreme conditions.	During Sifts 1 and 2, S11 and S12 recognised that surface and groundwater risks would need to be assessed and it was recognised that certain options posed an increased risk to surface groundwater than others, which was taken into account in the appraisals presented in the Sift 1 and 2 and therefore no change is proposed to either report.	

Sift Criteria	Summary of main issues and comments raised by consultees (technical and wider responses)	Does this affect the Sift 1 appraisal?	Does this affect the Sift 2 appraisal?
S13: Cultural heritage	Respondents highlighted the setting of heritage assets, especially Someries Castle (SM, NHLE 1008452) and Luton Hoo (Grade II* RPG, NHLE 1000578) as important considerations in the selection of the preferred option. The comments indicated that priority should be given to the conservation of heritage assets, including against noise and visual intrusion of flying aircraft as well as any enhancement of heritage assets including provision of better access. Other more specific comments arising under this criterion included an opposition to the potential demolition of Winchhill Farmhouse (Grade II, NHLE 1307881) as part of the enabling works, and also the ability to highlight Luton's role in aviation history.	The consultation feedback was in line with the opportunities and constraints identified during the Sift 1 and 2 appraisals for each of the options and it is therefore considered that each of the heritage concerns raised by respondents has already been taken into account. Furthermore, the emphasis on enhancement and conservation were key considerations during the previous appraisals and the development of each of the options and therefore no change is proposed to either sift report. It should be noted that Winchhill Farmhouse is proposed for demolition on health and safety grounds as it is derelict.	
S14: Landscape and visual impact and Environmental Land Use	The respondents to the non-statutory consultation highlighted that the airport expansion proposals would irreversibly damage a valued area of the landscape and would result in the loss of valued biodiversity and tree cover. Furthermore, it was stated that the tranquillity of the Chilterns Area of Outstanding Natural Beauty (AONB) and views from the AONB may be affected by the airport, with the landscape and visual amenity of the AONB from airport development, over flying aircraft and light pollution affected due to the expansion. The respondents also highlighted that the prominent position that the airport occupies within the landscape mean views to the aviation platform and buildings may not be able to be screened, including in views experienced by users of the replacement park. The respondents also commented on the long-term conservation and enhancement of the natural environment stating that phasing should allow landscape mitigation measures to mature prior to impacting affected areas as well as looking at the cumulative effects of the proposed development, development at Century Park and the sites allocated for housing to the east of Luton.	The main issues and comments highlighted by the consultees, whilst relevant to the layouts included in Sift 1, would not alter the Sift 1 appraisal.	The appraisal levels for Sift 2 would remain the same as previously published although the supporting text has been updated to reflect that certain additional elements, namely the tranquillity of the Chilterns AONB, were considered within the appraisal.
S15: Climate change	Comments referencing 'climate change' were predominantly related to climate change mitigation and carbon emissions (see S10 above), rather than resilience which this criterion specifically sought to cover.	Given the lack of comments focused on climate change resilience, no change is proposed to either the Sift 1 or 2 appraisals.	

Sift Criteria	Summary of main issues and comments raised by consultees (technical and wider responses)	Does this affect the Sift 1 appraisal?	Does this affect the Sift 2 appraisal?
Strategic objective O7: To maximise the number of passengers and workforce arriving at the airport on public transport			
S16: Public transport modal share	The non-statutory consultation highlighted the public's concerns over poor public transport connections with local areas outside of Luton town centre, alongside the broader concerns that an increased public transport mode share will not solve congestion issues.	The key surface access issues raised by the public during the consultation stage had already been considered within the Sift 1 and 2 appraisals, and as such the identified concerns had been acknowledged as needing to be addressed as part of any airport expansion proposals. In addition, in many cases the issues raised by the respondents would be equally relevant to any of the options appraised and hence would not impact on the outcomes of the appraisals. However in some instances, such as concerns over public transport connectivity to Luton town centre, the options which sought to provide a terminal to the north of the runway would enable the issues expressed to be addressed more readily and this was already reflected in the appraisal of the options. No change is therefore proposed to the Sift 1 or 2 appraisals.	
Strategic objective O8: To minimise new build highway requirements			
S17: Requirement for additional highway infrastructure	Some respondents highlighted their concerns over the existing junction capacities on the M1 and also along roads in the airport vicinity, predicted to be exacerbated by the airport expansion.		
Strategic objective O9: To minimise impact on the wider highway network			
S18: Impact on wider highway network	Related to the criterion above, the impact on the surrounding highway network was a key theme for respondents to the non-statutory consultation. The comments took the form of more general comments regarding congestion on existing roads around the airport but also more specific comments regarding "rat running" along country lanes. The surrounding road network was also perceived to be impacted due to high car parking charges resulting in increased airport-related car parking on residential roads, and the effect of HGV traffic in the vicinity during construction phases.		
Strategic objective O10: To be technically viable, taking account of the needs of airport users, operators and phasing			
S19: Deliverable within the context of the current concession to 2031	A number of respondents made comments on the existing quality of service and congestion experienced in the existing terminal. However, there were mixed views as to whether these current issues would be best addressed by extending the existing terminal (to reduce land take), replacing the existing terminal by a new terminal or splitting traffic between two terminals and whether these would improve or detract from the passenger experience.	The points raised by the respondents place a greater emphasis on the passenger experience and highlight to a greater extent the importance of minimising disruption to the existing operations and the working of the current concession. As an existing sub-criterion however, this is most appropriately covered under S23, Operational Effectiveness, which has been back-checked accordingly in line with this greater emphasis on the passenger experience and the Sift 2 appraisal adjusted as set out in paragraph4.4.6. Apart from this, no changes to the Sift 1 or 2 appraisals were considered necessary.	

Sift Criteria	Summary of main issues and comments raised by consultees (technical and wider responses)	Does this affect the Sift 1 appraisal?	Does this affect the Sift 2 appraisal?
S20: Attractive to future concessionaires	Although it is in an important consideration in the selection of a preferred option, there were no particular issues raised during the non-statutory consultation, largely aimed at the public, focused on the attractiveness of each option to future concessionaires.	As there were no particular issues raised relevant to this criterion, no change is proposed to the Sift 1 or 2 appraisals as a result of the non-statutory consultation.	
S21: Feasibility of landfill, earthworks and ground conditions	The questions which asked respondents to rank the key impacts of the airport expansion did not generally highlight the earthworks as a key impact. However, there were some specific concerns raised relating to the landfill; such as building on landfill being perceived as dangerous, containing hazardous material or unexploded ordnances (UXO).	The Sift 1 and 2 appraisals recognised that minimising lorry movements during earthworks was key to reducing traffic and pollution, with risks from excavation and treating landfill material also accounted for in the appraisal. The level of mitigation required for each of the options was also taken into account in the appraisal for both Sift 1 and 2 and no change is proposed to either appraisal as a result. UXO risk was not part of the sub criteria in S21 but it has been considered as part of the ongoing work and assessment, with detailed ground investigation ongoing to understand the nature of the waste within the landfill. It should be noted that the landfill was not extensively used until after the end of World War II and it is reasonable to expect that any UXO would have been identified at the time.	
S22: Additional land required beyond current LLAL holdings	The collective responses to the consultation ranked land ownership and acquisition as the least important of the ten issues raised under question 5, with no particular issues raised in regard to land ownership.	As there were no particular issues raised relevant to this criterion, no change is proposed to the Sift 1 or 2 appraisals as a result of the non-statutory consultation.	

Sift Criteria	Summary of main issues and comments raised by consultees (technical and wider responses)	Does this affect the Sift 1 appraisal?	Does this affect the Sift 2 appraisal?
Strategic objective O1f: To enhance LTN's system efficiency and resilience			
S23: Operational effectiveness	In relation to the operational effectiveness of the options considered, respondents commented on the potential for greater efficiency with a large single-terminal solution, although other respondents expressed a preference for two smaller terminals. There were some concerns that splitting traffic across the two terminals could result in passenger confusion when navigating the expanded airport. In addition and as outlines under S19, there were concerns about options which retained the existing terminal because of current perceived poor levels of service experienced by customers.	This criterion was not directly appraised during Sift 1, although it was considered as part of a more holistic appraisal under S21.	As mentioned above, the consultation highlighted that a greater emphasis should be placed on passenger experience when appraising each of the options. As a result, the S23 appraisal conducted during Sift 2 has been back-checked accordingly with the appraisals under this criterion adjusted as set out in paragraph 4.4.6 (i.e. option 1b scored Moderate Beneficial rather than Large Beneficial reflecting the perceived impact on passenger experience of disruption to existing terminal operations as part of this option).
S24: System resilience	Some respondents to the non-statutory consultation raised the greater resilience offered by a two runway solution. In addition, a single terminal solution was felt by some to be more secure although the reason for this view was not explained.	Whilst system resilience was not a separate criterion or part of the sub-criteria within S21 during Sift 1, the two runway option was already scored large beneficial on the relevant criterion which addressed operational viability. As such no changes are proposed to the Sift 1 appraisal.	There were no new points raised during the consultation regarding the system resilience of the options considered during Sift 2 and therefore no change is proposed.

Sift Criteria	Summary of main issues and comments raised by consultees (technical and wider responses)	Does this affect the Sift 1 appraisal?	Does this affect the Sift 2 appraisal?
S25: Attractiveness to airline operators	Some of the respondents raised the potential for two terminal solutions to be less attractive to airline operations as it may require airlines to split operations between terminals.	This criterion was not considered during Sift 1 directly although was added to the criteria for Sift 2.	The consideration of split operations in option 1a and 2 was an important factor within the Sift 2 appraisal, having been considered as part of the appraisals under criteria S23 and S25. As a result, the non-statutory feedback has not resulted in a change to the appraisal of this sift criterion.
S26: Safeguarding for expansion	A number of respondents suggested that development on the southside would lend itself better to longer term expansion, whilst others noted that development on the northside would leave open the option of further expansion on the southside, which was seen as a positive by some and a negative by others.	This criterion was not considered during Sift 1 directly although was added to the criteria for Sift 2.	There is no change proposed to the Sift 2 Report as a result of the non-statutory consultation feedback as these points were already considered during the appraisal.
S27: Safeguarding existing levels of MRO, Business, Aviation and Cargo activity	A number of respondents raised the question of noise related to cargo and business aviation movements, although this is more appropriately considered under the noise appraisal.	This criterion was not considered during Sift 1 directly although was added to the criteria for Sift 2.	As there were no direct issues raised in regard to the safeguarding of these activities, no change is proposed to the Sift 2 appraisal as a result of the non-statutory consultation feedback. It is perceived by the relevant technical lead that safeguarding these areas remains economically desirable to maintain alternative sources of income and an expanded offer for the concessionaire.
Strategic objective O12:To be affordable including any public expenditure that may be required and taking account of the needs of airport users and operators (Value for Money)			
S28: Estimated cost benefit	The non-statutory consultation highlighted concerns about the cost of the project, particularly in relation to its affordability and the overall level of public expenditure	The importance of this criterion is recognised by its inclusion in the sifting methodology as its own strategic objective. No change is proposed to the Sift 1 or 2 Reports or appraisal levels following the consultation feedback.	

4.3 Back-check of Sift 1

4.3.1 Based on the technical leads' review of the consultation feedback, no changes were identified for the Sift 1 appraisals. However, as part of the finalisation of the first sifting stage, revisions to the sift appraisals under two criteria were identified.

Revision to appraisal of S10: Carbon emissions

4.3.2 As referenced in paragraph 5.7.6 of the draft Sift 2 Report, air traffic movements (ATMs) were not considered during the Sift 1 appraisals but were considered during Sift 2. As part of the finalisation of the sift reports this has been amended for consistency across the sift process.

4.3.3 Options 1a, 1b and 1c were previously appraised as either Moderate or Slight Adverse. As the most significant Green House Gas (GHG) emissions will result from the increase in ATMs all options are revised to Large Adverse. This is reflected in Table 4.4 of the finalised Sift 1 Report.

Revision to appraisal of S18: Impact on wider highway network

4.3.4 In sift 1, options 3a (realigned runway) and 3b (extended runway) were appraised as Moderate Adverse but should be Large Adverse as they, like options 1a, 1b and 1c (terminals north of the runway) also propose more/larger terminal buildings north of the existing runway, potentially creating a larger impact on the existing highway network. This is reflected in Table 4.5 of the finalised Sift 1 Report.

Overall impact on Sift 1 findings

4.3.5 The changes outlined in **Section 4.3** do not affect the overall outcome of Sift 1. However, option 3a would now be considered the least preferred option of those in Sift 1 rather than 3c, and the comparative performance of options 1a, 1b and 1c has been reduced in relative terms. Ultimately however the option 3 family would remain discounted at that stage and the remaining options were progressed to Sift 2.

4.4 Back-check of Sift 2

4.4.1 The review of the consultation feedback and additional work identified the appraisals under three sift criteria and sub-criteria for re-consideration.

Revision to appraisal of S15: Climate Change

4.4.2 Sift criterion S15: Climate change considered the extent to which the options reduce climate change risks during construction, operation and surface access phases. In the draft Sift 2 Report option 1a was appraised as more preferred than the remaining options as their comparatively larger hard surfacing areas and infrastructure requirements would make them potentially more susceptible to climate change risk. However, the engineering and drainage solutions present in each option will be

designed appropriately for their size and therefore the climate change risk present in each option would be mitigated to the same level for each option. As a result, the Moderate Beneficial appraisal level for option 1a is reduced to Slight Beneficial, in line with the other option appraisal rationales and levels.

4.4.3 This is covered in Table 5.15 of the finalised Sift 2 Report.

Revision to appraisal of S22: Additional land required beyond current LLAL holdings

4.4.4 Sift criterion S22: Additional land required beyond current LLAL holdings included a sub-criterion which asked: "Will the earthworks required to win material involve land not owned by LLAL?" Following Sift 2, additional technical work has been undertaken to inform the earthworks solution, highlighted in the consultation document as one of likely key issues with the proposals. There was general support in the feedback to take the earth from the site and it is now clear that some of the options being considered would involve isolated pockets of land ownership outside of LLAL's current holdings. Therefore, a conservative approach has been taken to assume that all options which could potentially use one of these landform options considers this additional information as part of the appraisal conducted at Sift 2. This has resulted in the Large Beneficial appraisals levels being reduced to Moderate Beneficial for the northern options.

4.4.5 This is covered in Table 5.22 of the finalised Sift 2 Report.

Revision to appraisal of S23: Operational effectiveness

4.4.6 The passenger experience, particularly the current passenger experience, was highlighted as an important consideration through the consultation. Whilst Sift 2 criterion S23: Operational effectiveness did take this into account (paragraphs 3.2.29 and 3.2.30 of the draft Sift 2 Report), it was agreed that this was a priority for airport users and therefore airline operators. Therefore the passenger benefits of each option, through the relative weight of this sub-criterion over others, has been increased in the overall judgement by the technical lead and reflected in the awarded appraisal level.

4.4.7 Originally in Sift 2, both single terminal options (options 1b and 1c) were appraised as Large Beneficial as a single building would increase operational efficiency, flexibility and enhance the passenger experience. After consideration of the consultation feedback and the need to afford greater consideration to passenger benefits, the appraisal level of option 1b has been reduced from Large Beneficial to Moderate Beneficial, reflecting the perceived impact to passenger experience due to building from west to east, resulting in disruption to existing terminal operations before there is sufficient space to decant operations to the east.

4.4.8 This is covered in Table 5.23 of the finalised Sift 2 Report.

Overall impact on Sift 2 findings

4.4.9 The combined changes to the appraisal levels of sift criteria S15, S22 and S23 outlined above demonstrate changes to individual scores but no change to the order of preference. This is because whilst the scores have been reduced in relation to option 2, this option still remains unworkable due to current Green Belt policy. Option 1a therefore remains the more preferred option at the end of Sift 2 following this process of back-checking.

4.5 Refinement of sift criteria for Sift 3

4.5.1 Taking into account the consultation feedback and additional work undertaken since Sift 2, one change to the criteria used for Sift 3 was proposed in relation to *S23: Operational effectiveness* where the passenger experience sub-criterion should be given greater consideration during the judgement on the most appropriate appraisal level, as set out in **paragraph 4.4.9** above. The details of criterion S23 used during Sift 3 are set out in **Appendix C**.

5 SIFT 3 APPRAISAL

5.1 Overview

5.1.1 Following the back-checking of Sifts 1 and 2 at 36-38mppa, Sift 3 comprised two main components as set out in **Chapter 2**:

- Appraisal of option 1d compared against Sift 2 options, assuming a target of 36-38mppa; and
- Appraisal of revised Sift 2 options plus option 1d, assuming a target of 32mppa.

5.1.2 This section sets out the approach to appraisals including the assumptions, followed by summary tables of appraisal results with the more detailed justification tables set out **in Appendix A and B.**

5.2 Approach to appraisals

5.2.1 As noted above, Sift 3 comprised two phases:

- **An appraisal of all options assuming a capacity of 36-38mppa**. Because (assuming a capacity of 36-38mppa) the options considered at Sift 3 were, apart from option 1d, the same as at Sift 2, Sift 3 focused on revisiting and reviewing the results of Sift 2 in light of new information (consultation feedback and additional technical work) for options 1a, 1b, 1c and 2, alongside a full appraisal of option 1d.
- **A new sift of 32mppa versions of options 1a, 1b, 1c, 1d and 2** as described earlier in **paragraph 2.5.1**.

5.2.2 The results of both are presented in **Section 5.5.**

5.3 Assumptions for appraisal of options at 36-38mppa

5.3.1 The assumptions for Sift 3 are broadly the same as for Sift 2, as set out in paragraph 2.4.4 of the Sift 2 Report, with one revision to the assumption covering the New Century Park application. As option 1d would seek to retain Wigmore Valley Park in its entirety, this assumption has been modified. Amendments to assumptions in each case are shown in bold italics.

5.3.2 The assumptions for Sift 3 and therefore the appraisal of option 1d are as follows:

- All options to assume a capacity of up to 36-38mppa, based on information available at the time of the sift process, and required infrastructure to support this capacity.
- All options to focus on containing as much of the future development and impact within the area of LLAL land ownership.
- All options assumed to include reasonable embedded and good practice mitigation (e.g. a code of construction practice), but not

additional mitigation (for example, new link roads on land outside of LLAL ownership) for the purposes of this sift.

- Land within LLAL ownership also includes the new business park development proposed at New Century Park which is assumed to be built out according to the current planning application (application ref. 17/02300/EIA). ***In the case of option 1d, as Wigmore Valley Park is retained, New Century Park is assumed not to have been built out.***
- For the purposes of appraisal, all options were assumed to receive the benefit of an extension to the recently consented Luton Direct Air-Rail Transit (DART) system from Luton Airport Parkway Station which is now under construction. Any extensions to the current DART route which would be needed to serve each option could be materially different for each option.
- However, renewable energy sources (photovoltaics, etc.) would not be shown on the drawings as it is assumed the effect would be the same for all options.

5.4 Assumptions for appraisal of options at 32mppa

5.4.1 The assumptions used for the appraisal of the options at 32mppa are the same as for 36-38mppa, with the exception of a change to the first one (amendment shown in bold italics) to read:

- All options to assume a capacity of ***up to 32mppa*** based on information available at the time of the sift process, and required infrastructure to support this capacity.

5.4.2 The same eight level evaluation system (see **Table 5.1**) has been used for Sift 3 as in Sift 2. This was considered appropriate for Sift 3 as, although further technical work had been undertaken in a number of areas, not all of the areas considered under the appraisal criteria had been progressed to a sufficient level of detail to justify a more granular scoring system. Adopting the same appraisal scale provides consistency of appraisal and ease of comparison. As for Sift 2, scoring is based on professional judgement and information available at the time of appraisal. The sift criteria used in Sift 2 were also used in Sift 3, as set out in Section 3.2 of the Sift 2 Report, subject to the refinement of criterion S23 referred to in **Section 4.5** and set out in **Appendix C.**

Table 5.1 Appraisal levels

Appraisal Level	Scoring
Large Beneficial	20
Moderate Beneficial	10
Slight Beneficial	5
Neutral	0
Slight Adverse	-5
Moderate Adverse	-10
Large Adverse	-20
Currently Unworkable	-20

5.5 Sift 3 findings

5.5.1 This section sets out a high level summary of the results of Sift 3 for options 1a, 1b, 1c, 1d and 2 at both 36-38mppa and 32mppa. Where appraisals still stand from Sift 2, these scores and rationale have been carried forward into Sift 3. The full details for the rationale of appraisal levels for the options are set out in **Appendix A** and **Appendix B**.

5.6 Summary of 36-38mppa appraisal

5.6.1 The overall performance of the options, including the new option 1d, against the criteria is shown below in **Table 5.2** in summary form, with the full rationale set out in **Appendix A**.

Table 5.2 Overall appraisal levels, summary of rationale and numerical values for each 36-38mppa option at Sift 3

	Strategic Objective	Sift Criteria	Option				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Strategic Fit	O1: Compliance with Government Aviation Policy	S1: Consistent with making best use of the existing runway	Options 1a, 1b, 1c and 2 could deliver at least 50 aircraft movements per hour, which has been assessed as the operational capacity to deliver best use of the single runway. Option 1d is not considered capable of ensuring the best use of the runway as it is likely to struggle to deliver the required aircraft movements due to the configuration, location and quantity of apron and runway which are likely to lead to aircraft congestion.				
			20	20	20	-5	20
	O2: To identify a scheme that is likely to be capable of being consented and secured through a DCO	S2: In broad conformity with national and local town planning policies and capable of attracting the consents required	Options 1a, 1b and 1c largely focus development north of the runway, west of Wigmore Valley Park and within the Strategic Allocation outlined in the Luton Local Plan LLP6 and therefore on balance presents a stronger case for consent; options 1d and 2 would place all or significant additional terminal building and associated buildings outside of the Strategic Allocation and within land designated as Green Belt.				
			10	10	10	Currently Undeliverable	Currently Undeliverable
	O3: To provide additional capacity and connectivity in line with the assessment of need	S3: Increase capacity both airside and landside to achieve target increase up to 36-38mppa	Options 1a and 2 performed the best overall due to their ability to phase capacity with a two terminal solution. Option 1b would be unlikely to deliver capacity in time to meet demand and could result in reduced capacity during initial reconfiguration works to the existing terminal area. Option 1d would also struggle to phase capacity in line with demand as new taxiways would likely need to be into the existing taxiways, causing congestion.				
			20	-5	10	-10	20

	Strategic Objective	Sift Criteria	Option				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Economic	O4: To maximise the potential economic benefits to the regional, sub-regional and local economies	S4: Deliver economic benefits nationally and regionally	As options 1a, 1b, 1c and 2 could be capable of achieving up to 36-38mppa, they could deliver significant benefits to users and airlines, and support economic growth in the surrounding areas by attracting additional investment. Option 1b and 1d score less well in comparison, largely because of increased costs affecting producer benefits and creating lower, wider connectivity benefits.				
			20	5	10	5	20
		S5: Increase job opportunities for the people of Luton and the surrounding areas	Overall, all five options could increase the number and type of opportunities for people in and around LTN with options 1a, 1b and 1c performing best due to relatively better public transport accessibility. Options 1d and 2 scored less well as a result of the relative remoteness of the new terminal building in both, and option 1d scored worse because the lower capacity of this option would generate fewer jobs.				
			20	20	20	5	10
Social (people)	O5: To maintain and where possible improve the quality of life for Luton's residents and the wider population	S6: Promote positive benefits and minimise adverse impacts on local communities	Options 1a, 1b, 1c and 2 are appraised as Slight Beneficial given the need to balance the beneficial impacts of access to employment with any potential adverse impacts in relation to noise, air quality or access to community facilities, by way of example. Whilst option 1d would retain Wigmore Valley Park it would therefore not benefit from the new community facilities at New Century Park as in the other options, and therefore performed comparatively worse.				
			5	5	5	0	5
Sustainability and environment	O6: To minimise environmental impacts and, where practicable, to actively mitigate and manage any potential environmental effects	S7: Noise impact	Given the increase over time in aircraft movements due to the expansion, there is potential for Large Adverse impacts to occur. Due to the prospect that the level of impact will be reduced through mitigation and compensation measures however it is considered appropriate to appraise the potential impact of options 1a, 1b and 1c as Moderate Adverse. The orientation of the new apron in option 1d brings the development closer to noise receptors in the east, compared to northern options 1a, 1b and 1c and would also require a substantial number of heavy goods vehicle movements during site preparation. The provision of a southern link road in option 2 could have the potential to significantly impact nearby communities, and receptors south of the site could experience significant increases in ground noise. Therefore, both options 1d and 2 are considered to perform least well.				
			-10	-10	-10	-20	-20
		S8: Air quality	All options would introduce additional road traffic, flights and associated activities, creating adverse impacts on receptors in the vicinity of the airport and adversely affecting Air Quality Management Areas. Option 2 performs relatively better as it would spread airport activity and sources of emission to the south, away from residential areas north of the airport.				
			-10	-10	-10	-10	-5

Strategic Objective	Sift Criteria	Option				
		Option 1a	Option 1b	Option 1c	Option 1d	Option 2
	S9: Natural habitats and biodiversity	All options are likely to have potential impacts on Section 41 priority habitats – areas of lowland calcareous grassland and broadleaved woodland – and the loss of arable field margin habitats. Although option 1d reduces the extent of impacts on Wigmore Park County Wildlife Site (CWS), it could have greater impact on connectivity through the removal of woodland ridge habitat and isolating the CWS from surrounding habitats. As it is assumed that these impacts could be mitigated effectively, all are scored Moderate Adverse.				
		-10	-10	-10	-10	-10
	S10: Carbon emissions	For all options, the most significant greenhouse gas (GHG) emissions will be from aircraft cruise emissions, and as the capacity is assumed to be the same for all options (36-38mppa), all options are considered as having Large Adverse impacts based on available information at the time of appraisal.				
		-20	-20	-20	-20	-20
	S11: Water Resources	Options 1a, 1b and 1c require piling through a landfill site on a principal aquifer, potentially creating pathways for contaminated water to reach the groundwater. Whilst option 1d does not involve piling through landfill, it involves larger scale earthworks than the other options, increasing the risk to groundwater and abstraction – as with 1a, 1b and 1c, it is assumed the risk can be managed, hence the Slight Adverse appraisal level for all four. Option 2 is considered to have a Neutral impact with smaller scale earthworks.				
		-5	-5	-5	-5	0
	S12: Flood risk	Assuming that any potential impacts on surface water flooding are managed via the implementation of an appropriate drainage design, all five options are not likely to result in any impacts on loss of flood storage, or increase in flood risk, and are therefore considered Neutral.				
		0	0	0	0	0
	S13: Cultural Heritage	For all options, the impact on the setting of Luton Hoo Registered Park and Garden and the Grade I listed Luton Hoo House as well as other listed structures within the park will require careful consideration. Option 1d would have more of an adverse impact on a greater number of heritage assets east of the airport, compared to options 1a, 1b and 1c. The possible visual impact on the setting of Someries Castle Scheduled Monument is much more significant in option 2, hence the Large Adverse appraisal level.				
		-5	-5	-5	-10	-20
	S14: Landscape and visual impact and Environmental Land Use	Options 1a, 1b and 1c are considered to be broadly similar in effect, which whilst potentially more significant during construction, could also have greater potential for being mitigated in the longer term. Options 1d and 2 are considered to have Large Adverse impacts as they would affect a larger area of landscape than the other three options and with impacts on large areas of agricultural land.				

	Strategic Objective	Sift Criteria	Option				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
			-10	-10	-10	-20	-20
		S15: Climate change	All options are appraised to have a beneficial impact in terms of their resilience to climate change, in comparison to the existing airport, assuming that any new assets and infrastructure would be engineered to current design and building specifications.				
			5	5	5	5	5
Surface access	O7: To maximise the number of passengers and workforce arriving at the airport on public transport	S16: Public transport modal share	Options 1b and 1c perform better than the other options as the DART could be extended more easily than for option 1a, 1d or 2, and because they are closer to the conurbation, have the potential to achieve a higher public transport modal share. Option 1a is considered Slight Beneficial due to the need to serve two terminal buildings, affecting the attractiveness of bus and coach services. In options 1d and 2, extending the DART in addition to increased journey times for buses and coaches to serve two more remote terminals gives them a Slight Adverse appraisal level.				
			5	10	10	-5	-5
	O8: To minimise new build highway requirements	S17: Requirement for additional highway infrastructure	Options 1b and 1c require upgrades to the Century Park Access Road (CPAR), whilst option 2 requires a new link road for the southern terminal. As these all require major highway interventions, they are given a Large Adverse scoring. Although major new build infrastructure may be required for options 1a and 1d – particularly the extension of CPAR in option 1d – the impact of these two options is likely to be lower in magnitude and scale than the other three options.				
			-10	-20	-20	-10	-20
	O9: To minimise impact on the wider highway network	S18: Impact on wider highway network	Significant additional public transport modal share and traffic management interventions will be required for all options. Options 1a and 1d will require less mitigation on airport and third party land than 1b, 1c and 2, hence the Moderate Adverse rating. Options 1b and 1c would have a Large Adverse impact on the wider network and a number of links/junctions would need to be mitigated. Although option 2 requires less mitigation than option 1a, the need for a new road link and the resultant environmental issues and costs led to a Large Adverse rating.				
			-10	-20	-20	-10	-20
Deliverability	O10: To be technically viable, taking account of the needs of airport users, operators and phasing	S19: Deliverable within the context of the current concession to 2031	Delivery of option 1b would be the most challenging in terms of managing capacity, meeting customer expectations and contractual issues; followed by option 1c, also due to the disruption on the existing concession. Options 1a and 1d could be largely constructed without impacting on the existing concession, although there would be difficulties in phasing 1d compared to option 2, assuming 1d would operate on the basis of a gyratory taxiway system. Option 2 would provide the largest beneficial impact due to its ability to largely be constructed without impacting on the existing concession.				
			10	-10	-5	10	20

	Strategic Objective	Sift Criteria	Option				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
		S20: Attractive to future concessionaires	Options 1a and 2 perform the best given the flexibility they provide to future concessionaires and the ability to phase delivery in line with demand. Options 1b and 1c would encounter phasing challenges, with less land available for Business Aviation and Maintenance, Repairs and Overhaul (MRO). Option 1d is considered to be unlikely to be attractive to an incoming concessionaire due to high build and operational costs.				
			20	-5	5	-10	20
		S21: Feasibility of landfill, earthworks and ground conditions	Options 1a, 1b and 1c would face challenges in terms of: piling in the landfill; requirement for a large earthworks platform; and dependency on earthworks weather during construction (restricted to building in the summer earthworks season). In addition, the large area of stands in option 1a would require many piles or a compromise on stand reliability/maintenance. Option 1d would require a larger land platform and a large volume of fill but would avoid excavating into the existing landfill. Option 2 is considered relatively straightforward with regard to the earthworks required.				
			-20	-20	-20	-10	-5
		S22: Additional land required beyond current LLAL holdings	Whilst options 1a, 1b and 1c would be located generally within LLAL's boundaries, they may require isolated pockets outside of these boundaries for their underpinning earthworks. Options 1d and 2 would require large areas of third-party land to be included to enable access and to accommodate the proposed development.				
			10	10	10	-20	-20
Operational viability	O11: To enhance LTN's system efficiency and resilience	S23: Operational effectiveness	Option 1c is appraised as Large Beneficial due to the increased efficiency designed into a completely new terminal building, providing operational flexibility to airlines and enhancing the passenger experience. Whilst option 1b also receives these benefits, passenger benefits are comparatively lower given the disruption to the existing concession. Options 1a, 1d and 2 would retain the existing T1 building at a lower efficiency and lower level of passenger experience. Option 1d is considered Moderate Adverse due to the potential of disruption to vehicle and aircraft operations on the taxiways, as well as a longer DART connection time.				
			10	10	20	-10	10
		S24: System resilience	Two terminal options are considered to provide greater resilience than single terminal options. Although option 1d has two terminals, it is considered Slight Beneficial on the basis that the inefficient loop taxiway configuration is retained and requires a longer, more convoluted road to the terminal than either options 1a or 2. Single terminal options, 1b and 1c, are considered to provide lower resilience in the case of disruption as they are reliant on singular surface access links, with the reduced ability to close a section of the airport if required.				
			20	10	10	5	20

	Strategic Objective	Sift Criteria	Option				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
		S25: Attractiveness to airline operators	Option 1a was appraised as Moderate Beneficial as it would leave the (relatively inefficient) T1 still in use. Options 1b and 1c would also be Moderate Beneficial as they would ultimately provide a modern, efficient airport, although the phasing required could increase costs and hence airport charges. Option 2 was considered Slight Beneficial as it would leave T1 still in use but would also risk some airlines having to split operations either side of the runway. Option 1d performed poorly in comparison due to a relatively inefficient and inflexible airport layout, thereby making it less attractive to airline operators.				
			10	10	10	-10	5
		S26: Safeguarding for expansion	Options 1a, 1b and 1c would require the redevelopment of T1 in the medium term (or longer term in the case of 1a), resulting in some wastage of space, but leave open expansion options to the south in the longer term. In comparison, option 2 would have less potential to safeguard land for future expansion as it would already occupy land south of the runway, and in the meantime, land north of the runway may have already been developed for alternative uses.				
			10	10	10	10	5
		S27: Safeguarding existing levels of MRO, Business, Aviation and Cargo activity	Options 1a, 1d and 2 are appraised as Large Beneficial as they would retain existing levels of MRO, business aviation and cargo activity. Options 1b and 1c would impact on existing businesses which would need to be relocated.				
			20	10	10	20	20
Cost benefit	O12:To be affordable including any public expenditure that may be required and taking account of the needs of airport users and operators (Value for Money)	S28: Estimated cost benefit	Options 1a and 2 are appraised as Large Beneficial based on capital expenditure cost estimates being lower than 1b, 1c and 1d. Options 1b, 1c and 1d require relatively more investment, indicating lower benefits than options 1a and 2, hence the Moderate Beneficial appraisal level.				
			20	10	10	10	20
		Total	125	-5	40	-145	15

5.6.2 **Table 5.2** clearly shows that at 36-38mppa, option 1a which proposes two terminals north of the existing runway, is the preferred option, and option 1d which seeks to retain Wigmore Valley Park, is the least preferred option.

5.7 Summary of 32mppa appraisal

5.7.1 The overall performance of the 32mppa revised options against the criteria is shown below in **Table 5.3.**

Table 5.3 Overall appraisal levels, summary of rationale and numerical values for each 32mppa option at Sift 3

	Strategic Objective	Sift Criteria	Option Family				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Strategic Fit	O1: Compliance with Government Aviation Policy	S1: Consistent with making best use of the existing runway	All five options would be considered to be Large Beneficial in terms of making the best use of the existing runway, with no clear differentiating factors between the options. Option 1d would be able to provide the required objectives for 32mppa where this was altogether less possible for 36-38mppa, hence an increase in appraisal level from a Slight Adverse to Large Beneficial.				
			20	20	20	20	20
	O2: To identify a scheme that is likely to be capable of being consented and secured through a DCO	S2: In broad conformity with national and local town planning policies and capable of attracting the consents required	Compared with the 36-38mppa schemes, options 1a, 1b and 1c at the lower targeted capacity of 32mppa would reduce or potentially eliminate the need for surface level car parking within the Green Belt due to the reduced size of the development. Options 1d and 2 are considered Currently Unworkable, as per the 36-38mppa appraisal, as significant amounts of development would be located outside of the Strategic Allocation outlined in the Luton Local Plan Policy LLP6 and also within the designated Green Belt and its robust policy protections.				
			10	10	10	Currently Undeliverable	Currently Undeliverable
	O3: To provide additional capacity and connectivity in line with the assessment of need	S3: Increase capacity both airside and landside to achieve target increase of 32mppa	The appraisal levels below reflect the appraisal conducted for the 36-38mppa. Although the overall capacity assumption has been altered, the option appraisals reflect how the options are phased in line with demand. As two terminal options, option 1a and 2 performed better, whilst option 1d. Option 1b and 1c are also comparatively appraised based on their deliverability in relation to the existing terminal.				
			20	-5	10	-10	20

	Strategic Objective	Sift Criteria	Option Family				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Economic	O4: To maximise the potential economic benefits to the regional, sub-regional and local economies	S4: Deliver economic benefits nationally and regionally	At 36-38mppa, option 1d was appraised as Slight Beneficial due to the cost implications of the very long DART extension and the capacity related delays to the airlines due to taxiway congestion negatively impacting on producer benefits. At 32mppa, option 1d is considered to be capable of delivering the same producer benefits as the single terminal options (1b and 1c), without experiencing the same phasing/capacity issues as the 36-38mppa option. The appraisal scoring and rationale for options 1a, 1b, 1c and 2 remained the same at 32mppa as at 36-38mppa.				
			20	5	10	10	20
		S5: Increase job opportunities for the people of Luton and the surrounding areas	All five options could increase the number and type of job opportunities for people in and around the Airport, with the northern options scoring higher, in part due to relative ease of access by public transport, compared to option 1d which is further remote and option 2 where one terminal building would be south of the runway. At 32mppa the anticipated capacity of option 1d is now in line with the other options, and therefore does not generate comparatively lower job projections. As a result, option 1d is now appraised as Moderate Beneficial, compared to Slight Beneficial at 36-38mppa.				
			20	20	20	10	10
Social (people)	O5: To maintain and where possible improve the quality of life for Luton's residents and the wider population	S6: Promote positive benefits and minimise adverse impacts on local communities	All options will contribute to improvements to access to employment, and experience potential adverse impacts upon amenity of residents due to construction, noise and air quality changes. The addition of new park facilities in options 1a-c and 2 outweighs the adverse effects resulting from the loss of parkland from the existing Wigmore Valley Park. Therefore, options 1a-c and 2 are scored as slightly beneficial. Option 1d is scored as neutral because it does not benefit from the additional community facilities provided as part of the New Century Park redevelopment.				
			5	5	5	0	5

	Strategic Objective	Sift Criteria	Option Family				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Sustainability and environment	O6: To minimise environmental impacts and, where practicable, to actively mitigate and manage any potential environmental effects	S7: Noise impact	In line with the 36-38mppa appraisal, the increase in aircraft movements due to expansion causes the potential for Large Adverse impacts to occur, with the same prospects that these impacts can be reduced through mitigation and compensatory measures as for the 36-38mppa options. Furthermore, Large Adverse impacts are likely to occur due to the provision of a southern link road in option 2, which is still required for the 32mppa version , and hard-standing areas of option 1d remaining in close proximity to sensitive receptors at Wigmore and Breachwood Green at 32mppa.				
			-10	-10	-10	-20	-20
		S8: Air quality	All options will introduce additional emission sources due to increased capacity and activity and all cause an adverse impact on current and future receptors in the vicinity of the airport. In line with the 36-38mppa appraisal, option 2 moves airport activity and sources of emissions to the south, away from existing residential areas north of the airport and is therefore likely to have a reduced impact on existing receptors compared to the other options. Option 1d still introduces an apron which is partly within 200m from residents on Eaton Green Road which is likely to cause adverse impacts on current residents close to the airport, the impact remains moderate, based on the current relatively low monitored NO^2 levels near to the airport and anticipated low number of movements at that part of the apron nearest to Eaton Green Road.				
			-10	-10	-10	-10	-5
		S9: Natural habitats and biodiversity	The S9 appraisal focused on the spatial encroachment of each of the options onto areas of sensitivity, with the considerations largely reflecting those within the 36-38mppa appraisal. There are likely to be impacts to ancient woodland and Section 41 priority habitats in all options. While option 1d reduces the extent of impacts on Wigmore Valley Park CWS compared to the other four options, it would have greater impact on connectivity through removal of ridgeline woodland habitat and isolation of Wigmore Valley Park from surrounding habitats. Despite this, based on the assessment criteria, the appraisal level would be the same across all options, Moderate Adverse.				
			-10	-10	-10	-10	-10
Sustainability and environment		S10: Carbon emissions	For an option by far the most significant GHG emissions impact will be from aircraft cruise emissions (i.e. emissions from aircraft over 3,000ft). For the sift process, it has been assumed that the increase in cruise emissions, once the airport is operating at maximum capacity of up to 32mppa, will be the same for each scheme. As a result every option, even at 32mppa, is appraised as Large Adverse impact over the baseline				
			-20	-20	-20	-20	-20

	Strategic Objective	Sift Criteria	Option Family				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Sustainability and environment		S11: Water Resources	As with 36-38mppa, the 32mppa versions of options 1a, 1b and 1c require piling through an existing landfill site on a Principal Aquifer, therefore potentially creating pathways for contaminated water to reach the groundwater which is not present in option 2. However, it is assumed that the potential risk can be managed appropriately via the implementation of appropriate mitigation measures to ensure that any measurable impacts are limited in extent and duration, and these options are therefore appraised as Slight Adverse. Option 1d does not involve piling through a landfill but does involve earthworks to develop a larger platform, which would mean a larger excavation to the northeast to provide the material, therefore overall this option is also considered to be slight adverse.				
			-5	-5	-5	-5	0
		S12: Flood risk	On the basis that any potential impacts on surface water flooding are managed via the implementation of an appropriate drainage design, all five options will not result in any loss of flood storage or increase in flood risk and are therefore considered to be Neutral. These appraisal levels are therefore consistent across the 36-38mppa appraisal and the 32mppa appraisal.				
			0	0	0	0	0
		S13: Cultural Heritage	The cultural heritage considerations are broadly based on spatial extent, rather than throughput, and are therefore broadly similar for both the 36-38mppa appraisal and the 32mppa appraisal. Options 1a, 1b and 1c are considered to be broadly similar in effect, notably on the setting of Luton Hoo and Someries Castle. Option 1d will be more prominent in the landscape, affecting further the rural setting of a number of listed buildings to the east. Option 2 will be the most prominent in the landscape and its proximity to the Someries Castle and Luton Hoo will erode their setting to a great extent. The larger the land take to the east or south and the more the development is centred in these areas the higher the likelihood of major opposition to the project being raised by statutory stakeholders.				
			-5	-5	-5	-10	-20
		S14: Landscape and visual impact and Environmental Land Use	Options 1a, 1b and 1c are considered to be broadly similar in effect, which whilst potentially more significant during construction, could also have greater potential for being mitigated in the longer term. Options 1d and 2 are considered to have Large Adverse impacts as they would affect a larger area of landscape than the other three options and with impacts on large areas of agricultural land.				
			-10	-10	-10	-20	-20

	Strategic Objective	Sift Criteria	Option Family				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
		S15: Climate change	All options were appraised to have a beneficial impact in terms of their climate change resilience in comparison to the existing airport. It is assumed that all new buildings and infrastructure, whether at 32mppa or 36-38mppa, will be engineered/ designed to the latest building standards; therefore the options will be similar in climate change resilience levels.				
			5	5	5	5	5
Surface access	O7: To maximise the number of passengers and workforce arriving at the airport on public transport	S16: Public transport modal share	For the 32mppa appraisal, the targeted modal share of 45% is now the same in all options. However, as with the 36-38mppa options, the ease at which the existing DART could be extended, the vicinity to the Luton conurbation of each option, alongside whether the option was a single or double terminal, influenced the appraisal levels. As a result, the relative performance of the options is consistent with the 36-38mppa appraisal.				
			5	10	10	-5	-5
	O8: To minimise new build highway requirements	S17: Requirement for additional highway infrastructure	Initial surface access modelling suggests that substantial road improvements would need to be delivered for any 36-38mppa scheme, possibly including some regional improvements and new link roads which would be very challenging to deliver. There is more potential to mitigate surface access impacts of a 32mppa scheme, although major new build infrastructure may be required for the 32mppa options; therefore the resulting appraisal levels are consistent between the 36-38mppa and 32mppa appraisals. A conservative approach to the scoring of the options at 32mppa has been taken given the level of information available at this stage, whilst surface access modelling is ongoing. Due to the need to upgrade the CPAR, therefore requiring major highway interventions, options 1b and 1c are appraised as Large Adverse. Option 2 is also appraised as Large Adverse as a new link road is required to serve the southern terminal. In comparison with the other options, the impact of option 1a is likely to be the lowest in magnitude/scale so it is considered to be Moderate Adverse, alongside option 1d which would also require the extension of the CPAR.				
			-10	-20	-20	-10	-20
	O9: To minimise impact on the wider highway network	S18: Impact on wider highway network	As with the 36-38mppa appraisal, significant additional public transport modal share and traffic management interventions, although potentially less third party land, will be required for all 32mppa options. Options 1b and 1c are considered to have a Large Adverse impact on the wider network and 25 links/junctions could require mitigation (subject to model confirmation). Options 1a and 1d require less mitigation on airport and third party land than 1b and 1c, hence the Moderate Adverse rating. Whilst option 2 requires less mitigation again than option 1a and 1d, the need for a new road link and the resultant environmental issues and costs has led to a Large Adverse rating. All of these appraisal levels are consistent between the 36-38mppa appraisals and those conducted at 32mppa for the reasons outlined above for S17.				
			-10	-20	-20	-10	-20

	Strategic Objective	Sift Criteria	Option Family				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Deliverability	O10: To be technically viable, taking account of the needs of airport users, operators and phasing	S19: Deliverable within the context of the current concession to 2031	The 32mppa options are appraised under this criterion for their relative impact on the current concession boundary and the ability to phase each of the options so that it can meet demand until a new concession is in place. As a result, avoiding contractual and logistical issues whilst meeting customer expectations is based on the spatial arrangement of each of the options and not the resulting throughput. As a result, the appraisal levels are consistent between the 36-38mppa appraisal and the 32mppa appraisal.				
			10	-10	-5	10	20
		S20: Attractive to future concessionaires	Options 1b and 1c would be extremely complex to build and phase while maintaining current airport operations and are potentially less attractive due to loss of some MRO and Business Aviation, however option 1b would have a markedly greater impact on the operation of the existing terminal and as such has been marked down. Option 1d is operationally flawed and requires large development of land to the east. Overall, both options 1a and option 2 are appraised as Large Beneficial given the flexibility they provide to future concessionaires and the ability to phase delivery in line with demand. The appraisal levels under this criterion are consistent between the 36-38mppa and 32mppa appraisals.				
			20	-5	5	-10	20
		S21: Feasibility of landfill, earthworks and ground conditions	In line with the 36-38mppa appraisal, the extent to which each option interacts with the area of landfill was the determining factor for the 32mppa appraisal. The option 1 family were all appraised as adverse due to obstructions in the landfill making piling difficult, although option 1d, which moves the terminal further east, alleviates this factor but reduces the area from where fill can be extracted. As with the 36-38mppa options, the earthworks to support option 2 are considered to be relatively straightforward.				
			-20	-20	-20	-10	-5
		S22: Additional land required beyond current LLAL holdings	Although the overall capacity of the option is reduced, the 32mppa options still require significant earthworks to support the platform. The 32mppa options places less pressure on land take in options 1a to c so the prospect of the development staying within LLAL ownership. As with the 36-38mppa option appraisal, option 1d and 2 will still require the purchase of large areas of land for their 32mppa options.				
			10	10	10	-20	-20

	Strategic Objective	Sift Criteria	Option Family				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Operational viability	O11: To enhance LTN's system efficiency and resilience	S23: Operational effectiveness	As with the 36-38mppa option appraisal above, option 1c is preferred due to the completely new terminal building which would provide operational flexibility to airlines and enhance the passenger experience. Whilst this new terminal building is also present in option 1b, the level of service experienced by the passengers is likely to be diminished in this option. Options 1a and 2 are both considered Moderate Beneficial due to the residual inefficiencies of the existing terminal, whilst option 1d has a number of inefficiencies that would likely impact significantly on the overall operability of the airport.				
			10	10	20	-10	10
		S24: System resilience	This criterion sought to appraisal the extent of the resilience improvement in each of the five options, largely derived by whether the option contained a single or double terminal solution. This is because the single terminal options are considered to provide lower resilience in the case of disruption compared to two-terminal options because options 1b and 1c are reliant on singular surface access links and therefore reduce the ability to close a section of the airport whilst this would be possible if there was an incident in any of the two-terminal options. As a result, in line with the 36-38mppa appraisal, options 1b and 1c are appraised as Moderate Beneficial, with options 1a and option 2 appraised as Large Beneficial. Option 1d is appraised as Slight Beneficial due to a number of inefficiencies that make it less resilient than option 1a by virtue of moving the second terminal further to the east.				
			20	10	10	5	20
		S25: Attractiveness to airline operators	This criterion compared options based on their attractiveness to airline operations, comparing the retention of the existing terminal against the difficulties in phasing a single terminal solution in line with demand and splitting airport operations either side of the runway. These considerations are consistent in both the 36-38mppa and 32mppa appraisal, as are the relative appraisal levels. The additional taxiways in option 1d increase efficiency but conversely the gyratory layout in relation to the runway end may provide a sub-optimal system that is hard to operate by ground control and navigate by pilots.				
			10	10	10	-10	5
		S26: Safeguarding for expansion	The area of land occupied by both the 32mppa and 36-38mppa options are broadly similar, with future expansion potential broadly similar as a result. The option 1 family leave open expansion options to the south in the longer term, whilst option 2 could impact on ultimate expansion prospects to the south. The required redevelopment of the existing terminal, either in the shorter (option 1b and c) or the longer (option 1a and 1d) term also reduces the options to moderate beneficial, although they are all seen as having the capacity to expand to 36-38mppa in the future.				
			10	10	10	10	5

	Strategic Objective	Sift Criteria	Option Family				
			Option 1a	Option 1b	Option 1c	Option 1d	Option 2
		S27: Safeguarding existing levels of MRO, Business, Aviation and Cargo activity	In line with the 36-38mppa appraisal, option 1a, 1d and 2 were appraised as Large Beneficial as they retain existing levels of MRO, Business Aviation and Cargo Activity. Options 1b and 1c are appraised as Moderately Beneficial as the options will impact on existing businesses.				
			20	10	10	20	20
Cost benefit	O12:To be affordable including any public expenditure that may be required and taking account of the needs of airport users and operators (Value for Money)	S28: Estimated cost benefit	As with the 36-38mppa appraisal, options 1a and 2 would have a similar order of lower capital expenditure than the other three options which would require comparatively more investment.				
			20	10	10	10	20
		Total	125	-5	40	-110	15

5.7.2 **Table 5.3** shows that, as at 36-38mppa, the preferred option remains option 1a and option 1d the least preferred.

6 OUTCOMES OF SIFT 3

6.1 Introduction

6.1.1 Following on from the summary of the appraisals set out in **Chapter 5** earlier, this section sets out the preferred option to take forward for more detailed design.

6.2 Summary of findings

6.2.1 Overall, the 32mppa findings set out in **Table 5.3** largely mirrored the 36-38mppa appraisal, with option 1a emerging strongly as the most preferred option. Although the overall appraisal findings are not significantly different to those at 36-38mppa, there are nonetheless benefits to the reduction in capacity.

6.2.2 In relation to surface access, initial surface access modelling suggests that substantial road improvements would need to be delivered for any 36-38mppa scheme, possibly including some regional improvements and new link roads which would be very challenging to deliver. The likely lower magnitude of the highway impacts of a 32mppa scheme are likely to be more capable of being managed, for example by focusing on gaining a higher public transport modal share and implementing traffic management interventions in addition to local highway improvements (albeit that it is a difficult and restricted, congested network). Whilst surface access modelling is ongoing a conservative approach has been taken to the scoring of the options at 32mppa at this stage.

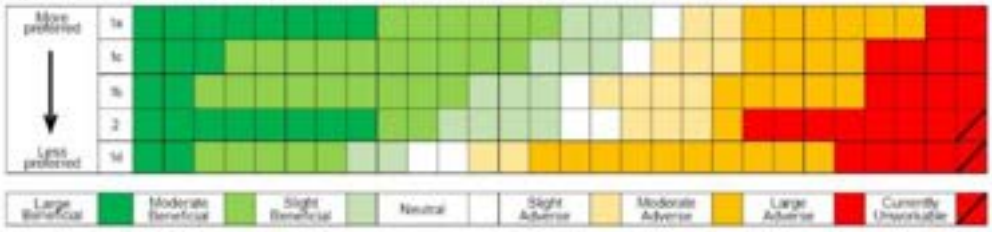
6.2.3 Further, at 36-38mppa, the scale and magnitude of road improvements would be such that the costs are likely to increase and may impact on the project's affordability. Reducing the scheme to 32mppa would potentially reduce the scale of road improvements required and a more granular appraisal system would have captured this benefit, but option 1a in sift criterion S28 Estimated Cost Benefit was already considered Large Beneficial, the most positive score possible.

6.2.4 In relation to the Green Belt, assuming a capacity of 32mppa reduces or potentially eliminates the need for surface level car parking within the Green Belt as part of options 1a, 1b and 1c, due to the reduced size of the development. At 36-38mppa it was acknowledged that further design work would need to be undertaken to find a solution which could demonstrably reduce or minimise such an impact to comply with the stringent requirements of Green Belt policy.

Preferred option

6.2.5 **Figure 6.1** takes the numerical values from **Table 5.3** and rank the options from more preferred to less preferred, to show the relative distribution of appraisal levels.

Figure 6.1 Frequency of appraisal levels for each 32mppa option at Sift 3



6.2.6 Of all five options considered at Sift 3, taking on board changes made following consultation, additional technical work and back-checking during the finalisation of Sifts 1 and 2, option 1a remains the most preferred option which performed the strongest against the majority of the sift criteria, based on available information. This option performed the most strongly in relation to strategic fit, economic benefits, deliverability (within the context of the current concession, attractiveness to future concessionaires and not requiring additional land beyond current LLAL holdings), operational viability and cost benefit.

6.2.7 The other four options – 1b, 1c, 1d and 2 – should be discontinued at this stage. In particular, options 1d and 2 are discontinued based on the appraisal of sift criterion *S2: In broad conformity with national and local town planning policies and capable of attracting the consents required*, where both options propose development in the North Hertfordshire and Central Bedfordshire Green Belt and outside of the LLP6 Strategic Allocation boundary. As can be seen, the new option, option 1d, performed poorly, notably on the basis of operations, noise impacts, land ownership and landscape and visual impact considerations amongst others.

6.2.8 Both of the single terminal options, 1b and 1c, performed significantly less well than 1a in overall terms. Whilst they were considered capable of delivering some degree of beneficial impacts in relation to strategic fit, economic, social, deliverability, operational viability and cost benefits, they also delivered Large Adverse impacts in relation to surface access and landfill criteria compared to other options.

6.3 Next steps

6.3.1 It is recommended that a 32mppa option 1a, with two terminals north of the existing runway, is selected as the preferred option and developed further to take forward to statutory consultation in late 2019.

6.3.2 Chapter 7 of the Non-Statutory Consultation Feedback Report sets out further details of the next steps LLAL will be taking, including how it intends to identity proposals to manage and mitigate the impacts of the project.

Please note the following Appendices are designed to be read at A3.

Appendix A:APPRAISAL TABLES FOR 36-38MPPA

The tables below set out a summary of how options 1a, 1b, 1c, 1d and 2, assuming a capacity of 36-38mppa, were appraised against each of the 28 sift criteria as part of Sift 3. As for Sift 2, the sift criteria have been grouped by the strategic objective to which they relate. For each criterion we have set out below the results of the appraisal for each option and, where either the appraisal level or the rationale for that appraisal level have changed since Sift 2, we have set out the rationale for the appraisal level at Sift 3. Where the appraisal level and rationale remains the same as in Sift 2 full details can be found in Chapter 5 of the Sift 2 report.

A1 Strategic Objective O1: Compliance with Government Aviation Policy

A1.1 **Table A.1** below sets out how the options performed against the relevant criterion and sub-criteria, examining whether they are consistent with Government Aviation policy in relation to: proposed use or modification of existing runway; implications for Heathrow Airport expansion; support for consumer objectives and the delivery of a competitive aviation sector.

Table A.1: S1 Consistent with making best use of the existing runway (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Does the option use the existing runway or propose a new runway?	As for Sift 2-see chapter 5 of the Sift 2 Report.			No new runway is proposed (if an emergency runway is provided it is assumed that this would not be a breach of policy) and no modifications are proposed to the existing runway. Unlike the other four options, this option is likely to struggle to deliver at least 50 movements per hour and this is therefore not considered 'best use' of the existing runway consistent with aviation policy (National Policy Statement (NPS) and Aviation Strategy Call for Evidence). This is due to a number of reasons: - Location of the new apron area does not provide a suitable location for the queuing of departing aircraft so as not to block other taxiways and impede the arrivals flow. - Location of the main taxiway intersection between the new apron area and runway end is likely to be prone to congestion and pilot confusion. - Lack of apron space outside the new hangars may cause disruption to the parallel taxiway. Unlike the other four options, the capacity target is not consistent with 2003 Future of Aviation White Paper which supported expansion of capacity at LTN up to 240,000 aircraft movements a year with a single runway.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does the option require modifications to the existing runway – alignment or length?	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option retains the current runway alignment and does not propose an extension so is policy compliant.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Would the option have implications for the deliverability of the proposed Northwest runway at Heathrow as supported by Government policy (Adopted NPS)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			There would be no impact on deliverability of the Northwest runway at Heathrow as airspace is being redesigned to ensure that there are no airspace conflicts and Government policy supports other airports making best use of their runways alongside the third runway at Heathrow.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Would the option support the Government's consumer objectives?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Whilst there is some uplift in capacity, there is potential for gridlock due to the location of the eastern stands relative to the end of the runway. Therefore this option would offer less capacity than the other options.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Appraisal level	20	20	20	-5	20
Summary	All options except for option 1d would deliver Large Beneficial impacts, as option 1d is not considered capable of ensuring the best use of the existing runway.				

A2 Strategic Objective O2: To identify a scheme that is likely to be capable of being consented and secured through a DCO

A2.1 **Table A.2** below sets out how the options performed against the relevant criterion and its sub-criteria, considering their alignment with planning policies at the national and local level.

Table A.2: S2 In broad conformity with national and local town planning policies and capable of attracting the consents required (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Does the proposal meet National Planning Policy and Local Planning Policy sufficiently to support the grant a DCO, having regard to s104 of the Planning Act 2008, and the need to have regard to the Local Impact Report(s) and all relevant matters, including National and Local planning policies?	As for Sift 2-see chapter 5 of the Sift 2 Report.			In this option, the terminal building and all associated buildings and structures north and east of the runway would be outside of the Strategic Allocation outlined in the Luton Local Plan Policy LLP6. This option also places significant additional built development including terminal structures and access roads within land designated as Green Belt and its robust policy protections. As it currently stands this option is unlikely to meet the 'very special circumstances' Green Belt test as long as options 1a, 1b and 1c remain viable alternatives, hence being appraised as Currently Unworkable.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Appraisal level	10	10	10	00 Currently Unworkable	00
Summary	The three options which focus development north of the runway and west of Wigmore Valley Park – options 1a, 1b and 1c – perform equally well, whereas both options 1d and 2 are considered to be Currently Unworkable given current policy constraints and high threshold for Green Belt protections.				

A3 Strategic Objective O3: To provide additional capacity and connectivity in line with the assessment of need

A3.1 **Table A.3** sets out how well the options could provide additional capacity and connectivity, taking into consideration their ability to provide additional capacity in the runway, apron and terminal subsystems, and to phase this capacity in line with projected demand.

Table A.3: S3 Increase capacity both airside and landside to achieve target increase up to 36-38mppa (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
What is the capacity to be provided in each subsystem – Runway? – Apron? – Terminal?	As for Sift 2-see chapter 5 of the Sift 2 Report.			No taxiway simulation modelling has been carried out on this option to confirm runway movement rates or general suitability. However, based on professional judgement, it is believed that the desired 50 movements per hour would not be deliverable. The location of the new apron area would make it difficult to queue aircraft for departure without compromising the flow of traffic through the main taxiway intersection. This is likely to make separation of arrival and departure flows difficult leading to complex sequencing and congestion. Sufficient apron is provided to accommodate 220,000 passenger ATMs a year and space for cargo, MRO and business aviation activity is maintained. However, the lack of space for apron associated with the new hangars is likely to have a negative impact on the adjacent taxiway. The terminal could provide capacity for up to 36-38mppa.	As for Sift 2-see chapter 5 of the Sift 2 Report.
What is this option's ability to phase in line with demand?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The layout of the new terminal and apron area may be difficult to phase as it operates on the premise of a gyratory taxiway system. A scaled back first phase would require (at some point) very intrusive work to extend this loop further north.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Appraisal level	20	-5	10	-10	20
Summary	Option 1d performed less well than the other two double terminal options, 1a and 2 in terms of capacity, and like option 1b, is likely to struggle to phase capacity in line with demand due to the fact it is based on a gyratory taxiway system. Option 1d is considered to be materially worse for this criterion than the next worse option, 1b, and so has been moderated to a score lower than option 1b.				

A4 Strategic Objective O4: To maximise the potential economic benefits to the regional, sub-regional and local economies

A4.1 **Table A.4** and **A.5** set out how the options performed against the two criteria and sub-criteria, focusing on the options' abilities to: deliver benefits to users, producer benefits and wider connectivity benefits (S4); and increase job opportunities for those living in and around Luton (S5).

A4.2 Note that producer benefits are derived from the profitability of the investment – see O12 To be affordable including any public expenditure that may be required and taking account of the needs of airport users and operators (Value for Money).

Table A.4: S4 Deliver economic benefits nationally and regionally (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
What are the benefits to users (journey time and air fare savings due to availability of choice and more routes), known as Transport Economic Efficiency?	As for Sift 2-see chapter 5 of the Sift 2 Report.			As with the other options, user benefits will arise from savings to journey times compared to alternative airports and air fare benefits from LTN's low fare offer (subject to scheme cost and affordability, covered under sift criterion *S28: Estimated cost benefit*).	As for Sift 2-see chapter 5 of the Sift 2 Report.
What are the producer benefits (increased income to airlines, airport operators)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Producer benefits derived from the profitability of the investment (see sift criterion S28) due to increased capacity, could be phased to meet demand but will be impacted marginally by the costs to the airlines and operators (handling agents) etc caused by needing to operate in two terminal buildings. The cost implications of the very long extension to the DART would also negatively impact the producer benefits. This means overall benefits are likely to be lower than option 1a or 2 due to the anticipated higher costs and complexity of operation.	As for Sift 2-see chapter 5 of the Sift 2 Report.
What are the wider connectivity benefits (trade, tourism, inward investment) via improved road and rail infrastructure?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Wider benefits are proportional to the capacity delivered. This option is unlikely to be capable of achieving the full 36-38mppa and 220,000 passenger air traffic movement (PATMs) but will still deliver large benefits to users and airlines and support Gross Value Added (GVA) growth in the surrounding areas by attracting additional investment. Detailed assessment has yet to be carried out so initial judgements are made and, prima facie, these benefits would be less than the other which are capable of supporting the full 36-38mppa.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	20	5	10	5	20
Summary	Overall, option 1d performs as well as option 1b (Slight Beneficial) given that it is marked down on the basis of increased costs affecting producer benefits and lower wider connectivity benefits, whereas 1b was marked down as phased construction was considered to be both difficult and costly.				

Table A.5: S5 Increase job opportunities for the people of Luton and the surrounding areas (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
How many jobs could be created regionally, sub-regionally (three counties) and locally (Luton)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Local employment will be proportional to capacity and throughput at the Airport. Growth to the full 36-38mppa would support a sizeable increase in jobs, provisionally of the order 16,000 new jobs (direct, indirect and induced) in the sub-region (three counties) and £1.5bn uplift in GVA directly from the operation of the Airport. There may be slightly higher direct employment with two terminals compared to one terminal but this would be offset by the likely lower overall passenger throughput. Local access to jobs may be more difficult for low wage/low skill employees from Luton with a more easterly location as public transport (notably bus links) are likely to be less frequent and journey times lengthier.	As for Sift 2-see chapter 5 of the Sift 2 Report.
What type of jobs could be created and retained – skilled jobs (higher paid) in Luton (permanent jobs)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Jobs at the Airport and in the supply chain will be at a range of skills and wage levels and include apprenticeship opportunities for local people (it is expected that this requirement will be included in the new concession agreement) and linked to the Luton Skills and Employability Strategy.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	20	20	20	5	10
Summary	Overall, this option is considered to have Slight Beneficial impacts for local employment due to the relative remoteness of the new terminal location and the lower capacity supported (compared to the other four options), although improvements to public transport links would enhance local access to the employment opportunities.				

A5 Strategic Objective O5: To maintain and where possible improve the quality of life for Luton's residents and the wider population

A5.1 **Table A.6** below sets out how the options perform against the relevant criterion and its sub-criteria, focusing on their ability to maintain and improve the quality of life for those living in and around Luton.

Table A.6: S6 To promote quality of life and minimise adverse impacts on communities (36-38mppa)

Sub-criteria:	1a 1b 1c	Option 1d	2
Does this option improve quality and choice of employment and training opportunities?	As for Sift 2-see chapter 5 of the Sift 2 Report.	The employment appraisal (S5) states that provisionally around 16,000 new jobs (direct, indirect and induced) would be created. As with options 1a, 1b, c and 2, direct job creation would range from highly skilled to low and unskilled (with the largest proportion assumed to be in the latter categories), resulting in a significant increase in availability and choice of employment within Luton and across the region, with the potential for associated training and skills benefits. Appointment of the construction contractors would include assessment of their commitment to upskilling the local workforce in line with LLAL's commitment to social values. Development of the terms of the concession would include partnership obligations to deliver key criteria included within the Luton Investment Framework 2015-2035, focusing on improving life chances for local people.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option reduce adverse effects of unemployment, low income and job insecurity?	As for Sift 2-see chapter 5 of the Sift 2 Report.	The increased passenger numbers would provide a basis for negotiating a new concession agreement. This will contain improved terms which would permanently benefit direct employees in the airport and increase the proportion of jobs taken by hard to reach groups. It is assumed that LLAL will work with Luton Borough Council to integrate measures within both the concession agreement and construction contracts to support the Luton Investment Framework, Skills and Employ Strategy and Health Inequalities Strategic Plan to reflect a clear intent by LLAL to target the benefits of employment and training to those most in need, including hard to reach groups. It is considered that there is a potential for a beneficial impact with this particular sub-criterion.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option avoid direct impacts on, and maintain access to, existing community facilities?	As for Sift 2-see chapter 5 of the Sift 2 Report.	Wigmore Park currently covers approximately 40ha, including a small children's play area, allotments, a skate park and extensive areas for 'country walks'. This option would retain the majority of Wigmore Valley Park), the allotments, and the accessibility of the open space to the population it currently serves. There would be no direct impacts on open space provision as a result of the Airport expansion, and would therefore remain open to public during construction and continue to be used for its intended purposes.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option preserve the amenity of residential areas and enjoyment of community facilities and outside spaces?	As for Sift 2-see chapter 5 of the Sift 2 Report.	The temporary and permanent adverse impacts are similar to those for options 1a, 1b and 1c in terms of: • Likely temporary adverse construction impacts on the amenity of residential areas in south-east Luton from construction, earth-moving and demolition works. These activities are also likely to impact the amenity of users of the open space facilities in Wigmore Park and Wigmore Pavilion • Potential permanent adverse impacts on the amenity of residents and community facilities to the immediate north of the airport, due to additional aircraft and surface transport movement noise and the visual element of a new car park and airport related buildings. • Potential permanent adverse impacts (noise, air quality) on the enjoyment of community facilities and outside spaces, due to the additional traffic movements to and from the airport using the new road extending from the end of Century Park Access Road and around the perimeter of Wigmore Valley Park. As with the other four options, the increase in aircraft movements will increase impacts on amenity on those residential areas and community facilities already impacted due to their location under existing flightpaths.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option protect and promote public services that support quality of life and wellbeing?	As for Sift 2-see chapter 5 of the Sift 2 Report.	As with options 1a, 1b, 1c and 2, option 1d will also increase LLAL's continued contributions to local services. With profits made by LLAL payable to Luton Borough Council (LBC) as a dividend due to its role as a shareholder, this money is used to maintain the statutory and discretionary services provided by LBC. In addition to this and the Corporate Social Responsibility (CSR) Fund maintained by LBC, the retention of Wigmore Valley Park is likely to maintain access to physical activity and promote social cohesion in the Borough.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option promote positive equality impacts and minimise the potential for adverse equality impacts for groups with protected characteristics or communities that experience high levels of socio-economic deprivation?	As for Sift 2-see chapter 5 of the Sift 2 Report.	As with the other options, the potential for equality groups to benefit from the employment opportunities will depend on the implementation of measures to ensure the benefits reach relevant groups. The retention of Wigmore Valley Park will have neutral effects for local residents with protected characteristics, i.e. children, young people and others who may benefit from access to these facilities, as it is the status quo. The other options benefit from the provision of new facilities as part of the New Century Park development. Adverse impacts arising from construction and operation could have the potential to affect people from equalities groups living in those areas and who may be more sensitive to environmental impacts such as noise, air quality and changes to the visual environment. The retention of Wigmore Valley Park could provide an additional buffer to help minimise potentially adverse impacts on residential communities to the north. Improvements to public transport, as with other options, would allow people to access jobs at the airport could improve access for local communities, leading to potential positive outcomes for equality groups and particularly those who may be less likely to have access to private modes of transport. However, the easterly location may make journey times longer.	As for Sift 2-see chapter 5 of the Sift 2 Report.

Sub-criteria:	1a	1b	1c	Option 1d	2
	5	5	5	0	5
Summary	All options provide beneficial choice of employment and training opportunities. Option 1d will no longer deliver the additional provision of a children's playground and leisure facilities associated with the New Century Park development. Therefore, the existing Wigmore Valley Park will be retained without improvements. Potential permanent adverse impacts (noise, air quality) on the enjoyment of community facilities and outside spaces, due to the additional traffic movements to and from the airport using the new road extending from the end of Century Park Access Road and around the perimeter of Wigmore Valley Park. Option 1d has been assessed as neutral for the direct impacts on existing communities, equality groups, and the protection of public services and quality of life due to the balance between the employment benefits and the potential adverse changes to amenities, residential areas, and enjoyment of outdoor space.				

A6 Strategic Objective O6: To minimise environmental impacts and, where practicable, to actively mitigate and manage any potential environmental effects

A6.1 This strategic objective covers nine criteria:

- S7 Noise;
- S8 Air quality;
- S9 Natural habitats and biodiversity;
- S10 Carbon emissions;
- S11 Water resources;
- S12 Flood risk;
- S13 Cultural heritage;
- S14 Landscape and visual impact and environmental land use; and
- S15 Climate change.

A6.2 **Table A.7** sets out in more detail how the options performed in relation to the potential noise impact from site preparation, construction and operation.

Table A.7: S7 Noise impact (36-38mppa)

Sub-criteria:	1a 1b 1c	Option 1d	2
Does this option minimise the number of people exposed to the adverse impacts of noise? Including consideration of: • Site preparation noise and vibration	As for Sift 2-see chapter 5 of the Sift 2 Report.	Noise and vibration generated during site preparation will take place to the south of Eaton Green Road. During site preparation, substantial earthworks will be undertaken to level the ground, potentially resulting in adverse impacts at receptors in the residential area north of Eaton Green Road. The temporary nature of the works and the potential for implementing mitigation and adopting a methodology that implements best practicable means provides a basis for the likely impacts to be reduced or offset. Unlike other options, option 1d would require a substantial number of heavy goods vehicle (HGV) movements to provide enough material to level the site. The level of impacts will be dependent on the haul route selected; however, it is anticipated that the likely requirement for a large number of HGV movements over a short period of time would have the potential to result in adverse levels of noise. There is potential for the haul route to access the site via the A1081, which has an existing high density of road traffic flows so it would require a large number of HGVs to result in an overall change in road traffic noise. However, due to the high density of traffic flows, deliveries may need to be made at night so there is no additional stress placed on the local road network during peak periods. A management plan would be required to ensure that best practice is followed for site preparation deliveries to ensure that noise is minimised.	As for Sift 2-see chapter 5 of the Sift 2 Report.
• Construction noise and vibration • Noise from HGV traffic associated with site preparation and construction phases	As for Sift 2-see chapter 5 of the Sift 2 Report.	During construction, works will be confined to the areas designated for structures and hard standing areas and may take place approximately 250m from the nearest sensitive receptor to the north of Eaton Green Road. Adverse noise levels are likely to occur; however, the location of construction works will vary over the extent of the site so periods of adverse levels of noise are likely to be limited. As with site preparation works, the likely impacts could be controlled to some extent. As with site preparation, the level of impacts from HGV movements will be dependent on the haul route selected. Unlike the site preparation phase, there will not be a requirement to receive a high number of deliveries in a short period of time so deliveries could be scheduled to minimise noise. Consequently, it is unlikely that the magnitude of HGV movements on main roads will be high enough to result in a perceivable change in noise.	As for Sift 2-see chapter 5 of the Sift 2 Report.
• Aviation noise (aircraft approaches and departures)	As for Sift 2-see chapter 5 of the Sift 2 Report.	As factors affecting airborne aircraft noise (i.e. air traffic movements, aircraft variants, runway use and airspace design) are unlikely to change for each option, the impact of airborne aircraft noise for option 1d is the same as for the other four options. Given the considerable increase in aircraft movements due to the expansion, there is potential for adverse impacts to occur. However, there is the prospect that the level of impact may be reduced through changes in aircraft type, further improvements in aircraft technology, management of night-time flights and other mitigation/compensation measures.	As for Sift 2-see chapter 5 of the Sift 2 Report.

Sub-criteria:	1a	1b	1c	Option 1d	2
• On-site ground noise (i.e. aircraft taxiing, on-site road infrastructure, parking facilities etc.)	As for Sift 2-see chapter 5 of the Sift 2 Report.			Ground noise is the main constraining factor for option 1d as the distance from the new apron to the nearest sensitive receptor is approximately 250 m. Aircraft taxiing and idling in this area are likely to result in adverse levels of noise at receptors to the north of Eaton Green Road, in particular at night. The other north options – 1a, 1b and 1c - provide screening of ground noise from new terminal infrastructure; however, option 1d does not provide any form of screening of ground activities at the new apron with the exception of structure forming New Century Park. Road traffic will access the airport via the A1018 and an upgraded New Century Park access road. Due to the existing high density of road traffic on the A1081, it is unlikely that increases in road traffic will be of a magnitude to result in a substantial negative impact.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-10	-10	-10	-20	-20
Summary	Option 1d requires the orientation of the new apron to be in a broadly north/south direction, bringing the development closer to noise receptors north of Eaton Green Road than other northern options (1a, 1b and 1c). Compared to the other four options, option 1d would require a substantial number of heavy goods vehicle (HGV) movements during the site preparation phase. Although a management plan can route and schedule deliveries to minimise impacts, the likely high level of HGV movements and potential for night-time deliveries may result in moderate adverse impact, which is greater than other options. In addition, as it is uncertain at this stage of the appraisal if screening of ground noise can be delivered and whether a restriction on night activities on the new apron can be implemented, it is considered that the potential level of impact for option 1d is Large Adverse, as with option 2.				

A6.3 **Table A.8** below sets out in more detail how the options performed with regard to their potential effects on air quality and sensitive receptors.

Table A.8: S8 Air quality (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Is this option likely to cause an exceedance of any air quality objective?	As for Sift 2-see chapter 5 of the Sift 2 Report.			As with the other four options, the additional road traffic, additional flights and associated activity may cause an adverse impact on current and future receptors in the vicinity of the airport and may adversely affect the nearby Air Quality Management Areas (AQMAs), notably the Luton town centre AQMA, in all four options.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Is this option likely to delay compliance with EU limit values as calculated by the Government using the PCM model?	As for Sift 2-see chapter 5 of the Sift 2 Report.			As with the other four options, if the decrease in concentrations due to national level improvements does not outweigh the increased activity due to the development, exceedances of the annual mean NO_2 air quality objective in the AQMAs may be worsened which would be a constraint. After 2025 the proposed development would not be expected to exacerbate exceedances in the AQMAs as by that time the national improvements should cause a decrease in concentrations, using professional judgment based on the predicted change in emission factors (Defra's Emissions Factor Toolkit).	As for Sift 2-see chapter 5 of the Sift 2 Report.
Will this option have adverse or beneficial impacts on human receptors?	As for Sift 2-see chapter 5 of the Sift 2 Report.			As with the other four options, without data on the increase in surface access and the data for aircraft and other airside activity, the increase in concentrations cannot be quantified. The option introduces an apron which is partly within 200m from residents on Eaton Green Road. However, it is likely that the scheme will not cause large adverse effects on current residents close to the airport, using professional judgment based on the relatively low monitored NO_2 levels near to the airport currently and anticipated low number of movements at that part of the apron nearest to Eaton Green Road. It may give rise to odour complaints. It is however likely to increase concentrations in all three AQMAs. It is hard to determine the impact on future receptors as they may be closer to the increased airport activity than the current receptors, and therefore may be subject to higher concentrations. For (future) non-residential receptors the hourly NO_2 air quality objective is most relevant and is unlikely to be exceeded. It is likely that road traffic accessing the long stay car parks to the east via the Century Park Access Road (CPAR) will increase concentrations of pollutants at Wigmore Valley Park (WVP), where the hourly NO_2 air quality objective is relevant.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option minimise the number of people exposed to poor air quality?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The additional road traffic in the vicinity of the airport, additional flights and associated activity on the airport may cause an adverse impact on current and future receptors in the vicinity of the airport and may adversely affect the AQMAs, the town centre AQMA in particular. Prevailing winds are south-westerly so the greatest impact on long-term concentrations e.g. annual means, will be expected at locations that lie to the north-east of any of the airport and major road sources. The maximum short-term concentrations e.g. hourly NO_2, will not necessarily occur downwind of prevailing winds. The location of WVP with airport activity to the west and east of the main part of the park would be expected to result in worse air quality in WVP than under the other four options and may give rise to odour complaints from users of WVP.	As for Sift 2-see chapter 5 of the Sift 2 Report.

Sub-criteria:	1a	1b	1c	Option 1d	2
Will this option have adverse or beneficial impacts on ecological receptors?	As for Sift 2-see chapter 5 of the Sift 2 Report.			There are no nationally designated ecological receptors within 5km of the airport, but the assessment will consider ecological receptors within 15km of the airport. Without data on the increase in surface access and the data for aircraft and other airside activity, the impact on ecological receptors cannot be quantified. The proposed development is not likely to cause an adverse impact on ecological receptors, using professional judgment, based on distance of the ecological receptors from the airport (over 5km). It is likely that road traffic accessing the long stay car parks to the east via the CPAR will increase concentrations of pollutants at WVP. However, WVP is not a designated ecological site.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-10	-10	-10	-10	-5
Summary	As all options introduce additional road traffic in the vicinity of the airport, additional flights and associated activity, they all cause an adverse impact on current and future receptors in the vicinity of the airport and may adversely affect the AQMAs. Option 2 spreads airport activity and sources of emissions to the south, away from existing residential areas north of the airport and is therefore likely to have a reduced impact on existing receptors compared to the other options. Although option 1d introduces an apron which is partly within 200m from residents on Eaton Green Road, it is not likely that the option will cause adverse impacts on current residents close to the airport. This is in line with the other northern options (1a, 1b and 1c) based on the current relatively low monitored NO_2 levels near to the airport and anticipated low number of movements at that part of the apron nearest to Eaton Green Road.				

A6.4 **Table A.9** sets out in more detail how the options performed with regard to their potential effects on existing natural habitats and biodiversity.

Table A.9: S9 Natural habitats and biodiversity (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Are there any internationally, nationally or locally protected/designated nature conservation sites affected?	As for Sift 2-see chapter 5 of the Sift 2 Report.			As with the other four options, no significant impacts to internationally or nationally designated sites are envisaged as part of the proposed works at this stage in option 1d. However, further information regarding impacts such as potential air quality changes as a result of increased traffic will be required to establish the zone of influence of the proposed development. Acoustic impacts on wildlife receptors will also need consideration. Wigmore Park County Wildlife Site (CWS), a non-statutory designated site, would be affected by the proposed works through the removal of the south-east section of the 'green lane', which runs along the airport boundary. In addition, the works are likely to impact on Winch Hill Woods CWS, which comprises ancient woodland, located to the east of the existing runway. The partial loss of County Wildlife Sites is likely to require the creation of compensatory habitat through collaboration with the local wildlife trust and LBC. Compensation would also be required for any loss/degradation caused to the ancient woodland within Winch Hill Wood CWS, with any loss to this habitat being essentially irreplaceable. Other CWSs may also be impacted by changes in air quality and disturbance.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Will priority habitats identified in national legislation and local policy/guidance be impacted?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Potential impacts to habitats include habitat loss, fragmentation, degradation and disturbance. The most significant losses will be areas of broadleaved woodland and hedgerows, both of which are Section 41 priority habitats (Natural Environment and Rural Communities (NERC) Act 2006) and therefore of principal importance to the conservation of biodiversity in England. In addition, the loss of arable field margin habitats such as set-aside, calcareous grassland and mature trees will result in fragmentation at a landscape scale.	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent are populations of protected/notable species likely to be affected?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Based on current site understanding, the works would impact on at least two known bat roosts (common species in low numbers) and three main badger setts, resulting in species mortality in the absence of mitigation. Previous surveys have also identified the presence of a small population of reptiles (slow worm), Roman snail and an assemblage of common farmland birds, which may be impacted by the proposed development. Additional impacts on fauna include reduced foraging resource, disturbance and fragmentation.	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent can effects be managed and mitigated? What opportunities are likely to improve ecological connectivity and provide enhancements?	As for Sift 2-see chapter 5 of the Sift 2 Report.			At this stage, it is considered that the above impacts could be mitigated effectively through well thought out licence applications and habitat management planning including additional (compensatory) planting and parkland to retain and enhance connectivity with the wider landscape and compensation for loss of ancient woodland and habitats within Wigmore Park CWS that could be lost as part of the development.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-10	-10	-10	-10	-10
Summary	There are likely to be impacts to ancient woodland Section 41 priority habitats in all options. While option 1d reduces the extent of impacts on Wigmore Valley Park CWS compared to the other four options, it would have greater impact on connectivity through removal of woodland ridge habitat and isolation of Wigmore Valley Park from surrounding habitats. Overall, the appraisal level would be the same as for the other options, Moderate Adverse.				

A6.5 **Table A.10** sets out in more detail how the option performed with regard to carbon emissions.

Table A.10: S10 Carbon emissions (36-38mppa)

Sub-criteria:	1a 1b 1c	Option 1d	2
Does this option minimise the greenhouse gas (GHG) emissions from the proposed project (against the current status) during its construction, in its operation and its surface access with a focus on: • The loss of a carbon sink due to land use change	As for Sift 2-see chapter 5 of the Sift 2 Report.	Option 1d will result in an increase in carbon emissions as a result of land use change due to the expansion of the airport site and subsequent excavation of soil/vegetation in this area (as wth 1a, 1b and 1c). The retention of WVP would result in a smaller increase in carbon emissions from land use change compared to the other options in which WVP is not retained.	As for Sift 2-see chapter 5 of the Sift 2 Report.
• Construction activities and embedded carbon in materials	As for Sift 2-see chapter 5 of the Sift 2 Report.	Option 1d, 1a and 2 will require less demolition, have more reuse of existing assets, require less construction of buildings and infrastructure assets – all corresponding to a lower increase in carbon emissions from embedded carbon in materials required and diesel consumption for construction activities compared with option 1b and 1c. Option 1d has the smallest area of new apron leading to lower construction emissions and lower embedded carbon emissions for apron construction than options 1a, 1b and 1c. Not all material required for construction can be recovered from site in option 1d. Therefore, approximately 1million m³ would need to be imported, unlike other options. This would result in increased GHG emissions from transportation.	As for Sift 2-see chapter 5 of the Sift 2 Report.
• Airport buildings and infrastructure operations i.e. energy consumption, water supply, waste water, waste disposal;	As for Sift 2-see chapter 5 of the Sift 2 Report.	All three two-terminal options (1d, 1a and 2), are likely to require additional demand in potable water and grey water, and marginally higher generation of foul water and energy demand compared to single terminal options (1b and 1c). Options 1d, 1a and 2 are likely to generate more waste than options 1b and 1c. A two terminal option does not allow for economies of scale through a single waste management area.	As for Sift 2-see chapter 5 of the Sift 2 Report.
• Airport operated vehicles including those owned by third party operators (airside/landside);	As for Sift 2-see chapter 5 of the Sift 2 Report.	Option 1d will likely have marginally greater carbon emissions from landside/ airside vehicles compared to options 1a, 1b and 1c due to a second terminal building (potentially leading to increased journeys, distance to travel (all access to airport facilities should be assumed to come through the centre road extending from the end of the CPAR i.e. all traffic driving around the perimeter of WVP), etc). Option 1d will have similar emissions to option 2 due to the compact nature of the site.	As for Sift 2-see chapter 5 of the Sift 2 Report.
• Surface access journeys (passengers, freight, employees); and	As for Sift 2-see chapter 5 of the Sift 2 Report.	S16: Public transport modal share states a range of 50%+ public modal share is targeted in all options.	As for Sift 2-see chapter 5 of the Sift 2 Report.
• Aircraft (during landing take-off cycle, cruise emissions).	As for Sift 2-see chapter 5 of the Sift 2 Report.	Option 1d will result in an increase in aircraft taxi times compared to other options and the baseline because aeroplanes are more likely to back up and there is a longer distance to the opposite end of the runway on days when the wind is not in a favourable direction. The increase in aircraft cruise emissions will be the same across all five options; this will be the largest impact on the carbon footprint and will need further consideration.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-20 -20 -20	-20	-20
Summary	Option 1d offers lower emissions than the other options with regard to land use change (due to the retention of WVP) and lower embedded carbon in materials associated with the smaller new apron requirement. It has similar emissions to options 1a and 2 with regard to demolition and reuse of materials and slightly higher emissions than other options in terms of airport vehicle operations. For any option however by far the most significant carbon emissions impact will be from aircraft cruise emissions i.e. emissions from aircraft over 3,000ft, and as such, every option is judged to have a Large Adverse impact over the baseline. Emissions from the landing take-off (LTO) cycle of aircraft, while not as large as cruise emissions, will also be important. For the sift process it has been assumed that the increase in cruise emissions, once the airport is operating at a maximum capacity of up to 36-38mppa, will be the same for each scheme. The rate at which this maximum capacity is reached, and therefore the associated GHG emissions arising, will vary over time depending on which option is selected. However, at this stage there is insufficient information available to quantify this impact and hence all are presented as Large Adverse.	

A6.6 The results of the appraisal in relation to water resources are set out below in **Table A.11**. It is assumed that through the detailed design process, the proposals will take into account existing surface water flow paths.

Table A.11: S11 Water resources (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Does the option have any direct/indirect impacts on water quality in surrounding watercourses, particularly where Water Framework Directive (WFD) status may be compromised?	As for Sift 2-see chapter 5 of the Sift 2 Report.			As there are no surface water features within the area affected by this option there are no impacts to the surface water regime compared to baseline. It should also be noted that the Principal Aquifer underlying the site is classified as a Water Framework Directive (WFD) waterbody, the Upper Lea chalk. A WFD compliance assessment may be required to determine whether this option would affect the current WFD groundwater body status.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does the proposed option have the potential to affect any groundwater receptors, such as through dewatering or impacts on groundwater quality?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The scale of earthworks for option 1d is larger than the other options and as such could affect the groundwater regime and the abstraction of groundwater in the area. It is assumed that the potential risk can be managed appropriately via the implementation of appropriate mitigation measures to ensure that any measurable impacts are limited in extent and duration, and therefore this option is appraised as Slight Adverse.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Will the option have any direct/indirect effects on water abstractions (Groundwater and surface water) and Source Protection Zones (SPZ)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Option 1d would require piling into a Principal Aquifer and the development at the eastern end would be located above a Source Protection Zone (SPZ) 3 and is closer to the drinking water abstraction at Kings Walden. This option does not involve piling through the landfill therefore the risks of creating potential pathways for contamination to reach the groundwater are greatly reduced. However, the scale of earthworks is larger than the other options and as such could affect the groundwater regime and the abstraction of groundwater in the area.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-5	-5	-5	-5	0
Summary	Whilst option 1d does not involve piling through the landfill (unlike options 1a, 1b and 1c), it does involve larger scale earthworks than the other four options, increasing the risk to groundwater quality and abstraction. As it is assumed that the potential risk can be managed appropriately via the implementation of appropriate mitigation measures to ensure that any measurable impacts are limited in extent and duration, this option is therefore considered to have a Slight Adverse impact, in line with options 1a, 1b and 1c.				

A6.7 The results of the appraisal in relation to flood risk are set out below in **Table A.12**.

Table A.12: S12 Flood risk (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Does the option encroach on any areas at risk of flooding from surface water, rivers, artificial water bodies or groundwater?	As for Sift 2-see chapter 5 of the Sift 2 Report.			There are parts of the existing airport that are shown to be subject to high risk from surface water flooding and the existing surface water flow paths that cross the existing airport and the proposed development site will have to be taken into account through the development proposals.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does the option have the potential to pose any increase in flood risk to receptors located in the vicinity of the site?	As for Sift 2-see chapter 5 of the Sift 2 Report.			It is assumed the development process can preserve existing surface water connectivity maintaining existing surface water feeds to local receptors.	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent can any potential impacts on flood risk be appropriately managed?	As for Sift 2-see chapter 5 of the Sift 2 Report.			It is assumed that any potential impacts on localised surface water flood risk at this location (or any other location on the site were localise depressions may potentially be created) can be managed via the implementation of appropriate drainage measures.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	0	0	0	0	0
Summary	As with sift 2, on the basis that any potential impacts on surface water flooding are managed via the implementation of an appropriate drainage design, all five options will not result in any impacts to loss of flood storage or increase in flood risk and are therefore all considered to have a Neutral appraisal level.				

A6.8 The results of the appraisal in relation to potential effects on assets of cultural heritage are set out below in **Table A.13.**

Table A.13: S13 Cultural heritage (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Does the option seek to minimise adverse effects on the significance of internationally and nationally designated heritage assets and their settings?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The setting of Luton Hoo Registered Park and Gardens (RPG) and its associated buildings as well as the Someries Castle may be affected by development proposed by option 1d. In addition, proposed works further east of the existing airport buildings and hard surfaces will affect a number of listed buildings further east, north-east and south-east. These include: Wigmore Hall Farmhouse; Wandon End Farmhouse; Wandon End House; Woodside Cottage; and a number of grade II listed buildings in the village of Breachwood Green to the east. Seven of these are closer to the proposed development and include the Old Homestead, 12 Chapel Road, Old Pump Cottage, Fir Tree Cottage, Colemans Farmhouse, South Barn at Brownings Farm and Brownings Cottage. Winch Hill Farmhouse, a Grade II listed building, would be demolished in this option, although this is currently proposed for demolition on health and safety grounds.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does the option affect other heritage assets?	As for Sift 2-see chapter 5 of the Sift 2 Report.			A positive aspect is that the retention of WVP would mean that the area known as 'the triangle' (which was identified as having potential to preserve buried archaeological deposits) would remain undisturbed. This does not, however, substantially offset the far greater impact of the land take to the east and the building of large surface car parks will have. This has much greater additional potential to impact directly on buried heritage assets and indirectly on built heritage assets. The legibility of the historic landscape is more directly impacted by this proposal as the lane running from Wandon End past Winch Hill Farm would be removed along with the field boundaries associated with various farms. These are important elements relating to how we understand the evolution of agricultural use of the land and the growth of settlements.	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent can effects potentially be managed and mitigated?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The known Iron-Age/Romano British settlement to the east of WVP would be entirely removed by the building of the earthwork platform. Depending on the importance of the archaeological deposits and features that may be found to be preserved here, further mitigation may be deemed necessary. There are two archaeological alert areas (at Darley Hall, partially, and Winch Hill Farm, completely) lying within the proposed extent of the earthworks. It is not currently clear why these areas have been identified as having a high archaeological potential (identifying the reasons forms part of the ongoing consultation process with Hertfordshire CC), but they would require a phased programme of investigation consisting of desk based research, geophysical survey and evaluation by trial trenching.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-5	-5	-5	-10	-20
Summary	As with sift 2, option 2 would still have the most potential for an adverse visual impact on the setting of Someries Castle Scheduled Monument, even when taking option 1d into consideration. However, when compared with the other northern options, 1a, 1b and 1c, option 1d has more of an adverse impact on a greater number of heritage assets east of the existing airport and is appraised as having a Moderate Adverse impact.				

A6.9 The results of the appraisal in relation to landscape and visual impact, and environmental land use, are set out below in **Table A.14.**

Table A.14: S14 Landscape and visual impact and environmental land use (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Does this option impact, protect or enhance designated landscapes or townscapes?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The Chilterns Area of Outstanding Natural Beauty (AONB) is located to the west (beyond the M1 motorway) and north of Luton. It is not considered that the airport development proposed within this option would be discernible from the AONB. The earthworks and built development proposed under this option would necessitate some impact on the 'Wigmore Rural' designated Area of Local Landscape Value (ALLV). The proposed development is also largely located in an area of Green Belt to the east of the airport.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option affect the visual amenity of potentially sensitive visual receptors (e.g. those recreating in the surrounding landscape; those visiting historic buildings; etc.)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			This proposal is anticipated to affect the visual amenity and tranquility of people using Wigmore Valley Park and walkers using public rights of way (notably users of the Chiltern Way long distance footpath) to the east and northeast of the airport. Operations within the airport may impact amenity experienced from some private (residential) views, notably from properties within Luton, adjoining LLALs land ownership to the east of the airport and at Breachwood Green.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option affect locally sensitive landscape features (e.g. ancient woodlands, historic hedgerows, etc.) or contributors to landscape value (e.g. public access, etc.)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option necessitates substantial alteration to landform and the removal of mature woodland and historic hedgerows within and outside LLALs land ownership to the east of the airport. A designated County Wildlife Site (located to the east of the airport) would be affected to some extent by this option. Several rights of way within and beyond LLALs land ownership to the east of the airport would need to be stopped up or redirected to facilitate this development.	As for Sift 2-see chapter 5 of the Sift 2 Report.

Sub-criteria:	1a	1b	1c	Option 1d	2
Does this option affect the character of the landscape/townscape or the perceptual characteristics of surrounding landscape /townscape character areas?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The earthworks operations commercial development and construction of airport development proposed within this option would substantially affect the character of the landscape, within and outside LLAL land ownership to the east of the airport. Directly affecting the physical landscape within the following Landscape Character Areas: • Hertfordshire Character Area: LCA 200 (Peters Green Plateau); • Hertfordshire Character Area: LCA 201 (Kimpton and Whiteway Bottom); • Hertfordshire Character Area: LCA 202 (Breachwood Green Ridge); • Luton Landscape Character Assessment: Character Area 13: Wigmore Rural; and • Luton Landscape Character Assessment: Character Area 14: Luton Airport. Increased air traffic is considered to affect the perceived tranquility experienced from a number of surrounding Landscape Character Areas, most notably: • Hertfordshire Character Area: LCA 200 (Peters Green Plateau); • Hertfordshire Character Area: LCA 201 (Kimpton and Whiteway Bottom); • Hertfordshire Character Area: LCA 202 (Breachwood Green); • Central Beds Landscape Character Area: 11C (Luton Hoo Chalk Dipslope); • Central Beds Landscape Character Area: 11D (Chiltern Green Chalk Dipslope); • Central Beds Landscape Character Area: 12C (Slip End Chalk Valley); and • Central Beds Landscape Character Area: 12D (Lea Chalk Valley).	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent can effects on landscape or visual amenity be managed and mitigated?	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option impacts rights of way, areas of mature (and in some instances ancient) woodland, roads, hedgerows, designated habitat areas and areas of public open space. Principally impacting land outside the client's ownership, this option offers very little opportunity to mitigate or enhance these affected areas of landscape without the use of 3rd party land. This development option would necessitate a large amount of 'off-site' landscape compensation for strategic woodland planting to screen affected views/ night-time effects from the surrounding areas (e.g. views from Luton Hoo). It is anticipated also that this option will necessitate specific lighting measures to be applied to the airport development in order minimise night-time impacts.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Is this option likely to result in the loss or damage to best and most versatile agricultural land (i.e. ALC Grades 1, 2 or 3a)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			It is reasonable to predict that this option will affect agricultural land which is approximately a mixture of 50% Subgrade 3a (i.e. Best and Most Versatile land - BMV) and 50% Subgrade 3b (not BMV). The quantum of agricultural land affected would be over a far greater geographic area than any of the other options.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option affect local farm businesses (effects on sustaining a rural economy and on individual farmers and their farming operations)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option will have a greater effect on local farm businesses than options 1a, 1b and 1c. This option is likely to affect a larger number of holdings than options 1a, 1b and 1c, and the magnitude of effects on individual holdings (with regard to land-take, severance, fragmentation, demolition of agricultural buildings/infrastructure, potential job losses) is also likely to be greater.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option affect soil (including topsoil and subsoil) as a finite resource?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The effects on soil (including topsoil and subsoil) are likely to be substantial as this option will involve extensive earthworks. The development is considered to impact soils as a resource more so than any of the other development options.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option affect rural land designations (e.g. Agri-Environment Schemes or Nitrate Vulnerable Zones)?	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option is likely to have an effect on rural land designations as an area of land within the development boundary has been entered into the Entry Level Stewardship scheme (or higher).	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent can effects on land use be managed and mitigated?	As for Sift 2-see chapter 5 of the Sift 2 Report.			In addition to those impacts identified for 1a, 1b and 1c, the area of landscape affected by option 1d is considered to be greater in scale; broadly of similar overall value and sensitivity; and more problematic in land use terms to that affected by options 1a, 1b and 1c.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-10	-10	-10	-20	-20
Summary	Option 1d would protect the existing area of public open space, most of the designated 'Wigmore Park' CWS and the 'Wigmore Rural' ALLV. It would however dramatically alter much of the land to the east of the airport, which (although undesignated) is of similar or greater importance in landscape terms to the protected area of open space; the impact of this option removing several important landscape elements, eroding many aesthetic or perceptual qualities experienced by those in this landscape and affecting the characteristics of several character areas in this locality. This option would also be evident in views across a greater geographic area than any of the other development options and would affect several important visual receptors. It is considered that the effects of this option on landscape and visual amenity could not be effectively mitigated. Option is also considered to unavoidably impact a large area of Best and Most Versatile (BMV) agricultural land and the operations of several local farm businesses. It is also considered to impact soils as a resource more than any of the other development options. Overall, this option is considered to have a Large Adverse impact, similar to option 2.				

A6.10 Sift criterion S15 considers the risks associated with climate change present within each of the options. The results of the appraisal are shown in **Table A.15** including, as mentioned in paragraph 4.4.2, the updated appraisal levels from the draft Sift 2 Report.

Table A.15: S15 Climate change (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Climate Change Resilience: Does this option reduce the following climate change risks related to the proposed project during its construction, its operation and its surface access? • Extreme high temperature • Heavy precipitation • Flood risk • Damage to building/ infrastructure • Increased seasonal events • Increase in mean temperature	All options represent an increase in hard standing area compared with the existing airport. Although some options, such as options 1b and 1c require a higher volume of hard standing than others, the engineering and drainage solutions will be designed appropriately for the corresponding sizes of the respective options. As a result, the layouts will mitigate the risks associated with climate change to the same level for each option.				
	5	5	5	5	5
Summary	All options were appraised to have a beneficial impact in terms of their resilience to climate change in comparison to the existing airport. It is assumed that any new assets and infrastructure would be engineered to current design and building specifications therefore making them more resilient to the predicted impacts of climate change.				

A7 Strategic Objective O7: To maximise the number of passengers and workforce arriving at the airport on public transport

A7.1 Strategic objective 7 sought to maximise the number of airport passengers and workforce arriving at the airport on public transport, with **Table A.16** appraising the option on its public transport accessibility and anticipated walking/ cycling modal share.

Table A.16: S16 Public transport modal share (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Can the Luton DART be extended to increase modal share?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The Luton DART could be extended (subject to detailed design) but the provision of two stations, one for each terminal, will lead to increased complexity, less frequent services and longer journey times.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Can bus services be increased to accommodate a larger PT modal share?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Bus services could be increased but they may be less attractive to airport employees if they stop at the existing terminal prior to the new terminal.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Can more coach services be accommodated to increase PT modal share?	As for Sift 2-see chapter 5 of the Sift 2 Report.			More coach services could be accommodated but they would be less attractive due to dwell time at two terminals (i.e added journey time). This can be somewhat overcome by having a single terminal area for coaches and then a transfer onto Luton DART.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Can walking and cycling be accommodated to increase modal share?	As for Sift 2-see chapter 5 of the Sift 2 Report.			For staff, as the new terminal building is not as close to residential / built up areas, walking and cycling will not be as attractive as in option 1a, 1b and 1c.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Can landside forecourt layout provision accommodate all traffic increase – PT and others?	As for Sift 2-see chapter 5 of the Sift 2 Report.			There is sufficient space to accommodate traffic increases.	As for Sift 2-see chapter 5 of the Sift 2 Report.
What is an appropriate PT modal share target/ aspiration?	As for Sift 2-see chapter 5 of the Sift 2 Report.			A range of 50-60% is targeted, although this is subject to further modelling, assessment and analysis. However, a phased approach is envisaged as the later years up to 2042 would be largely aspirational as there is currently no binding agreement from stakeholders such as Network Rail; with some of the proposals that might come forward being completely out of LLAL's control. The additional distance for the DART to travel and the further distance that the new terminal would be from the existing terminal and residential areas to the north of the airport would mean that the modal share would be in a lower part of that range than for options 1a, 1b and 1c.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	5	10	10	-5	-5
Summary	Option 1d is considered Slight Adverse due to the time penalty difficulties of extending the Luton DART and the increased journey times for buses and coaches required to serve both terminal buildings compared to single terminal solutions such as option 1b and 1c.				

A8 Strategic Objective O8: To minimise new build highway requirements

A8.1 Sift criterion S17 appraises the potential magnitude and scale of additional highway infrastructure required to service the different options. **Table A.17** below sets out the results of the appraisal.

Table A.17: S17 Requirement for additional highway infrastructure (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Are new highways needed to accommodate the proposals generated traffic?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Yes, amendments to junctions and potential sections of the CPAR will be required in option 1d. Grade separation may be required at Airport Way and major changes to J10 of the M1 (scale as yet unknown).	As for Sift 2-see chapter 5 of the Sift 2 Report.
What is the magnitude of these highway proposals?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The CPAR junction with Airport Way will need to be grade separated, and the junction to the north of the GKN Plc building may require significant amendments. As with options 1a and 1b, the scale of changes required at Junction 10 are as yet unknown.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Can forecourt highway links be accommodated in an efficient manner?	As for Sift 2-see chapter 5 of the Sift 2 Report.			A split level solution will be required at the new terminal building. Car parking at surface level for long stay will be pushed further into Century Park.	As for Sift 2-see chapter 5 of the Sift 2 Report.
How well can it link with proposed new highway solutions in the vicinity?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The proposed terminal builds on the CPAR provision. As with options 1b and 1c, it could link up well with the A505 if pursued, but could potentially have major impacts on Junction 10 of the M1 and its vicinity.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-10	-20	-20	-10	-20
Summary	Although major new build infrastructure may be required, in particular the extension of CPAR, in comparison with options 1b, 1c, and 2, the impact of option 1d is likely to be similar to that of option 1a, and is thus the second lowest magnitude/scale so it is considered to be Moderate Adverse.				

A9 Strategic Objective O9: To minimise impact on the wider highway network

A9.1 **Table A.18** below sets out an overview of how the options could impact on the wider highway network.

Table A.18: S18 Impact on wider highway network (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Will highway capacity show problems in accommodating additional traffic levels before mitigation?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Yes, around M1 Junction 10, motorway and link roads to the airport with the CPAR less affected, compared to options 1b and 1c.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Can mitigation be provided within highway or airport owned land, or do areas of mitigation require third party land?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Significant off site highway works will likely be required and would require third party land in some instances.	As for Sift 2-see chapter 5 of the Sift 2 Report.
How many links and junctions might require mitigation?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Approximately 20 (subject to model confirmation).	As for Sift 2-see chapter 5 of the Sift 2 Report.
Can car parking be accommodated on airport land?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Likely, however this is subject to detailed work. However, surface level parking for long stay may require further land beyond airport control.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-10	-20	-20	-10	-20
Summary	Significant additional public transport modal share and traffic management interventions will be required for all options. Options 1a and 1d require less mitigation on airport and third party land than 1b and 1c, hence the Moderate Adverse rating				

A10 Strategic Objective O10: To be technically viable, taking account of the needs of airport users, operators and phasing

A10.1 **Table A.19** below focuses on the deliverability of the options.

Table A.19: S19 Deliverable within the context of the current concession to 2031 (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Deliverable without impacting substantially on current concession boundary	As for Sift 2-see chapter 5 of the Sift 2 Report.			Technically option 1d is feasible to construct without impacting on existing concessionaire with minimum interface to existing operation (runway tie-ins only)	As for Sift 2-see chapter 5 of the Sift 2 Report.
Impact on additional land leased by LLAOL	As for Sift 2-see chapter 5 of the Sift 2 Report.			No material impact.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Can the option be phased so as to meet demand until a new concession is in place?	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option cannot be as easily phased as other options due to the gyratory taxiway system which would have to be included in Phase 1 to provide sufficient capacity. However, it would be difficult to maintain operations when extending it.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	10	-10	-5	10	20
Summary	Overall, option 1d is considered Moderate Beneficial as it can largely be constructed without impacting on the existing concession, although there would be difficulties in phasing compared to option 2 due to the gyratory taxiway system.				

A10.2 **Table A.20** looks at how attractive the option would be to a future concessionaire coming into LTN in terms of investment, revenue and operations.

Table A.20: S20 Attractive to future concessionaire (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Cost of works and timing relative to income	As for Sift 2-see chapter 5 of the Sift 2 Report.			The remote terminal operation may result in inefficiencies, higher operating costs for the concessionaire and a lower commercial income compared to a single terminal solution like options 1b or 1c. Two additional tunnels would also be required to connect the island pier to the terminal on the east and remote areas to the west for service vehicles as a surface road crossing would not be viable in relation to maintaining taxiway movement rates. Catering, baggage and other non-stand based vehicles would be unable to access the central apron.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Can the option be phased to align with income?	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option includes a long DART extension with its associated capital and operating expenditure costs. It is likely to be difficult to phase and may require a large first phase build compared to income, and requires a large earthworks platform. It does not however build on existing landfill unlike options 1a, 1b and 1c.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Opportunities for additional revenue generation, e.g. from MRO, Business Aviation, ancillary facilities	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option would maintain the existing maintenance, repair, and overhaul (MRO) and business aviation areas, and would also provide additional facilities albeit restricted in size.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does the scheme provide sufficient flexibility from a design and operational perspective, for future concessionaires and airlines?	As for Sift 2-see chapter 5 of the Sift 2 Report.			A two-terminal operation north of the runway is likely to be more cost efficient than a split operation across the runway (as in option 2), therefore reducing concessionaire operation costs. However, this comes at the expense of the loss of some flexibility due to split terminal, which is more significant in option 1d than option 1a. Option 1d would lead to increased operating costs and potential disruption due the lack of an effective taxiway network leading to congestion and delays.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	20	-5	5	-10	20

Sub-criteria:	1a	1b	1c	Option 1d	2
Summary	Options 1b and 1c are likely to encounter challenges in phasing which reduces option 1c to Slight Beneficial, with option 1b appraised as Slight Adverse due to the additional reduction in the amount of land for Business Aviation and MRO. Whilst option 2 was highlighted as requiring inefficient split operations across the runway, which would be inconvenient to an incoming concessionaire, option 1d is much more operationally inefficient. The option 1d layout is therefore unlikely to be attractive to an incoming concessionaire due to high build and operational costs.				

A10.3 **Table A.21** below provides an overview of the appraisal of the option with regard to the feasibility of the landfill, earthworks and ground conditions.

Table A.21: S21 Feasibility of landfill, earthworks and ground conditions (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
What extent does this option use geological resource i.e. aggregate?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Option 1d will require a significantly larger earthwork platform and a large volume fill - approximately 9 million m^3 - and would rely on large volumes of non-renewable materials for construction compared to the other four options. It would involve importation of approximately 1 million m^3 of material as there is currently not sufficient site won material. This would involve a larger number of lorry movements to import the required material compared to the other options.	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent does this option present a potential pollution risk to water or soil quality? Can this be mitigated?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Unlikely to be any significant contamination issues as the area has historically mainly been farmland and greenfield. Ground gas protection measures are likely to still be required in the development due to proximity to the landfill. However it is assumed that the risk can be managed appropriately via the implementation of mitigation measures.	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent does this option require landfill waste to be excavated?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Option 1d will avoid the need to excavate any landfill waste as the development will take place outside of the boundary of the former landfill.	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent does this option reuse excavated materials?	As for Sift 2-see chapter 5 of the Sift 2 Report.			None- approximately 9 million m^3 of material is required and would rely on large volumes of non-renewable materials for construction. It would involve importation of approximately 1 million m^3 material as there is currently not sufficient site won material	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option improve the contamination conditions of soil/groundwater?	As for Sift 2-see chapter 5 of the Sift 2 Report.			No, the retention of Wigmore Valley Park means the former landfill remains in situ and therefore the soils and groundwater of the general area are not benefitted by the treatment and improvement of the former landfill	As for Sift 2-see chapter 5 of the Sift 2 Report.
What is the extent of construction risks to environment and health of local residents?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Risks relating to excavation of former landfill material are greatly reduced due to no development in the area of the former landfill. However, there will still be construction risks relating to dust which will require management. In addition, increased vehicle movements compared to the other options, due to the need to import material, could adversely impact air quality in the local area.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Does this option generate large volumes of waste or problematic waste (e.g. hazardous or landfill waste) in construction, operation and decommissioning that cannot be effectively managed locally?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Inevitably some waste to landfill will be generated through the excavation activities and excavation of former landfill areas. However, with the retention of WVP, the need to excavate the landfill is significantly reduced and therefore any potential risks of large volumes of non-recyclable material being created are minimised.	As for Sift 2-see chapter 5 of the Sift 2 Report.
To what extent does it rely on large volumes of non-renewable materials for its construction?	As for Sift 2-see chapter 5 of the Sift 2 Report.			There is an overall requirement for aggregate, sand, cement and other materials which are non-renewable. Best practice, implemented through a Code of Construction Practice (CoCP) will consider the use of sustainable, recycled or secondary aggregates and products.	As for Sift 2-see chapter 5 of the Sift 2 Report.
How do each of the options relate to waste operations?	As for Sift 2-see chapter 5 of the Sift 2 Report.			During operation, it is assumed that some waste will inevitably still require landfilling. However, it is assumed that this will be minimal, because the option provides the opportunity to implement an effective waste management strategy and includes one or two dedicated waste management areas that will increase recycling rates over and above current levels.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	-20	-20	-20	-10	-5

Sub-criteria:	1a	1b	1c	Option 1d	2
Summary	Options 1b and 1c were appraised as Large Adverse because: obstructions in the landfill may make piling difficult; a large earthwork platform would be required; and construction will be dependent on earthworks weather (restricted to building in the summer earthworks season). The impacts of option 1a are also considered to be Large Adverse for the same reasons as 1b and 1c, but also because the large area of stands on the landfill will require many piles or a compromise on stand reliability/maintenance. Option 1d will require a larger land platform compared to these options and a large volume of fill. However, option 1d will avoid the necessity to excavate into the existing landfill and associated risks (unlike options 1a-c). In comparison, option 2 is considered relatively straightforward with regard to the earthworks required, with possible minor work to mitigate soft spots				

A10.4 Sift criterion S22 considers the elements of the proposed layouts, earthworks and access routes, and whether occupy land owned or optioned by LLAL. The results of the appraisal are shown in **Table A.22,** including, as mentioned in **paragraph 4.4.4** the updated appraisal levels from the draft Sift 2 Report.

Table A.22: S22 Additional land required beyond current LLAL holdings (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Does the proposed layout, and the earthworks needed to support it, directly occupy land not owned by LLAL?	As for Sift 2-see chapter 5 of the Sift 2 Report.			Yes - like option 2, a large area of additional land would be required that is not in LLAL ownership.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Will the earthworks required to win material involve land not owned by LLAL?	LLAL generally own or have an option on all the land envisaged at this stage to be required, with the exception of isolated pockets			As above.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Do the proposed access routes and the earthworks needed to support them directly occupy land not owned by LLAL?	As for Sift 2-see chapter 5 of the Sift 2 Report.			As above.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	10	10	10	-20	-20
Summary	Options 1d and 2 both require large areas of third-party land to be included to enable access and to accommodate the proposed development.				

A11 Strategic Objective O11: To enhance LTN's system efficiency and resilience

A11.1 **Table A.23** below sets out how each of the options performs with regard to operational effectiveness, taking into account layout efficiencies, delays to airlines and the passenger experience. As mentioned in **paragraph 4.4.6 and section 4.5**, this criterion has been refined and the draft Sift 2 appraisal levels have been updated to reflect a greater importance of the passenger experience.

Table A.23: S23 Operational effectiveness (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
How efficient is the layout?	As for Sift 2-see chapter 5 of the Sift 2 Report.			The separation between the two terminals would mean that each terminal would need to have a distinct pool of remote stands. The general taxiway layout is less resilient than other options due to the concentration at the end of the runway leading to conflicts between aircraft queuing for take off and arriving aircraft seeking to access the second terminal apron.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Delays to airlines	As for Sift 2-see chapter 5 of the Sift 2 Report.			The distance between the two terminals would impede passenger transfer and add complexity to the allocation of flights between the two terminals due to the distance between them.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Passenger experience	As for Sift 2-see chapter 5 of the Sift 2 Report.	The passenger experience of option 1b is comparatively worse compared to option 1c due to building from west to east. This would result in disruption to existing terminal operations before there is sufficient space to decant operations to the east.		The new terminal would enhance efficiency and improve the passenger experience. However, there is a likelihood of longer taxi times and the potential for congestion around the main taxiway intersection which would degrade the passenger experience and result in excess delays.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	10	10	20	-10	10
Summary	As with option 1a and 2, option 1d would retain the existing T1 building would be retained at a lower efficiency and lower level of passenger experience. Due to the potential of operation disruption of vehicle and aircraft operations, for the reasons set out above, including a longer DART connection time, option 1d is appraised as Moderate Adverse compared to the other four options.				

A11.2 Building on the strategic objective 11, sift criterion S24 appraised the five options for their resilience to operational disruption, both in absolute terms and compared to the existing scenario, as shown below in **Table A.24**. It should be noted that this assessment is made on the basis of the final configuration as indicated by the options, as phasing issues are considered separately under deliverability (see S19).

Table A.24: S24 System resilience (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Resilience to operational disruption	As for Sift 2-see chapter 5 of the Sift 2 Report.			As with options 1a and 2, two-terminal operations in option 1d would increase resilience to disruption. However, the inefficient loop taxiway configuration is retained in option 1d.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Resilience in the broader infrastructure (road and rail)	As for Sift 2-see chapter 5 of the Sift 2 Report.			Whilst two-terminal options like options 1a, 1d and 2 can provide alternative surface access routes and are more resilient compared to single terminal options, in this option road access as an alternative to the DART is approximately 3km longer than other options and is a very convoluted route to the terminal.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Extent of resilience improvement	As for Sift 2-see chapter 5 of the Sift 2 Report.			Taxiway layout is not as optimal as other two-terminal options in terms of operational resilience because the inefficient loop taxiway configuration is retained on T1 and duplicated on T2 albeit with dual code C taxiways. Neither terminal would have an efficient layout and the risk of delays to flight arrivals and departures would be increased	As for Sift 2-see chapter 5 of

Sub-criteria:	1a	1b	1c	Option 1d	2
				There is an increased potential for bird strike risk in option 1d due to WVP being located between the terminals, with a greater likelihood of birds flying over aircraft operational areas.	the Sift 2 Report.
	20	10	10	5	20
Summary	Overall, this option is considered Slight Beneficial in comparison to other options on the basis that the inefficient loop taxiway configuration is retained and requires a longer, more convoluted road to the terminal than either option 1a or 2.				

A11.3 **Table A.25** covers the appraisal of the five option families on their attractiveness to airline operators, taking into account the attractiveness to passengers, airport charges and the cost of operation.

Table A.25: S25 Attractiveness to airline operators (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Impact on airline delays	As for Sift 2-see chapter 5 of the Sift 2 Report.			Additional taxiways increase efficiency but conversely in this option, the gyratory taxiway layout in relation to the runway end may provide a sub-optimal system that is hard to operate by ground control and navigate by pilots and could lead to airline delays.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Impact on airport charges and cost of operation	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option has a reduced ability to phase the construction which would result in additional costs being incurred at an early date and be likely to have an impact on the ability to keep charges to airlines to acceptable levels. The difficulties of phasing would make it more difficult to match airport capacity to demand in an efficient manner.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Resilience to operational disruption	As for Sift 2-see chapter 5 of the Sift 2 Report.			Two terminals enhance resilience to disruption.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Attractiveness to passengers	As for Sift 2-see chapter 5 of the Sift 2 Report.			In this option, the passenger transfer operations would be complex and undesirable between the two terminals due to the distance. The more distant location would make the terminal less attractive to passengers, not least due to the extended DART journey.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Flexibility to adapt to airline's changing requirements	As for Sift 2-see chapter 5 of the Sift 2 Report.			As with options 1a and 2, the retention of T1 in option 1d means that it is less flexible to adapt to changing markets or service requirements, as opposed to those options with a single new, purpose-built terminal (options 1b or 1c).	As for Sift 2-see chapter 5 of the Sift 2 Report.
Flexibility to adapt to airline operational requirements (i.e. parking/offices)	As for Sift 2-see chapter 5 of the Sift 2 Report.			Split terminals slightly reduces the efficiency of operation and may result in one or more airlines having split operations, with substantial additional cost and operational complexity due to the distance between terminals compared with option 2.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Ability to accommodate based carriers	As for Sift 2-see chapter 5 of the Sift 2 Report.			The split maintenance activity, despite both being on the northside of the runway, are separated by some distance and may therefore be less attractive for based airlines.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	10	10	10	-10	5
Summary	Option 1b and 1c are considered to have Moderate Beneficial impacts as both would ultimately provide a modern efficient airport but the phasing required could increase costs and hence airport charges. As in option 1a, option 1d retains the existing inefficient terminal which is removed in option 1b and c. Option 1d is also perceived to be comparatively worse than option 2 due to the comparable inefficiency of the layout compared to option 2 which was an efficient layout in its own terms despite being located to the south of the runway. Option 1d is therefore considered Moderate Adverse because the airport layout is not as efficient or flexible as the other options and would therefore be less attractive to airline operators.				

A11.4 Current policy does not support expansion beyond the capacity of a single runway but preserving options for further capacity expansion would be desirable from LLAL's point of view. **Table A.26** sets out how well the option families performed in sift criterion S26 in relation to safeguarding for expansion.

Table A.26: S26 Safeguarding for expansion (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Flexibility in expansion	As for Sift 2-see chapter 5 of the Sift 2 Report.			As with options 1a, 1b and 1c, this option would utilise all of the effective northside site when full phasing and MRO requirements are taken into account.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Safeguarding for requirements past 2040	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option leaves open expansion options to the south in the longer term.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	10	10	10	10	5
Summary	Both options 1b and 1c involve the redevelopment of the existing terminal building which may result in some wastage of space, and option 1a and 1d also requires the redevelopment of the existing terminal but in the longer term – all four options were considered to have a Moderate Beneficial rating. In comparison, option 2 was appraised as having a Slight Beneficial rating as it will occupy land to the south before the potential of this area has been fully explored whilst in the meantime, land to the north of the runway may have been developed for alternative uses.				

A11.5 **Table A.27** sets out the appraisal of the options against sift criterion S27 which seeks to safeguard existing levels of MRO, business aviation and cargo activity, which are important in terms of attracting future concessionaires.

Table A.27: S27 Safeguarding existing levels of MRO, business aviation and cargo activity (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Maintain slots and land for MRO, business aviation and cargo to minimise disruption and maintain existing operations	As for Sift 2-see chapter 5 of the Sift 2 Report.			This option allows for the western maintenance zone, cargo and business aviation zones to remain in operation.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	20	10	10	20	20
Summary	Option 1d performs as well as option 1a and 2 for this sift criterion as they all retain existing levels of MRO, business aviation and cargo activity, whilst options 1b and 1c would impact on existing businesses (the easyjet hangar and Harrods business aviation would need to be relocated).				

A12 Strategic Objective O12: To be affordable including any public expenditure that may be required and taking account of the needs of airport users and operators (Value for Money)

A12.1 A preliminary comparative analysis on the direct benefit of the programme has been undertaken based on broad based likely investment and revenue assumptions. This analysis has sought to understand the benefit derived over a possible future concession arrangement.

A12.2 It should be noted here that the cost of purchasing additional land is excluded in the estimated capex costs.

Table A.28: S28 Estimated cost benefit (36-38mppa)

Sub-criteria:	1a	1b	1c	Option 1d	2
Capex expenditure	As for Sift 2-see chapter 5 of the Sift 2 Report.			Compared to the other four options, the estimated capex of option 1d is higher due to increased taxiways. However, there is also a cost benefit in terms of less construction impact and disruption to existing T1 operations.	As for Sift 2-see chapter 5 of the Sift 2 Report.
Affordability of scheme	As for Sift 2-see chapter 5 of the Sift 2 Report.			A large platform is required that will increase the volume of cut and fill, therefore increasing the enabling cost of earthworks. However, the option retains WVP and therefore avoids piling the existing landfill, which would be a cost benefit in terms of much less contamination issues. Significant cost would also be incurred for the long DART extension from T1 to T2 compared to other options.	As for Sift 2-see chapter 5 of the Sift 2 Report.
	20	10	10	10	20
Summary	Given the assumptions stated previously in the Sift 2 Report, options 1a and 2 are appraised as Large Beneficial with insufficient differences at this time between options to differentiate between them. Options 1b, 1c and 1d require comparatively more investment, indicating lower benefits compared with 1a and 2, hence the Moderate Beneficial appraisal level.				

Appendix B: APPRAISAL TABLES FOR 32MPPA

The tables below set out a summary of how options 1a, 1b, 1c, 1d and 2, assuming a capacity 32mppa, were appraised against each of the 28 sift criteria as part of Sift 3. As for Sift 2, the sift criteria have been grouped by the strategic objective to which they relate. For each criterion we have set out below the results of the appraisal for each option the rationale for the overall appraisal level for each option. Each table also includes a general summary on the respective performance of the options in relation to that sift criterion.

B1 Strategic Objective O1: Compliance with Government Aviation Policy

B1.1 **Table B.1** below sets out how the options performed against the relevant criterion and sub-criteria, examining whether they are consistent with Government Aviation policy in relation to: proposed use or modification of existing runway; implications for Heathrow Airport expansion; support for consumer objectives and the delivery of a competitive aviation sector.

Table B.1: S1 Consistent with making best use of the existing runway (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does the option use the existing runway or propose a new runway?	All options except option 1d appraised were considered capable of delivering at least 50 aircraft movements per hour, which has been assessed as the operational capacity to deliver best use of the single runway at LTN, in the longer term. The revised capacity target will require fewer than 50 movements per hour and deliver fewer than the 240,000 aircraft movements a year, with option 1d considered here to be able to provide the required objectives for 32mppa where this was altogether less possible for 36-38mppa.				
Does the option require modifications to the existing runway – alignment or length?	None of the options propose a new runway or modifications to existing alignment and it has been assumed that an emergency runway, if included in future detailed design, would not constitute a breach in policy.				
Would the option have implications for the deliverability of the proposed Northwest runway at Heathrow as supported by Government policy (Adopted NPS)?	There would be no impact from any of the options on deliverability of the Northwest runway at Heathrow as airspace is being redesigned to ensure that there are no airspace conflicts and Government policy supports other airports making best use of their runways alongside the third runway at Heathrow.				
Would the option support the Government's consumer objectives?	For all options, expanding the airport to 'best use' will deliver connectivity and consumer benefits consistent with broader Government policy objectives.				
Appraisal level	20	20	20	20	20
Summary	All five options were considered to be Large Beneficial, with no clear differentiating factors between the five options relating to this criterion. All options are considered capable of sustaining 47-48 aircraft movements per hour required to attain 32mppa and relate to 'best use' in the medium term having regard to other constraints.				

B2 Strategic Objective O2: To identify a scheme that is likely to be capable of being consented and secured through a DCO

B2.1 **Table B.2** below sets out how the options performed against the relevant criterion and its sub-criteria, considering their alignment with planning policies at the national and local level.

Table B.2: S2 In broad conformity with national and local town planning policies and capable of attracting the consents required (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does the proposal meet National Planning Policy and Local Planning Policy sufficiently to support the grant a DCO, having regard to s104 of the Planning Act 2008, and the need to have regard to the Local Impact Report(s) and all relevant matters, including National and Local planning policies?	Moving to 32mppa reduces or potentially eliminates the need for surface level car parking within the Green Belt as part of options 1a, 1b and 1c due to the reduced size of the development. It was noted in the scoring for the appraisal for 36-38mppa during the Sift 2 appraisal that on-going design would seek to avoid such development or otherwise a very special circumstances case would need to be presented. Options 1b and 1c would on balance present a slightly preferable proposition than option 1a as they retain more of the park open space within Luton. However on the basis that the open space requirements are met by all three schemes alone this wouldn't be sufficient in policy terms to offer a greater level of confidence on the options sufficient to raise their appraisal level from Moderate Beneficial to Large Beneficial.			The second terminal, associated car parking, New Century Park buildings and part of the apron would be outside of the Strategic Allocation outlined in the Luton Local Plan Policy LLP6 and also located within land designated as Green Belt. On balance and given the high threshold of protection this option is unlikely to meet the 'very special circumstances' Green Belt test as long as options 1a, 1b and 1c remain viable alternatives, hence being appraised as Currently Unworkable.	The second terminal and all associated buildings and structures south of the runway would be outside of the Strategic Allocation outlined in the Luton Local Plan Policy LLP6 This option also places all built development including significant terminal structure and a new access road within land designated as Green Belt. On balance and given the high threshold of protection this option is unlikely to meet the 'very special circumstances' Green Belt test as long as options 1a, 1b and 1c remain viable alternatives, hence being appraised as Currently Unworkable.
Appraisal level	10	10	10	Currently Unworkable	Currently Unworkable
Summary	The three options which focus development north of the runway and west of Wigmore Valley Park – options 1a, 1b and 1c – perform equally well, whereas both options 1d and 2 are considered to be Currently Unworkable given current policy constraints and high threshold for Green Belt protections.				

B3 Strategic Objective O3: To provide additional capacity and connectivity in line with the assessment of need

B3.1 **Table B.3** sets out how well the options could provide additional capacity and connectivity, taking into consideration their ability to provide additional capacity in the runway, apron and terminal subsystems, and to phase this capacity in line with projected demand.

Table B.3: S3 Increase capacity both airside and landside to achieve target increase up to 32mppa (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
What is the capacity to be provided in each subsystem : – Runway? – Apron? – Terminal?	Simulation modelling has demonstrated that this option could deliver 50 movements per hour on the runway. Provision of a second full parallel taxiway could enable a higher runway movement rate to be delivered (c.52 movements per hour), subject to other constraints. It is unlikely that 50 movements per hour will be required to support 32mppa so the target movement rate is likely to be 47-48 movements per hour. The two terminals could provide capacity for up to 32mppa with the potential for future expansion of the new terminal to 36-38mppa. T1 is assumed to revert to 18mppa once T2 opens although terminal capacity may be increased as an interim first phase.	Simulation modelling has demonstrated that this option could deliver 50 movements per hour on the runway. Provision of a second full parallel taxiway could enable a higher runway movement rate to be delivered (c.52 movements per hour), subject to other constraints. It is unlikely that 50 movements per hour will be required to support 32mppa so the target movement rate is likely to be 47-48 movements per hour. Sufficient apron could be provided to accommodate 220,000 passenger ATMS a year but there a reduction in space available for cargo, MRO and business aviation activity. The single terminal buildings in options 1b and 1c could provide capacity for up to 32mppa.	Simulation modelling has demonstrated that this option could deliver 50 movements per hour on the runway. Provision of a second full parallel taxiway could enable a higher runway movement rate to be delivered (c.52 movements per hour),subject to other constraints. It is unlikely that 50 movements per hour will be required to support 32mppa so the target movement rate is likely to be 47-48 movements per hour. Sufficient apron could be provided to accommodate 220,000 passenger ATMS a year but there a reduction in space available for cargo, MRO and business aviation activity. The single terminal buildings in options 1b and 1c could provide capacity for up to 32mppa.	Although simulation modelling has confirmed the ability of the runway to handle 50 movements per hour when supported by the appropriate taxiway infrastructure, this options results in a bottleneck at the entry and exit to the T2 apron. Hence, 50 movements per hour would not be deliverable in the longer term with this option. The location of the new apron area would make it difficult to queue aircraft for departure without compromising the flow of traffic through the main taxiway intersection. This is likely to make separation of arrival and departure flows difficult leading to complex sequencing and congestion. It is possible that the required 47-48 movements per hour might be attainable despite these constraints. The two terminals could provide capacity for up to 32mppa with the potential for future expansion of the new terminal to 36-38mppa. T1 is assumed to revert to 18mppa once T2 opens although terminal capacity may be increased as an interim first phase.	Simulation modelling has demonstrated that this option could deliver 50 movements per hour on the runway. Provision of a second full parallel taxiway could enable a higher runway movement rate to be delivered (c.52 movements per hour),subject to other constraints. It is unlikely that 50 movements per hour will be required to support 32mppa so the target movement rate is likely to be 47-48 movements per hour. The two terminals could provide capacity for up to 32mppa with the potential for future expansion of the new terminal to 36-38mppa.
What is this option's ability to phase in line with demand?	Development can be phased to meet demand in option 1a.	Some capacity constraints during the phased implementation of a single terminal (see S19) due to limited apron expansion area available. Unlikely to deliver capacity in time to meet demand and may result in reduced capacity during initial reconfiguration works to the T1 area after 2031. There could be some complications of rebuilding T1 and the potential for substantial new capacity to have to be built ahead of demand. May require further extension of the apron eastwards as a temporary measure to provide sufficient capacity whilst the Terminal 1 area is reconfigured.	Additional apron and terminal capacity will need to be provided at an early date to allow aircraft and passengers to be partially decanted from T1 to T2 to enable reconfiguration of the T1 area after 2031. Due to phasing issues, phased delivery will not be straightforward. Option 1c may require further extension of the apron eastwards as a temporary measure to provide sufficient capacity whilst the Terminal 1 area is reconfigured.	The layout of the new terminal and apron area may be difficult to phase as it operates on the premise of a gyratory taxiway system. A scaled back first phase would require, at some point, very intrusive work to extend this loop further north.	Development can be phased to meet demand in option 2.
Appraisal level	20	-5	10	-10	20
Summary	Option 1a and 2, as two terminal options, performed better overall due to their ability to phase development than options 1b and 1c. Option 1b being markedly harder to deliver in relation to impact of build on T1 capacity. Option 1d is sub-optimal in terms of the overall layout and its ability to provide the capacity needed robustly. Since inclusion this option is considered to be materially worse for this criterion than the next worse option and so has been moderated to a score lower than option 1b.				

B4 Strategic Objective O4: To maximise the potential economic benefits to the regional, sub-regional and local economies

B4.1 This strategic objective covers two criteria:

- S4 Deliver economic benefits nationally and regionally; and
- S5 Increase job opportunities for the people of Luton and the surrounding area.

B4.2 **Table B.4** and **B.5** set out how the options performed against the two criteria and sub-criteria, focusing on the options' abilities to: deliver benefits to users, producer benefits and wider connectivity benefits (S4); and increase job opportunities for those living in and around Luton (S5).

B4.3 Note that producer benefits are derived from the profitability of the investment – see O12 To be affordable including any public expenditure that may be required and taking account of the needs of airport users and operators (Value for Money).

Table B.4: S4 Deliver economic benefits nationally and regionally (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
What are the benefits to users (journey time and air fare savings due to availability of choice and more routes), known as Transport Economic Efficiency?	User benefits will arise from savings to journey times compared to alternative airports and air fare benefits from LTN's low fare offer (subject to scheme cost and affordability O12) and these would be the same for all options.				
What are the producer benefits (increased income to airlines, airport operators)?	Option 1a is considered to be capable of delivering the same Producer Benefits as the single terminal options, without experiencing the same phasing/capacity issues.	Phased construction of this option is likely to be very difficult and costly due to disruption to T1 operations, resulting in a capacity restriction during reconfiguration of T1 area. It may also require new capacity to the east to be built ahead of need so increasing the costs of the construction. As a consequence, producer benefits will be substantially lower than the other options, although it would still provide increased capacity and deliver potential efficiencies from a single terminal in the longer term. To the extent that higher costs translate to higher prices to airlines, there would be loss of airline producer benefits and/or consumer benefits such that these costs are passed on through higher airfares with a potential consequential impact on the timescale over which 32mppa would be achieved.	Requirement for delivery of apron capacity at an early date to allow decanting of traffic from T1 will reduce producer benefits (to the airport), compensated to some extent by efficiencies delivered from a single terminal. As a consequence, producer benefits will be slightly lower than the two terminal options 1a and 2 (but better than option 1b), although it would still provide increased capacity provided and deliver potential efficiencies from a single terminal in the longer term. As with option 1b, higher costs could translate to high prices to airlines and therefore loss of airline producer benefits and/or consumer benefits.	Option 1d is considered to be capable of delivering the same Producer Benefits as the single terminal options, without experiencing the same phasing/capacity issues. Producer benefits derived from the profitability of the investment (see O12) due increased capacity, phased to meet demand but will be impacted marginally by the costs to the airlines and operators (handling agents) etc caused by needing to operate either side of the runway. The cost implications of the very long extension to the DART would also negatively impact the producer benefits. The increase in score from 36-38mppa reflects the improvement in capacity related delays to the airlines due to reduced taxiway congestion.	Option 2 is considered to be capable of delivering the same Producer Benefits as the single terminal options, without experiencing the same phasing/capacity issues.
What are the wider connectivity benefits (trade, tourism, inward investment) via improved road and rail infrastructure?	Wider benefits are proportional to the capacity delivered in each option, with each option capable of delivering 32mppa. Therefore delivering large benefits to users and airlines, and supporting GVA growth in the surrounding areas by attracting additional investment. Detailed assessments have yet to be carried out so initial judgements are made and, prima facie, these benefits would be considered to be substantial				
Appraisal level	20	5	10	10	20
Summary	Given that the user and wider connectivity benefits are considered equally beneficial in all options, the differentiating factor is the options' performance against the producer benefits, where the two-terminal options 1a and 2 perform better in terms of phasing and capacity.				

Table B.5: S5 Increase job opportunities for the people of Luton and the surrounding areas (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
How many jobs could be created regionally, sub-regionally (three counties) and locally (Luton)?	Local employment is envisaged to be proportional to capacity and through put of the airport, with growth to 32mppa supporting a sizeable increase in jobs. Employment estimates are currently being refined and will be reported at the Statutory consultation stage. There may be slightly higher direct employment with two terminals in this option compared to one terminal in options 1b and 1c	As for option 1a although there may be slightly lower direct employment with one terminal in these options.		Benefit would be proportional to capacity and through put of the airport as per option 1a.	Please see appraisal for option 1a.
What type of jobs could be created and retained – skilled jobs (higher paid) in Luton (permanent jobs)?	Jobs at the Airport and in the supply chain will be at a range of skills and wage levels and include apprenticeship opportunities for local people (it is expected that this requirement will be included in the new concession agreement) and linked to the Luton Skills and Employability Strategy. Maintaining land available for MRO in all options could also help to maximise contribution to the creation and retention of skilled jobs.				As with options 1a, 1b, 1c and 1d, option 2 would create a similar range of jobs for local people. However, local access to may be more difficult for low wage/low skill employees from Luton to the south side location of one of the terminal buildings, as public transport is likely to be less frequent and journey times lengthier.
Appraisal level	20	20	20	10	10
Summary	Overall, all five options could increase the number and type of job opportunities for people in and around the Airport, with the northern options scoring higher, in part due to relative ease of access by public transport, compared to option 1d which is further remote and option 2 where one terminal building would be south of the runway				

B5 Strategic Objective O5: To maintain and where possible improve the quality of life for Luton's residents and the wider population

B5.1 **Table B.6** below sets out how the options perform against the relevant criterion and its sub-criteria, focusing on their ability to maintain and improve the quality of life for those living in and around Luton.

Table B.6: S6 To promote quality of life and minimise adverse impacts on communities (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does this option improve quality and choice of employment and training opportunities?	For all five options (1a, 1b, 1c, 1d and 2), the development of a 32mppa airport could provide additional jobs in the three surrounding counties, including direct, indirect and induced jobs. Direct job creation for all five options would range from high skilled to low or unskilled, with the majority of positions assumed to be in the latter two categories. This would benefit Luton and the wider region by providing a significant increase in the availability and choice of jobs in addition to the associated skills and training benefits. The appointment of construction contractors would incorporate an assessment of their commitment to train and upskill the workforce in Luton and the surrounding counties, in line with LLAL's stated commitment to social values. Development in the terms of the concession would include partnership obligations to deliver key criteria included within the Luton Investment Framework 2015 – 2035, which is focused on improving chances for local people.				
Does this option reduce adverse effects of unemployment, low income and job insecurity?	The increased passenger numbers would provide a basis for negotiating a new concession agreement. This will contain improved terms which would permanently benefit direct employees in the airport and increase the proportion of jobs taken by hard to reach groups. It will also seek to target the benefits of employment and training to those most in need via a range of potential approaches. These could include working with Luton Council to integrate measures to support the Luton Investment Framework, Skills and Employment Strategy and Health Inequalities Strategic Plan, and to set ambitious targets within its construction supply chain contracts. The appraisal here has been made based on the DART project's assumptions with social value criteria forming part of the contract selection process. It is considered that there is a potential for a large beneficial effect with regard to this sub-criterion; however there is insufficient detail at this stage to definitively comment.				
Does this option avoid direct impacts on, and maintain access to, existing community facilities?	Wigmore Park currently covers approximately 40ha, including a small children's play area, allotments, a skate park and extensive areas for 'country walks'. The northern-most area of parkland closest to residents in Wigmore will remain and would include the improved facilities proposed within the New Century Park application, namely improved children's play space and an improved skate park. The allotments would also remain. The less formal area of open space will be lost, and re-provided, to the east of the existing parkland. These options would result in a larger quantity of parkland than currently exists, formed of the northern part of Wigmore park and additional informal parkland to the east. Although the overall area of parkland area has increased, some of this provision is located further east (away from communities immediately north of Eaton Green Road), making part of the open space less accessible to some of the population it currently serves, based on criteria set out in the LBC Green Space Strategy Review (1.2km walking or 2km cycling) including future residents in proposed developments east of Wigmore. The new parkland would also be closer to North Hertfordshire villages, such as residents of Darley Road immediately north, and Breachwood Green 300m to the east. The increase in highway traffic movements along the A1081 from the M1 could result in increased congestion and delays, which could create a barrier between people trying to access facilities, communities and employment opportunities outside of Luton. Movement within Luton would be reasonably unchanged from changes to traffic volumes. Improvements to public transport to allow more people to access jobs at the airport could also improve access between communities and to wider community facilities within Luton.		This option would retain Wigmore Valley Park in its current form, however would not deliver the new children's playground and leisure facilities in Wigmore Park associated with the New Century Park development. There are unlikely to be any direct impacts on open space provision as a result of the Airport expansion and would therefore remain open to public during construction and continue to be used for its intended purposes. Improvements to public transport to allow more people to access jobs at the airport could also improve access between communities and to wider community facilities within Luton.	Development to the south of the terminal could have positive indirect impacts for communities to the north, who are likely to experience less adverse impacts associated with noise, construction and changes to the visual environment. However, there are some isolated residential properties in the south that are likely to experience adverse indirect impacts associated with noise and visual amenity during construction. This option would retain slightly more of Wigmore Valley Park compared to options 1a-c,and will include the improved facilities proposed within the Century Park application, namely improved children's play space and an improved skate park. The allotments will also remain. This will retain the accessibility of the open space to the population it currently serves and enhance the provision of open space and play facilities. The increase in highway traffic movements along the A1081 from the M1 could result in increased congestion and delays, which could create a barrier between people trying to access facilities, communities and employment opportunities outside of Luton. Movement within Luton would be reasonably unchanged from changes to traffic volumes. Improvements to public transport to allow more people to access jobs at the airport could also improve access between communities and to wider community facilities within Luton.

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does this option preserve the amenity of residential areas and enjoyment of community facilities and outside spaces?	There are likely to be temporary adverse construction impacts on the amenity of residential areas in south-east Luton from construction and earth-moving works associated with the earth platform excavation. This will arise, from the demolition of the existing airport buildings and infrastructure, and construction of the new terminal building and car parks. These activities are also likely to impact the amenity of users of the improved open space facilities (children's play space, skate park etc.) in Wigmore Park, and Wigmore Pavilion. There is potential for permanent adverse impacts on the amenity of residents and community, due to the increase in passenger numbers, additional traffic from surface transport accessing the airport, and the visual element of a new car park and airport related buildings, such as the parkland at community centre at Raynham Way. The increase in aircraft movements is likely to worsen impacts on amenity for those residential areas and community facilities already located under existing flightpaths, such as Surrey Street Primary School and The Linden Academy to the west; Breachwood Green JMI School, Breachwood Green Baptist Church and Breachwood Green Village Hall / playing fields to the east.			Assessment as for 1a-c, apart from the potential permanent adverse impacts (noise, air quality) on the enjoyment of community facilities and outside spaces, due to the additional traffic movements to and from the airport using the new road extending from the end of Century Park Access Road and around the perimeter of Wigmore Valley Park. As with the other four options, the increase in aircraft movements will increase impacts on amenity for those residential areas and community facilities already impacted due to their location under existing flightpaths.	Option 2 moves airport site preparation and construction activities to the south, away from existing residential areas north of the airport and is therefore likely to have a reduced impact on the amenity of residential areas north of the airport and users of the Wigmore Park compared to the other options. There is potential for temporary adverse construction impacts on the amenity of residents in small rural hamlets and isolated dwellings south of Luton. The potential for adverse impacts on the amenity of residents resulting from increased aircraft movements for this option is the same as for the other options.
Does this option protect and promote public services that support quality of life and wellbeing?	For all options, any increase in airport growth is likely to increase LLAL's continued contributions to local services. With profits made by LLAL payable to LBC as a dividend due to their role as sole shareholder, this money is used to maintain the statutory and discretionary services provided by the Council. As the dividend increases, this may provide further opportunities for further contributions to local services. In addition, LLAL maintains a Corporate Social Responsibility (CSR) Fund with money allocated each year to different organisations and activities in line with the priority outcomes derived from the Luton Forum Sustainable Community Strategy 2008-2026. This includes a range of local and regional initiatives, primarily Active Luton, which provides leisure facilities, and Luton Culture which manage sites including Stockwood Discovery Centre and Wardown House as well as arts provision across the borough.				
Does this option promote positive equality impacts and minimise the potential for adverse equality impacts for groups with protected characteristics or communities that experience high levels of socio-economic deprivation?	Negative externalities arising from construction and operation may be particularly significant for local people who share protected characteristics and have increased sensitivity to environmental impacts, such as children or older people, along with people with respiratory disabilities who may be more vulnerable to air emissions. For options 1a, 1b, 1c and 2, the partial loss of Wigmore Valley park is likely to result in minor adverse impacts for residents with protected characteristics, i.e. children, young people and others who use this space as additional facilities intended to be provided to the east, may be less accessible for some groups, such as people with reduced mobility (e.g. older or disabled people) and people without access to a car (e.g. low-income groups). However, the retention of the northern part of the park by these options could act as a buffer to help minimise potentially adverse impacts on residential communities to the north (most significantly by option 1a). The retention of Wigmore Valley Park by option 1d will have neutral effects for local residents with protected characteristics, i.e. children or young people and others who may benefit from access to these facilities, as it is the status quo. The placement of the terminal to the south of the airport in option 2 could have minor positive impacts for the residential communities to the north. This could limit adverse impacts on residents arising from construction and operation. This is particularly important for people who share protected characteristics living in these areas who may be more sensitive to environmental impacts such as noise or air emissions (particularly older people, children or those with respiratory difficulties). The local community to the north of the airport would also benefit from the provision of new facilities as part of the New Century Park Development, notably including improved children's play space and an improved skate park, with the exception of option 1d. However, the southern location of the terminal has the potential for temporary adverse construction impacts on the amenity of residents in small rural hamlets and isolated dwellings south of Luton. The improvements to public transport offered by all options could improve access to employment at the airport for local communities. This could lead to potentially positive outcomes for those who share protected characteristics, particularly those who may be less likely to have access to private modes of transport e.g. low-income groups. Further, the potential for groups who share protected characteristics to benefit from new employment opportunities will depend on the implementation of measures to ensure the benefits reach relevant groups.				
Appraisal level	5	5	5	0	5
Summary	All options will contribute to improvements to access to employment, and experience potential adverse impacts upon amenity of residents due to construction, noise and air quality changes. Option 1d has no direct impacts on Wigmore Valley Park. During construction and operation, the park is retained, can be used for its intended purposes, and would remain accessible to the existing communities it serves. However, this option would not deliver the additional provision of a new children's playground and leisure facilities in Wigmore Valley Park, associated with the New Century Park development. The other four options (options 1a-c and 2) all benefit from the provision of new park facilities associated with the New Century Park development and new parkland to the east to compensate for the partial loss of parkland in Wigmore Park, whilst option 1d does not. On balance, the addition of new park facilities in options 1a-c and 2 outweighs the adverse effects resulting from the loss of parkland from the existing Wigmore Valley Park and the less accessible re-provided parkland to the east.				

B6 Strategic Objective O6: To minimise environmental impacts and, where practicable, to actively mitigate and manage any potential environmental effects

B6.1 This strategic objective covers nine criteria:

- S7 Noise;
- S8 Air quality;
- S9 Natural habitats and biodiversity;
- S10 Carbon emissions;
- S11 Water resources;
- S12 Flood risk;
- S13 Cultural heritage;
- S14 Landscape and visual impact and environmental land use; and
- S15 Climate change.

B6.2 **Table B.7** below sets out in more detail how the options performed in relation to the potential noise impact from site preparation, construction and operation.

Table B.7: S7 Noise impact (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does this option minimise the number of people exposed to the adverse impacts of noise? Including consideration of: • Site preparation noise and vibration	Noise and vibration generated during site preparation and construction will take place east of the existing terminal. During site preparation, substantial earthworks will be undertaken to level the ground, potentially resulting in adverse impacts at receptors in the residential area north of Eaton Green Road. The temporary nature of the works and the potential for implementing mitigation and adopting a methodology that incorporates best practicable means provides a basis for the likely impacts to be reduced or offset.		Option 1c is similar to option 1a and 1b with regard to noise impacts. The differentiating factor is that aircraft stands will be closer to receptors to the north of Eaton Green Road. Consequently, it is considered that option 1c performs marginally less well than option 1a and 1b; however, the difference between the options in terms of noise impacts is likely to be indistinguishable.	Noise and vibration generated during site preparation will take place to the south of Eaton Green Road. During site preparation, substantial earthworks will be undertaken to level the ground, potentially resulting in adverse impacts at receptors in the residential area north of Eaton Green Road. The temporary nature of the works and the potential for implementing mitigation and adopting a methodology that implements best practicable means. Unlike other options, option 1d would require a substantial number of HGV movements to provide enough material to level the site. The level of impacts will be dependent on the haul route selected; however, it is anticipated that the likely requirement for a large number of HGV movements over a short period of time that would be required to facilitate works have the potential to result in adverse levels of noise. There is potential for the haul route to access the site via the A1081, which has an existing high density of road traffic flows so it would require a large number of HGVs to result in an overall change in road traffic noise. However, due to the high density of traffic flows, it may be a requirement that deliveries are made at night so there is no additional stress placed on the local road network during peak periods. A management plan would be required to ensure that best practice is followed for site preparation deliveries to ensure that noise is minimised.	The main site preparation and construction works will be south of the runway, in the area designated for new terminal infrastructure, with potentially significant impacts on the nearby Copt Hall Cottage receptors. Given the small number of receptors that are located at Copt Hall Cottages, it may be possible to offset significant impacts; however, as the level of mitigation cannot be guaranteed at this stage of the project, it is considered that site preparation and construction works could result in adverse impacts.

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
• Construction noise and vibration • Noise from HGV traffic associated with site preparation and construction phases	During construction, works will be more confined to the area directly to the north of the runway, but the likely scale of works mean that adverse impacts may occur at receptors in the residential areas to the north of the site. As with site preparation works, the likely impacts could be controlled to some extent. Substantial levels of HGV movements are anticipated during the site preparation and construction works phase. The level of impacts will be dependent on the haul route selected; however, it is anticipated that traffic could access the site using the A1081, which has an existing high density of road traffic flows. Consequently, it is unlikely that the magnitude of HGV movements on main roads will be high enough to result in a perceivable change in noise and site preparation/construction traffic.			During the construction phase, works will be confined to the areas designated for structures and hard standing areas. Works may take place at approximately 250 m from the nearest sensitive receptor to the north of Eaton Green Road. Adverse noise levels are likely to occur; however, the location of construction works will vary over the extent of the site so periods of adverse levels of noise are likely to be limited. As with site preparation works, the likely impacts could be controlled to some extent. As with the site preparation phase, HGV movements are anticipated during the construction works phase. The level of impacts will be dependent on the haul route selected; however, it is anticipated that traffic could access the site using the A1081, which has an existing high density of road traffic flows. Unlike the site preparation phase, it is considered that there will not be a requirement to receive a high number of deliveries in a short period of time so deliveries can be suitably scheduled to ensure that noise emissions are minimised. Consequently, it is unlikely that the magnitude of HGV movements on main roads will be high enough to result in a perceivable change in noise and site preparation/construction traffic.	As with options 1a, 1b and 1c, construction traffic will likely access the site via the A1081 which already experiences high density road traffic movements. To access the works site to the south of the runway, a temporary haul road will need to be constructed, potentially on the alignment of the new southern link road to allow road traffic access to the new terminal from the A1081. HGV movements on this haul route would adversely impact Copt Hall Cottage receptors; however, when considered in the context of the baseline noise conditions, the impacts may be considered no worse than slightly negative.
• Aviation noise (aircraft approaches and departures)	As factors affecting airborne aircraft noise (i.e. air traffic movements, aircraft variants, runway use and airspace design) are unlikely to change between each option, the impact of airborne aircraft noise will be the same for all options. Given the considerable increase in aircraft movements due to the expansion, there is potential for significant adverse impacts to occur. However, there is the prospect that the level of impact may be reduced through changes in aircraft type, further improvements in aircraft technology, management of night-time flights and other mitigation/compensation measures.				

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
• On-site ground noise (i.e. aircraft taxiing, on-site road infrastructure, parking facilities etc.)	In comparison to the existing layout, it is likely that the option 1a, 1b and 1c layouts will be an improvement on the current situation as taxi-routes will be shortened and aircraft will spend less time spent idling as they queue for a stand. Additionally, building layouts are aligned with the runway and may result in increased screening of ground based noise sources for residential areas to the north of the airport. However, any benefits may be offset by increases in ground activity. Receptors to the south of the site will experience an intensifying of ground noise from airport activities; however, given that noise due to ground activities are likely to be lower than airborne aircraft noise, potential impacts on receptors to the south are unlikely to be significantly impacted when taken in context with baseline noise levels. Road traffic will access the airport via the A1018 and an upgraded Century Park Access Road. Due to the existing high density of road traffic on the A1081, it is unlikely that increases in road traffic will be of a magnitude to result in a substantial negative impact. As New Century Park is part of LTN Enterprise Zone, it is anticipated that any future development will be future- proofed against road traffic noise impacts; however, as the New Century Park is likely to be completed and occupied prior to full capacity at LTN being reached, it is considered reasonable to assume there could be slight negative impacts.			Ground noise is the main constraining factor for option 1d as the distance from the new apron to the nearest sensitive receptor is approximately 250 m. It is considered that aircraft taxiing and idling in this area are likely to result in significant adverse levels of noise at receptors to the north of Eaton Green Road, in particular at night. The other north options provide screening of ground noise from new terminal infrastructure; however, option 1d does not provide any form of screening of ground activities at the new apron with the exception of structure forming New Century Park. Option 1d shows that these buildings are not continuous so would not effectively screen ground noise. Consequently, should this option be selected as the preferred option, consideration of how screening may be provided to protect receptors north of Eaton Green Road will be required. A further consideration to reduce noise impacts would be to introduce a restriction on night activities on this apron; however, the practicalities of introducing such a ban would need to be discussed. Road traffic will access the airport via the A1018 and an upgraded New Century Park access road. Due to the existing high density of road traffic on the A1081, it is unlikely that increases in road traffic will be of a magnitude to result in a substantial negative impact.	The option 2 layout would provide increased separation distance between new airport operations on the south side of the runway and sensitive receptors to the north. However, communities to the south of the runway e.g. Copt Hall Cottages, Chiltern Green, Peters Green would experience higher levels of noise due to the proximity of airport activities. Whilst receptors to the south may benefit from screening from the new southern terminal building, the new terminal will still represent an intensification of activities closer to those. The majority of road traffic is likely to access the airport via the A1081 for option 2. A new link road connecting the terminal with the A1061 will be constructed to provide access, passing adjacent to Copt Hall Cottages. These communities are not currently subject to high levels of road traffic noise, so there is potential for notable impacts to occur. Mitigation may be implemented into the design; however, given the magnitude of change in noise (albeit to a limited number of receptors), it may not be possible to mitigate noise from road traffic entirely.
Appraisal level	-10	-10	-10	-20	-20
Summary	Given the considerable increase in aircraft movements due to the expansion, there is potential for Large Adverse impacts to occur. However, there is the prospect that the level of impact will be reduced through changes in aircraft type, further improvements in aircraft technology, management of night-time flights and other mitigation/compensation measures. Until further work has been undertaken to better understand how these measures may offset the growth in number of aircraft movements, it is considered appropriate to judge the potential impact of options 1a, 1b and 1c as Moderate Adverse. The provision of a southern link road in option 2 with the potential to significantly impact nearby communities, and receptors located to the south of the site with potential to experience significant increases in ground noise (compared to the baseline), suggest that option 2 is considered to have a greater adverse impact than options 1a, 1b and 1c. Due to the close proximity of airport ground activities to sensitive receptors at Eaton Green Road in option 1d, significant levels of noise are likely to be experienced. As it is uncertain at this stage of the appraisal if screening of ground noise can be delivered and whether a restriction on night activities on the new apron can be implemented, it is considered that the potential level of impact for option 1d is Large Adverse.				

B6.3 **Table B.8** below sets out in more detail how the options performed with regard to their potential effects on air quality and sensitive receptors.

Table B.8: S8 Air quality (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Is this option likely to cause an exceedance of any air quality objective?	The additional road traffic in the vicinity of the airport, additional flights and associated activity on the airport may cause an adverse impact on current and future receptors in the vicinity of the airport and may adversely affect the nearby Air Quality Management Areas (AQMAs), notably the Luton town centre AQMA, in all five options.				
Is this option likely to delay compliance with EU limit values as calculated by the Government using the PCM model?	If the decrease in concentrations due to national level emissions and technology improvements does not outweigh the increased activity due to the development, exceedances of the annual mean NO_2 air quality objective in the AQMAs may be worsened which could be a constraint. After 2025 the proposed development would not be expected to exacerbate exceedances in the AQMAs as by that time the national improvements should result in a decrease in concentrations, based on the predicted change in emission factors (Defra's Emissions Factor Toolkit).				

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Will this option have adverse or beneficial impacts on human receptors?	Without data on the increase in surface access and the data for aircraft and other airside activity, the increase in concentrations cannot be quantified. The options introduce new sources of emissions to air within 200m from residents on Eaton Green Road (i.e. aprons, car parks). However, it is likely that the change in traffic flow along Eaton Green Rd will be the main source of emissions to the residents north of the airport. The roads linking the Century Park Access Road (CPAR) and Eaton Green Road may have an impact, but data is not currently available to determine the effects on the traffic along Eaton Green Road. All options have the potential to increase concentrations in all three AQMAs. It is not possible to determine the impact on future receptors as they may be closer to the increased airport activity than the current receptors, and therefore may be subject to higher concentrations. For (future) non-residential receptors the hourly NO_2 air quality objective is most relevant and is unlikely to be exceeded. It is likely that road traffic accessing the car parks to the east via the CPAR will increase concentrations of pollutants at Wigmore Valley Park (WVP), where the hourly NO_2 air quality objective is relevant. The scheme may also give rise to odour complaints from people on WVP.				
Does this option minimise the number of people exposed to poor air quality?	The additional road traffic in the vicinity of the airport, additional flights and associated activity on the airport may cause an adverse impact on current and future receptors in the vicinity of the airport and may adversely affect the AQMAs, the town centre AQMA in particular. Prevailing winds are south-westerly so the greatest impact on long-term concentrations (e.g. annual mean average) will be expected at locations that lie to the north-east of major airport sources. The maximum short- term concentrations (e.g. hourly NO_2), will not necessarily occur downwind of prevailing winds. This may also give rise to odour complaints from WVP and the receptors immediately north of the airport and from future receptors that will be to the north-east.				The spread of airport activity, and therefore emissions to the south, envisaged in option 2, in particular the location of car parks to the south and the splitting of the surface access north and south of the runway, is likely to reduce impacts on current and future receptors in the vicinity of the airport compared with options 1a, 1b, 1c and 1d.
Will this option have adverse or beneficial impacts on ecological receptors?	There are no nationally designated ecological receptors within 5km of the airport. Without data on the increase in surface access and the data for aircraft and other airside activity, the impact on ecological receptors cannot be quantified; however, the proposed development is not likely to cause an adverse impact on ecological receptors, based on distance of the ecological receptors from the airport (over 5km). It is likely that road traffic accessing the long stay car parks to the east via the CPAR will increase concentrations of pollutants at WVP. However, WVP is not a statutorily designated ecological site.				
Appraisal level	-10	-10	-10	-10	-5
Summary	Without data on the increase in surface access and the data for aircraft and other airside activity the increase in concentrations cannot be quantified. All options will introduce additional emission sources due to increased capacity and activity (i.e. road vehicle emissions at additional car parks and aircraft emissions at additional stands). As all options introduce additional road traffic in the vicinity of the airport, additional flights and associated activity, they all cause an adverse impact on current and future receptors in the vicinity of the airport and may adversely affect the AQMAs. Option 2 moves airport activity and sources of emissions to the south, away from existing residential areas north of the airport and is therefore likely to have a reduced impact on existing receptors compared to the other options. Although option 1d introduces an apron which is partly within 200m from residents on Eaton Green Road which is likely to cause adverse impacts on current residents close to the airport, the impact remains moderate, based on the current relatively low monitored NO_2 levels near to the airport and anticipated low number of movements at that part of the apron nearest to Eaton Green Road.				

B6.4 **Table B.9** sets out in more detail how the options performed with regard to their potential effects on existing natural habitats and biodiversity.

Table B.9: S9 Natural habitats and biodiversity (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Are there any internationally, nationally or locally protected/designated nature conservation sites affected?	No significant impacts to internationally or nationally designated sites are envisaged as part of the proposed works at this stage in options 1a, 1b and 1c. However, further information regarding impacts such as potential air quality changes as a result of increased traffic will be required to establish the zone of influence of the proposed development. Acoustic impacts on wildlife receptors will also need consideration. Much of Wigmore Park County Wildlife Site (CWS), a non-statutory designated site, would be affected by the proposed works, but would in part be re-provided to the east (see mitigation below). In addition, the works are likely to impact on Winch Hill Woods CWS, which comprises ancient woodland, located to the east of the existing runway. The loss of Wigmore Park CWS is likely to require the creation of compensatory habitat through collaboration with the local wildlife trust and LBC. Compensation would also be required for any degradation caused to the ancient woodland within Winch Hill Wood CWS; with any loss to this habitat being essentially irreplaceable. Other CWSs may also be impacted by changes in air quality and disturbance.			The impacts for option 1 are as listed in options 1a-c, except for Wigmore Park County Wildlife Site (CWS) only being partially lost to the proposed works through the removal of the south-east section of the 'green lane', which runs along the airport boundary.	The impacts for option 2 are as listed in options 1a-c, except for Wigmore Park County Wildlife Site (CWS) only being partially lost to the proposed works.
Will priority habitats identified in national legislation and local policy/guidance be impacted?	Potential impacts to habitats include habitat loss, fragmentation, degradation and disturbance. The most significant losses will be areas of lowland calcareous grassland and broadleaved woodland, both of which are Section 41 priority habitats (Natural Environment and Rural Communities (NERC) Act 2006) and therefore of principal importance to the conservation of biodiversity in England. In addition, the loss of arable field margin habitats such as set-aside, hedgerows and mature trees will result in fragmentation at a landscape scale.			Potential impacts to habitats include habitat loss, fragmentation, degradation and disturbance. The most significant losses will be areas of broadleaved woodland and hedgerows, both of which are Section 41 priority habitats (Natural Environment and Rural Communities (NERC) Act 2006) and therefore of principal importance to the conservation of biodiversity in England. In addition, the loss of arable field margin habitats such as set-aside, calcareous grassland and mature trees will result in fragmentation at a landscape scale	Potential impacts to habitats include habitat loss, fragmentation, degradation and disturbance. The most significant losses will be areas of broadleaved woodland, a Section 41 priority habitat (Natural Environment and Rural Communities (NERC) Act 2006), as well as habitats located at the margins of arable fields, such as hedgerows and mature trees, which will result in fragmentation at a landscape scale

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
To what extent are populations of protected/notable species likely to be affected?	Based on current site understanding, the works would impact on at least two known bat roosts (common species in low numbers) and three main badger setts, resulting in species mortality in the absence of mitigation. Previous surveys have also identified the presence of a small population of reptiles (slow-worm), Roman snail and an assemblage of common farmland birds, which may be impacted by the proposed development. Additional impacts on fauna include reduced foraging resource, disturbance and fragmentation.				The presence/absence of protected/notable species is largely unknown to the south of the existing runway, with surveys focussing on the area to the east of the existing airport. However, there is a known population of Roman snail to the south of the runway. Local records data also indicates the presence of common reptile species to the south of the runway. These species are likely to be displaced from their current habitats. Additional impacts on fauna include reduced foraging resource, disturbance and fragmentation due to associated road infrastructure located between existing blocks of woodland.
To what extent can effects be managed and mitigated? What opportunities are likely to improve ecological connectivity and provide enhancements?	At this stage, it is considered that the above impacts could be mitigated effectively through well thought out licence applications and habitat management planning including additional (compensatory) planting and parkland to retain and enhance connectivity with the wider landscape and compensation for loss of ancient woodland and habitats within Wigmore Park CWS that could be lost as part of the development.				
Appraisal level	-10	-10	-10	-10	-10
Summary	There are likely to be impacts to ancient woodland and Section 41 priority habitats in all options. While Option 1d reduces the extent of impacts on Wigmore Valley Park CWS compared to the other four options, it would have greater impact on connectivity through removal of ridgeline woodland habitat and isolation of Wigmore Valley Park from surrounding habitats. Similarly, Options 1b and 1c also result in the removal of the ridgeline woodland, reducing connectivity with the wider landscape. Despite this, based on the assessment criteria, the appraisal level would be the same across all options, Moderate Adverse.				

B6.5 **Table B.10** sets out in more detail how the option performed with regard to carbon emissions.

Table B.10: S10 Carbon emissions (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does this option minimise the greenhouse gas (GHG) emissions from the proposed project (against the current status) during its construction, in its operation and its surface access with a focus on: • The loss of a carbon sink due to land use change	Option 1a, 1b and 1c will contribute a smaller increase in emissions compared to option 1d and 2 as a result of land use change; as the building of T2, forecourt and MSCP on closed landfill could contribute less carbon emissions from land use change			Option 1d will have an increase in emissions as a result of land use change as it will be building on Green Belt land to the east of Wigmore Valley park and less building on closed landfill.	Option 2 has minimal building over the closed landfill and converting of greenfield land south of the airport for the development will lead to increased carbon emissions from land use change.

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
• Construction activities and embedded carbon in materials	Option 1a, 1d and 2 will require less demolition, more reuse of existing buildings and infrastructure – all corresponding to lower increase in embedded carbon in materials required and fuel consumption for construction activities.	Options 1b and 1c will require more demolition work, less reuse of existing facilities (although 1b aims to partially incorporate parts of T1 and infrastructure), and construction of larger buildings and infrastructure assets. This could lead to larger increase in carbon emissions due to embedded carbon in materials used and fuel consumption for construction activities.		Option 1a, 1d and 2 will require less demolition, more reuse of existing buildings and infrastructure – all corresponding to lower increase in embedded carbon in materials required and fuel consumption for construction activities. Additionally, Option 1d requires the construction of morel infrastructure such as 4.2km dual carriageway and long extension of MPT.	Option 1a, 1d and 2 will require less demolition, more reuse of existing buildings and infrastructure – all corresponding to lower increase in embedded carbon in materials required and fuel consumption for construction activities. Additionally, option 2 requires the construction of more infrastructure such as 5km 10mwide A road, road bridge over railway, and more extensive expansion of MPT.
• Airport buildings and infrastructure operations i.e. energy consumption, water supply, waste water, waste disposal;	Option 1a will have a smaller overall terminal footprint than options 1b and 1c therefore assumed will consume less electricity. The water consumption, wastewater treatment and waste depend on number of passengers through, therefore these will be similar across all options.	Options 1b and 1c will require larger overall terminal footprint than options 1a, 1d and 2 therefore assumed will consume more electricity. The water consumption, wastewater treatment and waste depend on number of passengers through, therefore these will be similar across all options.		Smaller overall terminal footprint than options 1b and 1c therefore assumed will consume less electricity. The water consumption, wastewater treatment and waste depend on number of passengers through, therefore these will be similar across all options.	Smaller overall terminal footprint than options 1b and 1c therefore assumed will consume less electricity. The water consumption, wastewater treatment and waste depend on number of passengers through, therefore these will be similar across all options.
• Airport operated vehicles including those owned by third party operators (airside/landside);	The number of airport operated vehicles is expected to be similar across these three options.			Option 1d and 2 may have marginally higher increase in carbon emissions from landside/ airside vehicles as the terminal buildings/ aprons are further apart.	
• Surface access journeys (passengers, freight, employees); and	Surface access journey distances will be shorter, and similar to options 1a, 1b & 1c leading to lower carbon emissions.			Surface access journey distances will be larger as car park is located further east from existing road scheme.	Surface access journey distances will be larger as the terminal south of the terminal will increase the distance from road.
• Aircraft (during landing take-off cycle, cruise emissions).	Aircraft emissions during cruising will be the same across all options, with landing and take-off (LTO) carbon emissions dependent on distance of taxiing from runway to apron. These LTO distances are relatively similar for all options. Combined, there will be the largest adverse impact on the carbon footprint of the expansion project.				
Appraisal level	-20	-20	-20	-20	-20
Summary	For an option by far the most significant GHG emissions impact will be from aircraft cruise emissions (i.e. emissions from aircraft over 3,000ft). As a result every option is appraised as large adverse impact over the baseline. Emissions from LTO cycle of aircraft while not as large as cruise emissions will also be important. For the sift process, it has been assumed that the increase in cruise emissions, once the airport is operating at maximum capacity of up to 32mppa, will be the same for each scheme. The rate at which each option scales up to reach the maximum mppa is unknown at this time.				

B6.6 The results of the appraisal in relation to water resources are set out below in **Table B.11**. It is assumed that through the detailed design process, the proposals will take into account existing surface water flow paths.

Table B.11: S11 Water resources (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does the option have any direct/indirect impacts on water quality in surrounding watercourses, particularly where Water Framework Directive (WFD) status may be compromised?	These options have no impact on water quality and WFD status in any surrounding watercourses. This option involves piling through an existing landfill on a Principal aquifer and therefore poses the risk of creating pathways for potentially contained water to reach the groundwater. Refer to S21 for further information on the interaction between the landfill and groundwater receptors. As the Principal Aquifer underlying the site is classified as a WFD waterbody the Upper Lea chalk, a WFD compliance assessment may be required to determine whether this option would affected the current WFD groundwater body status.			The option has no impact on water quality and WFD status in any surrounding watercourses. This option does not include piling through the existing landfill. Therefore, in comparison to the other options the risk to groundwater due to contaminants potentially mobilised during piling is lower for this option. As the Principal Aquifer underlying the site is classified as a WFD waterbody, the Upper Lea chalk, a WFD compliance assessment may be required to determine whether this option would affected the current WFD groundwater body status.	The option has no impact on water quality and WFD status in any surrounding watercourses. This option would require less piling and excavation of the existing landfill than options 1a, b, or c. Underlying clay deposits will help to protect the chalk aquifer. A WFD compliance assessment may be required as per options 1a, 1b, 1c and 1d.
Does the proposed option have the potential to affect any groundwater receptors, such as through dewatering or impacts on groundwater quality?	This option has the potential of having a large adverse impact on groundwater receptors. During the design process however, it is likely that impacts can be mitigated and reduced, ensuring that any material effects are limited in extent and duration.			The scale of earthworks for Option 1d is larger than the other options and as such could affect the groundwater regime and the abstraction of groundwater in the area. It is assumed that the potential risk can be managed appropriately via the implementation of appropriate mitigation measures to ensure that any measurable impacts are limited in extent and duration, and therefore this option is appraised as Slight Adverse.	This option involves the use of minor earthworks which has the potential to have a minor impact on the Principal Aquifer, SPZ and abstraction. However, as it is not anticipated to have an impact on the use and/or integrity of the Principal Aquifer, SPZ and abstraction, or quality of groundwater.
Will the option have any direct/indirect effects on water abstractions (Groundwater and surface water) and Source Protection Zones (SPZ)?	There are no surface water abstractions that will be impacted by this option. The proposed excavation on the eastern side of the site is within a groundwater SPZ (Zone 3) and could affect groundwater levels and quality, therefore also affecting the groundwater regime and the abstraction of groundwater in this area, depending on the depth of excavation. A quantitative assessment has not been carried out at this stage but it is possible that the impact on groundwater levels could be large. However, it is assumed that the risk can be managed appropriately via the implementation of appropriate mitigation measures to ensure that any measurable impacts are limited in extent and duration. Refer to S21 for further information on impacts on groundwater receptors.			There are no surface water abstractions that will be impacted by this option. The proposed excavation on the eastern side of the site is within a groundwater SPZ (Zone 3) and could affect groundwater levels and quality, therefore also affecting the groundwater regime and the abstraction of groundwater in this area, depending on the depth of excavation. A quantitative assessment has not been carried out at this stage but it is possible that the impact on groundwater levels could be large. However, it is assumed that the risk can be managed appropriately via the implementation of appropriate mitigation measures to ensure that any measurable impacts are limited in extent and duration.	There are no surface water abstractions that will be impacted by this option.
Appraisal level	-5	-5	-5	-5	0
Summary	Options 1a, 1b and 1c require piling through an existing landfill site on a Principal Aquifer, therefore potentially creating pathways for contaminated water to reach the groundwater. However, it is assumed that the potential risk can be managed appropriately via the implementation of appropriate mitigation measures to ensure that any measurable impacts are limited in extent and duration, and these options are therefore appraised as Slight Adverse. Option 1d does not involve piling through a landfill but does involve earthworks to develop a larger platform , which would mean a larger excavation to the northeast to provide the material, therefore overall this option is also considered to be slight adverse. Option 2 is considered to have a Neutral impact as the scale of earthworks would be smaller and is therefore not anticipated to have an impact on the use and/or integrity of the Principal Aquifer, SPZ and abstraction.				

B6.7 The results of the appraisal in relation to flood risk are set out below in **Table B.12**.

Table B.12: S12 Flood risk (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does the option encroach on any areas at risk of flooding from surface water, rivers, artificial water bodies or groundwater?	Option 1a, 1b, 1c and 1d do not encroach on any areas of flooding associated with rivers, groundwater and artificial bodies. The proposed development in each of these options impacts areas of high surface water flood risk, including the surface water flow paths that form the upper catchment of the River Mimram, although this can be accounted for in the developing design to ensure no overall increase in flood risk.				The option does not encroach on any areas of flooding associated with rivers, groundwater and artificial bodies. There are parts of DCO extent that encroach upon areas of high surface water flood risk which will need to be taken into account in the development proposals. However, the extent does not include the surface water flow paths that form part of the upper catchment of the River Mimram. Therefore, it is rated as slightly beneficial compared to options 1a, 1b, 1c and 1d.
Does the option have the potential to pose any increase in flood risk to receptors located in the vicinity of the site?	It is assumed an appropriate drainage design will ensure no increase in flood risk at nearby receptors, therefore the impact is neutral. The area impacted by the proposed development is of low susceptibility to groundwater flooding and will therefore not result in any impacts on groundwater flooding.				
To what extent can any potential impacts on flood risk be appropriately managed?	It is assumed that any potential impacts on surface water flood risk can be managed by appropriate drainage design.				
Appraisal level	0	0	0	0	0
Summary	On the basis that any potential impacts on surface water flooding are managed via the implementation of an appropriate drainage design, all five options will not result in any loss of flood storage or increase in flood risk and are therefore considered to be Neutral.				

B6.8 The results of the appraisal in relation to potential effects on assets of cultural heritage are set out below in **Table B.13.**

Table B.13: S13 Cultural heritage (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does the option seek to minimise adverse effects on the significance of internationally and nationally designated heritage assets and their settings?	Options 1a, 1b and 1c have the potential to affect the setting of a number of designated heritage assets, most notably the setting of Someries Castle and Luton Hoo RPG. This is mainly as a result of the increased size of the new apron and associated buildings and the additional proposed car parking space to the north-east. The proposed works for the expansion of the existing airport include the demolition of the Grade II listed Winch Hill Farmhouse. The Multi-Storey Car Parks (MSCPs) to the south-west of the existing airport and the Fire Training Ground would impact on the setting of Luton Hoo RPG and Someries Castle by further eroding their setting.			This option has the potential to have an impact on the setting of designated heritage assets, most importantly on the setting of the Someries Castle and Luton Hoo RPG. This option would have significant irreversible effects on non-designated archaeological assets. The impact of the earthworks would extend across a larger area and the phasing would not allow the effects of development on views from sensitive receptors to be reduced. As the earthwork platform would need to be delivered in the first stage, there is an increased risk for the discovery of very important archaeological remains.	This option is the most prominent within the landscape. The setting of Someries Castle and Luton Hoo RPG would be adversely affected by the positioning of the new terminal, surface car parking and MSCP adjacent to Someries Castle as well as the construction of the new surface access routes.

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does the option affect other heritage assets?	Apart from the Someries Castle, Luton Hoo RPG and Winchhill Farmhouse, there are additional designated heritage assets that have the potential to be affected. These include a number of listed farmhouses to the north-east and south-east of the site and a number of listed buildings in the village of Breachwod Green to the east. Non-designated heritage assets that will potentially be affected include the Iron Age/Romano-British settlement to the east of the current Wigmore Valley Park and a further Romano British site and cropmarks relating to prehistoric and Roman activity, some of which lie within an archaeological alert area. Winch Hill farm has been a settlement since the medieval period and there may therefore be evidence relating to its evolution as a settlement preserved in the area around the farmhouse.			Option 1d has a greater footprint due to the land take to the east and the impact the construction of large surface car parks will have. This has greater potential to impact directly on buried heritage assets and indirectly on built heritage assets. Apart from the setting of the Someries Castle and Luton Hoo RPG, the setting of a series of listed farmhouses to the north-east and south-east has the potential to be impacted. In addition, a number of listed properties in the village of Breachwood Green to the east have the potential to be affected. Winch Hill Farmhouse, a Grade II listed building would be demolished. The known Iron-Age/Romano British settlement to the east of Wigmore Valley Park will be entirely removed by the building of the earthwork platform. Depending on the importance of the archaeological deposits and features that may be found to be preserved here, further mitigation may be deemed necessary by the Central Bedfordshire Archaeologist. There are two archaeological alert areas (at Darley Hall, partially, and Winch Hill Farm, completely) lying within the proposed extent of the earthworks (see constraints plan). It is not currently clear why these areas have been identified as having a high archaeological potential (identifying the reasons forms part of the ongoing consultation process with Hertfordshire CC), but they will require a phased programme of investigation consisting of desk based research, geophysical survey and evaluation by trial trenching.	The setting of Someries Castle and Luton Hoo RPG and would be heavily impacted. A large area of agricultural land to the south of the airport would be directly impacted, including the known sites of crop marks of Iron Age date, which may represent a settlement.
To what extent can effects potentially be managed and mitigated?	Potential methods of mitigation include preservation by record of non-designated archaeological assets through a phased programme of archaeological evaluation, excavation, recording and archiving. Consideration of the scale, mass and design of the terminal buildings and MSCP's, the positioning of trees as screening and avoidance of unnecessary lighting will all help to mitigate the overall impact. Potential methods of mitigation include preservation by record of non-designated archaeological assets through a phased programme of archaeological evaluation, excavation, recording and archiving. Consideration of the scale, mass and design of the terminal buildings and MSCP's, the positioning of trees as screening and avoidance of unnecessary lighting will all help to mitigate the overall impact.			This option offers fewer possible options of mitigation by design on the impact on the setting of designated heritage assets through landscaping and screening. Mitigation of the impact on buried archaeological assets would be through a phased programme of evaluation and, depending on the nature, importance and state of preservation of any archaeology identified a subsequent programme of complete excavation (preservation by record).	It would not be feasible to mitigate the direct or indirect impacts on the designated heritage assets associated with this design.
Appraisal level	-5	-5	-5	-10	-20
Summary	All options will have as a result the impact of a number of designated heritage assets including the Someries Castle, Luton Hoo RPG and Winchhill Farmhouse, although the latter is currently proposed for demolition on health and safety grounds. Options 1a, 1b and 1c are considered to be broadly similar in effect. Option 1d will be more prominent in the landscape, affecting further the rural setting of a number of listed buildings to the east. Option 2 will be the most prominent in the landscape and its proximity to the Someries Castle and Luton Hoo will erode their setting to a great extent. The larger the land take to the east or south and the more the development is centred in these areas the higher the likelihood of major opposition to the project being raised by statutory stakeholders (Historic England and the LPA archaeologists).				

B6.9 The results of the appraisal in relation to landscape and visual impact, and environmental land use, are set out below in **Table B.14.**

Table B.14: S14 Landscape and visual impact and environmental land use (32mppa)

Sub-criteria:	Option 1a Option 1b Option 1c	Option 1d	Option 2
Does this option impact, protect or enhance designated landscapes or townscapes?	The Chilterns AONB is located to the west (beyond the M1 motorway) and north of Luton. It is not considered that the airport development proposed within these options would be discernible from the AONB. The earthworks and built development proposed in these options would necessitate substantial impact on the 'Wigmore Rural' designated Area of Local Landscape Value (ALLV).	It is not considered that the airport development proposed within this option would be discernible from the AONB. The earthworks and built development proposed under this option would necessitate some impact on the 'Wigmore Rural' designated Area of Local Landscape Value (ALLV).	It is not considered that the airport development proposed within this option would be discernible from the AONB. The built development proposed within New Century Park would impact the 'Wigmore Rural' designated Area of Local Landscape Value (ALLV). The proposed terminal building and apron to the south of the runway would substantially affect the Dane Street Farm designated ALLV, Someries Farm ALLV and Hyde designated Area of Great Landscape Value (AGLV).
Does this option affect the visual amenity of potentially sensitive visual receptors (e.g. those recreating in the surrounding landscape; those visiting historic buildings; etc.)?	These options are anticipated to affect the visual amenity and tranquillity of people using Wigmore Valley Park and walkers using public rights of way (notably users of the Chiltern Way long distance footpath) to the east and northeast of the airport. Operations within the airport may impact amenity experienced from some private (residential) views, notably from properties within Luton and adjoining LLALs land ownership to the east of the airport.	Whilst the proposals do not directly impact Wigmore Valley Park it is likely that the tranquillity of the park may be affected by proposed development to the east. Existing vegetation retained within the park may help to screen views of the proposed development and retain visual amenity. The visual amenity of walkers using the Public Rights of Way (notably the Chiltern Way long distance footpath) to the east and northeast of the airport are predicted to be directly affected. Operations within the airport would be likely to impact the visual amenity of some private (residential) views, particularly those within Luton and Breachwood Green.	The New Century Park part of the proposal is anticipated to affect the visual amenity of people using Wigmore Valley Park and from public and private (residential) locations within Luton. The proposed terminal and access road is considered to affect walkers using public rights of way to the south of the airport (notably those approaching Someries Castle), views experienced by visitors to Someries Castle Scheduled Monument and Luton Hoo Hotel and Registered Parkland. The proposed terminal and access road will also affect the visual amenity experienced from a number of private (residential) views and will introduce additional lighting which will be evident from a wide geographic area to the east, west and south of the airport.

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does this option affect locally sensitive landscape features (e.g. ancient woodlands, historic hedgerows, etc.) or contributors to landscape value (e.g. public access, etc.)?	These options necessitate substantial alteration to landform and the removal of blocks of woodland and historic hedgerows within LLALs land ownership to the east of the airport. A designated County Wildlife Site (located to the east of the airport) would be substantially affected by this option. A number of Rights of way within Wigmore Valley Park, LLALs land ownership to the east of the airport may need to be stopped up or redirected to facilitate this development. These options would necessitate substantial alteration to Wigmore Valley Park (a designated District Park) located immediately to the northeast of the airport.			This option necessitates substantial alteration to landform and the removal of mature woodland and historic hedgerows within and outside LLALs land ownership to the east of the airport. A designated County Wildlife Site (located to the east of the airport) would be affected to some extent by this option. Several rights of way within and beyond LLALs land ownership to the east of the airport would need to be stopped up or redirected to facilitate this development.	This option necessitates some alteration to landform within LLALs land ownership to the east of the airport (Century Park). The New Century Park part of this option would necessitate alteration to Wigmore Valley Park (a designated District Park) located immediately to the northeast of the airport. The New Century Park part of this option would necessitate impact to a designated County Wildlife Site (located to the east of the airport) and District Wildlife Site (located to the west of the airport). This option necessitates the removal of several hedgerows (some mature) and woodland blocks to the south of the existing airport. Residential properties to the south of the runway would need to be removed to accommodate the new terminal buildings and apron. Historic road alignments to the south of the runway would need to be realigned. A number of rights of way would need to be stopped up or redirected to accommodate the new terminal and extension to the south of the runway.

Sub-criteria:	Option 1a Option 1b Option 1c	Option 1d	Option 2
Does this option affect the character of the landscape/townscape or the perceptual characteristics of surrounding landscape /townscape character areas?	The earthworks operations and commercial development proposed within this option would substantially affect the character of the landscape within LLAL's land ownership to the east of the airport. Directly affecting the physical landscape within the following Landscape Character Areas: • Hertfordshire Character Area: LCA 200 (Peters Green Plateau). • Hertfordshire Character Area: LCA 201 (Kimpton and Whiteway Bottom). and • Luton Landscape Character Assessment: Character Area 13: Wigmore Rural. The reconfiguration of the airport and construction of taxiways would impact to some extent (particularly to its north) the landscape character and perceptual characteristics of Luton Landscape Character Assessment: • Character Area 14: Luton Airport. Increased air traffic is considered to affect the perceived tranquility experienced from a number of surrounding Landscape Character Areas, most notably: • Hertfordshire Character Area: LCA 200 (Peters Green Plateau); • Hertfordshire Character Area: LCA 201 (Kimpton and Whiteway Bottom); • Hertfordshire Character Area: LCA 202 (Breachwood Green); • Central Beds Landscape Character Area: 11C (Luton Hoo Chalk Dipslope); • Central Beds Landscape Character Area: 11D (Chiltern Green Chalk Dipslope); • Central Beds Landscape Character Area: 12C (Slip End Chalk Valley); and • Central Beds Landscape Character Area: 12D (Lea Chalk Valley). The replacement open space in North Herts is a greater distance from the existing area of parkland (and its residential users) and may be incongruous to the existing landscape character within its surrounding area.	The earthworks operations commercial development and construction of airport development proposed within this option would substantially affect the character of the landscape, within and outside LLAL land ownership to the east of the airport. Directly affecting the physical landscape within the following Landscape Character Areas: • Hertfordshire Character Area: LCA 200 (Peters Green Plateau); • Hertfordshire Character Area: LCA 201 (Kimpton and Whiteway Bottom); • Hertfordshire Character Area: LCA 202 (Breachwood Green Ridge); • Luton Landscape Character Assessment: Character Area 13: Wigmore Rural; and • Luton Landscape Character Assessment: Character Area 14: Luton Airport. Increased air traffic is considered to affect the perceived tranquility experienced from a number of surrounding Landscape Character Areas, most notably: • Hertfordshire Character Area: LCA 200 (Peters Green Plateau); • Hertfordshire Character Area: LCA 201 (Kimpton and Whiteway Bottom); • Hertfordshire Character Area: LCA 202 (Breachwood Green); • Central Beds Landscape Character Area: 11C (Luton Hoo Chalk Dipslope); • Central Beds Landscape Character Area: 11D (Chiltern Green Chalk Dipslope); • Central Beds Landscape Character Area: 12C (Slip End Chalk Valley); and • Central Beds Landscape Character Area: 12D (Lea Chalk Valley).	The development proposed within this option would substantially affect the physical character of the landscape within and outside LLAL's land ownership to the east of the airport. Directly affecting the physical landscape within the following Landscape Character Areas: • Hertfordshire Character Area: LCA 200 (Peters Green Plateau); and • Luton Landscape Character Assessment: Character Area 13: Wigmore Rural. •Central Beds Landscape Character Area: 11D (Chiltern Green Chalk Dipslope)The new terminal and its access road would substantially affect the physical landscape and character of the within the following landscape character areas: • Hertfordshire Landscape Character Area: LCA 200 (Peters Green Plateau) • Central Beds Landscape Character Area: 12D (Lea Chalk Valley) The CPAR and reconfiguration of built form to the north of the existing terminal and runway would impact to some extent the landscape characteristics of Luton Landscape Character Assessment: • Character Area 14: Luton Airport; Increased air traffic is considered to affect the perceived tranquility experienced from a number of surrounding Landscape Character Areas, most notably: • Hertfordshire Character Area: LCA 200 (Peters Green Plateau) • Hertfordshire Character Area: LCA 201 (Kimpton and Whiteway Bottom); • Hertfordshire Character Area: LCA 202 (Breachwood Green); • Central Beds Landscape Character Area: 11C (Luton Hoo Chalk Dipslope); • Central Beds Landscape Character Area: 11D (Chiltern Green Chalk Dipslope); • Central Beds Landscape Character Area: 12C (Slip End Chalk Valley); and • Central Beds Landscape Character Area: 12D (Lea Chalk Valley). The replacement open space (proposed in New Century Park) is slightly further from the existing area of parkland (and its residential users).

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
To what extent can effects on landscape or visual amenity be managed and mitigated?	This option impacts rights of way, historic hedgerows, designated habitat areas and areas of public open space, but offers some potential to mitigate or enhance these affected areas of landscape within the client's ownership. Hedgerow reinstatement and strategic woodland planting at the perimeter of LLALs land ownership to the east of the airport (Century Park) and the Option Land would assist in screening the development to some extent. Varying the gradation and including planting on the slope to the perimeter of the proposed platform would also soften and improve the visual appearance of this slope. Street and structural planting within the commercial development and to the perimeter of drainage features and fuel farm would also help to break up the openness of this land following the earthworks operations. It is anticipated that this development option would necessitate some 'off-site' landscape compensation and strategic planting to screen affected views and to mitigate for affected valued landscape elements that cannot be compensated within the client's ownership.	These options impact rights of way, areas of mature (and in some instances ancient) woodland, historic hedgerows, designated habitat areas and areas of public open space, but offers some potential opportunity to mitigate or enhance these affected areas of landscape within the client's ownership. Hedgerow reinstatement and strategic woodland planting at the perimeter of LLALs land ownership to the east of the airport (Century Park) and the Option Land would assist in screening the development to some extent. Varying the gradation and including planting on the slope to the perimeter of the proposed platform would also soften and improve the visual appearance of this slope; Structural planting within the parkland and to the perimeter of drainage water bodies and car park would also help to break up the openness of this land following the earthworks operations. This development option would necessitate some 'off-site' landscape compensation and strategic planting to screen affected views and to affected valued landscape elements that cannot be compensated within the client's ownership.		This option impacts rights of way, areas of mature (and in some instances ancient) woodland, roads, hedgerows, designated habitat areas and areas of public open space. Principally impacting land outside the client's ownership, this option offers very little opportunity to mitigate or enhance these affected areas of landscape without the use of 3rd party land.This development option would necessitate a large amount of 'off-site' landscape compensation for strategic woodland planting to screen affected views/ night-time effects from the surrounding areas (e.g. views from Luton Hoo). It is anticipated also that this option will necessitate specific lighting measures to be applied to the airport development in order minimise night-time impacts.	This option impacts rights of way, areas of mature (and in some instances ancient) woodland, roads, hedgerows, designated habitat areas and areas of public open space. Principally impacting land outside the client's ownership, this option offers very little opportunity to mitigate or enhance these affected areas of landscape without the use of 3rd party land. Hedgerow reinstatement and woodland planting within LLALs land ownership to the east of the airport (Century Park) and the Option Land would help further mitigate effects from New Century Park and may assist in compensating for lost hedgerows and woodland in other areas. This option would necessitate a large amount of 'off-site' landscape compensation for strategic woodland planting to screen affected views/ night-time effects from the surrounding areas (e.g. views from Breachwood Green). It is anticipated also that this option will necessitate specific lighting measures to be applied to the airport development in order minimise night-time impacts.
Is this option likely to result in the loss or damage to best and most versatile agricultural land (i.e ALC Grades 1, 2 or 3a)?	These options are likely to affect Grade 3 agricultural land from the Provisional ALC Map (1:250,000). These options are likely to affect 'Moderate Likelihood of BMV (20 - 60% are BMV)' from Natural England's Predictive BMV Map of East England (1:250,000). From the Post 1988 ALC map attached, it is reasonable to predict that this option will affect agricultural land which is approximately a mixture of 50% Subgrade 3a (i.e. BMV land) and 50% Subgrade 3b (not BMV). The quantum of agricultural land affected (of which it is estimated 50% will be BMV) by these options appear to be broadly similar.			It is reasonable to predict that this option will affect agricultural land which is approximately a mixture of 50% Subgrade 3a (i.e. Best and Most Versatile land - BMV) and 50% Subgrade 3b (not BMV). The quantum of agricultural land affected would be over a greater geographic area than any of the other options.	This option is likely to affect Grade 3 agricultural land from the Provisional ALC Map (1:250,000). This option is likely to affect 'Moderate Likelihood of BMV (20 - 60% are bmv)' from Natural England's Predictive BMV Map of East England (1:250,000). From the Post 1988 ALC map attached, it is reasonable to predict that this option will affect agricultural land which is approximately a mixture of 50% Subgrade 3a (i.e. BMV land) and Subgrade 3b (not BMV). This option, with major development and highways proposed to the south of the airport, is likely to affect more BMV agricultural land than options 1a, 1b and 1c.
Does this option affect local farm businesses (effects on sustaining a rural economy and on individual farmers and their farming operations)?	These options will affect local farm businesses to the east of the airport. The likely effects on local farm businesses under these options appear to be similar.			This option will have a greater effect on local farm businesses than options 1a, 1b and 1c. This option is likely to affect a larger number of holdings than options 1a, 1b and 1c, and the magnitude of effects on individual holdings (with regard to land-take, severance, fragmentation, demolition of agricultural buildings/infrastructure, potential job losses) is also likely to be greater.	This option will have a greater effect on local farm businesses than options 1a, 1b and 1c. This option is likely to affect a larger number of holdings than options 1a, 1b and 1c, and the magnitude of effects on individual holdings (with regard to land-take, severance, fragmentation, demolition of agricultural buildings/infrastructure, potential job losses) is also likely to be greater.

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does this option affect soil (including toosoil and subsoil) as a finite resource?	The effects on soil (inc. topsoil and subsoil) are likely to be substantial as these options will involve extensive earthworks. It is anticipated that the effects on soil would be broadly similar for all of these options.			The effects on soil (including topsoil and subsoil) are likely to be substantial as this option will involve extensive earthworks. The development is considered to impact soils as a resource more so than any of the other development options.	The effects on soil (inc. topsoil and subsoil) are likely to be substantial as this option will involve extensive earthworks. At this stage it is difficult to establish whether this option is more or less favourable than the other options in terms of effects on soil.
Does this option affect rural land designations (e.g Agri-Environment Schemes or Nitrate Vulnerable Zones)?	The likely effects on rural land designations under these three option appear to be broadly similar			This option is likely to have an effect on rural land designations as an area of land within the development boundary has been entered into the Entry Level Stewardship scheme (or higher).	From the map showing 'Agri-Environment Schemes' (from MAGIC.co.uk), there is a large area (505 ha) of agricultural land entered in the Entry Level plus Higher Level Stewardship scheme to the southeast of the airport. There is also an area of agricultural land entered into the Entry Level Stewardship Scheme close to junction 9 of the M1. This option is likely to affect both rural land designations noted above. It is reasonable to assume that option 2 will have the greatest effect on rural land designations.
To what extent can effects on land use be managed and mitigated?	These options will necessitate substantial alteration to existing agricultural land and soils. The effects on affected local farm businesses and BMV land impacted by the proposals are considered to be unavoidable. By using appropriate soil management regimes and minimising the footprint of any earthwork activities, effects on soils as a finite resource can be minimised.			In addition to those impacts identified for 1a, 1b and 1c, the area of landscape affected by option 1d is considered to be greater in scale; broadly of similar overall value and sensitivity; and more problematic in land use terms to that affected by options 1a, 1b and 1c.	This option will necessitate substantial alteration to existing agricultural land and soils. The effects on affected local farm businesses and BMV land impacted by the proposals are considered to be unavoidable. By using appropriate soil management regimes and minimising the footprint of any earthwork activities, effects on soils as a finite resource can be minimised.
Appraisal level	-10	-10	-10	-20	-20
Summary	Options 1a, 1b and 1c are broadly similar in impact to each other, although it is recognised that Options 1b and 1c would impact a greater geographic area due to the removal and reconfiguring of the existing terminal and its surroundings. The area of landscape affected by options 1d and 2 are greater in scale; broadly of similar overall value and sensitivity; and more problematic in land use terms to that affected by any of the northern options. Effects from options 1a, 1b and 1c, whilst significant during construction, are also considered to have greater potential for being mitigated in the longer term.				

B6.10 The results of the appraisal in relation to climate change are set out in **Table B.15.**

Table B.15: S15 Climate change (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Climate Change Resilience: Does this option reduce the following climate change risks related to the proposed project during its construction, its operation and its surface access? • Extreme high temperature • Heavy precipitation • Flood risk • Damage to building/ infrastructure • Increased seasonal events • Increase in mean temperature	The design of airport infrastructure and associated surface access routes, drainage, material selection all have influence on climate change resilience of the airport expansion. It is assumed that the appropriate engineering responses to climate change will be incorporated into the design, such that all options will improve its resilience to climate change as far as practicable. Options 1b and 1c are expected to have larger increase in hardstanding surface area which could lead to increased risk on storm-water drainage systems; however it is assumed that the engineering and drainage solutions will be designed appropriately and therefore this risk is mitigated. For all options the engineering responses will have to consider the following in particular when addressing climate change resilience: - Building on closed landfill – contamination, remediation, earthworks, etc. - Hardstanding surface area – apron, forecourt, surface car parks, terminal footprint. This will affects the surface water run-off during extreme weather events, increased precipitation and flash flooding. - Impact from extreme temperature and heatwaves – this may impact on operation of buildings (i.e. increasing energy demand).				
Appraisal level	5	5	5	5	5
Summary	All options were appraised to have a beneficial impact in terms of their climate change resilience in comparison to the existing airport. It is assumed that all new buildings and infrastructure will be engineered/ designed to the latest building standards; therefore the options will be similar in climate change resilience levels.				

B7 Strategic Objective O7: To maximise the number of passengers and workforce arriving at the airport on public transport

B7.1 Strategic objective 7 sought to maximise the number of airport passengers and workforce arriving at the airport on public transport, with **Table B.16** appraising the option on its public transport accessibility and anticipated walking/ cycling modal share.

Table B.16: S16 Public transport modal share (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Can the Luton DART be extended to increase modal share?	The Luton DART could be extended (subject to detailed design) but the provision of two stations, one for each terminal, will lead to increased complexity, less frequent services and longer journey times.	The Luton DART can be extended (subject to detailed design). With option 1b the distance would be marginally closer compared to 1c but this is not significant.		The Luton DART could be extended (subject to detailed design) but the provision of two stations, one for each terminal, will lead to increased complexity, less frequent services and longer journey times.	This may be difficult to achieve with this option given the terminal building south of the runway. It is also likely that it will be more expensive than the Luton DART solution for options1a, 1b and 1c
Can bus services be increased to accommodate a larger PT modal share?	Bus services could be increased but they may be less attractive to airport employees if they stop at the existing terminal prior to the new terminal.	Bus services could be increased, with the added attractiveness of the drop off areas / pick up areas being close to the urban conurbation in these two options, so no duplicate services would be required.		Bus services could be increased but they may be less attractive to airport employees if they stop at the existing terminal prior to the new terminal.	Bus services could be increased, but it is unlikely that the same buses would be able to serve both terminals without restrictive time penalties. This would predominantly affect airport employees rather than passengers.
Can more coach services be accommodated to increase PT modal share?	More coach services could be accommodated but they would be less attractive due to dwell time at two terminals (i.e. added journey time). This can be somewhat overcome by having a single terminal area for coaches and then a transfer onto Luton DART.	There is sufficient space for a public transport interchange to be accommodated. However, a split level solution might be more appropriate which is more expensive.		More coach services could be accommodated but they would be less attractive due to dwell time at two terminals (i.e. added journey time). This can be somewhat overcome by having a single terminal area for coaches and then a transfer onto Luton DART.	With the provision of a new terminal there is sufficient space to accommodate a PT interchange and to include more coach services. However, journeys between the two terminals may be seen as negative.
Can walking and cycling be accommodated to increase modal share?	For staff, these options are attractive in terms of their proximity to the urban conurbation of Luton; therefore take-up of walking and cycling should be healthy.			For staff, as the new terminal building is not as close to residential / built up areas, walking and cycling will not be as attractive as in option 1a, 1b and 1c.	For staff, as the new terminal building is not close to residential / built up areas, walking and cycling will not be as attractive as in option 1a, 1b and 1c.
Can landside forecourt layout provision accommodate all traffic increase – PT and others?	A split level solution is most likely for the new terminal based on early layouts produced, but is considered more expensive.	Landside forecourt layout provision could accommodate the increase but early layout configurations suggest a split level solution would be required to accommodate passenger drop off, short stay parking and public transport interchange.		There is sufficient space to accommodate traffic increases.	There is sufficient space to accommodate traffic increases.
What is an appropriate PT modal share target/ aspiration?	A 45% public transport modal share is targeted across all 32mppa options, although this is subject to further modelling, assessment and analysis. However, a phased approach is envisaged as the later years up to 2039 would be largely aspirational as there is currently no binding agreement from stakeholders such as Network Rail; with some of the proposals that might come forward being completely out of LLAL's control.			The additional distance for the DART to travel and the further distance that the new terminal would be from the existing terminal and residential areas to the north of the airport would mean that the modal share could potentially be lower than currently targeted for options 1a, 1b and 1c, although this is subject to further modelling, assessment and analysis.	Please see appraisal for option 1a.
Appraisal level	5	10	10	-5	-5
Summary	Options 1b and 1c are appraised as Moderate Beneficial because: the Luton DART could be extended in these options more easily than for option 1a and option 2; they are closer to the conurbation (increasing take-up of walking and cycling and attractiveness of bus services); and they have the greater potential to achieve the target public transport modal share. Whilst option 1a has a similar potential to meet the target public transport modal share as options 1b and 1c, it is considered Slight Beneficial due to the need to serve two terminal buildings, impacting on the attractiveness of bus and coach services. Option 2 is considered Slight Adverse due to the difficulties of extending the Luton DART and the increased journey times for buses and coaches required to serve both terminal buildings. Option 1d is considered Slight Adverse due to the time penalty difficulties of extending the Luton DART and the increased journey times for buses and coaches required to serve both terminal buildings compared to single terminal solutions such as option 1b and 1c.				

B8 Strategic Objective O8: To minimise new build highway requirements

B8.1 Sift criterion S17 appraises the potential magnitude and scale of additional highway infrastructure required to service the different options. **Table B.17** below sets out the results of the appraisal.

Table B.17: S17 Requirement for additional highway infrastructure (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Are new highways needed to accommodate the proposals generated traffic?	Yes, amendments to junctions and potential sections of the CPAR will be required in option 1a. Grade separation may be required at Airport Way and major changes to Junction 10 of the M1 (scale as yet unknown).	A higher magnitude of upgrade of CPAR would be required; however it may not be necessary to grade-separate the junction with Airport Way.		Yes, amendments to junctions and potential sections of the CPAR will be required in option 1d. Grade separation may be required at Airport Way and major changes to J10 of the M1 (scale as yet unknown).	New highways are required including a further key road link connecting to Airport Way. As with options 1a, 1b and 1c, the vicinity around Junction 10 will need to be improved (scale unknown but major). CPAR in present format should be adequate.
What is the magnitude of these highway proposals?	The CPAR junction with Airport Way will need to be grade separated, and the junction to the north of the GKN Plc building may require significant amendments. As with options 1a and 1b, the scale of changes required at Junction 10 are as yet unknown.	Major (new build) with potential additional lanes and new junction configurations required, suggesting that the nature of the CPAR may/will change. In addition, the M1 by Junction 10 will also require changes; the scale is currently unknown but is subject to the success of PT modal share increases.		The CPAR junction with Airport Way will need to be grade separated, and the junction to the north of the GKN Plc building may require significant amendments. As with options 1a and 1b, the scale of changes required at Junction 10 are as yet unknown.	Major (Junction 10). Difficult and challenging new links to Airport Way will be required to provide access to the southern terminal locations.
Can forecourt highway links be accommodated in an efficient manner?	A split level solution will be required at the new terminal building. Car parking at surface level for long stay will be pushed further into Century Park.	Yes, however split level activities are most likely to be required based on early designs. It may also be difficult to achieve grade-separation given the distance between the proposed terminal and CPAR.		A split level solution will be required at the new terminal building. Car parking at surface level for long stay will be pushed further into Century Park.	The site is unconstrained and as such an efficient highway layout could be provided (assuming a split level forecourt).
How well can it link with proposed new highway solutions in the vicinity?	The proposed terminal builds on the CPAR provision. As with options 1b and 1c, it could link up well with the A505 if pursued, but could potentially have major impacts on Junction 10 of the M1 and its vicinity.	Although it links up with CPAR, major reconfiguration and changes to the CPAR are required. It could link up well with the A505 if pursued, but could potentially have major impacts on Junction 10 of the M1 and its vicinity.		The proposed terminal builds on the CPAR provision. As with options 1b and 1c, it could link up well with the A505 if pursued, but could potentially have major impacts on Junction 10 of the M1 and its vicinity.	New, independent highway solutions are required.
Appraisal level	-10	-20	-20	-10	-20
Summary	Due to the need to upgrade the CPAR, therefore requiring major highway interventions, options 1b and 1c are appraised as Large Adverse. Option 2 is also appraised as Large Adverse as a new link road is required to serve the southern terminal. Although major new build infrastructure may be required, in comparison with the other options, the impact of option 1a is likely to be the lowest in magnitude/scale so it is considered to be Moderate Adverse. Although major new build infrastructure may be required in option 1d, in particular the extension of CPAR, in comparison with options 1b, 1c, and 2, the impact of option 1d is likely to be similar to that of option 1a, and is thus the second lowest magnitude/scale so it is considered to be Moderate Adverse. Whilst the appraisal levels remain the same for 32mppa as at 36-38mppa, in principle the magnitude of highway requirements are likely to be lower at some locations, but at this stage, are currently being subjected to detailed modelling.				

B9 Strategic Objective O9: To minimise impact on the wider highway network

B9.1 **Table B.18** below sets out an overview of how the options could impact on the wider highway network.

Table B.18: S18 Impact on wider highway network (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Will highway capacity show problems in accommodating additional traffic levels before mitigation?	Yes, around M1 Junction 10, motorway and link roads to the airport with the CPAR less affected, compared to options 1b and 1c.	Yes, around M1 Junction 10 and motorway links, and the CPAR, as well as local junctions in the built up conurbation. Early studies suggest the M1 may be able to cater with around 50% increases in airport traffic beyond 18mppa. Thus more PT modal share and traffic management interventions will be required.		Yes, around M1 Junction 10, motorway and link roads to the airport with the CPAR less affected, compared to options 1b and 1c.	Yes, the motorway link around Junction 10.
Can mitigation be provided within highway or airport owned land, or do areas of mitigation require third party land?	Significant off site highway works will likely be required and would require third party land in some instances.				The new link road to Airport Way will require third party land.
How many links and junctions might require mitigation?	Approximately 20 (subject to model confirmation).	Approximately 25 (subject to model confirmation). Major grade separation is likely to be required.		Approximately 20 (subject to model confirmation).	Whilst this option would affect less than 10 (this is a high level estimate subject to model confirmation), the need for a new road link and the environmental issues and costs that result weigh against this option.
Can car parking be accommodated on airport land?	Likely, however this is subject to detailed work. However, surface level parking for long stay may require further land beyond airport control.			Likely, however this is subject to detailed work. However, surface level parking for long stay may require further land beyond airport control.	No. The southern terminal and its environs are located on land beyond LLAL's ownership.
Appraisal level	-10	-20	-20	-10	-20
Summary	Significant additional public transport modal share and traffic management interventions will be required for all options. Options 1b and 1c are considered to have a Large Adverse impact on the wider network and 25 links/junctions could require mitigation (subject to model confirmation). Options 1a and 1d require less mitigation on airport and third party land than 1b and 1c, hence the Moderate Adverse rating. Whilst option 2 requires less mitigation again than option 1a and 1d, the need for a new road link and the resultant environmental issues and costs has led to a Large Adverse rating. As with S17, whilst the appraisal levels remain the same for 32mppa as at 36-38mppa, in principle the magnitude of highway impacts are likely to be lower at some locations but at this stage, are currently being subjected to detailed modelling.				

B10 Strategic Objective O10: To be technically viable, taking account of the needs of airport users, operators and phasing

B10.1 **Table B.19** below focuses on the deliverability of the options.

Table B.19: S19 Deliverable within the context of the current concession to 2031 (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Deliverable without impacting substantially on current concession boundary	Construction of option 1a should be capable of being managed without impacting on the current concession.	A second terminal starting west of the existing taxiway network cannot be constructed without impacting on the operation of the existing terminal and concession area which runs until 2031. This option could only realistically be delivered if the existing concession was terminated early or other agreement reached with the concessionaire to reconfigure the existing terminal area at an early date.	This option will be difficult to deliver within the context of the existing concession boundary and without impacting on the operation of Terminal 1. The location of the terminal would need to be to the east of the existing taxiway network and existing cargo facilities would need to be relocated.	Option 1d can be constructed with minimum interface to existing operation (runway tie-ins only) Technically feasible to construct without impacting on existing concession except for the above	It is technically feasible to construct option 2 without impacting on the existing concession and only with minimum interface to the existing operation (runway tie-ins only).
Impact on additional land leased by LLAOL	T2 would require relocation and replacement of long stay car parks on land leased by LLAOL but the impact is expected to be manageable.	T2 would require relocation and replacement of long stay car parks on land leased by LLAOL.	T2 would require relocation and replacement of long stay car parks on land leased by LLAOL.	Parallel taxiway works would be required for T2 would need to be built on LLAOL leased land and involve re-provision of the ERB and fire training ground.	No impact.
Can the option be phased so as to meet demand until a new concession is in place?	Yes, construction can be phased, with a minimum first phase of 10-12mppa.	In order to enable reconfiguration of Terminal 1, Terminal 2 would need to have capacity for 16-20mppa by 2033 (i.e. more than would be required in a freestanding second terminal) in order to allow for decanting of traffic from T1. Phasing construction would be complex, even assuming 50% of T1 traffic could be decanted.	In order to enable reconfiguration of Terminal 1, Terminal 2 would need to have capacity for 16-20mppa by 2033 (i.e. more than would be required in a freestanding second terminal) in order to allow for decanting of traffic from T1. Phasing construction would be complex, even assuming 50% of T1 traffic could be decanted. Even then, it is not clear how the operation could be maintained at an acceptable level of service during the reconstruction process.	Not as easily phased as other options due to gyratory taxiway system which would have to be included at phase 1 to provide sufficient capacity but would be difficult to maintain operations on when extending it.	Please see appraisal for option 1a.
Appraisal level	10	-10	-5	10	20
Summary	Delivery of option 1b although not impossible, would be extremely challenging both in terms of managing capacity, meeting customer expectations and without substantial contractual issues, and is therefore considered Moderate Adverse. Option 1c has the same issues as option 1b but should be easier to phase in terms of operational disruption. Option 1a is considered Moderate Beneficial compared to options 1b and 1c due to its limited impact upon the current concession's operations. Overall, option 1d is considered Moderate Beneficial as it can largely be constructed without impacting on the existing concession. Option 2 could provide the largest beneficial impact of all the options due to its ability to largely be constructed without impacting on the existing concession.				

B10.2 **Table B.20** looks at how attractive the option would be to a future concessionaire coming into LTN in terms of investment, revenue and operations.

Table B.20: S20 Attractive to future concessionaire (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Cost of works and timing relative to income	This is likely to be the most cost effective option as it allows a smaller scale of initial build relative to the overall capacity required at the airport. In addition, this option maintains the existing MRO and maintenance areas, therefore preserving existing revenue streams.	It is unclear how this would be constructed due to the interaction with the existing concession. Contractual complexities are unlikely to be attractive to a new concessionaire as this would add substantially to the risk.	This option requires a complete reconfiguration of the airport apron, taxiway, terminal and landside areas. Huge costs are unlikely to be attractive to incoming concessionaire.	This option is unlikely to be attractive to incoming concessionaire due to high cost. This option requires long DART extension and large earthworks platforms, and associated capex and opex costs.	Like option 1a, this option can be phased and also maintains the existing MRO and maintenance areas. It minimises earthworks due to the southside alignment, but also has potentially high costs with the opening up of the site south of the runway and associated new infrastructure.
Can the option be phased to align with income?	Both options 1a and 2 would allow phasing aligned to demand, therefore minimising early concessionaire expenditure.	This would require a very large first phase built to allow reconstruction of T1 and is unlikely to be attractive to incoming concessionaire due to the high cost.	This would require a very large first phase built to allow reconstruction of T1 and is unlikely to be attractive to incoming concessionaire due to the high cost.	This option would be difficult to phase assuming you need a taxiway gyratory system in phase 1 to handle to large number of movements, i.e. long cul-de-sacs would be too congested.	Please see appraisal for option 1a.

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Opportunities for additional revenue generation, e.g. from MRO, Business Aviation, ancillary facilities	These options potentially minimise the earthworks platform but the extended platform could offer additional opportunities for MRO and Business Aviation to enhance revenue.			This option has the potential to provide large areas for MRO and Business Aviation.	Please see appraisal for option 1a.
Does the scheme provide sufficient flexibility from a design and operational perspective, for future concessionaires and airlines?	Two-terminal operation north of the runway is likely to be more cost efficient than a split operation across the runway (as in option 2), therefore reducing concessionaire operation costs, but at the expense of the loss of some flexibility due to split terminal operations.	Single terminal could be more cost efficient in operation and provide for some flexibility in use by airlines.		This option may not be able to provide a viable taxiway solution for departing aircraft and as such may not be able to deliver the required 32mppa. Even if that were not the case it would not be easy to add capacity to landside facilities, the terminal, or the apron.	Southside operations (cross runway) may result in inefficiencies (see strategic objective O11), higher operating costs for the concessionaire and lower commercial income compared to a single terminal solution.
Appraisal level	20	-5	5	-10	20
Summary	Options 1b and 1c would be extremely complex to build and phase while maintaining current airport operations and are potentially less attractive due to loss of some MRO and Business Aviation, however Option 1b would have a markedly greater impact on the operation of T1 and as such has been marked down. Option 1d is operationally flawed and requires large development of land to the east. Overall, both options 1a and option 2 are appraised as Large Beneficial given the flexibility they provide to future concessionaires and the ability to phase delivery in line with demand.				

B10.3 **Table B.21** below provides an overview of the appraisal of the option with regard to the feasibility of the landfill, earthworks and ground conditions.

Table B.21: S21 Feasibility of landfill, earthworks and ground conditions (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
What extent does this option use geological resource i.e. aggregate?	Approximately 4 million m^3 of material is required and would rely on large volumes of non-renewable materials for construction.	Approximately 4 million m^3 of material is required and would rely on large volumes of non-renewable materials for construction.	Approximately 4 million m^3 of material is required and would rely on large volumes of non-renewable materials for construction.	Option 1d will require a large earthwork platform and a large volume fill, approximately 8 million m^3 and would rely on large volumes of non-renewable materials for construction	Approximately 800,000 m^3 of fill would be needed to create the platform. Fill material could all be sourced from the development area and a cut/fill balance achieved.
To what extent does this option present a potential pollution risk to water or soil quality? Can this be mitigated?	It will be necessary to carry out all the remediation/ enabling works to the landfill at this stage to clear the site for the construction of the platform and enable the construction of the DART. The comprehensive treatment of the landfill at this stage will allow mitigation to avoid impacts on the controlled waters to be implemented. Risk to HH from: • Potential exposure to landfill waste by workers during excavation and reprofiling; • Gas risk to users of the terminal building from gas released from the landfill; and All of these risks can be either mitigated through the use of suitable PPE or processes during excavation, or designed out by the use of gas protection measures. Excavated landfill material should be suitably stored to avoid any harm being caused to controlled waters before being removed from site. There is a potential for infiltration to the landfill to increase by exposing this material which could increase the generation of leachate in this region which is a risk to the Principal Chalk Aquifer underlying the site. Ensure that the drainage cutting is not located on landfill waste and is properly lined to avoid any discharge of water to the landfill which would have a negative impact on controlled waters. It is assumed that appropriate mitigation measures will be implemented during construction to ensure no large adverse impacts on groundwater as a result of piling in the landfill.			Unlikely to be any significant contamination issues as area has historical mainly been farmland and Green Belt. Ground gas protection measures are likely to still be required in the development due to proximity to the landfill. However it is assumed that the risk can be managed appropriately via the implementation of mitigation measures. Therefore the overall impact has been assessed as moderate adverse.	Very low risk that could be mitigated. Development will be underlain by clay deposits that will protect the chalk. Desk study has not identified any potential contamination sources.
To what extent does this option require landfill waste to be excavated?	These options require remediation of 500,000m^3 of the landfill at this stage to clear the site for the construction of the platform and enable the construction of the DART.			Option 1d will avoid the need to excavate any landfill waste as the development will take place outside of the boundary of the former landfill.	Possible small area of excavation to enable new taxiway.
To what extent does this option reuse excavated materials?	Treatment options for the landfill waste excavated within these three options mean a significant amount of material should be able to reused. There are potentially suitable areas in which the material can be reused.			None- approximately 8 million m^3 of material is required and would rely on large volumes of non-renewable materials for construction.	Yes- a cut/fill balance is likely to be possible.

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does this option improve the contamination conditions of soil/groundwater?	Yes - the mitigation measures that will be necessary will result in a reduction of risk in the long term. There may be an increase in risk in the short term however - see above			No, the retention of Wigmore Valley Park means the former landfill remains in situ and therefore the soils and groundwater of the general area are not benefitted by the treatment and improvement of the former landfill.	No current impacts are likely in the terminal/stands area.
What is the extent of construction risks to environment and health of local residents?	Movement, processing and disturbance of large volumes of waste have the potential to cause gas, dust and odour impacts to local residents. Very careful management of this will be needed.			Risks relating to excavation of former landfill material are greatly reduced due to no development in the area of the former landfill. However, there will still be construction risks relating to dust which will require management. In addition, increased vehicle movements due to the need to import material could adversely impact air quality in the local area.	Low risk due to significant distance to populated area. Emissions are likely to be lower than other options.
Does this option generate large volumes of waste or problematic waste (e.g. hazardous or landfill waste) in construction, operation and decommissioning that cannot be effectively managed locally?	Yes - some of the waste excavated will not be suitable for reuse and will have to be taken to an offsite repository.			Inevitably some waste to landfill will be generated through the excavation activities and excavation of former landfill areas, hence the slight adverse rating. However, with the retention of Wigmore Valley Park, the need to excavate the landfill is significantly reduced and therefore any potential risks of large volumes of non-recyclable material being created are minimised.	No
To what extent does it rely on large volumes of non-renewable materials for its construction?	Approximately 4 million m^3 of fill will be needed to create the platform for these options. The fill material can all be sourced from the development area and a cut/fill balance achieved.			Approximately 8 million m^3 of fill will be needed to create the platform for this option. The fill material can all be sourced from the development area and a cut/fill balance achieved.	Approximately 800,000 m^3 of fill would be needed to create the platform. Fill material could all be sourced from the development area and a cut/fill balance achieved.
How do each of the options relate to waste operations?	A two-terminal option is assumed to perform less well than a single terminal option as waste management areas would need to be duplicated and this would not deliver the same economies of scale. The dual north option is assumed to perform better than a north/ south option because some collocated facilities could be included.	A single terminal option is assumed to be better than a two terminal option as it allows for economies of scale through a single waste management area		During operation, it is assumed that some waste will inevitably still require landfilling. However, it is assumed that this will be minimal, because the option provides the opportunity to implement an effective waste management strategy and includes 1 or 2 dedicated waste management areas that will increase recycling rates over and above current levels. It is assumed that a CoCP is employed and enforced, so that landfill waste from the project is minimised and as much material is reused on site as possible with any remaining reused or recycled off site. Without the use of best practice measures the rating could increase to moderate or higher	Please see appraisal for option 1a.
Appraisal level	-20	-20	-20	-10	-5
Summary	Options 1a, 1b and 1c were appraised as Large Adverse because: obstructions in the landfill may make piling difficult; a large earthwork platform would be required; significant remodelling of the landfill is needed and construction will be dependent on earthworks weather (restricted to building in the summer earthworks season). Option 1d moves the terminal further east which results in the area from where fill can be extracted being increasingly diminished. This puts pressure on the excavation part of the project and means that there is less flexibility to achieve a suitable landscape. However, this option involves less built development on the landfill. Inevitably some waste to landfill will be generated through the excavation activities and excavation of former landfill areas, hence the slight adverse rating. However, with the retention of Wigmore Valley Park, the need to excavate the landfill is significantly reduced and therefore any potential risks of large volumes of non-recyclable material being created are minimised. In comparison, option 2 is considered relatively straightforward with regard to the earthworks required, with possible minor work to mitigate soft spots.				

B10.4 Sift criterion S22 considers the elements of the proposed layouts, earthworks and access routes, and whether occupy land owned or optioned by LLAL. The results of the appraisal are shown in **Table B.22,** including, as mentioned in **paragraph 4.4.4** the updated appraisal levels from the draft Sift 2 Report.

Table B.22: S22 Additional land required beyond current LLAL holdings (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Does the proposed layout, and the earthworks needed to support it, directly occupy land not owned by LLAL?	LLAL generally own or have an option on all the land envisaged at this stage to be required	LLAL generally own or have an option on all the land envisaged at this stage to be required	LLAL generally own or have an option on all the land envisaged at this stage to be required	Yes, large areas	Yes, large areas
Will the earthworks required to win material involve land not owned by LLAL?	LLAL generally own or have an option on all the land envisaged at this stage to be required, with the potential exception of isolated pockets	LLAL generally own or have an option on all the land envisaged at this stage to be required, with the potential exception of isolated pockets	LLAL generally own or have an option on all the land envisaged at this stage to be required, with the potential exception of isolated pockets	Yes, large areas	Yes, large areas
Do the proposed access routes and the earthworks needed to support them directly occupy land not owned by LLAL?	Not the internal access routes	Not the internal access routes	Not the internal access routes	Yes	Yes
Appraisal level	10	10	10	20	20
Summary	The 32mppa options places less pressure on land take in options 1a - c so the prospect of the development staying within LLAL ownership is increased. As before option 1d and 2 will require the purchase of large areas of land.				

B11 Strategic Objective O11: To enhance LTN's system efficiency and resilience

B11.1 **Table B.23** below sets out how each of the options performs with regard to operational effectiveness, taking into account layout efficiencies, delays to airlines and the passenger experience.

Table B.23: S23 Operational effectiveness (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
How efficient is the layout?	New terminal would enhance efficiency but could result in some inefficiency due to split operation over two buildings. Constraints within the existing T1 loop taxiway would remain.	Single terminal would potentially increase operational efficiency.	The taxiway layout is an improvement on T1 due to code C dualling.	Some inefficiencies due to split operation across the runway.	New terminal would enhance efficiency but could result in some inefficiency due to split operation over two buildings.
Delays to airlines	Delays are considered to be within acceptable levels of c.10 mins based on simulation modelling.			The relationship between the main T2 apron area and the runway is not efficient and would likely lead to delays for departing aircraft.	Delays within acceptable levels but some reduction in performance due intermeshing movements north and south of the runway.
Passenger experience	Whilst the new terminal building would provide operational flexibility and enhance passenger experience, the existing terminal would be retained with a lower efficiency and passenger experience unless scaled back to a lower mppa	A completely new terminal building would be designed to provide operational flexibility and to enhance passenger experience. However the lower score than 1c reflects the feedback from the NSC about level of service concerns with this option.	A completely new terminal building would be designed to provide operational flexibility and to enhance passenger experience.	The layout of the terminal and associated journey from kerb to aircraft would likely be efficient, but the passenger experience either side of that journey would likely be sub-optimal.	Whilst the new terminal building would provide operational flexibility and enhance passenger experience, the existing terminal would be retained with a lower efficiency and passenger experience unless scaled back to a lower mppa
Appraisal level	10	10	20	-10	10
Summary	Option 1c is appraised as Large Beneficial due to increased efficiency due to the design of a completely new terminal building, which would also provide operational flexibility to airlines and enhance the passenger experience. Options 1a and 2 are both considered Moderate Beneficial due to the residual inefficiencies of the existing terminal. Option 1d has a number of inefficiencies that would likely impact significantly on the overall operability of the airport.				

B11.2 Building on the strategic objective 11, sift criterion S24 appraised the five options for their resilience to operational disruption, both in absolute terms and compared to the existing scenario, as shown below in **Table B.24**. It should be noted that this assessment is made on the basis of the final configuration as indicated by the options, as phasing issues are considered separately under deliverability (see S19).

Table B.24: S24 System resilience (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Resilience to operational disruption	Two-terminal operations increase resilience to disruption. The inefficient loop taxiway configuration is retained although additional taxiways will reduce delays.	Single terminal improves operational efficiency but lower resilience in the case of disruption to single terminal operation. This option retains a loop taxiway but with more efficient dual code C centrelines.	Single terminal improves operational efficiency but lower resilience in the case of disruption to single terminal operation. This option replaces the inefficient loop taxiway configuration which is prone to blockage. Additional taxiway infrastructure enhances resilience.	Taxiway layout is not as optimal as other options in terms of operational resilience. Inefficient loop taxiway configuration retained on T1 and duplicated on T2 albeit with dual code C taxiways. Additional taxiways will reduce delays however. With this option there is potential increase in bird strike risk (safeguarding issue) due to WVP being 'hemmed in' between the terminals with the greater likelihood of birds overflying aircraft operational areas.	As for option 1a with the additional benefit that the southside location of one of the terminal buildings could provide enhanced resilience to any incidents north of the runway.
Resilience in the broader infrastructure (road and rail)	Two-terminal options provide alternative surface access routes and are therefore more resilient than the single terminal options.	These options are reliant on a single front door and surface access links and are therefore less resilient that the two terminal options.		Two-terminal options provide alternative surface access routes and are therefore more resilient than the single terminal options. Road access as alternative to DART is approximately 3km longer than other options and very convoluted as a route to get to the terminal by road.	Please see appraisal for option 1a.

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Extent of resilience improvement	Extent of resilience improvement is greater in two-terminal options in terms of operational disruption and broader infrastructure.	Resilience is improved to a lesser extent when compared with two-terminal buildings as in 1a and option 2.		Please see appraisal for option 1a.	
Appraisal level	20	10	10	5	20
Summary	The single terminal options are considered to provide lower resilience in the case of disruption compared to two-terminal options. This is because options 1b and 1c are reliant on singular surface access links and therefore reduce the ability to close a section of the airport whilst this would be possible if there was an incident in either of the two-terminal options. As a result, options 1b and 1c are appraised as Moderate Beneficial, with options 1a and option 2 appraised as Large Beneficial. Option 1d is appraised as Slight Beneficial due to a number of inefficiencies that make it less resilient than option 1a.				

B11.3 **Table B.25** covers the appraisal of the five option families on their attractiveness to airline operators, taking into account the attractiveness to passengers, airport charges and the cost of operation.

Table B.25: S25 Attractiveness to airline operators (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Impact on airline delays	The additional taxiways will increase efficiency and could reduce delays.	The efficient apron layout in these options will reduce delays for arriving and departing aircraft.		Inefficient taxiway layout would likely cause delays to departing aircraft.	Please see appraisal for option 1a.
Impact on airport charges and cost of operation	The ability of this option to phase should keep charges to acceptable levels and provide capacity in time to meet demand.	The high cost of delivery of these options, notably ahead of demand, could impact adversely on airport charges.		Reduced ability to phase may have an effect on ability to keep charges to acceptable levels and provide capacity in time to meet demand.	Please see appraisal for option 1a.
Resilience to operational disruption	Two terminals would enhance resilience to disruption.	A single terminal is potentially less resilient to disruption than the two-terminal options, 1a and 2.		Additional taxiways increase efficiency but conversely the gyratory layout in relation to the runway end may provide a sub-optimal system that is hard to operate by ground control and navigate by pilots.	Please see appraisal for option 1a.
Attractiveness to passengers	As charges would be kept to an acceptable level, these options would be more attractive to passengers than option 1b and 1c where the airlines are likely to incur higher costs.	The high costs incurred by the airlines could be passed down to passengers, making the airport less attractive.		Passenger transfer operations would be complex and undesirable.	Please see appraisal for option 1a.
Flexibility to adapt to airline's changing requirements	The proposed retention of T1 would reduce efficiency and make the airport less flexible to adapt to changing markets or service requirements.	The new terminal is likely to be more flexible in layout and use than the existing terminal.		The proposed retention of T1 would reduce efficiency and make the airport less flexible to adapt to changing markets or service requirements.	Please see appraisal for option 1a.
Flexibility to adapt to airline operational requirements (i.e parking/offices)	The two terminal buildings proposed could require airline split operations.	The efficiency of single terminal operations is likely to be attractive to airlines.		Split terminals reduces slightly the efficiency of operation and may result in one or more airlines having split operations, with substantial additional cost and operational complexity due to the distance between terminals.	Split terminals across the runway reduce efficiency of operation and may result in one or more airlines having split operations.
Ability to accommodate based carriers	Co-located maintenance activities on the northside of the runway are likely to be more attractive to based airlines than split operations.			Co-located maintenance activities on the northside of the runway are likely to be more attractive to based airlines than split operations.	Maintenance activity on the northside of the runway may be less attractive for based airlines in this option.
Appraisal level	10	10	10	-10	5
Summary	Options 1b and 1c are considered to be moderate beneficial as both would ultimately provide a modern efficient airport but the phasing required could increase costs and hence airport charges. Option 1a was also appraised as Moderate Beneficial as it would leave the relatively inefficient T1 still in use. Option 2 was rated as Slight Beneficial in comparison to the other options as it would leave T1 still in use but would also risk some airlines having to split operations either side of the runway. For the same reason option 2 provides reduces benefits to airlines as does option 1d, however this option has additional inefficiencies that have caused it to be appraised as Moderate Adverse.				

B11.4 Current policy does not support expansion beyond the capacity of a single runway but preserving options for further capacity expansion would be desirable from LLAL's point of view. **Table B.26** sets out how well the option families performed in sift criterion S26 in relation to safeguarding for expansion.

Table B.26: S26 Safeguarding for expansion (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Flexibility in expansion	This option will utilise most of the effective northside site when phasing up to 32mppa and MRO requirements are taken into account. There should be capacity to expand in the future up to 36-38mppa on the Northside site.	These two options will utilise most of the effective northside site when phasing up to 32mppa and MRO requirements are taken into account. There should be capacity to expand in the future up to 36-38mppa with potential further expansion possible subject to reconfiguration of parts of the taxiway network and terminal.		This option will utilise all of the effective northside site when full phasing and MRO requirements are taken into account.	Land on the north could facilitate some further expansion, subject to alternative uses of the land in the meantime. This would provide the airport with some flexibility to accommodate additional airport related uses on the north.
Safeguarding for requirements past 2040	These options leave open any expansion options to the south in the longer term, unlike option 2.				Configuration could impact on ultimate expansion prospects to the south.
Appraisal level	10	10	10	10	5
Summary	Both options 1b and 1c involve the redevelopment of the existing T1 building which may result in some wastage of space, and option 1a and 1d also requires the redevelopment of T1 but in the longer term – all four options were considered to have a Moderate Beneficial rating. In comparison, option 2 was appraised as having a Slight Beneficial rating as it will occupy land to the south before the potential of this area has been fully explored whilst in the meantime, land to the north of the runway may have been developed for alternative uses.				

B11.5 **Table B.27** sets out the appraisal of the options against sift criterion S27 which seeks to safeguard existing levels of MRO, business aviation and cargo activity, which are important in terms of attracting future concessionaires.

Table B.27: S27 Safeguarding existing levels of MRO, business aviation and cargo activity (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Maintain slots and land for MRO, business aviation and cargo to minimise disruption and maintain existing operations	This option allows for the western maintenance zone, cargo and business aviation zones to remain in operation.	These options allow for the western maintenance zone to remain in operation but cargo, the easyJet hangar and Harrods business aviation would need to be relocated.		These options allow for the western maintenance zone, cargo and business aviation zones to remain in operation.	
Appraisal level	20	10	10	20	20
Summary	Option 1a, 1d and 2 were appraised as Large Beneficial as they retain existing levels of MRO, Business Aviation and Cargo Activity. Options 1b and 1c are appraised as Moderately Beneficial as the options will impact on existing businesses.				

B12 Strategic Objective O12: To be affordable including any public expenditure that may be required and taking account of the needs of airport users and operators (Value for Money)

B12.1 A preliminary comparative analysis on the direct benefit of the programme has been undertaken based on broad based likely investment and revenue assumptions. This analysis has sought to understand the benefit derived over a possible future concession arrangement.

B12.2 It should be noted here that the cost of purchasing additional land is excluded in the estimated capex costs.

Table B.28: S28 Estimated cost benefit (32mppa)

Sub-criteria:	Option 1a	Option 1b	Option 1c	Option 1d	Option 2
Capex expenditure	Capex cost is estimated to be significantly lower than options 1b,1c and 1d but slightly higher than option 2.	Capex cost is estimated to be significantly larger than the 2 terminal options 1a and 2, and slightly larger than 1d. Cost of decontamination is much higher than 1a.		Capex cost is slightly lower than options 1b and 1c but in the same magnitude. Cost of landfill decontamination is much reduced for this option but more cost for extended MPT and more fill for airfield platform.	Capex cost is slightly lower than option 1a due to reduced fill and decontamination costs though is in the same magnitude of cost.
Affordability of scheme	Similar order of Capex with option 2. More affordable than options 1b, 1c and 1d.	Capex for these options are significantly higher than the other options therefore less affordable.		Less affordable than Options 1a and 2.	Similar order of Capex with option 1a. More affordable than options 1b, 1c and 1d.
Appraisal level	20	10	10	10	20
Summary	Options 1a and 2 are similar order of Capex therefore large beneficial. Capex for the other options are significantly higher therefore moderate beneficial.				

APPENDIX C:

Table C.1 Strategic objectives and criteria and sub-criteria for Sift 3

	Strategic Objective	Sift Criteria number	Sift Criteria	Sub-Criteria
Strategic fit	O1: Compliance with Government Aviation Policy	S1	Consistent with making best use of the existing runway	• Does the option use the existing runway or propose a new runway? • Does the option require modifications to the existing runway – alignment or length? • Would the option have implications for the deliverability of the proposed Northwest runway at Heathrow as supported by Government policy (Adopted NPS)? • Would the option support the Government's consumer objectives? • Would the options support the delivery of a competitive aviation sector?
	O2: To identify a scheme that is likely to be capable of being consented and secured through a DCO	S2	In broad conformity with national and local town planning policies and capable of attracting the consents required	• Does the proposal meet National Planning Policy and Local Planning Policy sufficiently to support the grant a DCO, having regard to s104 of the Planning Act 2008, and the need to have regard to the Local Impact Report(s) and all relevant matters, including National and Local planning policies.
	O3: To provide additional capacity and connectivity in line with the assessment of need	S3	Increase capacity both airside and landside to achieve target increase of 32mppa/up to 36-38mppa	• Capacity to be provided in each subsystem: – Runway – Apron – Terminal • Ability to phase in line with demand will be a key consideration.
Economic	O4: To maximise the potential economic benefits to the regional, sub-regional and local economies	S4	Deliver economic benefits nationally and regionally	• Benefits to Users (journey time and air fare savings due to availability of choice and more routes) known as Transport Economic Efficiency • Producer Benefits (increased income to airlines, airport operators) • Wider Connectivity Benefits (trade, tourism, inward investment) via improved road and rail infrastructure
		S5	Increase job opportunities for the people of Luton and the surrounding areas	• How many jobs could be created regionally, sub-regionally (three counties) and locally (Luton)? • What type of jobs could be created and retained – skilled jobs (higher paid) in Luton (permanent jobs)?
Social	O5: To maintain and where possible improve the quality of life for Luton's residents and the wider population	S6	To promote quality of life and minimise adverse impacts on communities	• Does this option improve quality and choice of employment and training opportunities? • Does this option reduce adverse effects of unemployment, low income and job insecurity? • Does this option avoid direct impacts on, and maintain access to, existing community facilities? • Does this option preserve the amenity of residential areas and enjoyment of community facilities and outside spaces? • Does this option protect and promote public services that support quality of life and wellbeing? • Does this option promote positive equality impacts and minimise the potential for adverse equality impacts for groups with protected characteristics or communities that experience high levels of socio-economic deprivation?
Sustainability and Environment	O6: To minimise environmental impacts and, where practicable, to actively mitigate and manage any potential environmental effects	S7	Noise impact	• Does this option minimise the number of people exposed to the adverse impacts of noise? Including consideration of: – Site preparation noise and vibration – Construction noise and vibration – Noise from HGV traffic associated with site preparation and construction phases – Aviation noise (aircraft approaches and departures) – On-site ground noise (i.e. aircraft taxiing, on-site road infrastructure, parking facilities etc.)
		S8	Air quality	• Is this option likely to cause an exceedance of any air quality objective? • Is this option likely to delay compliance with EU limit values as calculated by the Government using the PCM model? • Will this option have adverse or beneficial impacts on human receptors? • Does this option minimise the number of people exposed to poor air quality? • Will this option have adverse or beneficial impacts on ecological receptors?
		S9	Natural habitats and biodiversity	• Are there any internationally, nationally or locally protected/designated nature conservation sites affected? • Will priority habitats identified in national legislation and local policy/guidance be impacted? • To what extent are populations of protected/notable species likely to be affected? • To what extent can effects be managed and mitigated? • What opportunities are likely to improve ecological connectivity and provide enhancements?

	Strategic Objective	Sift Criteria number	Sift Criteria	Sub-Criteria
		S10	Carbon emissions	• Does this option minimise the GHG emissions from the proposed project (against the current status) during its construction, in its operation and its surface access with a focus on: – The loss of a carbon sink due to land use change; – Construction activities and embedded carbon in materials; – Airport buildings and infrastructure operations i.e. energy consumption, water supply, waste water, waste disposal; – Airport operated vehicles including those owned by third party operators (airside/landside); – Surface access journeys (passengers, freight, employees); and – Aircraft (during landing take-off cycle, cruise emissions).
		S11	Water Resources	• Does the option have any direct/indirect impacts on water quality in surrounding watercourses, particularly where Water Framework Directive status may be compromised? • Does the proposed option have the potential to affect any groundwater receptors, such as through dewatering or impacts on groundwater quality? • Will the option have any direct/indirect effects on water abstractions (Groundwater and surface water) and Source Protection Zones?
		S12	Flood risk	• Does the option encroach on any areas at risk of flooding from surface water, rivers, artificial water bodies or groundwater? • Does the option have the potential to pose any increase in flood risk to receptors located in the vicinity of the site? • To what extent can any potential impacts on flood risk be appropriately managed?
		S13	Cultural Heritage	• Does the option seek to minimise adverse effects on the significance of internationally and nationally designated heritage assets and their settings? • Does the option affect other heritage assets? • To what extent can effects potentially be managed and mitigated?
		S14	Landscape and visual impact and environmental land use	• Does this option impact, protect or enhance designated landscapes or townscapes? • Does this option affect the visual amenity of potentially sensitive visual receptors (e.g. those recreating in the surrounding landscape; those visiting historic buildings; etc.)? • Does this option affect locally sensitive landscape features (e.g. ancient woodlands, historic hedgerows, etc.) or contributors to landscape value (e.g. public access, etc.)? • Does this option affect the character of the landscape/townscape or the perceptual characteristics of surrounding landscape/townscape character areas? • To what extent can effects on landscape or visual amenity be managed and mitigated? • Is this option likely to result in the loss or damage to best and most versatile agricultural land (i.e. ALC Grades 1, 2 or 3a)? • Does this option affect local farm businesses (effects on sustaining a rural economy and on individual farmers and their farming operations)? • Does this option affect soil (inc. topsoil and subsoil) as a finite resource? • Does this option affect rural land designations (e.g. Agri-Environment Schemes or Nitrate Vulnerable Zones)? • To what extent can effects on land use be managed and mitigated?
		S15	Climate change	Climate Change Resilience: Does this option reduce the following climate change risks related to the proposed project during its construction, its operation and its surface access? • Impact of extreme high temperature leading to damage of buildings/infrastructure and interruption of activities during construction and operation • Impact of increased number of heavy precipitation events leading to flash flooding events/surface water issued during construction and operation • Impact of increased flood risk associated with land use changes and number of heavy precipitation events • Impact of increase in intensity and occurrence of storms/extreme weather events (including extreme wind) leading to damage of buildings/infrastructure and interruption of activities during construction and operation • Impact of increased seasonality (e.g. wetter winters, drier summers) • Impact of increase in mean temperatures For the purpose of Sift 2, In-combination Climate Change Assessment (ICCA) has not been evaluated due to insufficient information available from the interdependent criteria
Surface Access	O7: To maximise the number of passengers and workforce arriving at the airport on public transport	S16	Public transport modal share	• Can the Luton DART be extended to increase modal share? • Can bus services be increased to accommodate a larger PT modal share? • Can more coach services be accommodated to increase PT modal share? • Can walking and cycling be accommodated to increase modal share? • Can landside forecourt layout provision accommodate all traffic increase – PT and others? • What is an appropriate PT modal share target/ aspiration?
	O8: To minimise new build highway requirements	S17	Requirement for additional highway infrastructure	• Are new highways needed to accommodate the proposals generated traffic? • What is the magnitude of these highway proposals? • Can forecourt highway links be accommodated in an efficient manner? • How well can it link with proposed new highway solutions in the vicinity?

	Strategic Objective	Sift Criteria number	Sift Criteria	Sub-Criteria
	O9: To minimise impact on the wider highway network	S18	Impact on wider highway network	• Will highway capacity show problems in accommodating additional traffic levels before mitigation? • Can mitigation be provided within highway or airport owned land, or do areas of mitigation require third party land? • How many links and junctions might require mitigation • Can car parking be accommodated on airport land?
	O10: To be technically viable, taking account of the needs of airport users, operators and phasing	S19	Deliverable within the context of the current concession to 2031	• Deliverable without impacting substantially on current concession boundary • Impact on additional land leased by LLAOL • Can the option be phased so as to meet demand until a new concession is in place
		S20	Attractive to future concessionaires	• Cost of works and timing relative to income • Can the option be phased to align with income • Opportunities for additional revenue generation, e.g. from Maintenance, Repair and Overhaul (MRO), Business Aviation, ancillary facilities • Does the scheme provide sufficient flexibility from a design and operational perspective, for future concessionaires and airlines
		S21	Feasibility of landfill, earthworks and ground conditions	• What extent does this option use geological resource i.e. aggregate? • To what extent does this option present a potential pollution risk to water or soil quality? Can this be mitigated? • To what extent does this option require landfill waste to be excavated • To what extent does this option reuse excavated materials? • Does this option improve the contamination conditions of soil/groundwater? • Extent of construction risks to environment and health of local residents? • Does this option generate large volumes of waste or problematic waste (e.g. hazardous or landfill waste) in construction, operation and decommissioning that cannot be effectively managed locally? • To what extent does it rely on large volumes of non-renewable materials for its construction? • How do each of the options relate to waste operations?
		S22	Additional land required beyond current LLAL holdings	• Does the proposed layout and the earthworks needed to support it directly occupy land not owned by LLAL • Will the earthworks required to win material involve land not owned by LLAL • Do the proposed access routes and the earthworks needed to support them directly occupy land not owned by LLAL
Operational Viability	O11: To enhance LTN's system efficiency and resilience	S23	Operational effectiveness	• How efficient is the layout • Delays to airlines • Passenger experience
		S24	System resilience	• Resilience to operational disruption • Resilience in the broader infrastructure (road and rail) • Extent of resilience improvement
		S25	Attractiveness to airline operators	• Impact on airline delays • Impact on airport charges and cost of operation • Resilience to operational disruption • Attractiveness to passengers • Flexibility to adapt to airlines changing requirements • Flexibility to adapt to airline operational requirements (ie parking/offices) • Ability to accommodate based carriers
		S26	Safeguarding for expansion	• Flexibility in expansion • Safeguarding for requirements past 2040
		S27	Safeguarding existing levels of MRO, Business, Aviation and Cargo activity	• Maintain slots and land for MRO, business aviation and cargo to minimise disruption and maintain existing operations
Cost	O12:To be affordable including any public expenditure that may be required and taking account of the needs of airport users and operators (Value for Money)	S28	Estimated cost benefit	• Capex expenditure • Affordability of scheme

ABBREVIATIONS USED

Abbreviation used	
ALC	Agricultural Land Classification
AGLV	Area of Great Landscape Value
ALLV	Area of Local Landscape Value
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Areas
ATM	Air Traffic Movements
BMV	Best and Most Versatile Land
BREEAM	Building Research Establishment Environmental Assessment Method
CIEEM	Chartered Institute of Ecology and Environmental Management
CoCP	Code of Construction Practice
CSR	Corporate Social Responsibility
CWS	County Wildlife Site
CPAR	Century Park Access Road
DART	Direct Air-Rail Transit
DCO	Development Consent Order
DfT	Department for Transport
EIA	Environmental Impact Assessment
EA	Environment Agency
EU	European Union
FBO	Fixed-base Operator
GHG	Greenhouse Gas
GVA	Gross Value Added
HGV	Heavy Goods Vehicle
IATA	International Air Transport Association
ICCA	In-combination Climate Change Assessment
IAQM	Institute of Air Quality Management
LBC	Luton Borough Council
LLAL	London Luton Airport Ltd
LLAOL	London Luton Airport Operations Ltd
LTN	London Luton Airport
LTO	Landing take-off
MPPA	Million passengers per annum
MSCP	Multi-storey car parks
MRO	Maintenance, Repair and Overhaul
NHLE	National Heritage List for England
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NERC	Natural Environment and Rural Communities
NSIP	Nationally Significant Infrastructure Project
PCM	Pollution Climate Mapping
PFRA	Preliminary Flood Risk Assessment
PT	Public Transport
RAG	Red Amber Green
RPG	Registered Park and Garden
SEMLEP	South East Midlands Local Economic Partnership

SM	Scheduled Monument
SPZ	Source Protection Zones
T1	Terminal 1 (Existing Terminal)
T2	Terminal 2 (New terminal)
UXO	Unexploded Ordnance
WFD	Water Framework Directive
WVP	Wigmore Valley Park

REFERENCES

Ref 1.1 London Luton Airport ltd (December 2017) London Luton Airport Vision for Sustainable Growth 2020-2050
Ref 1.2 London Luton Airport ltd (June 2018) Making Best Use of the Existing Runway, Consultation document