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Title of Airspace Change Proposal	Interface for Luton & Northolt Airports – Module D of London Airspace Management Programme (LAMP) Phase 1A
Change Sponsor	NATS
SARG Project Leader	[REDACTED]
Case Study commencement date	17 Feb 2015
Case Study report as at	22 July 2015
Report Reference	SARG/ERCD/AG/Luton and Northolt Interface LAMP Phase 1AV1.2

Instructions
<p>In providing a response for each question, please ensure that the 'Status' column is completed using the following options:</p> <ul style="list-style-type: none"> • Yes • No • Partially • N/A <p>To aid the SARG Project Leader's efficient Project Management it may be useful that each question is also highlighted accordingly to illustrate what is resolved (Green), not resolved (Amber) or not compliant (Red) as part of the SARG Project Leader's efficient project management.</p>

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1.	Introduction	
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This report describes the environmental considerations relevant to the changes to DVR departures from Luton and Northolt airports, as an enabler for LAMP.

The Airspace Change Proposal (ACP) has been submitted by NATS and represents Module D of Phase 1A of the London Airspace Management Programme (LAMP).

This assessment is based upon information presented in the proposal document entitled "LAMP Phase 1A, Airspace Change Proposal – Module D, Interface for Luton & Northolt Airports" (Issue 2.0, March 2015), plus associated consultation material and subsequent information received as the result of queries raised with the sponsor following submission of the ACP.

2.	Guidance to the CAA	Status
2.1	Is the proposal consistent with Government policy and/or guidance from Government to the CAA?	Yes

Guidance issued to the Civil Aviation Authority sets¹ out a framework for the environmental objectives that the CAA must consider when assessing airspace change proposals. In addition to these objectives, there may be other legitimate operational objectives, such as the overriding need to maintain an acceptable level of air safety, the desire for sustainable development or to enhance the overall efficiency of the UK airspace network, which need to be considered alongside these environmental objectives. The Government looks to the CAA to determine the most appropriate balance between these competing characteristics.

Flights over National Parks and AONBs are not prohibited by legislation² as a general prohibition against over-flights would be impractical. Government policy focuses on minimising the over-flight of more densely populated areas below 7,000 feet (amsl), but balances this with CO₂ emissions between 4,000 and 7,000 feet (amsl). However, where it is practical to avoid over-flight of National Parks and AONBs below 7,000 feet (amsl), the Guidance asks that the CAA encourages this.

¹ DfT, Guidance to the Civil Aviation Authority on Environmental Objectives Relating to the Exercise of its Air Navigation Functions, January 2014

² National Parks and Access to the Countryside Act 1949, National Parks (Scotland) Act 2000, and "Duties on relevant authorities to have regard to the purposes of National Parks, Areas of Outstanding Natural Beauty (AONBs) and the Norfolk and Suffolk Broads Guidance Note", Defra 2005.

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3.	Rationale for the Proposed Change	Status
3.1	Does the rationale for the ACP include environmental reasons?	Yes

The sponsor sets out two reasons as a rationale for this change (Section 1 of the proposal document):

- Firstly the environmental benefits that it delivers as an individual airspace change. In addition to CO₂ emissions reductions, the sponsor believes that there would also be an overall noise benefit since the aircraft would be able to climb more quickly and people beneath the current departure route would be overflown less. However the sponsor also notes that people beneath the eastbound departure route would be overflown more often.
- Secondly the change is presented as an enabler for LAMP Phase 1A. This change would ensure that the Luton and Northolt operations fit into a wider LAMP Phase 1A programme of change to the use of airspace supporting airports in South East England. NATS believes that this Module is justified on the basis that it is also an enabler for the implementation of Point Merge at London City Airport. This is because the removal of extant SIDs which are procedurally capped at 5,000ft will enable the London City departures to climb above the London City arrivals which the proposal would reposition over the Thames Estuary (see Module C for details).

4.	Nature of the Proposed Change	Status
4.1	Is it clear how the proposed change will operate, and therefore what the likely environmental impacts will be?	Yes

The proposal is based upon the premise that flights that currently depart Luton and Northolt airports towards Kent (south east) are becoming more inefficient as the airspace they fly through becomes more congested. The proposal seeks to place most of these flights onto the existing eastbound departure flight paths, so that they may avoid the congestion; this should reduce the risk of delay, reduce fuel burn and the volume of CO₂ emissions.

More specifically, the proposed routing will enable departing DVR traffic from Luton and Northolt to climb and thereby enabling most aircraft to cross above the arriving Heathrow LAM traffic rather than below as they do currently. It offers an alternative route between BPK and DVR, via DAGGA and ITVIP [(U)M85]. This should enable a more efficient profile for departing traffic which in turn reduces fuel burn and CO₂ emissions.

In practice most Luton and Northolt departures are expected reach FL150 before DAGGA and be tactically turned onto a southerly heading when they are sufficiently above any conflicting Heathrow traffic. Aircraft will turn south typically at heights between FL150 and FL200. The

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exact routing for these departures between MATCH and DVR will vary by flight, dependent on factors such as tactical vectoring by Air Traffic Control (ATC) and the activation of Danger Area D138.

The proposal confirms that flights will be above 7,000ft by the time they reach BPK, the point at which the change to routing begins.

4.2	Have alternative options been considered, and have the environmental impact of each alternative been assessed?	Partially
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A "Do Nothing" option was considered – whilst this would enable the current operation to be maintained, the benefits (including a reduction in CO₂ emissions) for the relevant Luton and Northolt departures would not be achieved. It would also prevent the implementation of LAMP changes for London City Airport as part of the wider LAMP Phase 1A and thereby restrict the proposed wider environmental benefits of LAMP Phase 1A.

The sponsor states that alternative options for the alignment of (U)M85 were determined through simulation but that options that placed the route further east or west were discarded on the basis of "controller input". It is not clear what this input would have been, but there is no indication that environmental impact (namely better or worse CO₂ emissions impact) was part of that consideration.

5.	Noise	Status
5.1	Has the noise impact been adequately assessed?	Yes

No assessment of noise has been undertaken on the basis that all affected flights will be above (and probably well above) 7,000ft. At this height, any noise impact will be insignificant even if the noise is perceptible. The DfT's Air Navigation Guidance confirms that above 7,000ft the priority environmental factor is minimising aircraft emissions and that mitigating the impact of noise is no longer a priority because at that altitude it is no longer considered to have a significant impact.

Accepting that any noise impact is very likely to be insignificant (if there is any impact at all) this negates one of the factors cited by the sponsor in the rationale for the change (see 3.1 above, first bullet). At these heights, there is unlikely to be any noise benefit and therefore to cite this as one of the factors for the change is not justifiable.

5.2	Has the noise impact been adequately presented in the consultation and the submitted proposal?	Yes
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As noted above in 5.1, no noise assessment was undertaken, and as noted in 14 below, no consultation was undertaken with non-aviation stakeholders. Despite this, the lack of a noise assessment is not an issue based upon the fact that any noise impact will be insignificant, and has therefore been adequately addressed.

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6.	Emissions	Status
6.1	Has the impact on CO₂ emissions been adequately assessed?	Yes

The proposed routes for both Luton and Northolt departures increase the lateral track miles flown, but despite this the new routes result in CO₂ reductions due to an expected improvement in vertical profile, i.e. they will be able to climb sooner rather than be held down to the same extent as there are currently.

The sponsor states that the changes for this Module offer CO₂ reductions in their own right whilst also being an enabler for LAMP Phase 1A and thereby a contributing to wider reductions.

6.2	Has the impact on CO₂ emissions impact been adequately presented in the consultation and the submitted proposal?	Yes
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As noted in 14 below, no consultation was undertaken and so no CO₂ assessment was presented.

The assessment of CO₂ emissions for this Module is set out in the Bridging ACP documents. The emissions assessment makes no obvious adjustment for any proportion of affected flights that will not benefit from this proposal, and so it would appear that the sponsor has assumed that 100% of potentially affected flights will achieve a benefit.

Based upon the assessment presented in the Bridging ACP, and the subsequent adjustment by the CAA, the annual estimate for the CO₂ reduction as a result of this Module (once the enabled fuel figures have been adjusted to account for tactical vectoring, a reduction of 21%) is a range from 2,280 – 4,560 tonnes in 2016 (1,439 tonnes of fuel x 3.18) and a range from 2,726 – 5,451 tonnes in 2020 (1,714 tonnes of fuel x 3.18).

A summary of the impacts on CO₂ emissions from the LAMP Phase 1A Modules is attached at Appendix 1.

7.	Local Air Quality	Status
7.1	Has the impact on Local Air Quality been adequately assessed?	Yes

As this Module reflects changes to procedures well above 1,000ft, then there is no expected impact upon Local Air Quality.

7.2	Has the impact on Local Air Quality been adequately presented in the consultation and the submitted proposal?	Yes
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As noted in 14 below, no consultation was undertaken and so no LAQ assessment was presented.

The proposal confirms that because there are no changes below 1,000ft an assessment of LAQ is not applicable.

8.	Tranquillity	Status
8.1	Has the impact on tranquillity been adequately considered?	Yes

There is no reference to tranquillity or visual intrusion in the proposal. This is considered further in 8.2 below.

8.2	Has the impact on tranquillity been adequately presented in the consultation and the submitted proposal?	Yes
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As noted in 14 below, no consultation was undertaken and so no consideration of tranquillity or visual intrusion was presented.

As noted in 8.1, the proposal makes no reference to tranquillity for visual intrusion. Reviewing the proposed routing (MATCH-DAGGA-ITVIP-DVR), and recognising that aircraft are expected to be tactically vectored south once beyond MATCH, there do not appear to be any AONBs or National Parks beneath the areas that aircraft might overfly, other than in the vicinity south of Canterbury where there routing may take aircraft over the Kent Downs AONB. However, the impact on both tranquillity and visual intrusion that this proposal might have on that area is likely to be negligible, principally because aircraft are expected to be at FL200 and above at that point. Additionally, by enabling aircraft to fly the proposed routing, fewer aircraft will use the existing routing which currently takes aircraft over a larger area of the same AONB (between DET & DVR) at lower altitudes. Whilst recognising that both tranquillity and visual intrusion are subjective and unquantifiable qualities, this proposed routing should have a net effect of improving tranquillity and visual intrusion over the AONB by allowing aircraft to be both higher as they cross the AONB and allow them to be above the AONB for a shorter distance.

Therefore the omission of any clear consideration of tranquillity or visual intrusion in the proposal is not a material omission.

9.	Visual Intrusion	Status
9.1	Has the impact of visual intrusion been adequately considered?	Yes

Refer to Sections 8.1 and 8.2 above.

9.2	Has the impact of visual intrusion been adequately presented in the consultation and the submitted proposal?	Yes
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Refer to Sections 8.1 and 8.2 above.

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10.	Biodiversity	Status
10.1	Has the impact upon biodiversity been adequately considered?	Yes

There is no reference to biodiversity in the proposal. However, this change will only affect aircraft at 7,000ft and above, and therefore any direct impacts upon biodiversity are extremely unlikely.

10.2	Has the impact upon biodiversity been adequately presented in the consultation and the submitted proposal?	Yes
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As noted in 14 below, no consultation was undertaken and so no consideration of biodiversity was presented. And as noted in 10.1 above, the omission of reference to biodiversity in the proposal is not a material omission.

11.	Continuous Descent Approaches	Status
11.1	Has the implementation of, or greater use of, CDAs been considered?	No

This proposal only relates to departing aircraft and so the consideration of CDAs is not relevant in this case.

12.	Impacts Upon National Parks and/or AONBs	Status
12.1	Does the proposed change have an impact upon any National Parks or Areas of Outstanding Natural Beauty (AONBs)?	No

The statutory purposes of National Parks are to conserve and enhance their natural beauty, wildlife, and cultural heritage and to promote opportunities for the understanding and enjoyment of their special qualities by the public. The statutory purpose of AONBs is to conserve and enhance the natural beauty of their area. In exercising or performing any functions in relation to, or so as to affect, land in National Parks and AONBs, the CAA is required to have regard to these statutory purposes under s.19 and Schedule 2 of the Civil Aviation Act 1982. This duty was re-stated in the revised Air Navigation Guidance issued in 2014.

This duty was also reiterated in the Aviation Policy Framework (March 2013) which stated "the CAA has legal duties to have regard to the purposes of National Parks and Areas of Outstanding Natural Beauty and must therefore take these into account when assessing airspace changes."

Whilst recognising this duty it is also true that flights over National Parks and AONBs are not prohibited by this legislation as a general prohibition against over-flights would be impractical.

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The potential for impact on the Kent Downs AONB is covered in 8.2 above with the conclusion that it is unlikely to have a net negative impact upon either tranquillity or visual intrusion.

13.	Traffic Forecasts	Status
13.1	Have traffic forecasts been provided, are they reasonable, and have these been used to reflect the future impact of the proposal?	Yes

The sponsor states that the introduction of this new route for Luton and Northolt departures is not expected to have any influence on the rate of growth of traffic operating on the route. For the purposes of the system wide CO₂ analysis, a level of growth has been assumed and the predicted traffic numbers (for 2016 and 2020) are presented in the Bridging ACP.

14.	Consultation	Status
14.1	If undertaken, has evidence of non-aviation stakeholder consultation been provided?	N/A

NATS did not undertake any consultation with non-aviation stakeholders for this proposal. The change affects flights that will be above 7,000ft and for that reason any noise impacts would be minimal. Equally, the CO₂ impact is presented as a benefit.

14.2	Has account been taken of the results of the environmental factors raised by consultees or has evidence been provided to indicate why this has not been possible?	N/A
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No consultation was undertaken and therefore there are no environmental factors raised by consultees.

15.	Compliance with CAP 725	Status
15.1	Have all environmental assessment requirements specified in CAP 725 been met, where applicable?	Yes

All requirements have been met where applicable.

16.	Other Aspects	Status
16.1	Are there any other aspects of the ACP, that have not already been addressed in this report, that may have a bearing on the environmental impact?	Yes

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The proposal confirms that – “As this change is contained wholly within existing controlled airspace there will be no effect on general aviation. No consultation with GA was undertaken.”

17.	Recommendations	Status
17.1	Are there any recommendations for the Post-Implementation Review?	Yes
	<ul style="list-style-type: none"> Provide illustrations of vertical and lateral profiles that demonstrate traffic patterns between BPK and DET for departures from both Luton and Northolt. These should portray traffic patterns for comparative and representative periods, and should show a comparison between pre-implementation and post-implementation. Average tracks should be derived for both lateral and vertical profiles and then used to model the fuel burn and CO₂ emissions, and then extrapolated to estimate an annual figure for the respective fleets at each airport. Provide data as evidence of the proportion of flights that benefit from the new routing, i.e. the proportion of flights that achieve a profile that crosses above the Heathrow arrivals, both pre-implementation and post-implementation. 	

18.	Government Approval	Status
18.1	Is the approval of the Secretary of State for Transport required in respect of the environmental impact of the airspace change proposal?	No

No – there is unlikely to be a significant detrimental environmental impact as a direct result of the changes proposed in this Module.

19.	Conclusions	Status
19.1	Can an overall environmental benefit be demonstrated (or justified/supported)?	Yes

Considering this Module as an individual proposal:

- There will not be a significant noise impact – all affected aircraft will be above (and probably well above) 7,000ft. However, the noise benefit cited by the sponsor as part of its rationale for the change is not evident.
- There is likely to be a reduction in CO₂ emissions if aircraft are able to achieve the intended improved profile (a more efficient vertical climb but with increased lateral track miles). This annual reduction in CO₂ is estimated to range from 2,280 – 4,560 tonnes in 2016 and range from 2,726 – 5,451 tonnes in 2020 (see 6.2 above). The CO₂ assessment is based upon 100% of flights achieving a benefit as a result of an approved profile.
- There are unlikely to be any LAQ, tranquillity, visual intrusion or biodiversity impacts as a direct result of these changes.

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- In light of the CO₂ benefit and no likely impact for other environmental factors, it is reasonable to conclude that this Module on its own should produce an environmental benefit.

Considering this Module as an integral part of a wider change (LAMP Phase 1A):

- These changes are part of a wider series of changes. These changes when considered as a whole are expected to produce an overall reduction in fuel burn and CO₂ emissions as detailed in Appendix 1.

Outstanding Issues		
Serial	Issue	Action Required

Additional Compliance Requirements (to be satisfied by Change Sponsor)	
Serial	Requirement

Environmental Assessment Sign-off/Approvals			
	Name	Signature	Date
Environmental Assessment completed by (ERCD representative)			22 July 2015
Environmental Assessment approved by (Head of ERCD)			22 July 2015

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Appendix 1 – Fuel & CO₂ Assessment for LAMP Phase 1 A

Explanatory notes on CO₂ assessment methodology

All figures in the following tables represent the change when compared with a “do nothing” scenario, with all other things being equal. They do not represent an absolute reduction.

The figures represent a fuel saving unless they are expressed as a negative (which represents a fuel increase).

The assessment method used for the LAMP Phase 1A CO₂ estimates calculated both an “enabled” fuel burn figure (which reflected the impact based solely of the theoretical flight-planned routes) and an “adjusted” fuel burn figure which sought to make an adjustment to reflect the fact that many aircraft fly routes that are shorter than their flight-planned routes because they are tactically vectored by Air Traffic Control.

Consultation for the various LAMP Phase 1A elements was undertaken by different sponsors depending upon the nature of the change (NATS, Stansted Airport, Gatwick Airport and London City Airport). However, not all elements that were consulted upon were progressed to become a formal Airspace Change Proposal. In particular, the majority of changes consulted upon in relation to aircraft operating at Gatwick Airport were not progressed and did not feature in the CO₂ assessment that was submitted to the CAA, other than some high-level changes for arrivals (the TIMBA STARS).

In addition to considering NATS’ assumptions and methodology for its CO₂ analysis, in terms of assessing the adequacy of the resulting estimates, the impacts attributable to the Stansted Airport elements (Module A) were checked for reasonableness by the CAA. This determined that the sponsor’s estimates were reasonable and was therefore used as an indicator that the estimates for the other Modules were also likely to be reasonable.

Key points from the Bridging ACP document:

The following points help to explain the methodology adopted by NATS to estimate the system-wide impacts on CO₂ emissions.

- The CO₂ emissions report is a full system analysis covering all of the LAMP Phase 1A modules. It was completed in January 2015 and is based on real time simulation modelling, taking into account the final proposed design both in terms of routes and procedural flight levels. It therefore represents the most up to date and complete analysis of the expected fuel and CO₂ impact of the Airspace Change Proposal (ACP) and supersedes analyses undertaken by the sponsors during the design process.
- The report estimates that in 2016 the change would result in enabled fuel savings of 15,600 tonnes, rising to 18,200 tonnes by 2020. This is an ‘enabled’ fuel benefit, which is a measure of the difference that the proposal will make to the “trip fuel” that airlines will plan for.

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- In the current operation aircraft are tactically vectored by Air Traffic Control for reasons of safety and efficiency. This occurs in today's airspace and would also occur in the future.
- Tactical vectoring means that not all trip fuel that airlines load onto a flight is used, because the distance actually flown is usually less than that planned for. As CO₂ is only generated from fuel which is burnt, this can mean that the enabled fuel benefit is likely to overestimate the CO₂ benefit if a straight conversion from the enabled fuel is undertaken. Therefore the report describes and applies a method for adjusting the results to avoid, as far as is practicable, overestimating actual fuel burn and therefore CO₂.
- NATS, as the sponsor, recognises that there are elements of the fuel and CO₂ assessment methodologies that remain subject to assumptions, in particular when translating enabled fuel reduction into actual CO₂ reduction. It took account of these factors as far as possible, and therefore reduced the CO₂ benefits on the basis of a comparison of modelled and actual fuel for today's traffic. This comparison indicated that a reduction of 21% to reflect the difference between enabled fuel and actual fuel was reasonable.
- The adjusted CO₂ estimate was a 39,400 tonne saving in 2016; rising to 46,000 by 2020 (this is adjusted down by 21% from the equivalent 'enabled' benefit).
- However, the dynamic nature of the air traffic environment both in terms of day-to-day operation and the long term effects of increasing traffic and technological advancement, mean that a degree of uncertainty remains and to account for this uncertainty NATS applied a range to the reported results in the ACP.
- The lower end of the range was not scientifically derived; it is simply 50% of the calculated value. However, it was NATS' view based upon its own operational and analytical experts that, as the calculated value represents "as close an approximation to the required adjustment as can be achieved, and then the lower end of the range more than covers the remaining uncertainty, and presents a sufficient benefit contributing to the overall justification for change."
- When applying this lower limit of 50%, the range of CO₂ reductions estimated by NATS for the entirety of LAMP Phase 1A are:
 - For 2016 = 19,000 to 40,000 tonnes
 - For 2020 = 23,000 to 46,000 tonnes
- It was noted that within the overall result there were some specific routes for which there will be a negative fuel/CO₂ impact, i.e. an increase. However, because these are the less-frequently-used routes, the net negative CO₂ impact is negligible when taken in the context of the overall estimated system benefit that is derived from the combined impacts of the LAMP Phase 1A modules.

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Predicted Annual Saving on Fuel (2016) – tonnes

		Consultation	Module ACP	Bridging ACP (Table 52 – “Enabled” Fuel)	Bridging ACP (revised for runway split – Table 52 – “Enabled” Fuel) ¹	Further adjustment by CAA (“Enabled” Fuel)
Module A - Stansted	Base case	2,000-4,000	2,000-4,000	5,131	4,271	4,298
Module B – London City Replications	Base case	0	0	0 ²	0 ²	0 ²
Module C – London City Network (plus Gatwick & Southend)	Base case	Part E = 2,500-5,000 for LCY Additional 5% for Biggin Hill = 125-250 (same figures quoted in Part F and Part G) No CO ₂ assessment for Southend, therefore no benefit claimed in consultation but negligible impact expected.	No figures stated – but cross-reference to the figures in the Bridging ACP	LCY = 4,632 Gatwick (TIMBA STARs) & Southend = 4,229 Total = 8,861 ² (no separate figures for Biggin Hill)	LCY = 4,136 Gatwick (TIMBA STARs) & Southend = 3,980 Total = 8,116 ² (no separate figures for Biggin Hill)	LCY = 4,082 Gatwick (TIMBA STARs) & Southend = 3,959 Total = 8,041 ² (no separate figures for Biggin Hill)
Module D – Luton & Northolt	Base case	No consultation undertaken	No figures stated – but cross-reference to the figures in the Bridging ACP	1,854	1,836	1,815
Module E – South Coast (Farnborough, Southampton, Bournemouth)	Base case	Figures for 2015: Farnborough = -1,400 Southampton = -102 Bournemouth = -9	-248	-248	-252	-265
Total	Base case	3,114-7,739	7,835-9,835	15,598	13,971	13,889

¹ The original assessment presented in the Bridging ACP had assumed a simple runway usage of 50/50. This was subsequently revised during the CAA's consideration of the LAMP Phase 1A proposals to a more realistic 70 westerly/30 easterly runway usage, and the CO₂ assessment was modified by the sponsor to reflect this.

² The CO₂ impacts from London City that are reported in the Bridging ACP do not distinguish between those from the Replications (Module B) or the Network (Module C) and so the entire figure for London City is reflected in this table as being Module C.

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Predicted Annual Saving on Fuel (2020) – tonnes

		Consultation	Module ACP	Bridging ACP (Table 52 – “Enabled” Fuel)	Bridging ACP (revised for runway split – Table 52 – “Enabled” Fuel) ¹	Further adjustment by CAA (“Enabled” Fuel)
Module A - Stansted	Base case	2,300-4,700	2,300-4,700	5,941	4,970	4,932
Module B – London City Replications	Base case	0	0	0 ²	0 ²	0 ²
Module C – London City Network (plus Gatwick & Southend)	Base case	Part E = 3,000-5,900 for LCY Additional 5% for Biggin Hill = 150-295 (same figures quoted in Part F) Part G= 2,900-5,800 for LCY No CO ₂ assessment for Southend, therefore no benefit claimed in consultation but negligible impact expected.	No figures stated – but cross-reference to the figures in the Bridging ACP	LCY = 6,255 Gatwick (TIMBA STARs) & Southend = 4,252 Total = 10,507 ² (no separate figures for Biggin Hill)	LCY = 5,648 Gatwick (TIMBA STARs) & Southend = 4,381 Total = 10,029 ² (no separate figures for Biggin Hill)	LCY = 5,514 Gatwick (TIMBA STARs) & Southend = 4,356 Total = 9,870 ² (no separate figures for Biggin Hill)
Module D – Luton & Northolt	Base case	No consultation undertaken	No figures stated – but cross-reference to the figures in the Bridging ACP	2,177	2,156	2,170
Module E – South Coast (Farnborough, Southampton, Bournemouth)	Base case	Figures for 2019: Farnborough = -1,700 Southampton = -113 Bournemouth = -10	-400	-399	-402	-418
Total	Base case	3,627-9,072	8,329-10,729	18,226	16,753	16,554

¹ The original assessment presented in the Bridging ACP had assumed a simple runway usage of 50/50. This was subsequently revised during the CAA's consideration of the LAMP Phase 1A proposals to a more realistic 70 westerly/30 easterly runway usage, and the CO₂ assessment was modified by the sponsor to reflect this.

² The CO₂ impacts from London City that are reported in the Bridging ACP do not distinguish between those from the Replications (Module B) or the Network (Module C) and so the entire figure for London City is reflected in this table as being Module C.

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Bridging ACP – Total Estimated CO₂ Reduction (tonnes)

These CO₂ figures are taken or derived from the Bridging ACP submitted to the CAA as part of LAMP Phase 1A Airspace Change proposal.

The "revised" figures represent the revision made by the sponsor to switch from a 50/50 runway usage assumption to a 70/30 usage assumption.

The "CAA adjusted" figures represents small adjustments made for roundings and other small inconsistencies in calculation.

A conversion figure of 3.18 has been used to convert fuel into CO₂.

			2016	2020
Based on Estimated <u>Enabled</u> Fuel Saving	Base case	original proposal	49,600	57,962
		revised proposal	44,428	53,278
		CAA adjusted total	44,167	52,642
	High case	original proposal	55,314	62,566
		revised proposal	49,662	57,488
		CAA adjusted total	-	-
Based on Estimated <u>Actual</u> Fuel Saving (i.e. adjusted for a 21% reduction from Enabled)	Base case	original proposal	39,368	46,006
		revised proposal	35,263	42,287
		CAA adjusted total	34,892	41,587
	High case	original proposal	43,903	49,659
		revised proposal	39,418	45,629
		CAA adjusted total	-	-

Based on the above results, we would conclude that the approximate annual benefit (i.e. reduction when compared with a "Do Nothing" scenario) in CO₂ emissions as a result of the combined LAMP Phase 1A changes would be approximately **34,900 tonnes of CO₂ in 2016 and 41,600 tonnes in 2020.**

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In acknowledging the fact that these estimates incorporate a number of assumptions derived from operational experience, NATS proposed a range of CO₂ impacts which set the lower limit at 50% of the derived estimate. (See the methodology notes at the start of this Appendix.) Applying the same 50% reduction to the figures in the table above in order to obtain a range, the result is:

- For 2016 = 17,450 to 34,900 tonnes of CO₂ saved
- For 2020 = 20,800 to 41,600 tonnes of CO₂ saved

If this lower limit was used as a pessimistic assumption for the estimated CO₂ saving, then the combined LAMP Phase 1A changes would be approximately **17,450 tonnes of CO₂ in 2016 and 20,800 tonnes in 2020.**