

Appendix Q: Business plan scenarios

The CAA has set out its expectation that our business plan should be based around a plausible range of scenarios, to support an understanding of how service levels and the cost base would vary under a range of reasonably alternative traffic scenarios around the central case.

In its guidance, the CAA highlights that it expects scenarios will be based on different levels of expected traffic, with each scenario integrated with other parts of the plan and accompanied by clear and detailed assumptions, including service levels and costs. The analysis below, further informed by our recent experience in responding to the economic shock of the pandemic, supports the fundamental conclusion that the outcomes in scenarios where the traffic forecast used for planning purposes differs to actual outturn traffic carry asymmetric risk. If NERL were to plan for low traffic, but experience high actual traffic, the overall economic outcomes for airlines and their passengers are materially worse vs NERL planning for high traffic and observing a low actual traffic outturn..

As a result, we do not believe it is credible to deliver multiple scenarios or plans to the level of detail expected by the CAA; consideration of sensitivities, as any competitive business would do, outlining the impact of varying traffic outcomes is the more credible, efficient and effective approach. We are a fixed cost infrastructure provider with long operational training lead times. The risks of choosing the 'wrong' plan are asymmetric and cannot be remedied effectively or sustainably within the price control period.

The analysis in this appendix therefore explores the implications for service delivery of higher or lower traffic scenarios across the NR23 period, and our approach to developing and considering those scenarios. It outlines how different components of our costs are related to traffic, either directly or indirectly, and the implications if traffic were to differ materially from the forecast on which the plan is ultimately based. This is in line with requests made by our stakeholders to understand the levers that could be moved to alter choices and provide material changes in business operations.

Our analysis also further supports an assessment of how well placed our plan is to respond to changes in external market conditions, such as traffic, as they evolve through NR23. Given that any forecast will inevitably be imprecise in practice, and that the level of uncertainty that exists as we plan for NR23 in particular is unprecedented, our plan is designed to meet the most likely demand scenario but to also minimise the overall impact for customers in the event that traffic is materially higher or lower than forecast.

To address these points, consideration is given to the aspects below:

- › **The relationship between NERL's cost base and traffic:** How the major elements of our cost base may vary in response to changes in traffic volumes
- › **Costs that could be varied with traffic scenarios:** The cost drivers related to traffic, the levers of flexibility available to us to adjust these costs, including the importance of a high degree of confidence that the changes in traffic would be enduring to support changing specific costs
- › **Scope for changing costs in low and high traffic scenarios:** The impact on our cost base and underlying unit cost of different scenarios

- > **Scenario outcomes where out-turn traffic aligns with underlying traffic assumptions:** The impact on costs over NR23 where the outturn traffic scenario aligns with the forecast used for the purposes of business planning
- > **Scenario outcomes where outturn traffic differs from planning assumptions:** The impact on outcomes where outturn traffic differs from planning assumptions
- > **Analytical assumptions:** Key assumptions on which the analysis rests
- > **Conclusions and implications:** Base case traffic scenario will deliver the most balanced set of service outcomes under the range of potential outturn traffic scenarios

This analysis supports an assessment of how well placed our plan is to respond to changes in external market conditions, such as traffic, as they evolve through NR23

Purpose of these scenarios

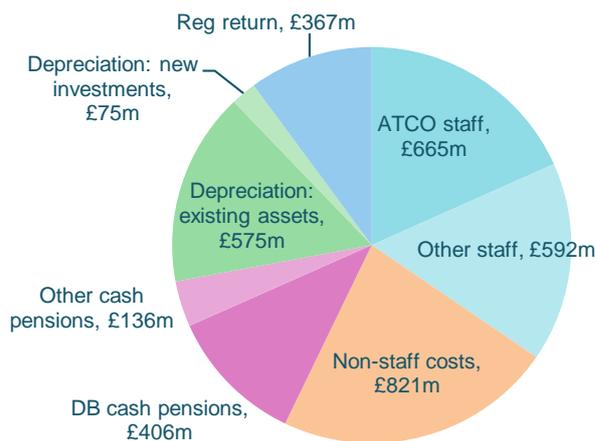
The scenarios are intended to illustrate the choices available to NERL, the CAA and customers in a world of uncertainty, and the likely implications of those choices. In turn, this will assist customers and the CAA in assessing how well NERL’s business plan has been developed to enable it to respond to a plausible range of market outcomes in NR23.

The scenarios have been developed based on a number of assumptions and expert judgements. The information provided here will facilitate a substantive understanding of how NERL can adapt to changing levels of traffic.

The analysis is for UKATS (en route), and is based around the STATFOR October 2021 base case forecast, as well as high and low cases.

The relationship between NERL’s cost base and traffic

The chart below shows our cost base (UKATS) for NR23, broken down into its main elements. Almost two thirds are operating costs (around 20% controller staff, 20% other staff, 25% non-staff).



NERL cost structure, excluding single till income

Each of the elements is explained in more detail below, with an outline of how they vary with traffic.

Element	NR23 £m	% of total	Description	Drivers
ATCO staff	£665m	21%	Costs of ATCOs and trainees,	Traffic levels, service quality, service resilience.

Element	NR23 £m	% of total	Description	Drivers
(controllers)			including overtime and other allowances	In practice, training timescales and longer term forecasts limit flexibility (3+ years to scale up supply of controllers to operations).
Other staff	£592m	19%	All other staff costs, including operational support, engineering, corporate services, etc	Operational support, engineering demand, and corporate and compliance requirements. Small proportion linked to traffic indirectly via controller numbers (occupational health, trainee controller recruitment). [X - redacted]
Non-staff costs	£821m	26%	All non-staff costs, including IT costs, systems maintenance costs, cyber-security, Research & Development (R&D), estate costs, rent & utilities	Largely fixed in nature, some cost driven by investment strategy and small proportion linked indirectly to headcount (eg IT costs and ATCO medical related items). Resilience and safety priorities are key drivers for consistent spend on systems maintenance and security.
Defined Benefit (DB) cash pensions	£406m	13%	Driven largely by market factors, very limited ability to influence due to primary legislation specific to the privatisation of NATS	Staff pensionable pay assumptions (linked to headcount)
Other cash pensions (Defined Contribution/ Pension Cash Alternative)	£136m	4%	Increasing in absolute terms as offset to DB scheme, which was closed in 2009 to new entrants	Staff numbers & pensionable pay assumptions
Depreciation: Existing assets	£575m	18%	Capital investments made in previous periods, remunerated over 15 years	None – fixed by CAA at each regulatory review for subsequent 5 years (albeit scope for the CAA to flex the profile of depreciation on an NPV neutral basis to alter the profile of charges)
Depreciation: New investment	£75m	2%	Capital investments made during NR23, a portion of which will be remunerated during NR23, the rest in future periods	Scale of capital programme
Regulatory return	£367m	11%	Cost of capital allowance, determined by CAA with reference to overall market returns and risk	Gearing, size of Regulatory Asset Base (RAB), risk mechanisms
Single till income: FMARS	£(200)m	(6%)	MoD joint & integrated contract – renewed in 2019, fixed for NR23	% of NERL's cost base, military demand
Single till income: other	£(234)m	(7%)	Other revenue streams in the single till eg site sharing, data feeds and inter-company income from NSL for corporate services	Market demand (limited scope for growth)
Total	£3203m	100%		

As explained in the table above, the vast majority of our cost base is fixed in nature. This is consistent with the Competition and Market Authority's (CMA) view; during the RP3 appeal, the CMA agreed with the view that NERL is more operationally geared than regulated utilities, and that the cost base is more fixed than ENAV's, the Italian air navigation service provider¹.

To assess the fixity of our cost base in NR23, we have taken two contrasting approaches:

- > **Empirical analysis:** We have reviewed our actual/forecast costs for 2020 and 2021 relative to the CMA's determination, and categorising the savings according to their nature. This indicates that we were able to achieve the following savings:
 - > [X - redacted] – these have been built into the future cost base, and are therefore not repeatable
 - > [X - redacted] – cost reductions achieved during Covid-19, when traffic levels were low and many activities were suspended due to restrictions, and which could be repeated in future material downturns, if required.
 - > [X - redacted] – savings which were achievable only because of the exceptional nature of the Covid-19 pandemic
 - > [X - redacted] – from reducing non-operational headcount
- > **Theoretical analysis:** We have reviewed our forward looking cost base, and categorised costs according to whether they are fixed, semi-fixed or variable under different traffic levels. Our analysis suggests:
 - > When outturn traffic is close to the forecast, there is very little scope to adjust the costs.
 - > During a moderate downturn (eg a 10% traffic shock), costs could vary by around 3-4%
 - > In a severe downturn (eg a 50% shock), costs could vary by 10-12%

Based on these two analyses, we estimate that around 5% of the cost base is variable with traffic in the short-medium term. This reflects the unique operating environment, including the illiquid labour market for , the time required for training and the degree of operational leverage.

Costs that could be varied with traffic scenarios

If there were a forward-looking traffic scenario or forecast, around which we had a high degree of confidence, both in terms of volume and sectoral composition, there are two categories of costs which we could vary:

- > **Costs that change directly with long term traffic variations:** including controller headcount (and the associated costs of recruiting or reducing this number), additional controller allowances (such as overtime), and capital investment to deliver future capacity (including associated impacts on R&D)
- > **Costs that vary with headcount (and therefore indirectly with traffic):** following headcount adjustments for sustained traffic variations, other costs would vary, including IT costs, occupational health/medical costs, trainee controller recruitment and training college costs

¹ NATS (En Route) Plc / CAA Regulatory Appeal, Final report, August 2020

Both of these categories are considered in more detail below. However, our ability to adjust these costs is now more limited following the actions we took in immediate response to Covid-19 and its impact on traffic in 2020.

[REDACTED]

Costs that can change directly as needed with long term traffic assumptions that have a high degree of confidence

These are composed primarily of **direct controller headcount costs** (wages and pension costs). Provided that we had a high level of certainty and confidence regarding future long term traffic forecasts, whether significantly higher or lower than trends over a number of years, we could consider changing headcount by adopting measures such as:

Significantly higher long term traffic forecast/outlook

[REDACTED]

Significantly lower long term traffic forecast/outlook

[REDACTED]

[REDACTED]

- › **Altering trainee controller throughput (reducing headcount)**: we could also restrict headcount in the low traffic scenario by adjusting the size of college recruitment classes. Although the cost of this is relatively small, the training lag times means that this choice would have a delayed impact on headcount. There are practical limits as to how much the trainee controller throughput can be increased; given our intention to run the college at maximum supply in NR23, it is not feasible to put more trainee controllers through the college in NR23

Significantly higher or lower long term traffic forecast/outlook

- › **Capital investment related to capacity enhancement (increasing/reducing costs)**: the scale and emphasis of the capital portfolio could be adjusted in response to different levels of traffic, provided there was certainty over traffic. Although the vast majority of capital investment is linked to resilience and sustainment, technical transformation, and airspace modernisation, we estimate that the envelope could be adjusted by around +/- £50m over NR23, if there were confidence in the traffic scenario.

In the **high traffic** case, this would enable accelerated spend on the lower technical operation platform to deliver future capacity. There is limited capability to implement more airspace change than currently included in the emerging plan.

In the **low traffic** case, investment in airspace modernisation and the technology transformation could be slowed in response to the change in capacity constraint. The reduction may lead to stranded labour which would either need to be redirected to other projects, or managed through a redundancy programme.

While these decisions on capital investment would impact the prices paid by customers in NR23, conversations with airline customers indicate that it may be preferential to continue or indeed accelerate capital expenditure during periods of lower traffic, where NERL's liquidity constraints allow, to minimise operational impacts.

Restrictions on changing headcount

The characteristics of the air traffic control industry, and the ATCO profession more specifically (which have been covered at length in the previous three regulatory price control period consultations in the UK, as well as by European ANSPs, regulators, and EC bodies), mean it is challenging to adjust headcount in a flexible and responsive way to changes in traffic. Measures which provide extra manpower in a flexible way, which may be possible in other professions, are not applicable or feasible for ATCOs. For example:

- the practice of reducing working hours when approaching retirement age is not currently practically feasible for ATCOs, as a minimum number of hours is needed to maintain skill currency
- similarly, although there are ATCOs who transition to corporate / back-office roles at later stages in their careers, it is not feasible for them to readily transition back to the control room if demand increases beyond supply

This is in contrast to other professions, GP doctors, for example, who can, and in response to Covid-19, have, transitioned more easily to active duty (part- or full-time), in a way that ATCOs cannot.

In addition, ATCOs who are retiring tend to have multiple validations whereas those just qualified only have one. An additional validation takes an extra two years in addition to the three years needed for qualification (five years in total). That said, as stated in our Palamon response², we are exploring opportunities to pursue more flexible rostering and working patterns.

Costs that can vary with headcount

Various smaller cost items will vary with the share of the headcount that depends on traffic.

Other controllers costs, such as overtime and on the job training instructor (OJTI) allowances, would change as the number of controllers adapted to different traffic planning outlooks. Occupational health & medical costs are also primarily driven by the number of staff, as well as travel and other expense costs.

Costs associated with running the training college and also trainee controller recruitment would change, depending on the decisions made regarding trainee throughput for NR23. IT costs would be affected by the total number of staff employed, which changes the number of headsets, laptops, software licences etc, that are needed. Lower long term levels of traffic may also mean it would be credible to reduce R&D spend on capacity enhancement projects.

Single till income could be slightly increased when planning for a low case scenario where we are likely to have spare college capacity. Similar to the situation that pertained in the early part of RP2, we were able to monetise the college by selling spare capacity to other ANSPs. However, this would require an uneven traffic recovery pattern in Europe, as a low case scenario for the UK would have to be paired with a high demand scenario in other European countries. This appears to be an unlikely outcome in the medium-term.

Scope for changing costs in low and high traffic scenarios

In assessing the implications of our ability in practice to change different cost items in high or low traffic scenarios, it is important to recognise that we would require a high-degree of confidence that traffic levels would be sustained over a number of years in order to switch from the base traffic case for planning purposes. The high fixity of cost means it is challenging to respond to sudden and

² Investigation under s.34 of the Transport Act 2000: Project Palamon – Final Decision, CAA, CAP 2100, February 2021

unpredictable traffic shocks through adjusting operating costs materially without significant, detrimental impact to customers, as shown in the scenarios below.

By using indicative estimates of the determined costs and unit rates that would apply under different planning scenarios, we have produced alternative outcomes to compare against our NR23 business plan. Based on historical data, and the expertise across the business, as well as the considerations outlined in the preceding section, the assumptions are as follows:

- > [REDACTED - redacted]
- > **Other controller costs** (eg overtime allowances, OJTI, ATCO voluntary attendance allowance (AVAA)) depend on the underlying driver. Overtime allowances move 1-to-1 with traffic, OJTI moves 1-to-1 with the trainee throughput, while AVAA changes in the same proportion as capital expenditure
- > **Capital investment** could be increased/reduced by £50m relative to the base case for a high and low case plan respectively – the reduction in the cost base would be smaller because capital investment is remunerated through regulatory depreciation. R&D costs would change by the same proportion
- > **IT costs** vary by 0.1% for each 1% change in traffic, as only a small share of the overall IT costs is variable with headcount, while the majority relate to fixed infrastructure costs
- > **Other costs** related to ATCOs such as occupational health could be varied 1-to-1 with traffic, while TATC recruitment costs depend on the choice regarding trainee throughput
- > **Training college** costs depend on the choice regarding trainee throughput
- > **Selling training college capacity** to other ANSPs could yield around £2m in a low-traffic scenario (similar to RP2)

A summary of the available measures to change costs relative to our NR23 business plan is shown in the table below.

Cost group	Cost item	Timeframe for adjustment	Impact on Determined Costs (low traffic)	Impact on Determined Costs (high traffic)	Conditionality
Changing directly with traffic	[X - redacted]				
	[X - redacted]				
	[X - redacted]				
	Capacity enhancement investment (capex)	Medium-term	£(16)m (£50m less investment)	£16m (£50m more investment)	Customer preference, operational requirement
Changing with headcount (ie indirectly with traffic)	[X - redacted]				
	IT costs	Medium-term	£(0)m – £(1)m	< £1m	Linked to headcount reduction / contract variation
	R&D costs	Short-term	< £(1)m	< £1m	Linked to capacity enhancement investment & current commitments
	Occupational health	Medium-term	< £(1)m	< £1m	Linked to headcount reduction
	TATC recruitment	Short-term	< £(1)m	£0m	Linked to TATC throughput
	Training college	Long-term	Up to £(2)m	£0m	Not a linear relationship between trainees and costs
	Single till income (ie using spare college capacity)	Long-term	Up to £(2)m	£0m	Slow UK recovery and faster rest of world recovery

Estimated impact of various traffic scenarios on NERL's cost base

Scenario outcomes where outturn traffic aligns with underlying traffic assumptions

This section summarises the impact on costs over NR23 where the outturn traffic scenario aligns with the forecast used for the purposes of business planning, ie a central business plan, built on central traffic forecast and outturn; a separate high cost plan that meets high traffic forecast/outturn; and a low cost plan meeting low traffic forecast/outturn. This is illustrated in the chart below by the boxes lying on the diagonal running from top left to bottom right, with the remaining boxes considered in later paragraphs:

Most likely outcome ↓

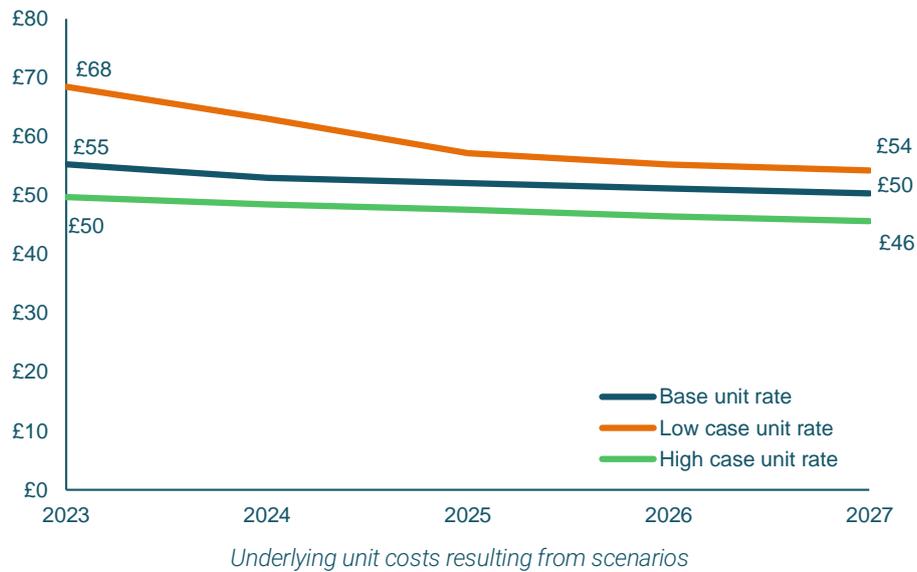
	Outcomes	Outturn traffic: high	Outturn traffic: base	Outturn traffic: low
	Plan traffic: high	Similar service quality to base case		
Current plan assumption →	Plan traffic: base		Central scenario Base case plan & base case traffic	
	Plan traffic: low			Similar service quality to base case Lower operational staff costs but lower traffic leading to slightly higher prices

In our NR23 business plan, based on the STATFOR October 2021 base case, our average determined costs (UKATS) is around £637m, or an underlying unit cost of around £52 per service unit (£2-3 per passenger).

Drawing on the STATFOR high and low cases to carry out illustrative calculations, and using the relationships between costs and traffic described above:

- › Using a STATFOR low traffic scenario as our planning assumption for NR23 and assuming that outturn traffic is in line with our low case planning (representing around 9% lower traffic volumes than our NR23 base case), average determined costs could be reduced by around 2% (£12m pa on average). Due to lower traffic volumes, and the nature of the rate calculation, the underlying unit cost is higher than the base case plan, particularly at the start of the price control when the difference between flight scenarios is greater
- › A high case planning scenario with a high case outturn, representing around 11% higher traffic volumes than the base case, would increase average determined costs by over 2.5% (£16m pa on average). This provides marginally lower underlying unit costs at the start of NR23, but is very close to base case outcomes in the later years. Due to higher traffic volumes, and the nature of the unit rate calculation, the underlying unit cost is lower in the base case before converging in later years

We assume service quality outcomes would be similar to our NR23 business plan, on the basis that the planning (and therefore resourcing) assumption would be matched to the outturn traffic.



The determined costs under each of the illustrative scenarios is shown in the table below.

UKATS	Drivers	Share of DCs	NR23 business plan	Low case	High case
Traffic forecast			2.4–2.6m flights (STATFOR October 2021 base)	2.0–2.5m flights (STATFOR October 2021 low) -9% vs base	2.7–2.9m flights (STATFOR October 2021 high) +11% vs base
[redacted]					
Total costs		100%	£3,203m	£3,141m (-3%) ³	£3,281m (+2.5%) ⁴
Average DUC			£52 per SU	£60 per SU	£48 per SU

Determined costs projections under high and low case scenarios

Scenario outcomes where outturn traffic differs from planning assumptions

Significant uncertainty is attached to our NR23 plan in terms of the pace and presentation of traffic recovery. The nature of NERL’s business (high fixity of cost, asymmetric risk on operational resourcing, training lag times, inability to influence traffic volume) means that choices for planning assumptions made now in 2021 will be long-lived, where current choices constrain or enable future options. It is therefore important for NERL’s plan to strike an appropriate balance between an efficient cost base for

³ [redacted].

⁴ [redacted].

the expected traffic volumes and resilience, such that it retains the capacity to meet changes in the external environment.

If a different level of traffic materialises compared to the planning assumption, it falls into one of the boxes off the top-left to bottom-right diagonal on the previously utilised chart. Boxes coloured in green provide an outcome that we consider is acceptable to customers in terms of service delivery and costs, even though there is a difference between the traffic assumption in the plan and outturn traffic. The scenarios highlighted in orange are worse for customers as either the costs are significantly greater than required for the traffic levels, or there are higher levels of delay. A scenario where with severe operational constraints is coloured in red.

Most likely outcome ↓

Outcomes	Outturn traffic: high	Outturn traffic: base	Outturn traffic: low
Plan traffic: high		- Improved service quality - Slightly higher operational staff costs than otherwise necessary	- Improved service quality - Potential financeability issues due to lower revenue receipts - Higher operational staff costs than otherwise necessary
Plan traffic: base	- Worse service performance - Future capacity at risk of not meeting demand		- Improved service quality - Slightly higher operational staff costs than otherwise necessary
Plan traffic: low	- Insufficient capacity leads to significantly worse (and unacceptable) performance - Potential industrial action leading to further delay due to workload or insufficient staffing	- Worse service performance - Future capacity at risk of not meeting demand	

Current plan assumption →

Our ability to cut costs or scale up our operational capacity are relatively limited compared to other businesses. While the main measure that we could activate immediately to change resourcing capacity if traffic turns out higher than expected would be to seek to increase overtime, there are more actions we could use during NR23 if we had a high degree of confidence that low traffic would be the most likely outturn. They include:

- Postponing additional capex projects that are not related to technical resilience or capacity enhancement, and reducing R&D costs
- Reducing estate management costs by rationalising likely unrequired space
- Implementing ‘austerity’ type measures to reduce spending temporarily and to reflect generally lower activity levels

Our ability to reduce costs more extensively and in other areas of the business is restricted in part by the cost containment measures that were put in place during the course of 2020 and 2021 as a response to Covid-19, as explained above. Measures that generate sustainable, permanent reductions in headcount and costs have already been factored into the NR23 business plan. This limits the reductions that could be attainable if another traffic shock occurred during NR23.

In the scenario where NERL plans for the base case traffic (ie our NR23 business plan, and the middle row in matrix above):

- > **If base case traffic materialises:** the outcomes would be as described elsewhere in our NR23 business plan
- > **If high case traffic materialises:** Delay would increase. The training lag time means we would be behind the curve for future capacity requirements (by around 2-3 years), and would need to shift investment focus to capacity. Marginal/indirect costs to service higher traffic (such as overtime and increasing trainees) are likely to be covered through the established traffic risk-sharing mechanism (the intended purpose of the mechanism)
- > **If low case traffic materialises:** Significantly lower delay to customers (a saving), however potential financeability concerns for NERL. We estimate that we could lose £137m and would start NR28 with a traffic risk sharing (TRS) debtor of £76m⁵, and would therefore need to take reactive measures to conserve liquidity, similar to the measures outlined above. In a moderate downturn (ie around 20–25%, almost twice the difference between the base and low traffic forecasts), we estimate that we would be able to reduce costs by approximately 2–5%, in line with our assessment of our fixity of cost
- > Our NR23 plan has been prepared on a base case traffic scenario, and will enable us to stretch to high traffic, although this may require greater levels of overtime and a faster trainee throughput, while being financially resilient to a moderate downturn

In the scenario where NERL plans for high case traffic (top row in matrix above):

As we plan to fully utilise the capacity of the training college in the early years of NR23 in our emerging business plan, staffing for high case traffic would require further measures to increase headcount. The most important action would be to offer incentives for controllers to stay longer on the job, which would require extra spending, as described above.

- > **If high case traffic materialises:** The outcomes would be as described in the our NR23 business plan [redacted]
- > **If base case traffic materialises:** Lower delay for airlines (1 to 2 seconds saving, based on the proposed traffic modulation mechanism) but higher costs than required due to the assumptions in the plan. However it may be possible to switch a proportion of these costs on and off when it becomes clear that outturn traffic is lower than the planning assumption. We would also suffer cash shortfalls during NR23, with an estimated loss of £144m and an additional £103m TRS debtor at the start of NR28
- > **If low case traffic materialises:** Even lower levels of delay for airlines (2 - 4 second saving, based on the proposed traffic modulation mechanism), but we are likely to have financeability concerns due to lower than expected traffic despite cost containment measures. We estimate that we could lose £144m and would start NR28 with a TRS debtor of £253m

In the scenario where NERL plans for low case traffic (bottom row in matrix above):

Planning for a low case traffic scenario would require us to reduce its operational headcount, likely through a redundancy programme before or during NR23. Considering the high level of unionisation of controllers, and the negative impact to airlines from industrial action (in the form of potentially significant additional delay), it is important to recognise the possible costs and uncertainties associated with planning for low case traffic.

⁵ This excludes the effects of lower traffic levels on the ability to recover the 2020-22 revenue shortfalls. The same applies to all the estimates of liquidity shortfalls when traffic materialises at a lower level than planned.

- › **If low case traffic materialises:** The outcomes would be as described in our NR23 business plan, [redacted]
- › **If base case traffic materialises:** Additional delay costs for airlines and passengers, (2–12 second increase to delay, based on the proposed traffic modulation mechanism). These extra delay costs, [redacted], would be likely to outweigh the impact of lower staff costs on our charges
- › **If high case traffic materialises:** This would cause significant indirect costs for users, as the delay would likely reach high levels (12 - 23 second increase to delay, based on the proposed traffic modulation mechanism), and we would be heavily reliant on overtime, which would be expensive and potentially unreliable, depending on status of trade union relationship. Additionally, we would not be ready for future traffic, having opted for a much smaller capital programme as well as significantly smaller workforce

Analytical assumptions

The estimated impact of each of the scenarios described above is based on a number of key assumptions, which are listed below:

- › Impact on delay from higher or lower outturn traffic based on our proposed traffic modulation mechanism, based on analysis of historic data (see [Appendix E](#) for further detail)
- › Indirect costs to airlines and passengers of delay calculated using the assumption that each minute of delay generates a cost of approximately £80 to airlines and £50/hour to passengers, and that each flight has 120 passengers. This is consistent with the CAA's analysis in the Palamon investigation⁶
- › Estimated impact of industrial relations risk based on reported data from other major European ANSPs

Conclusions and implications

Our assessment indicates that planning around the base case traffic scenario – the most probable traffic outcome – delivers the most balanced set of service outcomes under the range of potential outturn traffic scenarios.

This the 'minimum regret' approach, given the degree of uncertainty we currently face; the overall costs of this approach, in the event that traffic diverges materially from forecast, is lower than that for either the high or low plan scenarios.

The high fixity of cost mean it is challenging to respond to sudden and unpredictable traffic shocks through adjusting operating costs materially without significant, detrimental impact to customers, as shown in the scenarios where outturn traffic differs significantly from the planning assumption. However, our choice to plan for the base case traffic provides the flexibility to respond to variations in outturn traffic during NR23:

- › If lower traffic materialised, customers would benefit from better service quality (lower delay costs) and we could ensure ongoing financial resilience through appropriate further cost containment measures

⁶ CAA, Investigation under s.34 of the Transport Act 2000: Project Palamon – Final Decision, CAP 2100, February 2021, footnote 55. The original source for the delay cost to airlines is quoted in euro (ie €100), which we have converted to pound sterling using current exchange rates.

- › If higher traffic materialised, overtime and other measures could be leveraged to maintain acceptable levels of service quality (albeit there would be a lag to resource up permanently)

Planning for a high scenario would not materially improve consumer outcomes relative to the base case plan, but has significant downside financeability risk if low case traffic materialises.

On the other hand, planning for the low traffic scenario significantly increases the risk of worse consumer outcomes as it will inevitably present real challenges on service quality associated from higher outturn traffic. It would also deliver much lower resilience and more unpredictable performance – in the extreme, we would be far behind the curve for future demand. The relatively small savings associated with planning for low traffic would be dwarfed by large indirect delay costs to airlines and passengers.