

UK Launch Demand and Supply to 2040

An Evidence Based Assessment

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Purpose

The UK's reliance on space services is growing, making access to launch an increasingly important question for resilience, security and market development. Satellite services support national security, critical infrastructure, public services and commercial activity. UK Space Agency material identifies space as critical to the UK economy and security, with 18% of UK GDP reliant on satellite services.[1]

This paper assesses whether forecast launch demand and supply indicate a potential access risk for the UK. It provides the market and capacity assessment that supports wider consideration of assured launch. For this paper, Western refers to the UK, European, USA and other allied launch demand and supply captured in the analysis. The analysis covers three questions:

1. **How might UK, European and allied launch demand develop to 2040?**
2. **How might launch supply develop over the same period?**
3. **What might this imply for UK access to launch under normal and stressed conditions?**

The scenarios are analytical stress tests intended to explore sensitivity to demand growth, prioritisation and launch-access constraints. They are not a substitute for operational analysis. Future work could test these findings through defence, NATO and allied space-resilience wargaming activities to assess how launch prioritisation, payload readiness, allied decision-making and operational timelines interact under crisis conditions.

The assessment is indicative rather than predictive. It draws on open-source launch activity, published programme information, stated provider plans, vehicle capability, launch-site accessibility and market assumptions. The results should therefore be read as evidence of scale, direction and uncertainty rather than as a precise forecast of annual demand or supply.

Key findings

1. Demand grows rapidly, but UK demand remains small in market terms

The analysis indicates that total demand could rise from around 570,000 kg in 2026 to around 14.0 million kg in 2040. Most of this growth is associated with commercial activity, particularly communications constellations. This is consistent with wider market evidence. BryceTech's 2025 review reported **325 orbital launches** and **4,544 spacecraft deployed** in 2025, with communications satellites representing **83% of spacecraft launched**.[2] The UK remains a small share of the total Western market. Forecast UK demand rises from around **4,400 kg in 2026** to around **81,300 kg in 2040**, but remains small compared with European and USA / other allied demand.

2. Aggregate Western supply appears sufficient but the surplus depends heavily on the USA and other allied capacity

Forecast Western launch supply exceeds forecast demand throughout the period. Total supply rises from around **4.5 million kg in 2026** to around **32.9 million kg in 2040**. This aggregate surplus is not evenly distributed. It is driven mainly by USA and other allied launch providers. The headline surplus should be interpreted as nominal capacity, not as contestable market capacity. Some high-cadence providers may use a substantial share of their launch activity for internal constellation deployment, government customers, rideshare manifests, or other priority missions. This is particularly relevant for vertically integrated providers and providers with large recurring internal or strategic demand.

[1] https://assets.publishing.service.gov.uk/media/68adc3ec960e2d135b4c8e33/UK_space_sector_factsheet_Aug25_final_bn.pdf
[2] BryceTech - Orbital Launches Year in Review 2025

As a result, the practical capacity available to UK, European and other third-party payloads may be materially smaller than the aggregate supply figures suggest.

3. UK sovereign launch supply remains well below forecast UK demand

UK sovereign supply remains small across the assessment period. The analysis indicates UK sovereign supply of **0 kg in 2026**, around **3,450 kg in 2033**, and around **5,050 kg in 2040**. By comparison, forecast UK demand reaches around **81,300 kg by 2040**. On this basis, UK sovereign supply would meet only a small share of forecast UK demand by the end of the period. UK-based launch supply is higher than UK sovereign supply, because it includes launch from UK territory by non-UK-owned providers. This may improve logistics, access to polar orbits and operational proximity, but it is not the same as UK control over vehicle availability, supply chain, prioritisation or political release.

4. European capacity grows, but does not remove reliance on wider allied supply

European launch supply grows over the period, supported by Ariane 6, Vega C and emerging European launch providers. ESA states that Ariane 6 is intended to support a wide range of missions, with Ariane 62 capable of launching approximately **10.3 tonnes to LEO** and Ariane 64 approximately **21.6 tonnes to LEO**.[3] However, in this analysis, European demand exceeds European supply from the early 2030s. This means that UK and European access remains dependent on USA and other allied capacity, especially if demand grows as forecast.

5. The main UK access risk is prioritisation and practical availability, rather than total global lift capacity

The results do not indicate a simple global shortage of launch capacity. Instead, they indicate a dependency and prioritisation risk. Capacity may exist in aggregate but still be unavailable, unsuitable or deprioritised for UK requirements. This distinction is important for providers that are high-cadence but not fully open-market capacity. A regular launch cadence does not necessarily mean spare capacity exists for UK payloads, particularly where flights are used for internal constellations, national security missions, rideshare customers or long-booked commercial programmes. In crisis conditions, the key question is whether UK payloads can access a suitable launcher, orbit, range slot, integration route and mission approval within the required timeframe.

The assessment highlights three key areas of uncertainty: whether emerging launch providers achieve planned launch cadences; how much nominal launch capacity is practically accessible to UK payloads; and whether licensing, integration and mission operations can support launch at the pace required.

Taken together, these findings indicate that UK launch access should not be assessed by aggregate capacity alone. The more relevant question is the extent to which capacity is contestable, accessible to UK payloads, compatible with UK mission needs and available within the required timeframe. This depends not only on total launch capacity, but also on launch cadence, priority access to vehicles and the responsiveness of the wider launch system under routine and stressed conditions.

Method in brief

The assessment uses a bottom-up approach. Demand is estimated from historic launch activity, visible programme commitments and market growth assumptions. Supply is estimated from vehicle capacity, expected launch cadence, operational maturity and launch-site accessibility.

The evidence base is uneven. Some inputs are based on observed launch activity and published programme information. Others depend on provider-stated plans, future cadence assumptions and market growth estimates. The assessment therefore gives more weight to broad trends than to year-by-year values.

[3] https://www.thespacereview.com/article/5018/1

Payload mass is used because it provides a common measure of lift capacity. Payload masses reflect mission-specific assumptions and therefore include differences between typical LEO, MEO and GEO spacecraft. However, payload mass alone does not capture orbit-specific access constraints. Launch-access requirements may differ materially by orbit because vehicle compatibility, launch availability, transfer requirements and mission assurance considerations vary between mission classes.

Forecast launch supply is measured as nominal capacity. Not all nominal capacity should be assumed to be fully contestable or available to external customers. Some providers may reserve capacity for internal constellation deployment, government customers or other priority missions. The paper therefore treats accessible capacity and priority capacity qualitatively, rather than applying a numerical discount that the evidence base would not support.

Forecast supply should therefore be read as an estimate of capacity that may exist, not as a measure of capacity that is necessarily contestable by external customers. The analysis does not quantify the share of launch capacity already committed to internal constellation deployment, standing government customers, rideshare manifests or other priority demand. This limitation is treated qualitatively in the interpretation rather than through a numerical discount.

The demand-supply balance is then tested under three scenarios:

1. Peacetime baseline: compares central demand with full nominal launch supply under normal market conditions.
2. NATO wartime surge: applies an uplift to defence-related demand while assuming allied capacity remains available.
3. Constrained USA access: removes USA and other allied capacity from the accessible market to test UK and European dependence on the largest source of forecast allied supply.

The analysis distinguishes between UK sovereign, UK-based, European allied, and USA and other allied launch capacity. This distinction matters because launch geography and launch control are not the same. A launch from UK territory may improve logistics and operational proximity, but it should not be treated as UK sovereign capability unless the UK controls the vehicle, infrastructure, permissions, operational priority and relevant supply chain.

Full details of the method, assumptions, data sources and limitations are provided in Annex A.

Demand outlook

Forecast launch demand increases substantially, rising from around 570,050 kg in 2026 to around 14,010,300 kg in 2040. The forecast is dominated by USA and other allied demand, while UK demand remains a small share of the total.

UK demand is forecast to rise from around 4,400 kg in 2026 to around 81,300 kg by 2040. This is consistent with evidence of growing UK space activity across Defence, civil and commercial markets. Publicly announced programmes and investments include ISTARI, Skynet 6, Oberon, Juno and Tyche, alongside continuing deployment activity by UK-headquartered commercial satellite operators. While these programmes do not provide a complete measure of future launch demand, they indicate a growing requirement for satellite deployment, recapitalisation and capability enhancement over time.[4] European demand rises from around 17,000 kg to around 1,013,650 kg over the same period. This growth is driven primarily by assumed expansion of commercial space activity and deployment of new satellite constellations rather than government demand alone. USA and other allied demand rises from around 548,650 kg to

[4] UK launches first military spy satellite from Falcon 9 rocket - Breaking Defense

around 12,915,350 kg. The figures are model outputs and should not be read as point forecasts. They are most useful for comparing broad scale, direction and dependency across regions.

Table 1: Payload demand forecast from 2026 to 2040 (kg)

Region	Demand Forecast Payload Mass (kg)			Forecast annual growth rate
	2026	2033	2040	
UK	4,400	44,000	81,300	23.2%
Europe	17,000	543,750	1,013,650	33.9%
USA and Other allies	548,650	4,916,000	12,915,350	25.3%
Total	**570,050**	**5,503,750**	**14,010,300**	**25.7%**

Note: Results from author's analysis, see Annex A2.

Commercial demand is the largest driver of growth, especially communications constellations. This is consistent with wider launch market evidence showing that communications satellites are a major driver of recent orbital activity. BryceTech's 2025 review reported 325 orbital launches and 4,544 spacecraft deployed during 2025, with communications satellites representing 83% of spacecraft launched.[5]

UK Government, academic and defence demand remains more modest relative to USA and wider European markets, although it includes time-critical launches associated with specific satellite programmes. This demand is driven less by launch price and more by mission need, recapitalisation, resilience and capability development. The analysis includes UK programme anchors such as Skynet 6A, Oberon, Juno, Skynet 6 Enduring Capability and ISTARI, while noting that classified or unannounced programmes are not captured.

More broadly, UK demand represents only a small proportion of total Western launch demand and remains significantly smaller than European and USA demand throughout the assessment period. However, assured launch does not depend only on the scale of UK requirements. As international demand grows, UK payloads will compete for launch services within a larger and expanding market. The key issue is whether sufficient capacity remains available and accessible to the UK when larger allied, government and commercial customers are seeking launch services at the same time, particularly during periods of heightened operational demand.

The demand forecast should be treated as a visible-demand floor rather than a complete statement of future UK need. This is particularly important for defence and security programmes, where programme details, payload mass, launch dates and replenishment assumptions may not be public.

Supply outlook

Global launch supply increases substantially rising from approximately 4.5 million kg in 2026 to 32.9 million kg in 2040. This growth is driven predominantly by the expansion of USA launch capability, particularly through the scaling of large reusable launch systems, alongside the introduction of a new generation of European launch vehicles. As a result, overall Western launch capacity is expected to become significantly larger, with the majority of additional capacity originating from providers serving the global commercial launch market rather than launch systems developed specifically to support sovereign or defence requirements.

UK sovereign supply remains small in absolute terms. The central forecast shows no UK sovereign supply in 2026, around 3,450 kg in 2033 and around 5,050 kg in 2040. UK-based supply is materially higher because it includes non-UK-owned launch vehicles operating from UK territory, rising from around 1,600 kg in 2026 to around 46,000 kg in

[5] https://brycetech.com/reports/report-documents/global-orbital-activity-2025/

2040. However, near-term UK-based supply forecasts should be treated with relatively low confidence because they depend on first orbital launches, successful transition to operations and sustained launch cadence from providers that have yet to establish a track record of regular orbital service from the UK. As a result, forecast UK-based supply in the late 2020s is more sensitive to execution risk than any other element of the supply model.

Table 2: Forecast launch supply in payload mass from 2026 to 2040, central estimate (kg)

Region	Supply Forecast Payload Mass (kg)			CAGR
	2026	2033	2040	
UK Sovereign	-	3,450	5,050	23.8%*
UK Based	1,600	37,600	46,000	15.6%
Europe	173,100	327,750	348,350	3.2%
USA and Other Allies	4,290,800	32,262,400	32,470,400	11.2%
Total	**4,465,500**	**32,631,200**	**32,869,800**	**11.1%**

Note: Results from author's analysis, see Annex A3.
**UK supply CAGR calculated from 2027, the first year of forecast launch from a UK spaceport, until 2040.*

The UK launch infrastructure picture has improved, but capability remains in transition. SaxaVord has been licensed by the UK Civil Aviation Authority (CAA) as the UK's first vertical launch spaceport, with a licence permitting up to 30 launches per year. RFA has also received a UK CAA launch licence for vertical launch from SaxaVord, although the vehicle is German-owned and the licence includes pre-launch conditions.[6] [7] [8] Spaceport Cornwall also holds a CAA licence for horizontal launch operations. However, no launch provider has yet committed to sustained orbital launch services from the site and no near-term launch manifest has been established. As a result, Cornwall should currently be viewed as enabling infrastructure rather than a material source of forecast launch capacity.[9]

European supply is forecast to grow, but at a slower rate than demand. Ariane 6 and Vega C provide important institutional and commercial capacity, and ESA has taken steps to support continuing exploitation of both systems from Europe's Spaceport in French Guiana. ESA's material states that Ariane 6 can launch approximately 10.3 tonnes to LEO in Ariane 62 configuration and 21.6 tonnes to LEO in Ariane 64 configuration.[10] [11]

Future European supply depends partly on increasing cadence and on new entrants reaching operational maturity. Recent reporting from ESA and associated sources shows active consideration of higher Ariane 6 flight cadence, reflecting the wider concern about European capacity and autonomous access.[12] Initiatives such as ESA's European Launcher Challenge (ELC) and BOOST! programmes could accelerate provider maturation such as Maiaspace and PLD Space, increase launch cadence and broaden the diversity of European launch services. Their strategic significance extends beyond increasing nominal capacity, as they are intended to reduce reliance on a small number of launch systems and strengthen the resilience of European access to space. The extent to which these benefits are realised will depend on successful transition from development support to sustained commercial operations.

[6] https://www.caa.co.uk/newsroom/news/saxavord-granted-spaceport-licence-by-uk-civil-aviation-authority/
[7] https://www.caa.co.uk/newsroom/news/uks-first-vertical-launch-approved-by-civil-aviation-authority/
[8] https://www.rfa.space/rfa-receives-launch-licence-from-the-uk/
[9] ORS10 2022-001: Spaceport Licence: Cornwall Airport Limited | UK Civil Aviation Authority
[10] https://www.esa.int/Enabling_Support/Space_Transportation/Europe_s_Spaceport/Two_arrangements_mark_a_new_step_for_Ariane_6_and_Vega-C_exploitation
[11] https://www.esa.int/Enabling_Support/Space_Transportation/Launch_vehicles/Ariane_6_overview
[12] https://www.spaceintelreport.com/esa-looking-at-what-it-would-take-to-increase-ariane-6-cadence-to-15-missions-or-more-per-year-before-2030/

USA and other allied supply dominates the forecast. This reflects mature high-cadence launch systems, large reusable vehicles and major government and commercial customer bases. The supply forecast identifies SpaceX, ULA, Rocket Lab and Blue Origin as major contributors to this category.

However, the accessible share of this capacity is uncertain. FAA forecasts point to continued growth in USA commercial space operations, but FAA-regulated growth does not indicate how much launch capacity would be available to UK customers during crisis conditions.[13]

Demand-supply balance under scenarios

Scenario 1: Peacetime Baseline

This scenario represents a normal-market case comparing forecast demand with full nominal launch supply. It shows the headline demand-supply balance before applying crisis, prioritisation or accessibility constraints.

Under the peacetime baseline scenario, total estimated forecast supply exceeds total demand throughout the period. There is a total surplus of around 3,895,350 kg in 2026, rising to around 27,127,450 kg in 2033 and around 18,859,500 kg in 2040. The aggregate surplus masks regional deficits. UK supply remains below UK demand throughout the period, while European supply falls below European demand from the early 2030s. This results in continued reliance on USA and other allied capacity to balance Western demand.

Table 3: Gap between supply and demand of payload mass from 2026 to 2040 in the peacetime baseline scenario (kg)

Region	Peacetime Baseline Gap (kg)		
	2026	2033	2040
UK	(2,800)	(2,950)	(30,250)
Europe	156,050	(216,000)	(665,300)
USA and Other Allies	3,742,100	27,346,400	19,555,050
Total	**3,895,350**	**27,127,450**	**18,859,500**

Note: Author's calculations, see Annex A4.

A substantial share of forecast capacity from high-cadence or vertically integrated providers may be used for internal constellation deployment, government customers, rideshare manifests or other priority missions. The practical launch market available to UK, European and other third-party users may therefore be smaller than the nominal supply figures suggest. The interpretation is that the UK access issue is concentrated in contestability, accessibility, prioritisation and dependency, rather than aggregate lift capacity alone.

Scenario 2: NATO Wartime Surge

This scenario represents a crisis case in which defence-related launch demand increases while allied supply remains available. It tests whether higher military demand materially changes the overall capacity balance.

Applying a 20% uplift to military demand has only a limited impact on the overall demand-supply balance. Military payloads represent a relatively small proportion of total launch mass compared with commercial communications constellations and other commercial payloads. As a result, the aggregate Western market remains in surplus throughout the assessment period, although UK and European deficits persist. This suggests that future launch-access challenges are more likely to arise from competition for available launch opportunities than from aggregate launch-capacity

[13] https://www.faa.gov/data_research/aviation/aerospace_forecasts/2025-commercial-space.pdf

shortages. In a NATO crisis, multiple allied governments may seek access to the same launch vehicles, launch sites, integration facilities and responsive-launch opportunities at the same time. Consequently, prioritisation and access to suitable launch services may become a more significant constraint than aggregate lift capacity alone.

Table 4: Gap between supply and demand of payload mass from 2026 to 2040 in the NATO wartime surge scenario (kg)

Region	NATO Wartime Surge (kg)		
	2026	2033	2040
UK	(2,800)	(2,950)	(30,250)
Europe	156,050	(220,550)	(672,550)
USA and Other Allies	3,742,100	27,342,850	19,549,400
Total	**3,895,350**	**27,119,350**	**18,846,600**

Notes: Author's calculations, see Annex A4.

Scenario 3: Wartime surge with constrained USA access

This stress case removes USA launch capacity from the accessible market. It tests how dependent UK and European launch access is on USA provision under stressed conditions.

The constrained-USA scenario produces the clearest resilience signal. When USA supply and demand are removed from the accessible market, UK and European capacity is insufficient from the early 2030s and the deficit grows substantially over time.

Table 5: Gap between supply and demand of payload mass from 2026 to 2040 in the wartime surge with constrained USA access scenario (kg)

Region	Wartime surge with constrained USA access (kg)		
	2026	2033	2040
UK	(2,800)	(2,950)	(30,250)
Europe	156,050	(220,550)	(672,550)
USA and Other Allies	0	0	0
Total	**153,350**	**(223,500)**	**(702,800)**

This does not mean that USA access would necessarily be unavailable. It shows the sensitivity of UK and European launch access to assumptions about USA political availability, national prioritisation, commercial discretion and internal provider demand. A more plausible constraint may be restricted or delayed access resulting from competing national requirements, provider prioritisation or wartime demand rather than complete withdrawal of launch services.

Overall interpretation

The analysis indicates that the UK's launch access challenge is primarily one of accessibility, prioritisation, operational responsiveness and resilience, rather than a simple shortage of global launch capacity. Aggregate launch capacity appears broadly sufficient across the period assessed, but access to that capacity may become increasingly contested, constrained or unavailable for UK requirements under stressed conditions. Payload mass provides an important indicator of capacity balance, but the analysis suggests that access constraints, including prioritisation, responsiveness,

orbit suitability and payload readiness, are likely to become the dominant determinants of launch assurance before aggregate lift-capacity constraints emerge.

Forecast UK sovereign launch capacity could improve resilience by providing a domestically controlled launch option. However, sovereignty should be viewed as one point on a wider spectrum of launch assurance. Between fully sovereign capability and routine access to allied commercial services sits a range of nationally separable arrangements that may provide assured access, priority rights or operational control without requiring complete UK ownership of the launch system and supply chain. While this assessment focuses on sovereign and UK-based categories for analytical purposes, the degree of operational control available under different access models may be as important as ownership when considering future assured-launch requirements.

Table 6: UK payload launch demand met by UK sovereign and UK-based supply

Year	UK Demand (kg)	UK Sovereign Supply (kg)	% demand met by UK sovereign supply	UK-based supply (kg)	% demand met by UK-based supply
2026	4,400	0	0%	1,600	36%
2033	44,000	3,450	8%	37,600	85%
2040	81,300	5,050	6%	46,000	57%

Note: Author's calculations, see Annex A4

The figures above should be interpreted alongside the distinction between nominal capacity and practical access. UK-based supply is materially higher than UK sovereign supply, but it includes non-UK-owned launch vehicles operating from UK territory. This may improve logistics, licensing familiarity and access to some orbital profiles, but it does not necessarily give the UK control over vehicle availability, supply chain, prioritisation or political release.

Similarly, allied launch supply may be substantial in aggregate but not fully contestable by UK payloads. A provider with high annual cadence may still have limited practical capacity available to external customers if flights are committed to internal constellation deployment, standing government customers, rideshare manifests or existing commercial programmes. The practical market available to UK, European and other third-party users may therefore be smaller than the nominal supply figures suggest.

Responsiveness is also only partly a launch-capacity question. A short-notice launch requires payload readiness, launcher compatibility, range access, licensing, safety approvals, logistics, ground segment readiness and mission operations. Publicly reported USA tactically responsive space activity shows that rapid launch timelines are possible when systems are prepared in advance. However, the relevance for the UK is that responsive launch depends on a prepared mission architecture, of which launch is only one element.

The assessment therefore highlights three areas of uncertainty:

1. **Cadence delivery:** whether emerging providers reach stated launch rates.
2. **Accessible capacity:** how much nominal supply is genuinely open to UK payloads.
3. **Operational responsiveness:** whether payloads, licensing, integration and mission operations are ready at the pace required.

The analysis suggests that payload mass is one part of the access question. Control, prioritisation, orbit fit, payload readiness and mission integration all shape whether launch capacity can be used when required.

Annex A - Methodology

A.1 Analytical framework and model architecture

A.1.1 Purpose of the analysis

The analysis estimates launch demand, nominal launch supply and the resulting demand-supply balance to 2040. It is designed to test whether forecast demand and supply indicate a potential UK launch access risk under normal and stressed conditions.

The analysis is indicative rather than predictive. Its purpose is to compare broad scale, direction and dependency across UK, European and allied launch markets. It should not be read as a point forecast of annual launch activity, nor as an assessment that all modelled launch capacity would be available to UK payloads when required.

The approach is consistent with wider space-sector economic analysis in that it combines desk-based research, structured data collection, secondary sources and judgement-based classification where official statistics or complete market data are not available. London Economics' Size and Health of the UK Space Industry study, for example, uses a combination of survey inputs, secondary research, organisation-level assessment and caveats on data coverage to estimate space-sector activity where official classifications do not isolate space as a distinct economic sector.

A.1.2 Model structure

The model follows a bottom-up structure:

Observed launch activity and programme evidence
↓
Demand segmentation by region, customer type and payload application
↓
Growth assumptions by category
↓
Forecast demand by year and region
↓
Provider and vehicle supply assumptions
↓
Forecast nominal supply by year and region
↓
Demand-supply gap by scenario
↓
Interpretation of access, prioritisation and uncertainty

The model therefore has three linked components:

1. **Demand model**: estimates launch demand by region, payload type and customer group.
2. **Supply model**: estimates nominal launch capacity by provider, vehicle and launch category.
3. **Scenario model**: compares demand and supply under peacetime, wartime surge and constrained-access assumptions.

A.1.3 Measures used in the model

The model uses both payload mass and launch instances. These measures answer different analytical questions and are not interchangeable. Payload mass is used in the main results tables because it provides the clearest common

denominator between demand and supply. Launch instances are retained because one launch can carry many payloads, particularly in rideshare and communications constellation missions. Treating payload count as launch demand would materially overstate demand in those categories.

Measure	Used for	Strength	Limitation
Payload mass, kg	Main demand-supply comparison	Provides a common measure of lift requirement and lift capacity	Does not capture orbit, launch timing, integration route, customer priority or political availability
Launch instances	Cross-checking launch demand and cadence	Avoids overstating demand in rideshare-heavy missions where many payloads fly on one vehicle	Does not capture payload mass or orbit-specific constraints
Payload count	Market context and constellation activity	Useful for understanding spacecraft deployment trends	Not equivalent to launch demand

A.1.4 Analytical categories

The model groups launch demand and supply into four categories:

1. **UK sovereign:** Launch capability controlled by the UK, including vehicle, infrastructure, permissions, operational priority and relevant supply chain
2. **UK-based:** Launch activity from UK territory, including non-UK-owned vehicles.
3. **European allied**: Launch capacity provided by European partners or providers.
4. **US and other allied:** Launch capacity provided by USA and other allied providers, including commercial launch companies.

This distinction is important because geography and control are not the same. A launch from UK territory may improve operational access, but it should not be treated as UK sovereign launch if the vehicle, provider or supply chain is controlled outside the UK.

The quantitative supply model estimates nominal capacity. It does not quantify accessible or priority capacity because the evidence does not support a reliable market-wide discount.

Capacity concept	Definition	Quantified in the model?
Nominal capacity	Vehicle payload capacity multiplied by forecast annual launch cadence	Yes
Accessible capacity	Capacity plausibly procurable by UK users under normal market conditions	Treated qualitatively
Priority capacity	Capacity that could be available to UK users during crisis or conflict, subject to provider, state and operational prioritisation	Treated qualitatively

This treatment avoids false precision. The model can estimate how much lift capacity may exist in aggregate. It cannot reliably estimate how much of that capacity would be available to UK payloads at short notice, in the required orbit, under crisis conditions.

A.2 Demand method, assumptions and data sources

A.2.1 Demand calculation steps

Demand was estimated using a bottom-up method based on observed launch activity, visible programme commitments and projected growth in relevant satellite markets.

The demand calculation followed seven steps:

1. **Compile baseline launch records**
   A 2025 launch database was used as the baseline activity dataset. The baseline represents realised launch activity. It does not represent unconstrained demand. Payloads that were delayed, not publicly disclosed, unable to access launch, or carried as part of a larger rideshare mission may not be fully visible in the baseline. This means the baseline may understate latent demand, particularly for defence and security-related activity
2. **Classify launches and payloads**
   Launches and payloads were classified by customer type, payload application, operator country and launch category.
3. **Record or estimate payload mass**
   Payload mass was recorded where available. Where mass was not available, estimates were based on analogous spacecraft, published programme characteristics or mission records.
4. **Assign growth assumptions**
   Payload categories were assigned growth assumptions based on the most relevant market or programme driver.
5. **Apply tapering assumptions**
   Where source growth periods did not extend to 2040, growth rates were tapered to avoid indefinite compounding.
6. **Aggregate annual demand**
   Annual demand was aggregated by UK, Europe and USA and other allied categories.
7. **Cross-check outputs**
   Demand outputs were reviewed against observed market activity, programme evidence and the associated supply forecast.

Demand was segmented by customer group and payload application because different parts of the market have different demand drivers.

Customer groups

- Commercial
- Government and academic
- Military

Payload applications

- Communications
- Earth observation, including intelligence, surveillance and reconnaissance
- Positioning, navigation and timing
- Space domain awareness

- Technology demonstrators
- Space weather and environmental monitoring
- In-orbit servicing, refuelling and proximity operations

Commercial demand was treated as more sensitive to launch affordability and market expansion. Government, academic and defence demand was treated as more closely linked to mission need, programme commitments, recapitalisation and resilience requirements.

A.2.2 Demand assumptions register

ID	Assumption	Rationale	Confidence	Effect on results
D1	2025 is used as the baseline year	Provides a recent observed launch baseline	Medium-high	Results are sensitive if 2025 launch activity was unusually high or constrained
D2	Realised launch activity is treated as a lower-bound proxy for demand	Public launch data captures what flew, not all latent demand	Medium	May understate true demand, especially for defence and security payloads
D3	Payload mass is the primary quantitative demand measure	Provides a common comparison with launch supply	High	Useful for scale, but does not capture orbit, timing, integration or priority
D4	Launch instances are retained as a cross-check	One vehicle flight can carry many payloads	High	Reduces the risk of overstating demand in rideshare-heavy categories
D5	Commercial demand is more launch-cost sensitive than public-sector demand	Commercial operators are more exposed to affordability, market expansion and unit economics	Medium	Drives higher growth in commercial categories
D6	Communications constellations are treated as more mature than other commercial markets	Large constellations have already deployed at scale	Medium-high	Brings forward growth and tapers it earlier
D7	Government and academic demand is primarily mission-led	Public-sector missions are normally procured to deliver defined civil, scientific or strategic objectives	Medium	Reduces sensitivity to assumed launch cost reductions
D8	Market CAGRs are used as proxies where launch-volume CAGRs are unavailable	Consistent launch-volume CAGRs are not available for all payload categories	Medium-low	May overstate or understate demand because market revenue growth is not the same as launch-volume growth

ID	Assumption	Rationale	Confidence	Effect on results
D9	UK defence demand is based on visible programme anchors	Publicly announced programmes provide the defensible evidence base	Medium	Treats UK defence demand as a visible-demand floor
D10	Growth rates are tapered where source periods end before 2040	Avoids unrealistic long-run compounding	Medium	Reduces long-run demand relative to untapered forecasts
D11	Emerging concepts such as space-based data centres are excluded unless supported by sufficiently mature programme evidence	The analysis is limited to visible launch activity, programme evidence and market categories with defensible demand assumptions	Medium-high	May understate future demand if these markets mature, but avoids adding speculative demand to the central forecast

A.2.3 Commercial demand assumptions

Commercial demand was assumed to be influenced primarily by launch affordability and addressable market growth. The model assumes that launch costs decline over time as a result of:

1. reusability;
2. manufacturing scale effects;
3. increasing cadence;
4. standardisation of launch operations;
5. operational learning effects.

Commercial demand was therefore modelled using growth factors linked to assumed reductions in launch cost. An S-curve growth profile was applied to reflect the tendency of technology markets to move through early adoption, rapid expansion and eventual maturity.

This S-curve treatment is important. Without tapering, short-term growth rates can produce implausibly large long-run demand estimates by 2040.

A.2.4 Communications constellation treatment

Communications constellations were treated separately from other commercial payloads. They were assumed to be further along the adoption curve because of the scale and pace of recent deployment by Starlink and similar systems.

This means that:

- growth accelerates earlier than for less mature commercial markets;
- growth tapers earlier to reflect movement from build-out to replenishment;
- long-run assumptions are moderated to avoid assuming indefinite constellation expansion.

This treatment is consistent with observed market activity. BryceTech's 2025 review reported 325 orbital launches and 4,544 spacecraft deployed in 2025, with communications satellites accounting for 83% of spacecraft launched.

A.2.5 Government and academic demand assumptions

Government and academic demand was assumed to be driven primarily by mission need rather than launch price. Public-sector organisations usually procure launches to deliver specific civil, scientific, regulatory or strategic objectives. They are therefore expected to be less responsive to falling launch costs than commercial operators.

Demand was forecast using payload-specific CAGRs derived from published market outlooks and sector forecasts. These CAGRs were used as proxies for launch demand growth. This is a limitation because market revenue growth may reflect higher-value spacecraft, downstream services, inflation, or changes in unit prices, rather than increased launch volume alone.

Payload category	Growth assumption used in the model	Source type	Main caveat
Space-based ISR / earth observation payloads	6.8%	Market outlook	Revenue growth used as a proxy for launch demand
Space domain awareness / on-orbit sensing payloads	4.0%	Market outlook	Growth may reflect services and ground systems as well as satellites
PNT resilience / timing payloads	8.2%	Market outlook	Demand may be programme-led and lumpy
Technology demonstrator / operational concept demonstrator payloads	9.3%	Market outlook	Broad category with varied payload mass profiles
In-orbit servicing / proximity operations payloads	11.5%	Market outlook	Emerging market with high uncertainty
Space weather / environmental monitoring payloads	8.0%	Market outlook	Public-sector missions may not follow market growth rates
Communications constellations	9.3%, then tapered	Market outlook and adoption-curve judgement	Tapering required to avoid unrealistic long-run compounding

A.2.6 Defence demand assumptions

Defence demand was treated separately from broader government and academic demand. Military launch requirements were assumed to be driven primarily by:

- force development programmes;
- operational requirements;
- capability recapitalisation;
- resilience and reconstitution needs;
- technology demonstration and operational concept development.

Future UK military payload demand was derived from publicly announced programmes and initiatives, including SKYNET 6, ISTARI, Tyche, Oberon, Juno and other published UK Space Command activity. Where payload masses or launch dates were not publicly available, estimates were derived using analogous spacecraft and publicly reported programme characteristics.

This approach means that the UK defence demand forecast should be interpreted as a visible-demand floor. It does not capture classified programmes, unannounced resilience requirements, or future capability decisions.

A.2.7 Demand data sources

Source or source type	Used for	Main limitation
Public launch databases and mission records	Baseline launch activity, launch dates, providers, vehicles, payloads and launch sites	May omit classified payloads or contain incomplete payload mass data
Programme announcements and public procurement material	UK programme anchors, including defence and civil missions	Public information may not include full payload mass, launch date or replenishment assumptions
Market outlooks and sector forecasts	Payload-category growth assumptions	Often revenue-based rather than launch-volume-based
BryceTech orbital launch review	Cross-check on global launch activity and communications satellite dominance	Global market context, not UK-specific demand
UK Space Agency material	Context on UK reliance on satellite services and space as Critical National Infrastructure	Contextual source, not a launch demand forecast
Academic papers	Calculating S-curve growth using price-elasticity of demand	Relies on cost and techno-economic modelling rather than observed customer demand responses to launch prices

A.3 Supply method, assumptions and data sources

A.3.1 Supply calculation steps

Launch supply was estimated using published vehicle capacity, forecast cadence and qualitative evidence on provider maturity and accessibility.

The supply calculation followed eight steps:

1. **Identify relevant providers and vehicles**
   Providers were included where they were operational, had a publicly announced first launch, or had development activity indicating a plausible path to operation during the assessment period.
2. **Record vehicle payload capacity**
   Published payload capacity was recorded, normally to LEO unless another orbit was more relevant to the vehicle's primary use.
3. **Estimate annual launch cadence**
   Cadence assumptions were developed from historic launch rates, published manifests, production plans, regulatory limits, launch-site capacity and company statements.
4. **Assess provider maturity and confidence**
   Providers were assessed against flight heritage, vehicle maturity, regulatory position, launch-site readiness, funding and customer backing.
5. **Develop lower, central and upper supply cases**
   Alternative cases were developed to reflect uncertainty in service entry, cadence and scale-up.
6. **Calculate nominal annual supply**
   Vehicle payload capacity was multiplied by annual cadence.
7. **Aggregate by supply category**
   Outputs were grouped into UK sovereign, UK-based, European allied and USA / other allied categories.
8. **Interpret accessibility qualitatively**
   Ownership, internal demand, national prioritisation, customer commitments and geopolitical considerations were considered in the narrative, but not converted into numerical discounts.

A.3.2 Providers included

Providers were included where one or more of the following conditions applied:

- operational orbital launch capability already exists;
- first launch has been publicly announced or scheduled;
- development activity, funding or regulatory progress indicates a plausible path to operation within the assessment period;
- the provider is relevant to UK, European or allied launch access.

Inclusion does not imply equal confidence. Mature providers with extensive flight heritage were treated with higher confidence than pre-operational providers or vehicles that have not yet demonstrated sustained cadence.

The provider list is limited to launch vehicles and providers with operational capability, planned service entry, regulatory progress, funding, or other evidence indicating a plausible contribution to launch supply within the assessment period. The model does not include speculative future demand from emerging concepts unless there is sufficient evidence of a defined programme, payload class, launch requirement and deployment timescale.

For example, space-based data centres and similar emerging concepts are not modelled as a separate demand category. While such concepts may become relevant to future launch demand, the evidence available for this assessment was not sufficiently mature to support a quantified demand assumption to 2040. Including them as a forecast demand driver would risk overstating demand and reducing the transparency of the model.

Provider / vehicle	Category in the model	Reason for inclusion	Main uncertainty
Skyrora / Skyrora XL	UK sovereign	Relevant to future UK-controlled launch supply	Orbital service entry and sustained cadence
HyImpulse / SL1	UK-based	Non-UK-owned vehicle expected to use UK launch infrastructure	Pre-operational status and cadence
Rocket Factory Augsburg / RFA One	UK-based	Licensed by UK CAA for vertical launch from SaxaVord	First launch, cadence and non-UK ownership
ArianeGroup / Ariane 6	European allied	Major European institutional launcher	Cadence growth and future European demand pressure
Avio / Vega C	European allied	European light and medium launch capability	Cadence, reliability and market demand
Isar Aerospace / Spectrum	European allied	Emerging European launch provider	Pre-operational maturity and launch rate
MaiaSpace	European allied	Emerging European launcher linked to ArianeGroup	First flight, vehicle maturity and cadence
PLD Space / Miura 5	European allied	Emerging European launch provider	Service entry and long-term cadence
SpaceX	US / other allied	High-cadence provider and major supply contributor	Internal constellation demand, USA prioritisation and provider discretion
United Launch Alliance / Vulcan	US / other allied	US national security and commercial launch provider	Manifest commitments and national prioritisation
Rocket Lab	US / other allied	Operational small launch and future medium launch capability	Neutron maturity, customer commitments and site accessibility
Blue Origin / New Glenn	US / other allied	Emerging USA heavy-lift provider	Early service maturity, cadence and USA customer priorities

A.3.3 Supply assumptions register

ID	Assumption	Rationale	Confidence	Effect on results
S1	Published vehicle capacity is used as the basis for supply	Provides a transparent lift-capacity basis	Medium-high	May overstate usable supply for specific orbits
S2	Annual nominal supply equals vehicle capacity multiplied by cadence	Simple and auditable capacity calculation	High	Does not capture manifest, range, integration or political constraints
S3	Provider-stated cadence is tested against available evidence	Future cadence claims may be ambitious	High	Reduces central-case supply for less mature providers
S4	Mature providers have narrower uncertainty ranges	Flight heritage supports higher confidence	High	Produces more stable forecasts for established launchers
S5	Emerging providers have wider uncertainty ranges	First flight, reliability and scale-up remain uncertain	High	Increases uncertainty around UK and European future supply
S6	UK-based launch is not treated as UK sovereign unless UK control exists	Territory does not equal control of vehicle, provider or supply chain	High	Prevents overstatement of UK sovereign launch capacity
S7	SaxaVord licensing supports UK-based supply potential but not sustained cadence	Licensing enables launch activity but does not prove operational launch rate	High	Avoids treating licensed capacity as realised capacity
S8	RFA licensing supports UK-based supply, not UK sovereign supply	RFA is licensed to launch from SaxaVord but is German-owned	High	Maintains the UK-based / UK sovereign distinction
S9	US / other allied capacity remains central to aggregate supply	Driven by high-cadence USA providers and large reusable systems	Medium	Central surplus is sensitive to USA accessibility
S10	Nominal capacity may overstate accessible capacity	Providers may reserve capacity for internal, government or major commercial priorities	High	Practical UK access may be tighter than headline supply suggests
S11	Nominal high-cadence supply is not assumed to be fully contestable	Some providers may allocate capacity to internal constellations, government customers, rideshare manifests or existing commercial commitments	High	Practical supply available to UK and European payloads may be lower than the headline supply forecast

A.3.4 Launch cadence assumptions

Annual cadence estimates were developed using:

- observed launches;
- published launch manifests;
- publicly stated production capacity;
- launch-site and regulatory limits;
- customer backlog and institutional commitments;
- comparable launch-system performance;
- development status and service-entry timing.

Where providers published a range of possible future launch rates, the selected value reflected the evidence judged most relevant to achievable cadence. Midpoints were used only where the range was comparable and supported by evidence. Provider ambitions were not accepted at face value where they were inconsistent with flight heritage, manufacturing capacity, regulatory constraints or comparable launch-system performance.

Cadence is the largest source of uncertainty in the supply forecast. This is especially true for emerging providers and first-flight vehicles.

A.3.5 Treatment of UK-based and UK sovereign supply

UK sovereign and UK-based supply were treated separately.

- **UK sovereign** supply refers to launch capacity controlled by the UK, including control over the vehicle, infrastructure, permissions, operational priority and relevant supply chain.
- **UK-based** supply refers to launch activity from UK territory. It may improve logistics, licensing familiarity and operational proximity, but it is not automatically sovereign if the vehicle, provider or supply chain is controlled outside the UK.

This distinction is central to the analysis. UK-based launch may improve resilience, but it should not be interpreted as full UK control unless the underlying capability is also UK-controlled.

A.3.6 Supply data sources

Source or source type	Used for	Main limitation
Provider vehicle data	Payload capacity and vehicle status	Provider claims may be optimistic
Public manifests and launch records	Launch cadence and flight heritage	Future cadence may diverge from historic activity
CAA licensing material	UK launch-site and launch-operator readiness	Licensing is not the same as sustained operational cadence

Source or source type	Used for	Main limitation
ESA launcher material	Ariane 6, Vega C and European institutional launch context	Does not quantify UK-accessible capacity in crisis conditions
FAA commercial space material	US commercial space transportation context	Does not identify UK-accessible capacity for UK customers in crisis
Company plans, funding announcements and order books	Future cadence and maturity assumptions	Ambitions may exceed demonstrated capability

A.4 Scenario design and calculation method

A.4.1 Scenario purpose

The scenario analysis tests how the demand-supply balance changes under different access conditions. The scenarios are not forecasts of future events. They are stress tests designed to show the sensitivity of UK launch access to three factors:

- forecast growth in launch demand;
- increased defence-related demand under crisis conditions;
- constrained access to the largest source of forecast allied launch capacity.

The scenarios use the same underlying demand and supply model described in Annexes A2 and A3. They differ only in the treatment of demand uplift and accessible supply.

Three scenarios were modelled:

1. Peacetime baseline
2. NATO wartime surge
3. Wartime surge with constrained USA access

A.4.2 Demand-supply gap calculation

The demand-supply gap is calculated as forecast supply minus forecast demand.

A positive value indicates that modelled supply exceeds modelled demand. A negative value indicates that modelled demand exceeds modelled supply.

For the peacetime baseline, the gap is calculated as:

Peacetime gap = central nominal supply minus central demand

For the NATO wartime surge, the gap is calculated as:

NATO wartime surge gap = central nominal supply minus wartime-adjusted demand

For the constrained USA access scenario, the gap is calculated as:

Constrained USA access gap = UK and European nominal supply minus UK and European wartime-adjusted demand

The calculations are applied by region and for the total market captured in the model. Regional results should be interpreted carefully because launch capacity in one region may be used by customers in another region, subject to commercial availability, licensing, logistics, political access and prioritisation.

A.5 Scenario assumptions

Scenario	Demand assumption	Supply assumption	Access assumption	Analytical purpose
Peacetime baseline	Central demand forecast	Full nominal supply	No accessibility discount	Shows the headline demand-supply balance under normal market conditions
NATO wartime surge	Defence-related demand uplift applied	Allied supply remains available	No numerical accessibility discount	Tests whether higher military demand materially changes the overall capacity balance
Wartime surge with constrained USA access	UK and European wartime demand retained	US / other allied category removed from accessible supply	US / other allied supply unavailable for stress-test purposes	Tests dependence on the largest source of forecast allied capacity

A.5.1 Scenario 1: Peacetime baseline

The peacetime baseline compares central forecast demand with full nominal launch supply. It represents a normal-market case before applying crisis conditions, wartime demand uplift, prioritisation constraints or accessibility discounts.

This scenario answers a simple first-order question: **does modelled launch supply exceed modelled launch demand under central assumptions?**

The scenario assumes:

- central demand forecast;
- central supply forecast;
- full nominal supply available to the market;
- no wartime uplift to demand;
- no numerical discount for accessibility, prioritisation or political availability.

The peacetime baseline is useful because it shows the headline demand-supply balance. However, it should not be interpreted as a measure of assured UK access. It does not test whether capacity would be available to the UK at short notice, whether a payload could be integrated in time, or whether launch providers would prioritise UK requirements over other customers.

A.5.2 Scenario 2: NATO wartime surge

The NATO wartime surge scenario applies an uplift to defence-related launch demand while keeping allied supply available. It is intended to test whether a higher level of military demand materially changes the overall demand-supply balance.

The scenario assumes:

- central demand forecast as the starting point;
- uplift applied to defence-related launch demand;
- central nominal supply retained;
- allied launch capacity remains accessible;
- no numerical discount for accessibility or prioritisation.

This scenario is deliberately limited. It does not attempt to model the full operational complexity of a crisis or conflict. In practice, launch access in a NATO crisis would depend on the availability of suitable vehicles, orbit fit, range slots, payload readiness, mission assurance, licensing, allied prioritisation and political release.

The scenario is therefore best read as a sensitivity test of demand volume, not as a full test of wartime launch availability.

A.5.3 Scenario 3: Wartime surge with constrained USA access

The constrained USA access scenario removes the USA / other allied category from the accessible supply pool. It tests how dependent UK and European launch access is on the largest source of forecast allied capacity under stressed conditions.

This scenario does not assume that USA access would necessarily be unavailable. It is a stress test. It shows how the modelled demand-supply balance changes if USA / other allied capacity is materially constrained by national prioritisation, provider discretion, political release, internal provider demand or competing wartime requirements.

The scenario assumes:

- UK and European wartime-adjusted demand retained;
- US / other allied supply removed from accessible supply;
- UK and European nominal supply retained;
- no replacement capacity assumed from non-modelled providers;
- no numerical discount applied to remaining UK or European supply.

The scenario is useful because the central forecast surplus is heavily dependent on USA / other allied capacity. Removing that category tests the resilience of UK and European access without relying on the largest supply source in the model.

The scenarios do not model all operational constraints. In particular, they do not quantify:

- payload readiness;
- range scheduling;
- licensing timelines;
- mission assurance;
- orbital fit;
- short-notice integration;

- political release;
- national prioritisation in crisis;
- provider discretion.

The scenarios therefore show the sensitivity of the capacity balance, not the full operational feasibility of launch under stressed conditions.

A.6 Uncertainty and limitations

A.6.1 Purpose of this section

The analysis is designed to provide an evidence-based view of scale, direction and dependency in launch demand and supply to 2040. It is not intended to provide a precise forecast of future launch activity, nor to determine whether a specific UK payload could be launched on a specific vehicle at a specific point in time.

Uncertainty is therefore treated in two ways:

- **Within the model**, through lower, central and upper supply cases and confidence judgements on provider maturity and cadence
- **In the interpretation**, by distinguishing between nominal capacity, accessible capacity and priority capacity.

The model estimates how much launch capacity may exist in aggregate. It does not prove that this capacity would be available to the UK, compatible with UK payloads, or prioritised under stressed conditions.

A.6.2 Main areas of uncertainty

The most material uncertainties are set out below.

Area of uncertainty	Why it matters	Likely effect on results
Commercial constellation demand	Communications constellations are a major driver of forecast demand growth.	Higher deployment or replenishment demand would increase total demand and may absorb more launch capacity internally.
Launch cost reductions	Commercial demand growth is partly linked to falling launch costs.	Slower cost reductions would reduce modelled commercial demand growth. Faster reductions could increase demand.
Market CAGR assumptions	Some payload growth rates use market revenue CAGRs as proxies for launch demand.	Demand may be overstated or understated where revenue growth does not translate into launch-volume growth.
UK defence demand visibility	Public sources do not capture all classified, unannounced or future defence requirements.	UK demand may be understated, particularly for resilience, reconstitution or operational surge requirements.
Provider cadence delivery	Supply is highly sensitive to future launch cadence assumptions.	Lower cadence would reduce modelled supply, especially for emerging providers and large future systems.
Emerging launcher maturity	Several UK and European supply assumptions depend on providers reaching operational service and scaling cadence.	Delays, launch failure or funding constraints would reduce UK-based and European supply.
Accessible USA / other allied capacity	The central surplus depends heavily on USA and other allied providers.	If this capacity is constrained, the UK and Europe face a materially tighter access position.

Area of uncertainty	Why it matters	Likely effect on results
Vertical integration and internal demand	Some providers may use capacity for their own constellations, government customers or priority missions.	Nominal capacity may overstate the launch services available to external UK customers.
Payload readiness and integration	Launch responsiveness depends on payloads, licensing, integration, ground systems and mission operations.	Even where launch capacity exists, the UK may not be able to use it at short notice.

A.6.3 Confidence framework

A qualitative confidence framework was applied to the main inputs and assumptions. This was used to distinguish between assumptions supported by observed evidence and assumptions that rely more heavily on judgement.

Confidence level	Interpretation
High	Supported by observed activity, official data, flight heritage or repeated evidence.
Medium-high	Supported by strong evidence, but requiring some assumptions on future scaling.
Medium	Supported by partial evidence and judgement.
Medium-low	Dependent on unproven capability, incomplete data or ambitious assumptions.
Low	Based mainly on provider ambition, limited source evidence or highly uncertain projections.

Confidence is generally higher for historic launch activity, published vehicle characteristics and licensed launch infrastructure. It is lower for long-term cadence, post-2030 demand growth, emerging launcher maturity and the share of capacity that would be accessible to the UK in crisis.

A.6.4 Limitations of the demand forecast

The demand forecast is subject to five main limitations.

1. **The baseline captures realised launch activity, not unconstrained demand.**
   The 2025 baseline records activity that actually flew. It does not capture payloads that were delayed, cancelled, not publicly disclosed, unable to access launch, or absorbed into other missions. The baseline may therefore understate latent demand.

2. **Public sources do not capture all defence and security demand.**
   UK military demand is based on visible programme anchors and public information. Classified programmes, unannounced future requirements and potential resilience or reconstitution demand are not fully captured.

3. **Payload mass is an incomplete measure of launch demand.**
   Payload mass provides a common comparison with lift capacity, but it does not capture orbit, vehicle compatibility, mission assurance, launch timing, licensing, security requirements or customer priority.

4. **Market CAGRs are imperfect proxies for launch-volume growth.**
   Some growth assumptions use market revenue forecasts because consistent launch-volume forecasts are not publicly available across all payload types. Revenue growth may reflect higher-value spacecraft, services, inflation or changing prices, rather than more payload mass requiring launch.

5. **Long-term growth assumptions require tapering.**
   Many source growth rates do not extend to 2040. Tapering was applied to avoid unrealistic long-run compounding, but the tapering profile is necessarily judgement-based.

A.6.5 Limitations of the supply forecast

The supply forecast is subject to six main limitations.

1. **Nominal supply is not the same as accessible supply.**
   The model estimates nominal lift capacity using vehicle payload capacity and launch cadence. It does not quantify how much of that supply would be commercially available, politically releasable or prioritised for UK payloads.
2. **Cadence is the largest supply-side uncertainty.**
   Future launch supply is highly sensitive to assumed launch rates. This is particularly important for emerging providers, first-flight vehicles and systems that have not yet demonstrated sustained operations.
3. **Provider plans may not translate into operational capacity.**
   Published ambitions, production targets and launch manifests may be affected by development delays, regulatory constraints, launch failures, funding conditions, supply-chain limitations or customer demand.
4. **Vehicle capacity does not guarantee orbit-suitable capacity.**
   Payload capacity to LEO is a useful common metric, but UK missions may require specific inclinations, polar access, sun-synchronous orbit, GEO transfer, dedicated launch, security handling or particular integration routes.
5. **UK-based launch is not automatically UK sovereign launch.**
   Launch from UK territory may improve proximity, logistics and licensing familiarity. It does not provide UK control unless the UK also controls the vehicle, provider, operational priority and relevant supply chain.
6. **The model does not quantify provider prioritisation.**
   Providers may prioritise internal constellation deployment, national security customers, larger commercial customers, or existing manifest commitments. This means practical launch availability may be lower than nominal capacity suggests.

A.6.6 Limitations of the scenario analysis

The scenarios are stress tests, not predictions. They show how the capacity balance changes under different assumptions, but they do not model the full operational reality of launch access.

In particular, the scenarios do not quantify:

- payload readiness;
- payload-launcher compatibility;
- integration timelines;
- range availability;
- licensing and regulatory approval timelines;
- mission assurance;
- export controls;
- ground segment readiness;

- political release;
- national prioritisation in crisis;
- provider discretion;
- existing manifest commitments.

The scenario outputs should therefore be read as indicators of dependency and exposure. A positive aggregate supply-demand balance does not mean the UK has assured access. A negative regional balance does not mean launch is impossible. It indicates reliance on capacity outside that region.

A.6.7 Interpretation of results

A baseline estimate is used as the primary basis for the assessment because it reflects the best-supported interpretation of current evidence. The lower and upper cases provide sensitivity bounds around future supply, especially vehicle maturity and cadence.

The results are strongest when used to compare:

- broad scale of demand and supply;
- relative dependence on UK, European and USA / other allied capacity;
- timing of potential UK and European deficits;
- exposure to constrained USA / other allied access;
- the distinction between nominal capacity and practical launch access.

The results are weaker when used to infer:

- exact annual launch demand;
- precise provider market share;
- exact future launch cadence;
- specific payload launch availability;
- short-notice launch feasibility;
- crisis-time political or commercial prioritisation.

Overall, the analysis should be interpreted as an assessment of direction, dependency and uncertainty. It suggests that the principal UK launch challenge is not aggregate launch capacity, but assured access to suitable launch capability when required. Control, prioritisation, orbit fit, payload readiness, integration and political availability all influence whether nominal launch capacity can be converted into operational effect.



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