Advanced Air Mobility and Vertiport Infrastructure Concept of Operations for the Gulf Region

Executive Summary

Prepared by LYNEports. May 2026
For Governments, Regulators, Master Developers, and Infrastructure Investor

NETWORK PLANNING

SITE READINESS

OPERATIONAL INTEGRATION

PHASED DEPLOYMENT

01. The Thesis

The GCC is positioned to lead the next era of aviation, but only if the next eighteen months are sequenced correctly.

Advanced Air Mobility is moving out of concept and into commercial reality. Across the Gulf Cooperation Council, regulators have published dedicated vertiport frameworks, sovereign developers are integrating vertical mobility into giga-projects from the planning layer, and the first commercial corridors are being prepared. In the GCC context, AAM is expected to include not only eVTOL aircraft, but also electric helicopters and electric or hybrid short take-off and landing aircraft operating across a range of mission profiles. The region is not following the global AAM agenda. It is in a position to set it.

But the same conditions that make the Gulf attractive also make it unforgiving. Aircraft are being certified in temperate climates against assumptions that do not survive a Riyadh summer or a coastal morning in the Gulf. Sites that look attractive on a master plan can fail under the weight of airspace, power, and community realities. Operating concepts imported from European or North American studies systematically misprice the cost of doing business in this environment.

This document, and the broader Concept of Operations it summarises, was prepared to close that gap. It is an independent, technically grounded reference for the stakeholders shaping AAM in the Gulf: governments and sovereign entities, regulators, master developers, and the institutional investors backing them. It is not a vendor pitch, an aircraft-led forecast, or a generic global outlook. It is a regional framework written from inside the work.

Figure 1 Visual Render of Riyadh Multi-Hub Roof Top Air Parking

02. Why The Gulf is its Own Category

Four structural conditions that exist nowhere else simultaneously.

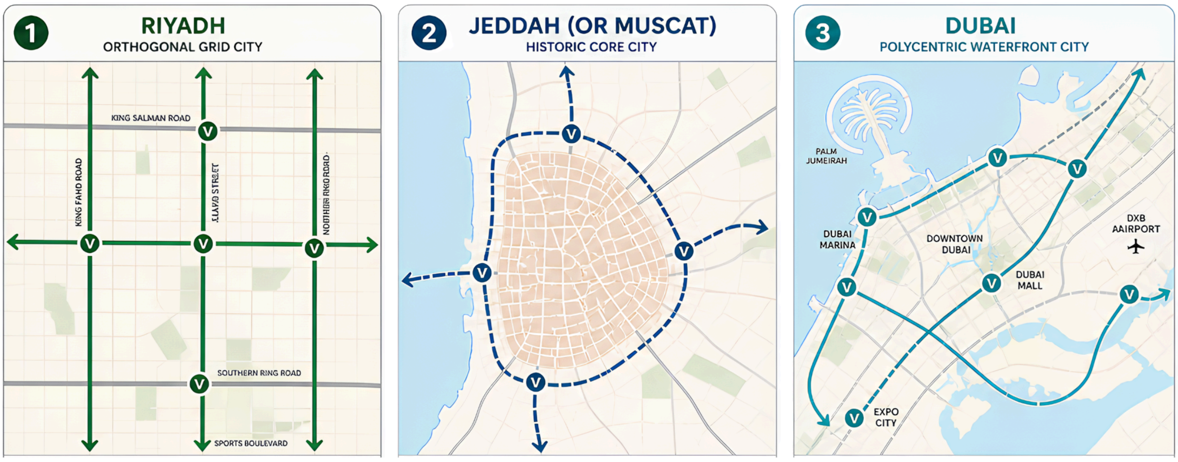

Figure 2 GCC Urban Fabric Typologies in Different Regions

Climate is a design parameter, not a footnote. Summer ambient temperatures regularly exceed the safe-day assumptions used in OEM business cases. Heat could compresses battery performance, humidity and dust accelerate component wear, and seasonal weather imposes episodic schedule disruption. Concept work that does not engineer for these conditions from day one will systematically overstate utilisation and understate operating cost.

Urban fabric is being written in real time. Riyadh, Jeddah, NEOM, Dubai, and Abu Dhabi are not retrofitting AAM into legacy cities. They are building urban systems where vertical mobility can be integrated at the planning layer, alongside metro, rail, and arterial networks. This is a structural advantage that few global cities possess, but it only translates into value if site, airspace, and grid decisions are taken together, and early.

Regulators are leading rather than reacting. Regulators across the GCC are increasingly leading rather than reacting, moving early to establish operational frameworks, infrastructure pathways, and cross-sector coordination mechanisms for AAM integration. In the UAE, the GCAA has already published a unified vertiport, heliport, and helideck framework, while in Saudi Arabia the GACA has established a dedicated AAM roadmap with working groups across infrastructure, airworthiness, operations, and airspace integration. The opportunity now is to translate that momentum into mutual recognition across GCC jurisdictions, an alignment that could position the region as a global reference model for low-altitude aviation.

The aviation ecosystem is already mature. The Gulf is not building AAM from a blank slate. It is building it on top of one of the most actively modernising aviation infrastructure programmes in the world: a regional market expanding rapidly through 2032, anchored by new-generation hub airports, a long-established rotorcraft sector, and sovereign aviation operators with operational depth. AAM here is a layer added to a system that already works at scale.

03. The Four Imperatives

What separates programmes that deploy from programmes that stall.

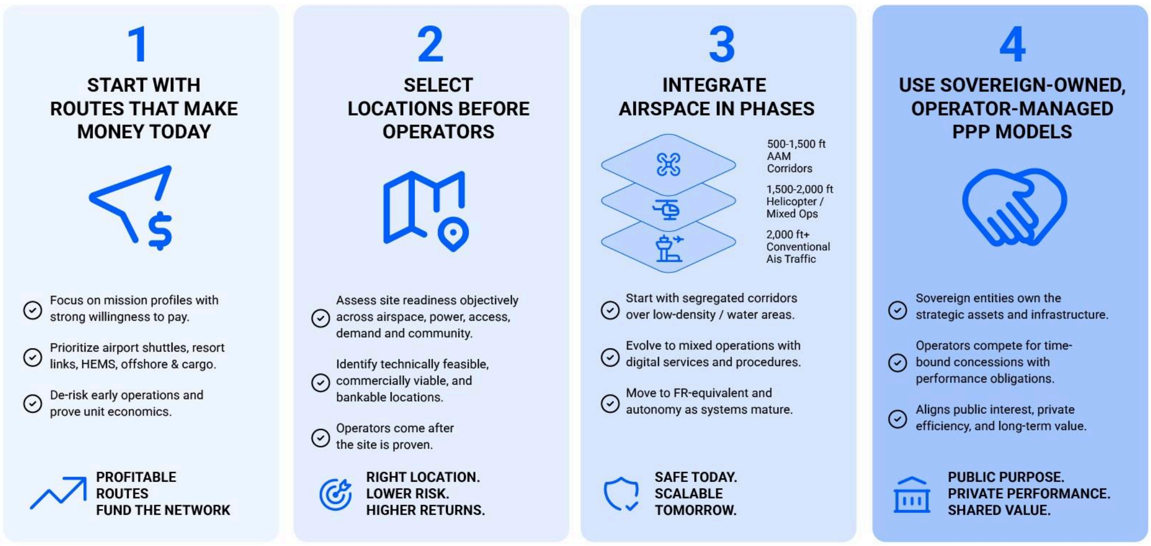

Figure 3 Four Strategic Imperatives for GCC AAM Deployment

Across our engagements in the region, four structural decisions consistently separate programmes that move toward commercial operation from those that stall in feasibility. These are not aspirational principles. They are the choices on which deployment outcomes hinge.

One — Sequence missions by where the economics close today, not by where the market will eventually be. Generalised urban air taxi is a 2030s+ opportunity. Medical response, airport links, intra-giga-project cargo, and offshore logistics are 2026–2028 opportunities. Programmes that anchor their commercial case to the first category in the near term are not bankable. Programmes that build proof on the second category, then expand, are.

Two — Treat vertiport siting as a real-estate, power, and airspace decision before treating it as an aviation decision. Grid edge conditions, thermal environment, ground access, and community context drive more than half of lifecycle cost. Sites that look attractive on aviation criteria alone routinely fail on infrastructure and integration grounds. Independent readiness assessment is the first decision gate, not the last.

Three — Phase airspace integration deliberately, not opportunistically. Begin with segregated corridors over low-density and water-adjacent areas. Move to mixed operations under the new regulatory frameworks once procedures and surveillance mature. Move to integration with conventional IFR traffic only after automated airspace services are certified. Skipping phases compounds risk; collapsing the timeline does not accelerate it.

Four — Anchor commercial delivery in sovereign-retained assets and competitively concessioned operations. The structure that has proven workable across DXV in Dubai, ADNOC offshore, and THC's emergency services model retains strategic asset control with the sovereign while exposing operating economics to specialist competition. This is the architecture institutional capital can underwrite. It is also the architecture that prevents early-market exclusivity from hardening into long-term structural lock-in.

→ The full Concept of Operations operationalises each imperative through the LYNEports site readiness scoring rubric, the airspace phasing criteria, and the concession-structure provisions that distinguish bankable PPPs from those that stall.

04. Where AAM Closes First

Demand is concentrated, not distributed.

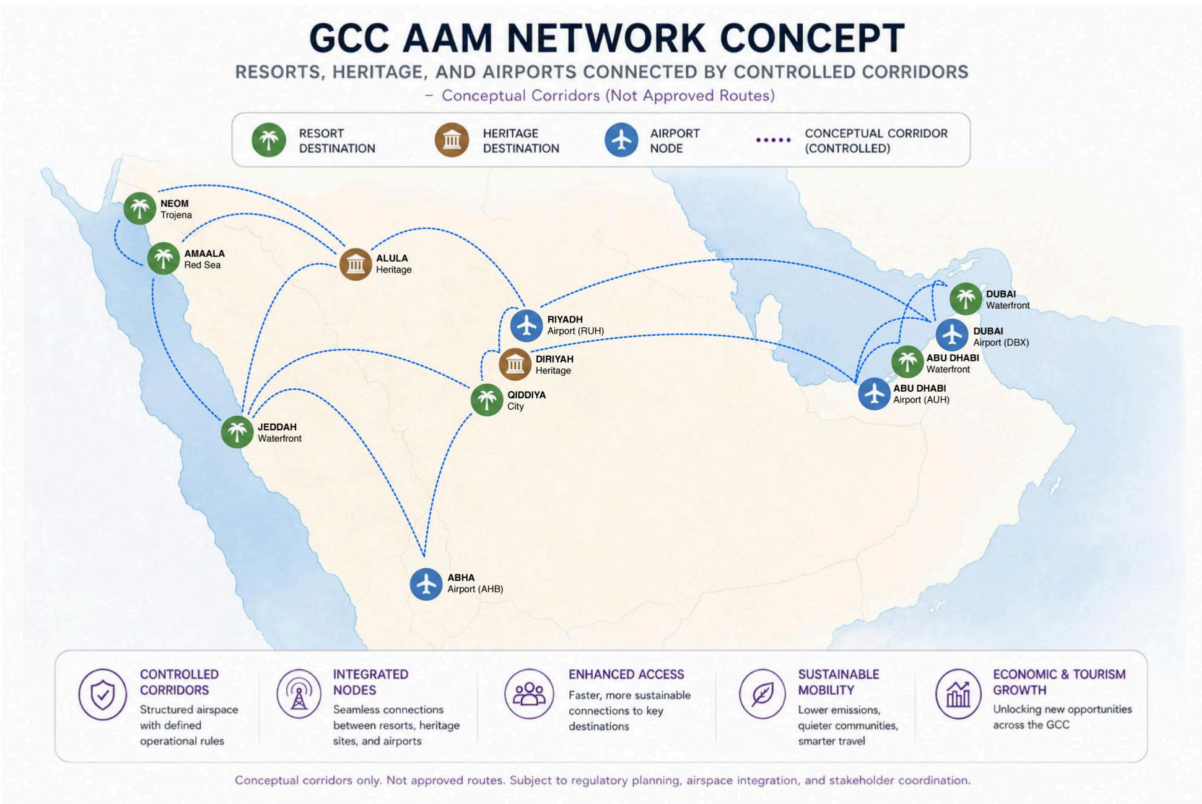

Figure 4 Example Case on Tourism Mobility Corridors

The temptation in any new aviation market is to plan for the whole map. In the Gulf, that approach destroys value. The missions where demand is real, willingness to pay is documented, and operational feasibility is achievable today are tightly concentrated, and they should be the starting point for every serious deployment plan.

- **Medical and emergency response.** Sovereign mandate is already in place. Routing is controlled. Public-safety value is explicit. Regulators are structurally more willing to approve operations where outcomes are measurable.
- **Tourism and premium mobility.** Red Sea, NEOM, AlUla, and the UAE leisure corridor support fare structures that close unit economics without subsidy. These corridors are operationally cleaner, defined airspace, and defined service standard.
- **Airport-link and intra-giga-project passenger transfer.** The clearest near-term commercial cases. Demand is anchored, alternatives are time-expensive, and the operating environment is contained.
- **Cargo and logistics.** A deployment-led pathway that builds operating hours, validates corridors, and de-risks the transition to passenger service.
- **Offshore oil-and-gas logistics.** Mature concession models, established demand, and a clear productivity case for fleet replacement and augmentation.

Generalised urban air-taxi networks, point-to-point short regional connectivity, and cross-border GCC services are real opportunities. They depend on next-generation aircraft range, airspace automation, and regulatory harmonisation that are not yet in place. The discipline is to build the foundation now, and let the network expand into those segments as the conditions mature, not to reverse the sequence.

05. The Economic Architecture

What makes the model bankable.

A credible Concept of Operations must support the financial case, not merely describe the operational one. AAM economics in the GCC resolve at three layers, aircraft operating cost, vertiport unit economics, and network-level value creation, and the commercial structures that govern them are as decisive as the technology itself.

Where value is actually created. Direct fare revenue is the headline number, but it rarely makes a vertiport network bankable on its own. The full value case combines fare revenue with cargo and supplementary services, time-value conversion for high-productivity travellers, tourism receipt uplift, productivity gains for offshore and industrial operators, and land-value uplift around vertiport sites. Programmes that price only the fare are pricing only a fraction of the system.

Figure 5 Render of a Mixed-Use Vertiport

The commercial structure that has emerged. The model that has proven workable in the region pairs sovereign retention of strategic assets with competitive concession of operational rights. Dubai's vertiport arrangement, strategic authority retained by the sovereign, infrastructure developed and operated by a specialist, and aircraft operating rights held by a certified operator for a defined exclusivity period, is an instructive template. Comparable structures are emerging across Saudi Arabia, anchored by PIF-controlled development entities and international operators. What makes this structure durable is what it builds into the contracts: clear performance obligations, exclusivity sunsets, service-level penalties, and explicit provisions for phased transition to multi-operator access.

The financing case. Vertiport networks in the GCC are financeable today, but only against the right structures. Sovereign-anchored concessions, transparent demand assumptions tied to verifiable mission profiles, and infrastructure capex sized to phased build-out rather than aspirational endpoint capacity are the components institutional capital can underwrite. Programmes structured this way move. Programmes structured around generic global forecasts do not.

→ *The full Concept of Operations includes vertiport unit economics, sensitivity scenarios across mission profiles, and the PPP architectures that have proven bankable across active GCC deployments.*

06. The Deployment Pathway

Three phases, not a single launch event.

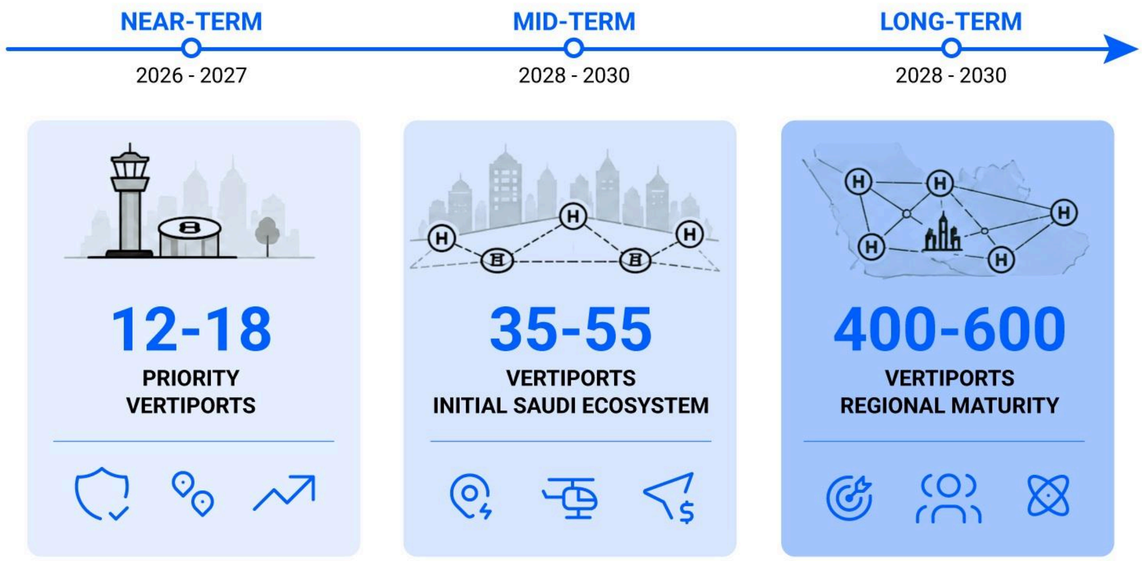

Figure 6 Three-phase timeline visual for Vertiports: Foundation (2026–2027), Expansion (2028–2030), Maturity (2031+).

AAM in the GCC will not arrive in one moment. It will arrive in three. Each phase has its own infrastructure requirements, regulatory dependencies, and commercial logic. Treating them as a single transition is one of the most common, and most expensive, planning errors in the sector.

Foundation (2026–2027). Initial commercial operations on controlled routes. Early vertiport deployments anchored to airports and giga-project demand nodes. Certification progress across GCC authorities. Establishment of MRO, charging, and ground-handling capability. This is the phase the region is entering now.

Expansion (2028–2030). Gradual increase in vertiport density. Broader intra-city network development across the major urban centres. Progression toward lower-visibility operations as airspace services mature. Expansion of charging infrastructure and grid integration. This is where network effects begin to appear.

Maturity (2031+). Transition toward network-scale operations. Increased integration across modes of transport. Introduction of higher levels of automation. Selective expansion into longer-range and cross-border segments, contingent on aircraft and regulatory maturity. This is the phase where the GCC has the opportunity to set the global standard.

What determines the pace. Four interdependent streams shape the transition between phases: aircraft certification within GCC jurisdictions, infrastructure delivery and grid readiness, pilot training and workforce development, and the maturation of sustained commercial demand. Programmes that align these streams move. Programmes that treat them as separate workstreams stall.

07. The Next Eighteen Months

Five priorities that will determine who captures the regional advantage.

The conditions for credible AAM deployment in the Gulf are in place. The next eighteen months will determine which programmes capture the regional advantage and which arrive late to a market already shaped by others.

One. — Sequence deployment against premium, well-defined mission profiles before targeting general urban air-taxi demand. Build commercial proof on missions where the economics close today.

Two. — Treat vertiport siting as an integrated real-estate, power, and airspace decision rather than an aviation-only exercise. Conduct independent site readiness assessments before operator selection or capital commitment.

Three. — Advance a GCC-wide AAM coordination mechanism across civil aviation authorities, and adjacent authorities to accelerate mutual certification recognition and unlock cross-border operational scale.

Four. — Build hot-and-high regional airworthiness supplements and environmental stress testing into certification from day one, rather than retrofitting them after deployment exposes the gap.

Five. — Anchor commercial delivery in public-private partnerships with sovereign asset retention and competitive operator concessions — and structure those concessions with explicit transition pathways to prevent early exclusivity becoming long-term lock-in.

08. LYNEports

An independent advisory firm, built for the work this region requires.

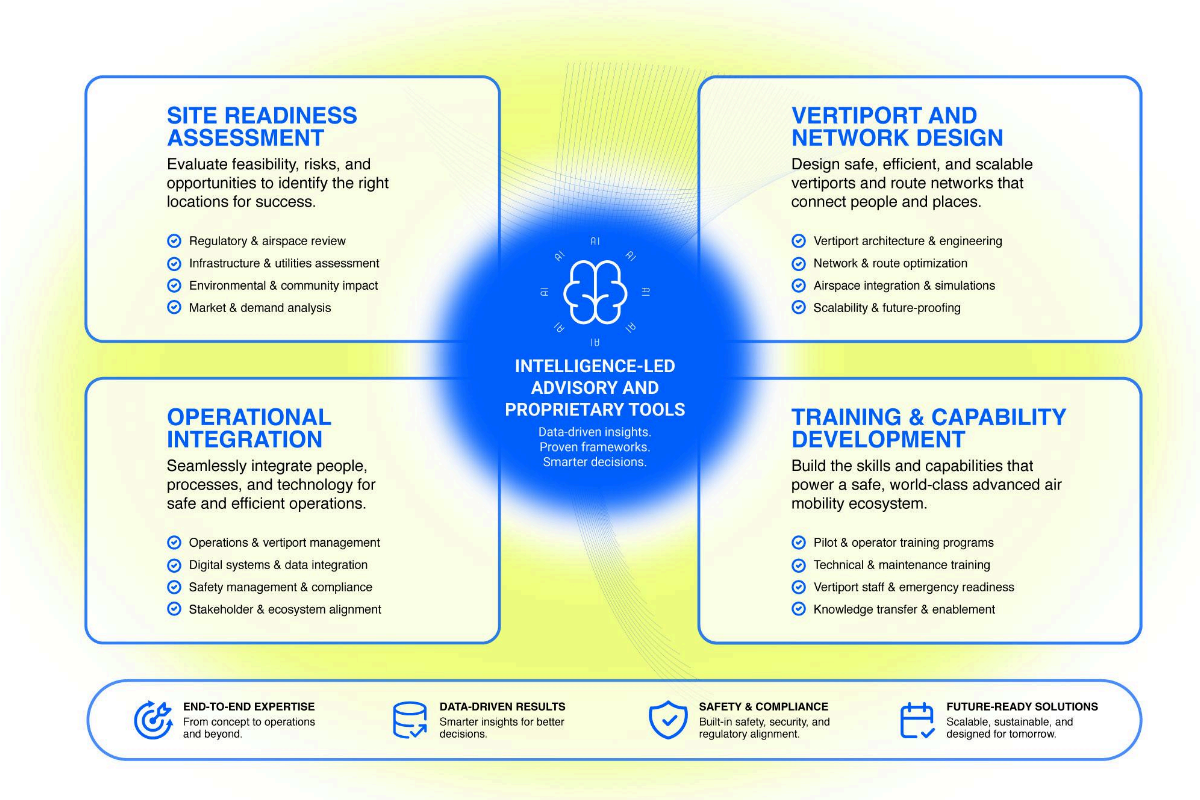

Figure 7 LYNEports engagement model

LYNEports is an intelligence-led advisory and technology firm specialising in the planning, design, financing, and operational enablement of aviation infrastructure across the Gulf Cooperation Council and adjacent markets. Our work spans vertiports, heliports, airport-linked systems, and the emerging hybrid infrastructure supporting Advanced Air Mobility. Alongside advisory services, we develop specialised software and digital twin systems that help governments, developers, and operators evaluate, simulate, and manage aviation infrastructure at both site and network level.

We are deliberately independent of aircraft manufacturers and operators. From that position we offer governments, master developers, and investors a defensible view of whether a site, network, or programme is technically feasible, commercially viable, and bankable. Our engagements span site readiness assessment, vertiport and network design, operational integration through to launch, and structured capability development, bridging strategy and execution across the full project lifecycle.

ACCESS THE FULL CONCEPT OF OPERATIONS

The full Concept of Operations, available through the link below or via the LYNEports website, extends this executive summary across the technical, regulatory, and commercial layers that determine deployment outcomes: operating environment constraints and certification implications, mission-archetype economics, airspace integration phasing, the LYNEports site selection methodology, vertiport and network financial modelling, and the evolving regulatory landscape across GCC civil aviation authorities and adjacent jurisdictions.

The Concept of Operations serves as a foundational layer for LYNEports Atlas, our regional intelligence platform for aviation infrastructure and Advanced Air Mobility.

Distribution of the current edition is limited to verified counterparties and institutional stakeholders at lyneports.com/atlas, where independent practitioner research and tailored intelligence engagements are also available.

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