

ROAD AND TRANSPORTATION MASTERPLAN

Palestine

TA 2012013 PS 00 F10

IV.3 – Air Transport

SEPTEMBER 30,2016



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1 Introduction

This chapter gives a comprehensive overview and a detailed description of the analysis and the proposal included in the NTMP for the air transport sector.

The status of the Palestinian aviation system was surveyed during the study and was used, together with the forecasted traffic, as starting point and input for the development to be proposed. *For more details, refer to: ¶AX.1 – Diagnostic Analysis of Palestinian Transport Sector.*

The same best case traffic forecast adopted for the other transport modes was also used as a starting point for the aviation sector's analysis.

The chapter starts with an overview of the aviation sector, continues with the preliminary forecasts for passengers, and ends with the description of the proposed options for the rehabilitation of the aviation in Gaza Strip and a new international airport in the West Bank.

2 Overview of Air Transport Sector

During the course of the project, the team has engaged in several occasions with key figures in the Palestinian aviation sector, including the Deputy Minister of Transport, Mr. Ammar Yassin, the Chairman of the Civil Aviation Authority, Eng. Mohamad Jaradat, and the Director General of the Palestinian Airlines, Capt. Yassien Al-Hawamdeh.

The meetings provided, among others, an opportunity to assess the preparedness of the civil aviation sector in Palestine. The main finding was the resolve of the Palestinian Authorities to expedite the reestablishment of viable commercial operations within the internationally recognized boundaries of Palestine, achieved by steps as eventually illustrated in the NMTP.

To date, the draft of the Aviation Law has been submitted for approval by the Presidency. A National Aviation Law is normally required to establish the overall set-up of the civil aviation sector, as per the ICAO mandate of separation between regulators and service providers. In the absence of a National Aviation Law, the regulatory framework is provided by the ICAO-mandated SARP's, as well as a long list of international treaties and conventions.

With roughly 350 personnel, the local Civil Aviation Authority requires a comprehensive refresh training and re-qualification program in order to be able to fulfill its future mandate. A thorough assessment of the CAA's roster is a key initial requirement to identify organizational gaps and shortfalls and to establish a program of institutional development and organizational strengthening, possibly with the support and assistance of more mature CAA's and under the overall supervision of ICAO.

The Palestinian Airlines has managed to retain a valid AOC, under Egypt CAA. The carrier currently employs a staff of roughly 55 staffers, the minimal roster to meet the AOC requirements for operation of 2 (two) Fokker F-50. Arguably, the carrier could resume operations from a national airport as soon as it would become available.

2.1 Aviation in the Middle East Region

The International Air Transport Association (IATA) has posted global passenger traffic results for 2015 showing that demand (calculated as revenue passenger kilometers or RPKs) rose 6.5% for the full year compared to 2014.

This result is well above the 10-year average annual growth rate of 5.5%, with Middle East carriers having the strongest annual traffic growth at 10.5%. As such "the share of international traffic carried by Middle East airlines reached 14.2%, surpassing their North American

counterparts (13.4%).¹ This result is mainly the result of the continues growth of the Gulf's carriers (mainly Emirates, Qatar Airways and Etihad), characterized by extensive and global route network.

The Gulf carriers are mostly growing with connecting traffic, given the relatively small size of their domestic markets. Yet, with the appropriation of modern long-haul fleets, the positioning of their hubs (with most of the world's population being within eight hours' flying time) allows them to capture a disproportionate share of long-haul market growth.

The regional instability, with wars in Syria, Libya and Iraq and terrorist threats in Egypt, has had an adverse impact on traffic volumes in selected MENA markets.

In others, like Jordan and Israel, traffic volumes have grown in the past 5-year period: Tel Aviv Airport has recorded a growth from 12.1 million in 2010 to about 16.3 million in 2015.

For Jordan, IATA forecast traffic volumes to more than double over the next 20 years, from 6.5 million in 2013 to just above 15 million by 2034. This growth will occur thanks to the use of Amman airport as hub for both Royal Jordanian and Air Arabia, who recently acquired 49% of Jordan's Petra Airlines.

It is noteworthy that, whilst Amman Airport recorded a growth from 5.4 million in 2010 to about 7.1 million in 2015, in the same period the tourism sector has been impacted by the aforementioned regional instability, with arrivals falling from 8.2m in 2010 to 4.8m in 2015; this clearly shows that population of West Bank makes heavy usage, although impeded by cumbersome crossing regulations and procedures, of the Jordan hubs to travel.

2.2 Aviation in the West Bank and Gaza Strip

ICAO² does not include West Bank and Gaza Strip as a full-fledged member yet. Nevertheless, the Palestinian Civil Aviation Authority (PCAA) actively participates, as observer to ICAO working bodies.

Currently, the only AOC, meant to be registered under PCAA, is still active for the Palestinian Airlines; the local air carrier has recently resumed operation with a small fleet of Fokker F-50 aircraft, although it cannot perform from within the West Bank and Gaza Strip nor from the old base in Al Arish airport, in North Sinai Governorate of Egypt.

The following aviation facilities could be listed in the West Bank and Gaza Strip:

- Yasser Arafat International Airport (IATA: GZA; ICAO: LVGZ)
It is also known as Gaza International airport and as Rafah or Dahaniya International airport; the airfield is located in the southern part of the Gaza Strip, between Rafah and Dahaniya, very close to the borders with Egypt and Israel.
The airport was opened to civil aviation traffic in 1998 and ceased its activities at the end of year 2000. The construction of the airport was provided by the Oslo II Agreement of 1995 and funded by seven different Countries. There is one runway oriented North/South (01-19) with a length of about 3000m; the total area occupied by the infrastructures is more than 200 hectares. The airport was operated by the Palestinian Civil Aviation Authority and served as home base of the Palestinian Airlines; it handled about 700k passengers per year. The radar station and the control tower were destroyed in 2001 and the runway pavement cut by bulldozers in 2002.
- Khan Younis Airport (IATA: GHK; ICAO: LLAZ)
It is also known as Gush Katif airport; the airfield is located in the Gaza Strip, approximately 3 Km north of the town of Khan Younis, close to the United Nation RWA camp that partially was expanded over the airfield land.

¹ Source: IATA

² ICAO is the International Civil Aviation Organization that has operated as the UN specialized agency since 1944 to manage the administration and governance of the Convention on International Civil Aviation (Chicago Convention).

The airfield was a military British Royal Air Force base during the Second World War, but there are no visible remains of the use of the airport by the RAF. The airfield had a runway oriented almost perpendicularly to the line of the coast (13-31) with a short asphalt pavement runway 800 meters long. After the destruction of the Gaza International airport (in Rafah) it was operated briefly as the only usable runway within the Gaza Strip. The airfield became partially covered by sand with a reduced width; it was abandoned on 2004 and overbuilt at present day 2015.

- Qalandiya Regional Airport (IATA: JRS; ICAO: LLJR)
It is also referred to as Jerusalem Airport because it is only at about 10 Km from that town, or Qalandiya Airport, or Atarot Airport; more rarely as Ramallah Airport. The airfield is located between Jerusalem and Ramallah, close to Qalandiya. This relatively small airport was formerly the only airport in the British Mandate for Palestine in the twenties (1920-30), it was expanded in 1931. The airport was opened in 1936 to regular flights and has one runway, almost east-west oriented (03-12), with an asphalt pavement runway of 1965x45m. It has been closed since 2000 when it was handed over to the IDF in 2001.
- Muqeible Airfield (IATA/ ICA: n/a)
Also known as Jenin airport, it is located in the north of West Bank, about 1Km South of the village of Muqeible and about 3Km North of Jenin and close to the Israeli border. The airport was built during the first years of the 20th century by the Germans; After the 1918 the airport became a British Royal Air Force military airbase then used by the US Army Air Force during the WWII. After the war the airfield was abandoned; currently only traces of the two former runways appear crossing; the main runway is oriented east-west and the other aligned about northeast/southwest; a road laid down over and crossing the main runway and agricultural fields has taken place around and over the infrastructures; no other support structures of the former base remain.
- Ramallah Heliport (IATA: ZDM, ICAO: n/a)
The Ramallah Heliport is located at about 860m above sea level in the urban fabric of Ramallah, in the West Bank. The FATO in asphalt (120m x 60m) is used mainly by the Palestinian National Authority to serve the Muqata'a and operated under VFR conditions.
The heliport has suffered heavy damages during the Second Intifada, along with the existing helicopter fleet. It has been partially refurbished in recent years.
- Other Infrastructures
Gaza City Heliport, Qusra runway strip

During the development of the NTMP, a thorough survey of each site has been performed, excluding Muqeible only, and including potential sites for new greenfield airport(s), in both the West Bank and Gaza Strip.

The main objective of the on-site survey was: to perform an initial assessment of the identified locations, as included in this Master Plan; to evaluate the readiness of the Civil Aviation sector in West Bank and Gaza Strip, and; collection of additional information and data for the correct gauging of air transport demand in the region.

The survey was performed over two separate missions, one for West Bank and one for Gaza Strip; details on the on-site missions can be found within the diagnostic part of the Final Report, together with photos of the status of the infrastructures and potential airports sites

For more details, refer to: ¶AX.1 – *Diagnostic Analysis of Palestinian Transport Sector and ¶Mid Term Report – 7 The Transport Sector in Palestine.*

3 Aviation Traffic Forecasts

3.1 Population Growth and Aviation Traffic Trend

Through the NTMP, a detailed socio-demographic analysis was conducted that, combined with macro-economic trends, has provided the basis to determine existing traffic patterns and forecast future travel demand.

The results of such analysis are not to be further discussed in this part of the report but have been considered when hypothesis had to be defined in order to gauge traffic demand and, with it, the main requirements for the aviation and airport infrastructures.

With regards to Population Growth Trends, several scenarios were initially considered, with different degrees of growth associated with the probable return of thousands of people of the Palestinian Diaspora.

The scenario adopted for the aviation is the same that has been adopted for the other transport modes through the NTMP; the traffic demand profiles have been studied by means of a Macro-economic Model that was developed ad-hoc for the Transportation Master Plan.

The Model, which is detailed in other parts of the Final Report, assumes that the adopted political scenario is an optimistic one, with unimpeded mobility and removal of all constraints in terms of trade of goods/services and passengers flows, including the removal of all internal and international barriers.

The considered time horizon is 2016 to 2045, with econometrics elaborated at constant 2013 prices, in USDollars.

The Model is able to forecast the GDP growth trends (at constant prices and within the proposed time frame), in its main expenditure components (shares %).

The impact on the overall GDP trend is determined by scoping the growth and development patterns of essential GDP supply components, i.e. to evaluate the added value for each strategic economic sector, such as agriculture or manufacturing.

As a result, the Model has delivered high-level forecast of both freight and passenger traffic levels, on both international and domestic traffic patterns.

Correlation between GDP growth rate and freight/passenger traffic levels growth rate has been established, also considering traffic elasticity and by comparing the result with other similar benchmarking countries, such as the close Jordan and Lebanon.

The analysis has resulted in a high-level forecast, partially reported below, that has provided initial estimates, on both freight and passengers flows, as a direct result of GDP trends.

3.2 Aviation Forecasts in West Bank

The forecasted annual passenger volume for West Bank follow:

Tab 1. West Bank: Annual Aviation Passenger Volume

Phase	Number of Passengers
Phase 1	-
Phase 2	4,285,311
Phase 3	4,900,865
Phase 4	4,955,343

Figure 1. West Bank and Annual Aviation Passenger Volume



3.3 Aviation Forecasts in Gaza Strip

The forecasted annual passenger volume for Gaza Strip follows:

Tab 2. Gaza Strip: Annual Aviation Passenger Volume

Phase	Number of Passengers
Phase 1	437,741
Phase 2	784,835
Phase 3	919,287
Phase 4	955,607

Figure 2. Gaza Strip: Annual Aviation Passenger Volume



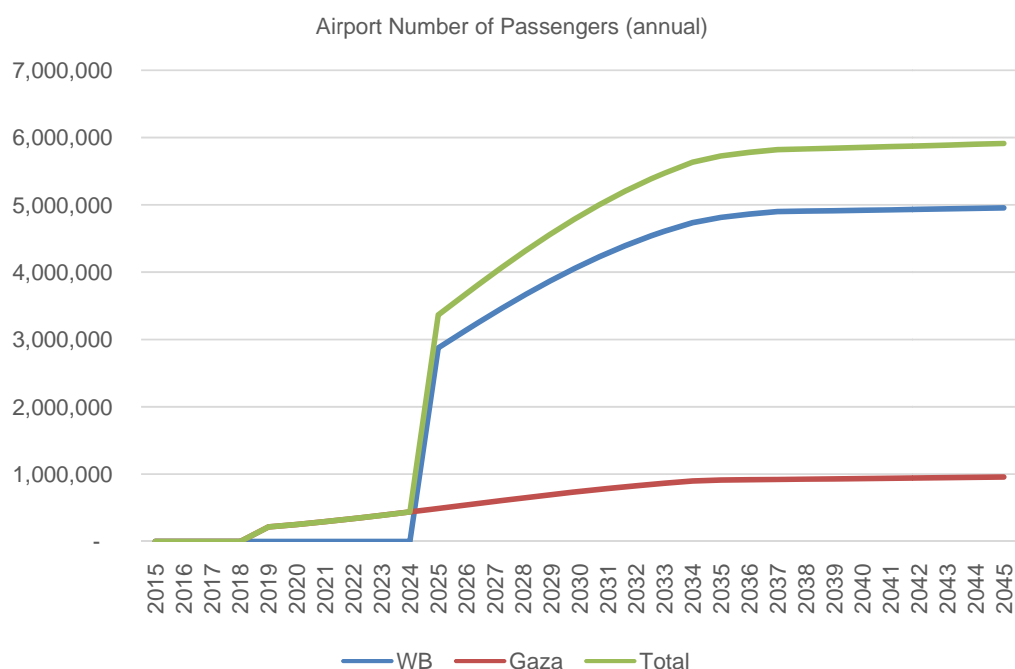
3.4 Aviation Forecasts in West Bank and Gaza Strip

The forecasted annual passenger volume for West Bank and Gaza Strip follows:

Tab 3. West Bank and Gaza Strip: Annual Aviation Passenger Volume

Phase	Total West Bank and Gaza Strip
Phase 1	437,741
Phase 2	5,070,147
Phase 3	5,820,152
Phase 4	5,910,950

Figure 3. West Bank and Gaza Strip: Annual Aviation Passenger Volume



This forecast represents a substantial basis over which the subsequent analysis for the air transport sector has been performed. Although it is noteworthy that most of the freight is assumed to be imported/exported via road and maritime shipping routes, a portion of it (normally perishable and high-value/low-weight goods) it is assumed to be shipped by air, once a functional air transport sub-sector has been re-established. The forecast above does not fully capture additional traffic components, such as sudden changes in the tourism sector, that could positively impact registered traffic levels. Based on the overall forecast results, the airport infrastructure considered for the Master Plan has been designed to different initial target traffic levels, in terms of million of passengers per annum (MPPA):

- Airport in Gaza Strip – designed to 1,5 MPPA, and;
- Airport in the West Bank – designed to 5,0 MPPA.

4 Air Transport Proposal

NTMP proposal for air transport sector has the following objectives:

- Develop a new airport in West Bank, to serve as the main international gateway into West Bank and Gaza Strip;³
- Rehabilitate the existing and damaged airport in Gaza Strip⁴ to enhance connectivity at regional scale, with hubs in the EU-MENA Region, as well as at domestic scale, through shuttle routes to/from the new airport in the West Bank, and;
- Emergency / Leisure Aerodrome in West Bank (Qalandiya).

NTMP calls for the refurbishment of existing aviation facilities as well as the establishment of new ones, including provision for a greenfield airport in the West Bank.

While aviation requires a comprehensive international framework to function, being highly regulated at international, regional and domestic levels, it often offers the most cost-effective and time-sensitive solution in providing connectivity in both medium and long haul distances. As such, the short-term rehabilitation of a viable aviation infrastructure could act as the stop-gap measure in the far reaching objective of this Master Plan.

Air transport network proposal's description is organized as follows:

- New West Bank International Airport Development;
- Yasser Arafat Regional Airport Rehabilitation in Gaza Strip, and;
- Overall SWOT Analysis of Air Transport Proposals.

The overall supply proposed for air transport does not become operative at the same time but develops and extends according to the already introduced Phases. *For more detail, refer to: ¶III – Road and Transportation Master Plan Overview.*

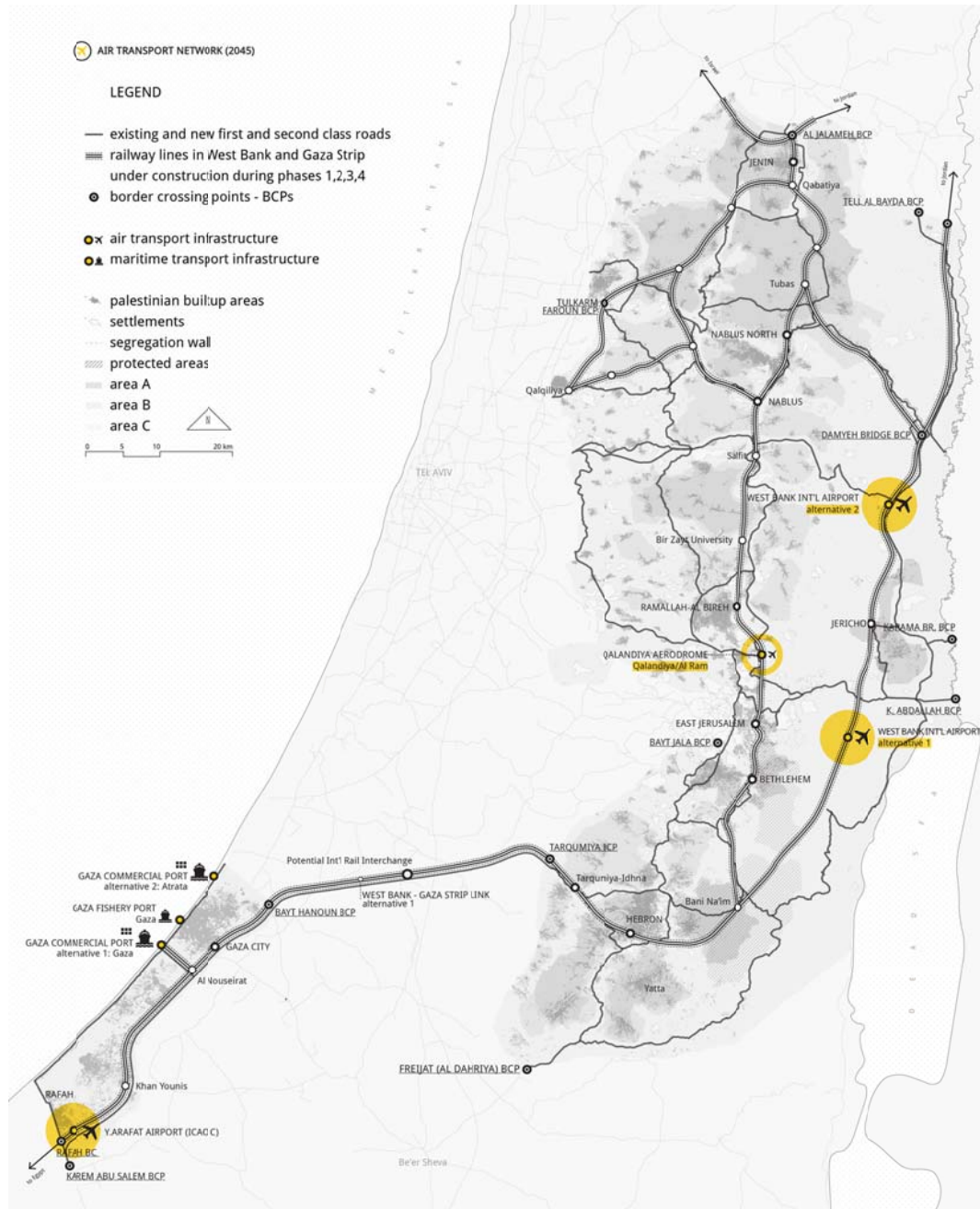
Before proceeding to describe in details the development of air transport by Phase, the entire proposed system is illustrated in the following figure.

For more detail, refer to: ¶AX.4 – Maps by Phase and Sector.

Figure 4. Air Transport Network (2045)

³ The analysis conducted with GIS tools and ICAO criteria has revealed that the aerodrome in Qalandiya (IATA: JRS, ICAO: LLJR) does not meet international standards, with regards to penetration of airport protection surfaces. Indeed, the surrounding multi-storey buildings clearly penetrate the airport obstacles protection surfaces (transitional), thus preventing a possible re-certification of the airport for civil use. Bearing the results of the conducted analysis in mind, NTMP considers Qalandiya aerodrome exclusively as a potential regional airport. For more details, refer to: ¶AX.1 – *Diagnostic Analysis of Palestinian Transport Sector and ¶Mid Term Report – 7.The Transport Sector in Palestine.*

⁴ Access to the Gaza Strip has been granted, thus allowing for an audit and evaluation for the proposed sites, given hereinafter.



4.1 New West Bank International Airport in Phase 1 (2016 – 2024) and Phase 2 (2025 – 2031)

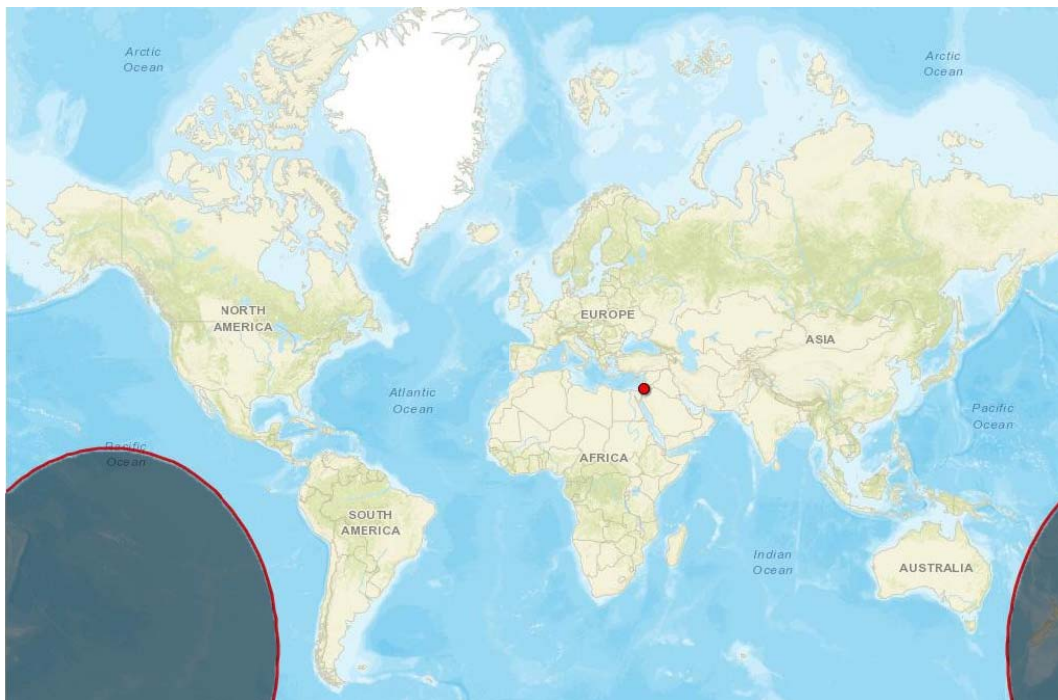
NTMP proposes to develop a new greenfield airport in the West Bank in the Jordan Valley, where two different sites are identified:

- Alternative 1 – South of Jericho;
- Alternative 2 – North of Jericho;

The Jordan Valley sites are both compatible with a 4,500m long runway (the estimated length is highly conditioned by the climate conditions) and a terminal building complex for 5 million passengers per year. The new West Bank International Airport could serve the West Bank as a modern O/D (Origin and Destination) airport, with global connectivity.

The proposed development of a new airport in West Bank is compatible with the operation of all aircraft type, for all destinations, including the largest ICAO class F type aircraft, like the Airbus A380 (mostly operated by Emirates). The other West Bank sites were considered also for reduced scope airports, which may not be compatible with the large airport envisioned for the West Bank. During the meetings with transport and aviation officials, it was agreed that the new West Bank airport should be compatible with all type of aircraft and that these could effectively operate the 4F-designated runway to reach destinations worldwide on a no-stop basis, with the main scope of the West Bank-located airport to serve its growing population. Cargo operations would also require the establishment of cold storage airport facilities and dedicated heavy-duty accessibility.

Figure 5. New West Bank Int'l Airport Catchment Area: Global Connectivity



The new West Bank Int'l Airport is expected to registered fleet mix and passenger trends similar to those of similar MENA airports, like Queen Alia Amman Airport, with mostly O/D traffic and limited connecting traffic, although it is unlikely that Palestinian Airlines will be immediately able to perform the role of legacy hub carrier.

The airport facility would be wholly interconnected with the NTMP planned road and rail transport infrastructure West Bank, with ample room for future development. Each option is illustrated in the following paragraphs, with key features listed for each proposed layout. A final SWOT analysis is provided as evaluation tool.

4.1.1 New Int'l Airport in South of Jericho (Alternative 1)

The following tables and figures show the main technical characteristics of proposed new international airport in West Bank, to be developed, as Alternative 1, in an area located between Dead Sea and Jericho.

Tab 4. Alternative 1 – South of Jericho: Technical Specifications for New Int'l Airport

Runway Length	4,500m
Runway Type	4F
Terminal Facility (one floor)	45,000m
Apron	150,000sqm
Total Airport Site	2.60sqKm
Capacity (Initial)	5.0Mppa (million pax per year)

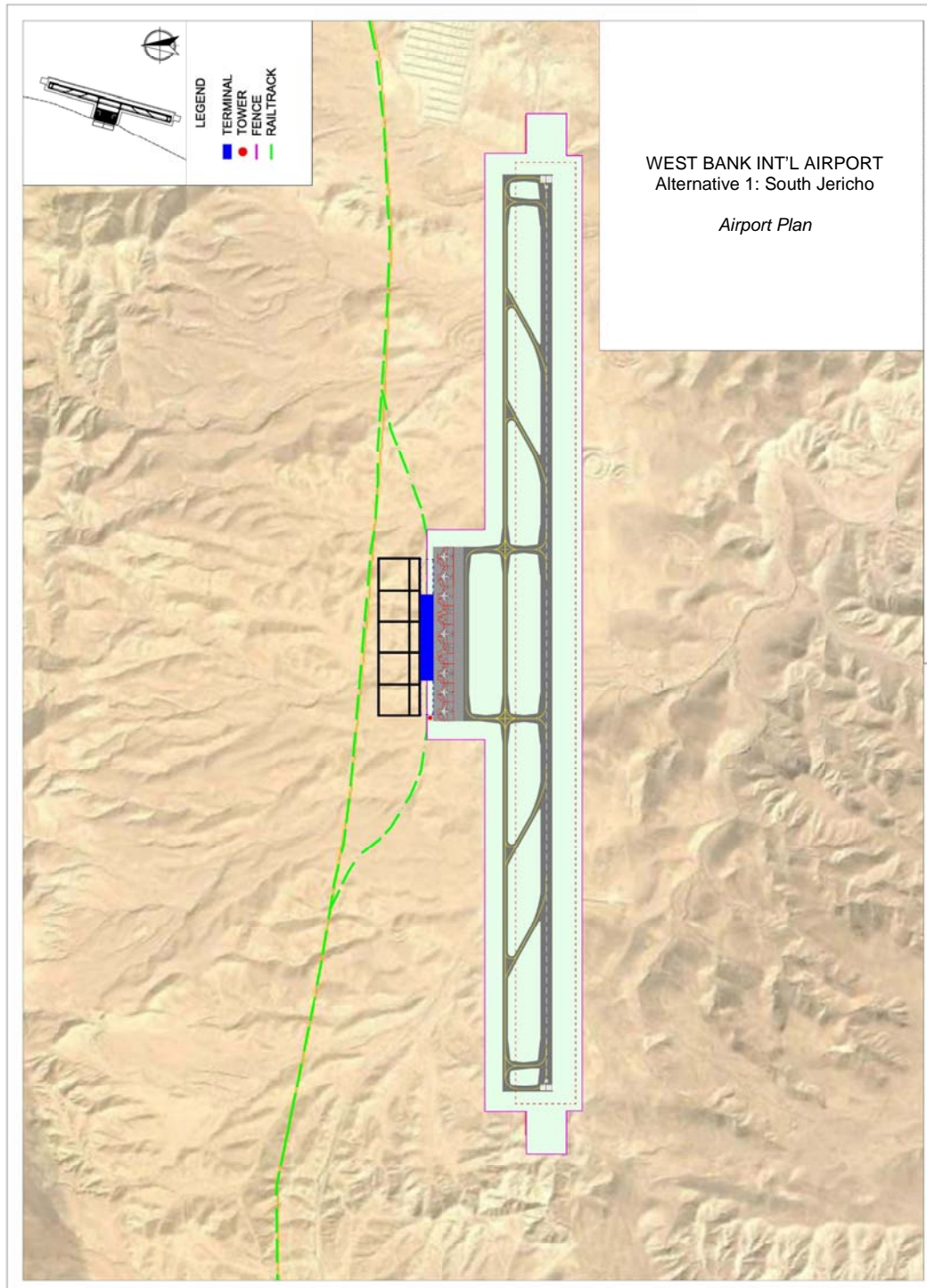
Figure 6. Alternative 1 – South of Jericho: proposed site 3D View



Figure 7. Alternative 1 – South of Jericho: Runway Elevation



Figure 8. Alternative 1 – South of Jericho: Airport Plan



4.1.2 NewInt'l Airport in North of Jericho (Alternative 2)

The following tables and figures the main technical characteristics of proposed new international airport in West Bank, to be developed, as Alternative 2, in an area located between Jericho and Damyeh Bridge Border Crossing Point.

Figure 9. Alternative 2 – North of Jericho: Technical Specifications for New Int'l Airport

Runway Length	4,500m
Runway Type	4F
Terminal Facility (one floor)	45,000m
Apron	150,000sqm
Total Airport Site	2.60sqKm
Capacity (Initial)	5.0Mppa (million pax per year)

The following figures illustrate a3D viewandplan for the proposed Site 2for the new West Bank Int'l Airport.

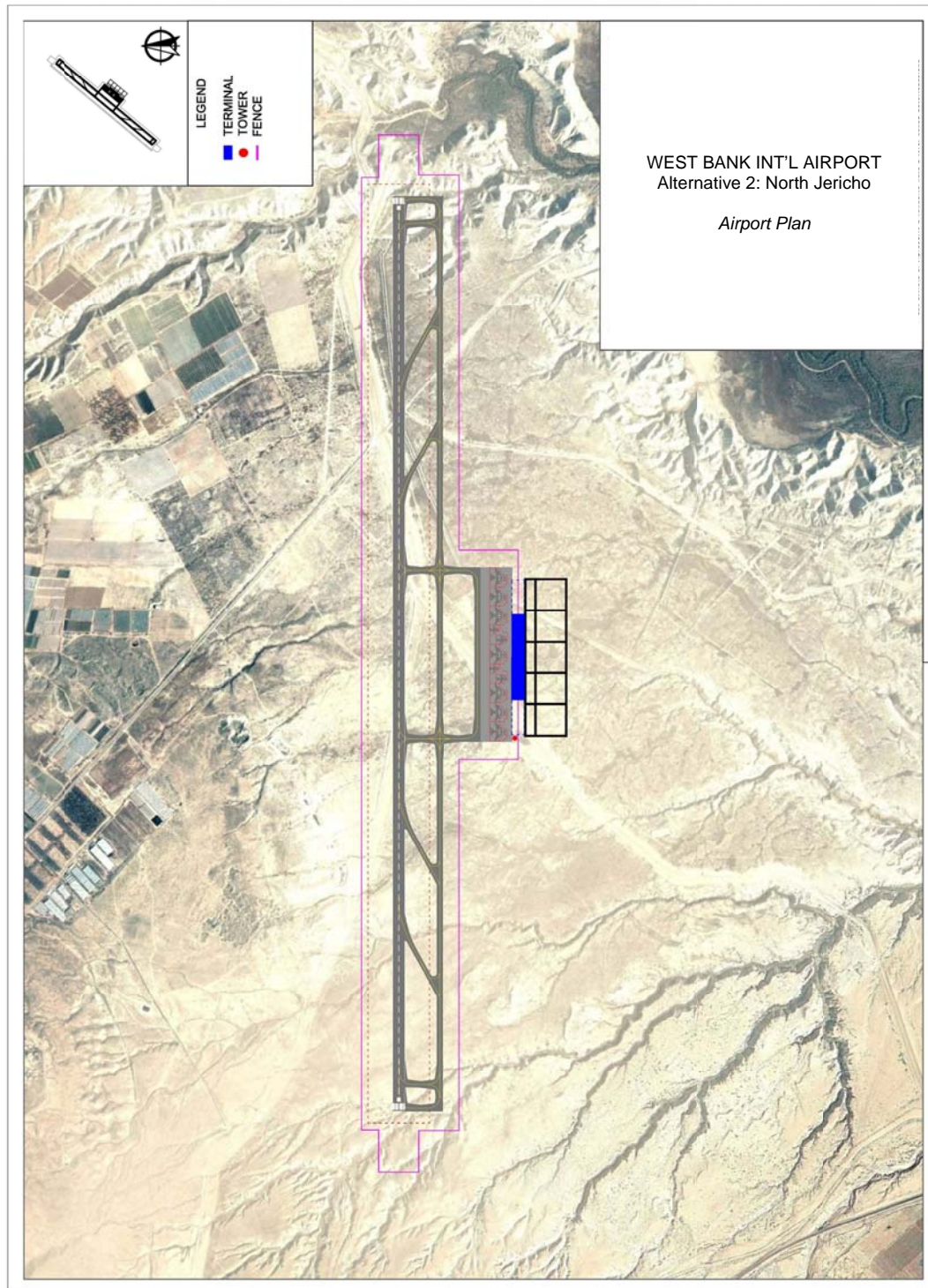
Figure 10. Alternative 2 – North of Jericho: Site 3D View



Figure 11. Alternative 2 – North of Jericho: Runway Elevation



Figure 12. Alternative 2 – North of Jericho: Airport Plan





4.1.3 Additional Options for new West Bank International Airport

Other three additional options for locating the new international airport in West Bank are identified; these additional options are located along and/or close the central transport corridor that crosses and serves all West Bank in N-S direction.

The additional options are listed below and are presented in details in the following paragraphs:

- Alternative 3 – Near Tubas;
- Alternative 4 – Near Arabah;
- Alternative 5 – Near Bethlehem.

New Int'l Airport in Tubas (Alternative 3)

The following tables and figures show the main technical characteristics of the studied new international airport in West Bank, considered as additional Alternative 3, in an area located at 10km South to Tubas.

Figure 13. Additional Alternative 3 – Tubas: Technical Specifications for New Int'l Airport

Runway Length	4,50 m
Runway Type	4F
Terminal Facility (one floor)	45,000m
Apron	150,000sqm
Total Airport Site	2,60sqKm
Capacity (Initial)	5.0Mppa (million pax per year)

The following figures illustrate a 3D view and plan for the proposed Site 3 for the new West Bank Int'l Airport.

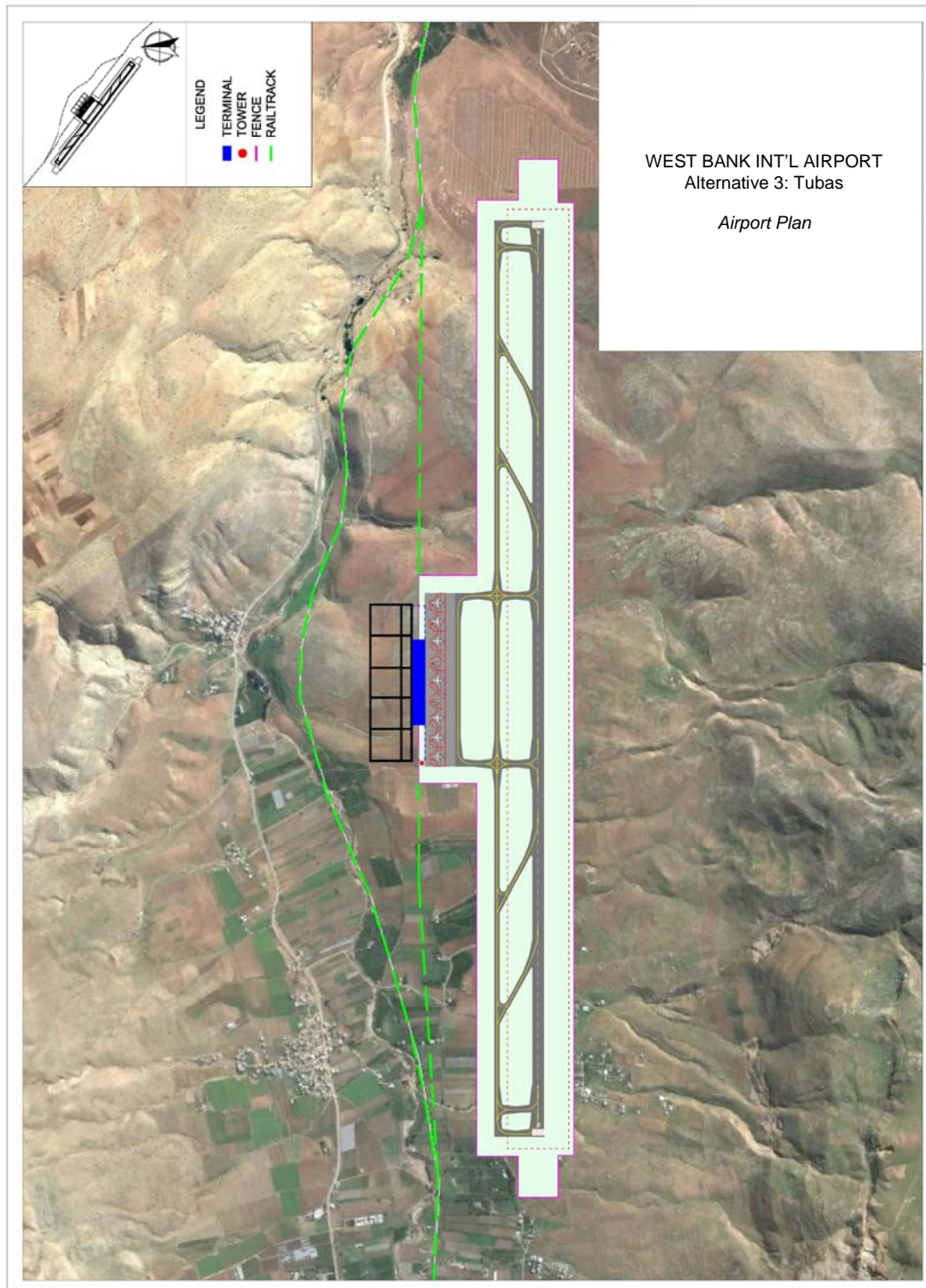
Figure 14. Additional Alternative 3 – Tubas: Site 3D View



Figure 15. Additional Alternative 3 – Tubas: Runway axial profile



Figure 16. Additional Alternative 3 – Tubas: Airport Plan



New Int'l Airport in Arabah (Alternative 4)

The following tables and figures show the main technical characteristics of the studied new international airport in West Bank, considered as additional Alternative 4, in an area located at 3km North of Arabah.

Tab 5. Additional Alternative 4 – Arabah: Technical Specifications for Int'l Airport

Runway Length	4,500m
Runway Type	4F
Terminal Facility (one floor)	45,000m
Apron	150,00sqm
Total Airport Site	2.60sqKm
Capacity (Initial)	5.0Mppa (million pax per year)

The following figures illustrate a site 3D view and plan for the proposed Site 4 for the new West Bank Int'l Airport.

Figure 17. Additional Alternative 4 – Arabah: Site 3D View

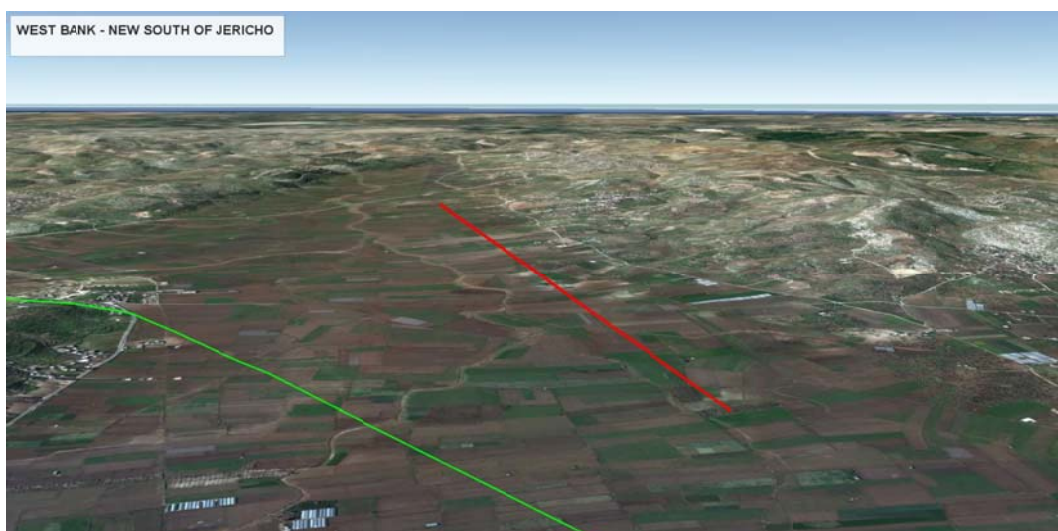
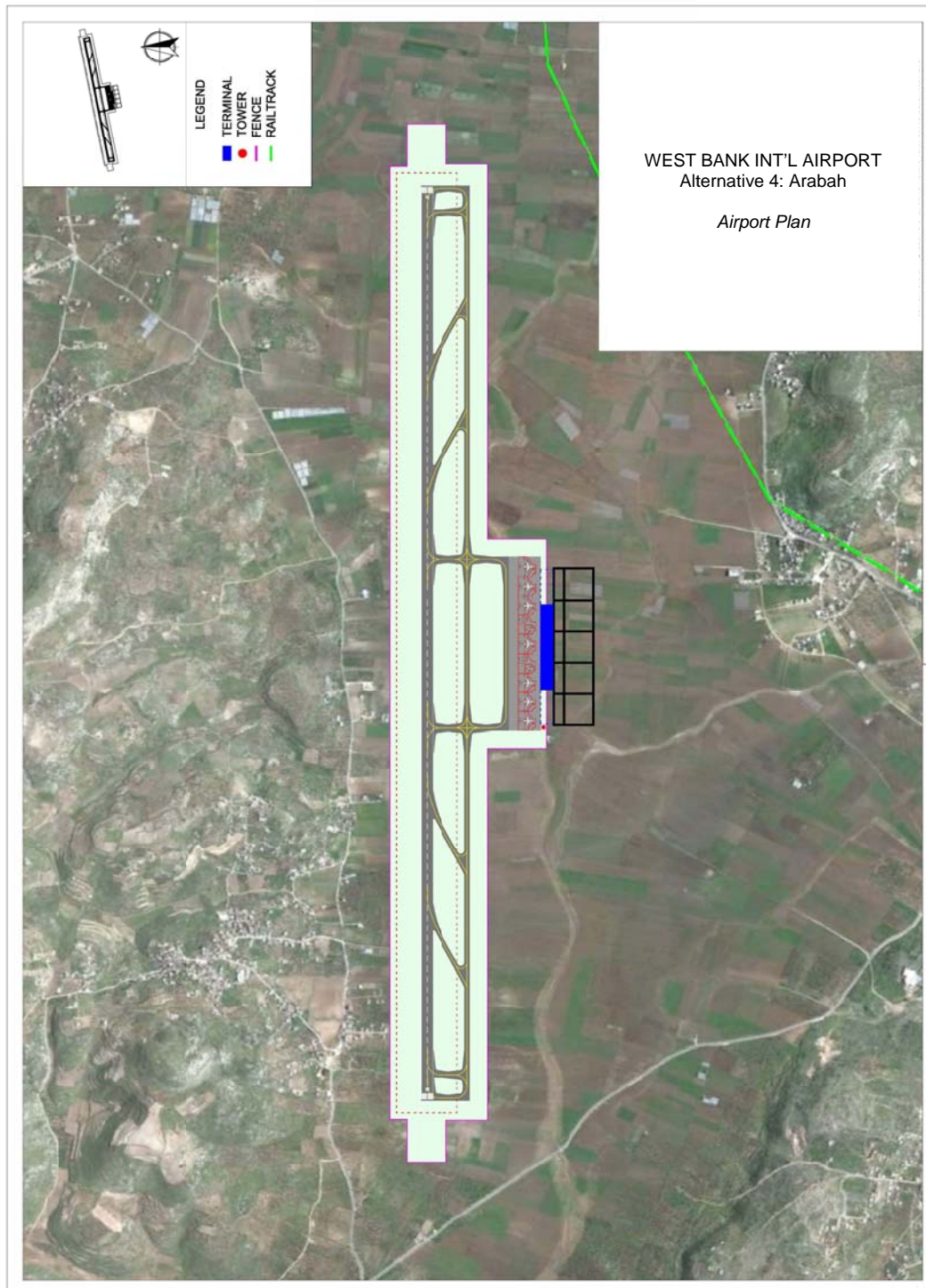


Figure 18. Additional Alternative 4 – Arabah: Runway Elevation Profile



Figure 19. Additional Alternative 4 – Arabah: Airport Plan



West Bank Site 5 – Bethlehem

The considered additional Alternative 5 is located at about 7km South of Bethlehem. Its main characteristics are presented below.

Tab 6. Additional Alternative 5 – Bethlehem: Tech. Specifications for new Int'l Airport

Runway Length	4,500m
Runway Type	4F
Terminal Facility (one floor)	45,000m
Apron	150,000sqm
Total Airport Site	2.60sqKm
Capacity (Initial)	5.0Mppa (million pax per year)

The following figures illustrate a site view and plan for the proposed Site 5 for the new West Bank Int'l Airport.

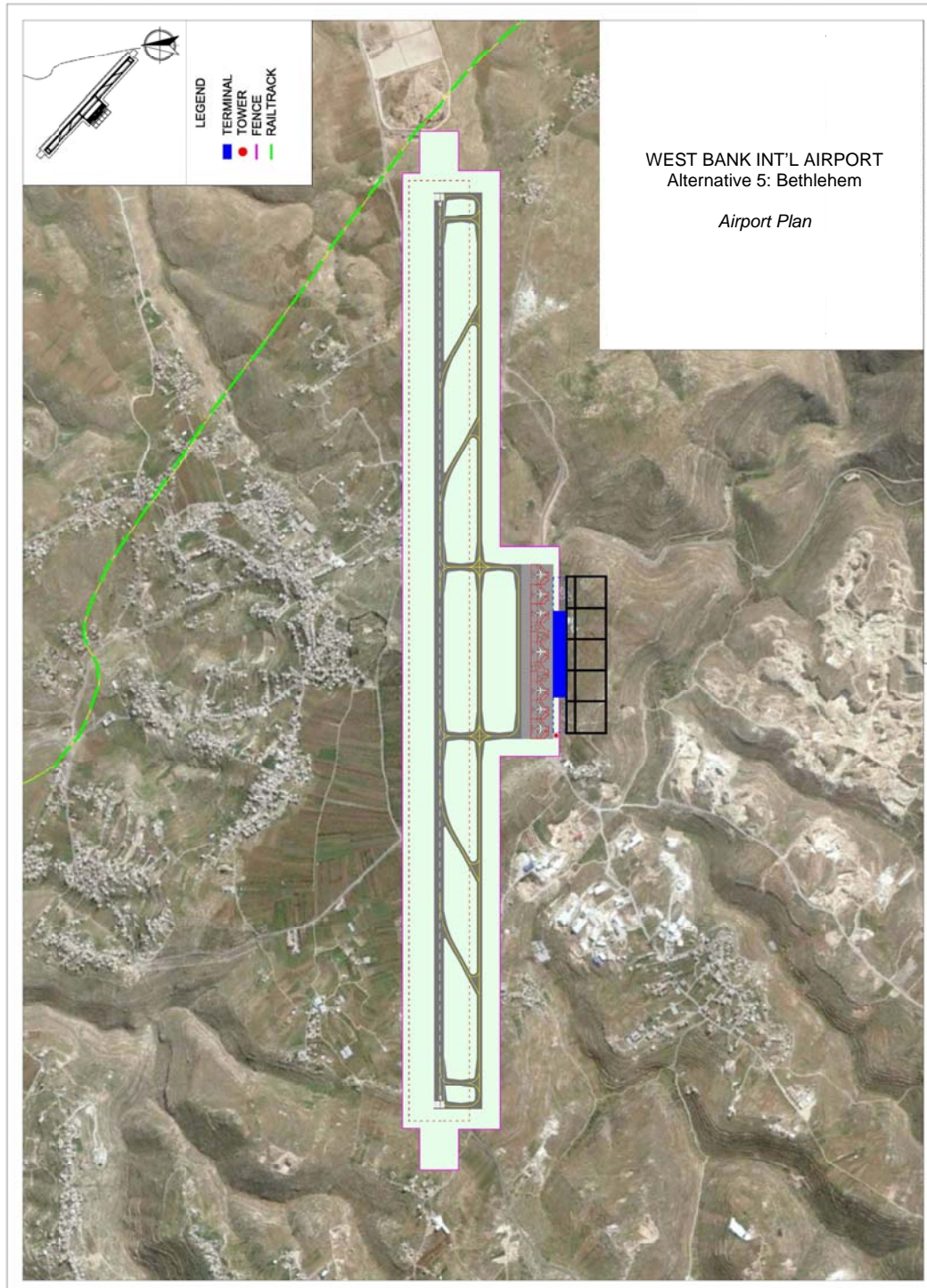
Figure 20. Additional Alternative 5 – Bethlehem: Site 3D View



Figure 21. Additional Alternative 5 – Bethlehem: Runway Elevation



Figure 22. Additional Alternative 5 – Bethlehem: Airport Plan



4.1.4 Comparative SWOT Analysis International Airport Alternatives in West Bank

The following comparative SWOT Analysis provides a simple yet effective tool to further elaborate on the viability of the alternatives studied by NTMP for the implementation of the new West Bank International Airport.

The SWOT Analysis can establish some initial prioritization and therefore identifies the most effective option.

As for the traffic forecast, the SWOT Analysis assumes no future constraints, but it does take into account the impact of the existing constraints and limitations on the future development of each alternative.

Finally, the SWOT Analysis includes, as a sixth option, also the Qalandiya Airfield, although several restrictions make it a viable option exclusively as eventual aerodrome for domestic purposes only.

Tab 7. Comparative SWOT Analysis for New West Bank Int'l Airport Options

	AIR TRANSPORT PROPOSALS FOR WEST BANK		
	Qalandia Regional Airport	Alternative 1 - South Jericho	Alternative 2 -North Jericho
Strengths	<ul style="list-style-type: none"> • Potential Availability of Governmental Land; • Previous Aviation Use; • Existing ATC Layout and Procedures Limited Disruption of Arable Land. 	<ul style="list-style-type: none"> • Proven Site Compatibility; • Optimal Runway Orientation; • Minimal Disruption on Residential Areas; • Limited Use of Arable Land; • Balanced Distance from Main Cities. 	<ul style="list-style-type: none"> • Potential Site Compatibility; • Optimal Runway Orientation; • Proximity to Karama BCP; • Proximity to new International Rail Corridor in West Bank; • Central Location respect to main Residential Areas; • Lower Site Preparation Cost.
Weaknesses	<ul style="list-style-type: none"> • Heavy Residential Encroachment Non-compliance with ICAO Standards; • Limited Accessibility from West Bank; • Distance from main Residential Areas; • Limited Development Potential as Main Gateway into West Bank. 	<ul style="list-style-type: none"> • Location in Area C; • Higher Site Preparation Cost; • Road Accessibility to be Improved. 	<ul style="list-style-type: none"> • Location in Area C; • Potential Impact on Jericho Residential Areas; • Substantial Use of Arable Land.
Opportunities	<ul style="list-style-type: none"> • Re-development to limited General Aviation and/or Helicopter-only Use. 	<ul style="list-style-type: none"> • Potential Seaside Tourism (Dead Sea); • Good Proximity to Holy Lands Sites (High Tourism Potential); • Greenfield Potential for Future Development. 	<ul style="list-style-type: none"> • Facilitated Intermodal Integration; • Potential Intermodal and Commercial Development in Jericho Area; • Facilitated Access from Jordan; • Very Good Proximity to Holy Lands Sites (Very High Tourism Potential); • Greenfield Potential for Future Development.
Threats	<ul style="list-style-type: none"> • Location beyond West Bank Barrier Airspace; • Restrictions Imposed by Neighbouring Countries. 	<ul style="list-style-type: none"> • Potential Temporary Site Unavailability; • ATC Interference with AMM and TLV; • High Operating Temperatures. 	<ul style="list-style-type: none"> • Potential Temporary Site Unavailability; • ATC Interference with AMM and TLV; • High Operating Temperatures.

Tab 8. Comparative SWOT Analysis of Additional Options for NewWB Int'l Airport

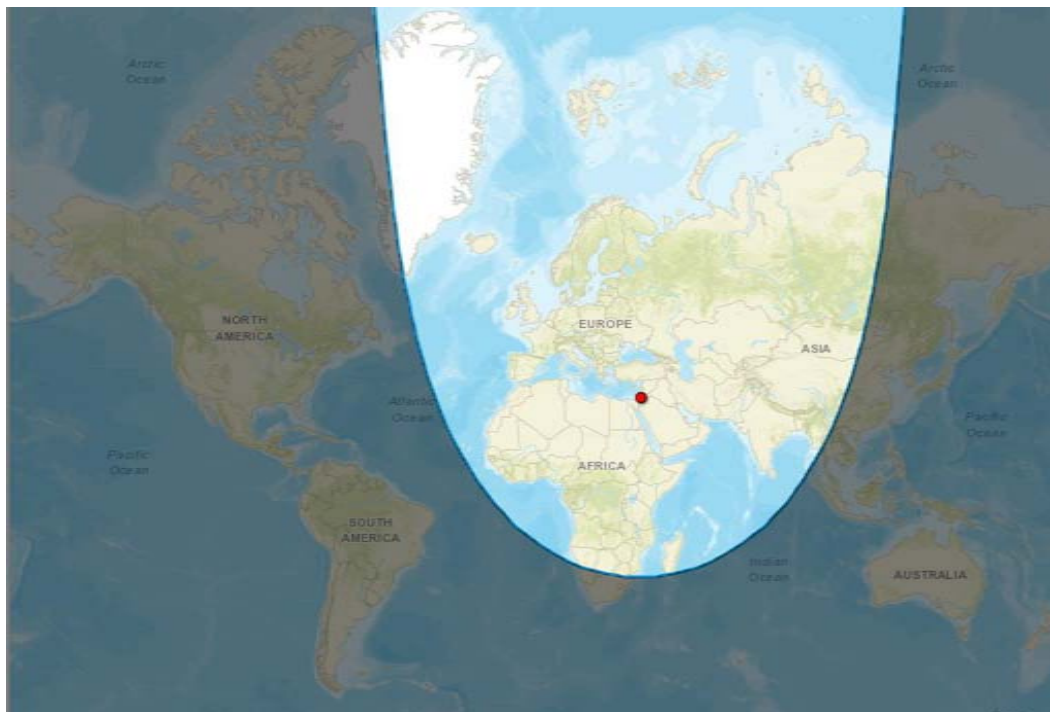
AIR TRANSPORT PROPOSALS FOR WEST BANK				
		Additional Alt.3 –Tubas	Additional Alt.4 - Arabah	Additional Alt.5 - Bethlehem
Strengths		<ul style="list-style-type: none"> Proximity to North West Bank production areas; Proximity to Central West Bank rail Corridor; Central Location in respect to main Residential Areas of North West Bank. 	<ul style="list-style-type: none"> Location in Area A; Proximity to North West Bank production areas; Proximity to Central West Bank rail Corridor; Central Location in respect to main Residential Areas of North West Bank. 	<ul style="list-style-type: none"> Proximity to South-Central West Bank production areas; Proximity to Central West Bank light rail Corridor; More Central Location respect to main Residential Areas.
	Weaknesses	<ul style="list-style-type: none"> Very high Site preparation costs; Location in Area B and C; Heavy Impact on Residential Areas; Potential incompatibility with 4F runway; Potential risk of impact on heritage sites; 	<ul style="list-style-type: none"> High Site preparation costs; Heavy Impact on Residential and Tourist Areas; Potential risk of impact on heritage sites; Compatibility with 4F runway to be further evaluated; Heavy Use of Fertile Arable Land; Distance from South West Bank Cities. 	<ul style="list-style-type: none"> Very high Site preparation costs; Location in Area B and C; Heavy Impact on Residential Areas; Potential incompatibility with 4F runway; Potential risk of impact on heritage sites; Distance from South West Bank Cities.
Opportunities		<ul style="list-style-type: none"> Facilitated access for cargo shipment; Very Good Proximity to North Holy Lands Sites; Potentially compatible with a reduced scope 4C airport 	<ul style="list-style-type: none"> Facilitated access for cargo shipment; Very Good Proximity to north Holy Lands Sites; Potentially compatible with a reduced scope 4C airport 	<ul style="list-style-type: none"> Very Good Proximity to Holy Lands Sites (Very High Tourism Potential);
Threats		<ul style="list-style-type: none"> Hot & High Operations; Incompatibility due to terrain; ATC Interference with TLV; Difficult access from Central / South West Bank. 	<ul style="list-style-type: none"> ATC Interference with TLV; Incompatibility due to terrain; Difficult access from Central / South West Bank. 	<ul style="list-style-type: none"> Hot & High Operations; Potentially incompatible also with reduced scope 4C airport; Difficult access from North West Bank.

4.2 Regional (EU-MENA) Airport in Gaza Strip in Phase 1 (2016 – 2024)

4.2.1 Yasser Arafat Airport Rehabilitation

The proposed rehabilitation for Y. Arafat Airport in Gaza Strip (IATA: GZA, ICAO: LVGZ) is incompatible with the operation of the most recent ICAO class C type aircraft, like the Airbus A320Neo family, the Boeing B737Max family as well as the Bombardier C-Series.

Figure 23. Y.Arafat Regional Airport Catchment Area: EU-MENA Regions



The main scope of Y.Arafat Regional Airport's rehabilitation is to serve, mainly with direct flights, the main European airports/hubs as well as the main North Africa and the Middle East destinations, with both passengers and cargo operations.

The starting of cargo operations would normally require the establishment of cold storage facilities at the airport, as well as dedicated heavy-duty accessibility.

As the rehabilitation of the regional airport in the Gaza Strip could be faster than the construction of a new airport in the West Bank, the Palestinian Airlines could be enabled to re-start its operations from this airport first and then to move to the new international facility when ready.

The PA could perform many of the mentioned medium haul connecting flights, including a domestic link to the newly established airport in West Bank.

The rehabilitation proposal is illustrated in the following table and figure.

Tab 9. Tech. Specifications for the Rehabilitated Y. Arafat Regional Airport in Gaza Strip

Runway Length	2,500m
Runway Type	4D
Terminal Facility (one floor)	7,000m
Cargo Facility	9,000m
Apron	70,000sqm
Total Airport Site	1.75sqKm
Capacity	1.5Mppa (million pax per year)

Figure 24. Y.Arafat Regional Airport Rehabilitation in Gaza Strip: Site View



Figure 25. Y.Arafat Regional Airport Rehabilitation in Gaza Strip: Runway Elevation

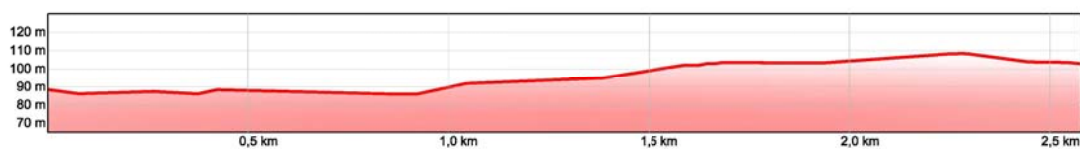
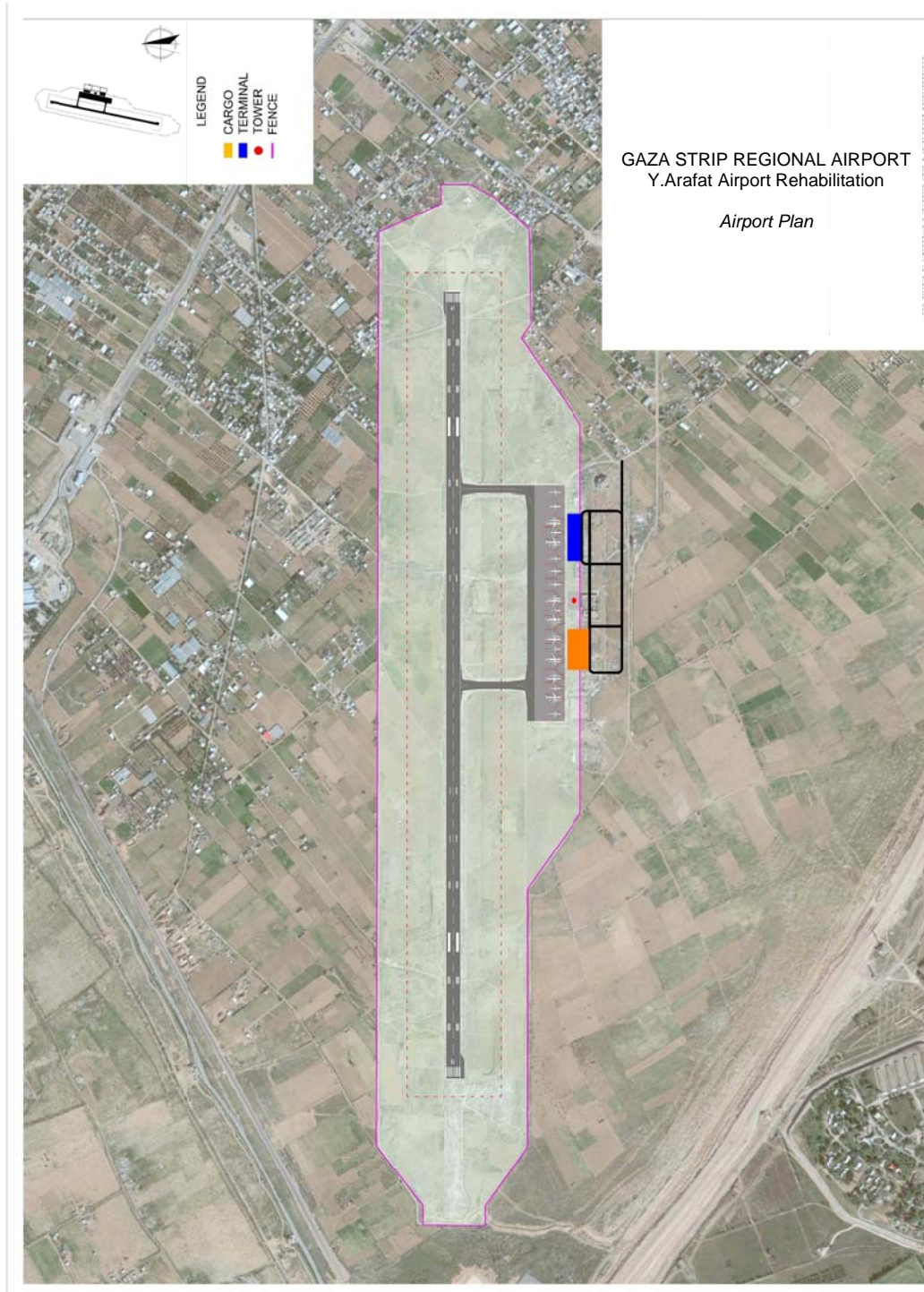


Figure 26. Y.Arafat Regional in Gaza Strip; Airport Rehabilitation Plan



4.2.2 New Regional Airport in the North of Gaza Strip

A second potential site was evaluated for an airport in the Gaza Strip, in an area close to the Strip's Northern Border. The visit on site confirmed that the potentially available land could be compatible with the proposed new Gaza Airport layout, as illustrated in the following paragraph. The area is substantially flat from Bayt Hanoun BCP to the sea, it is free from residential facilities and with limited farming.

No zoning plans have been provided to the survey team, with most of the area still in the availability of the Palestinian Authorities.

Tab 10. Technical Specifications for New Regional Airport in Gaza Strip's Northern Border

Runway Length	2,500m
Runway Type	4D
Terminal Facility (one floor)	7,000m
Cargo Facility	9,000m
Apron	70,000sqm
Total Airport Site	1.75sqKm
Capacity	1.5Mppa (million pax per year)

Figure 27. New Regional Airport in Gaza Strip's Northern Border: Site 3D View



Figure 28. New Regional Airport in Gaza Strip's Northern Border: Runway Elevation

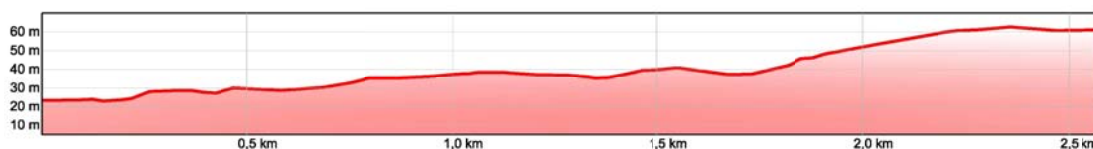
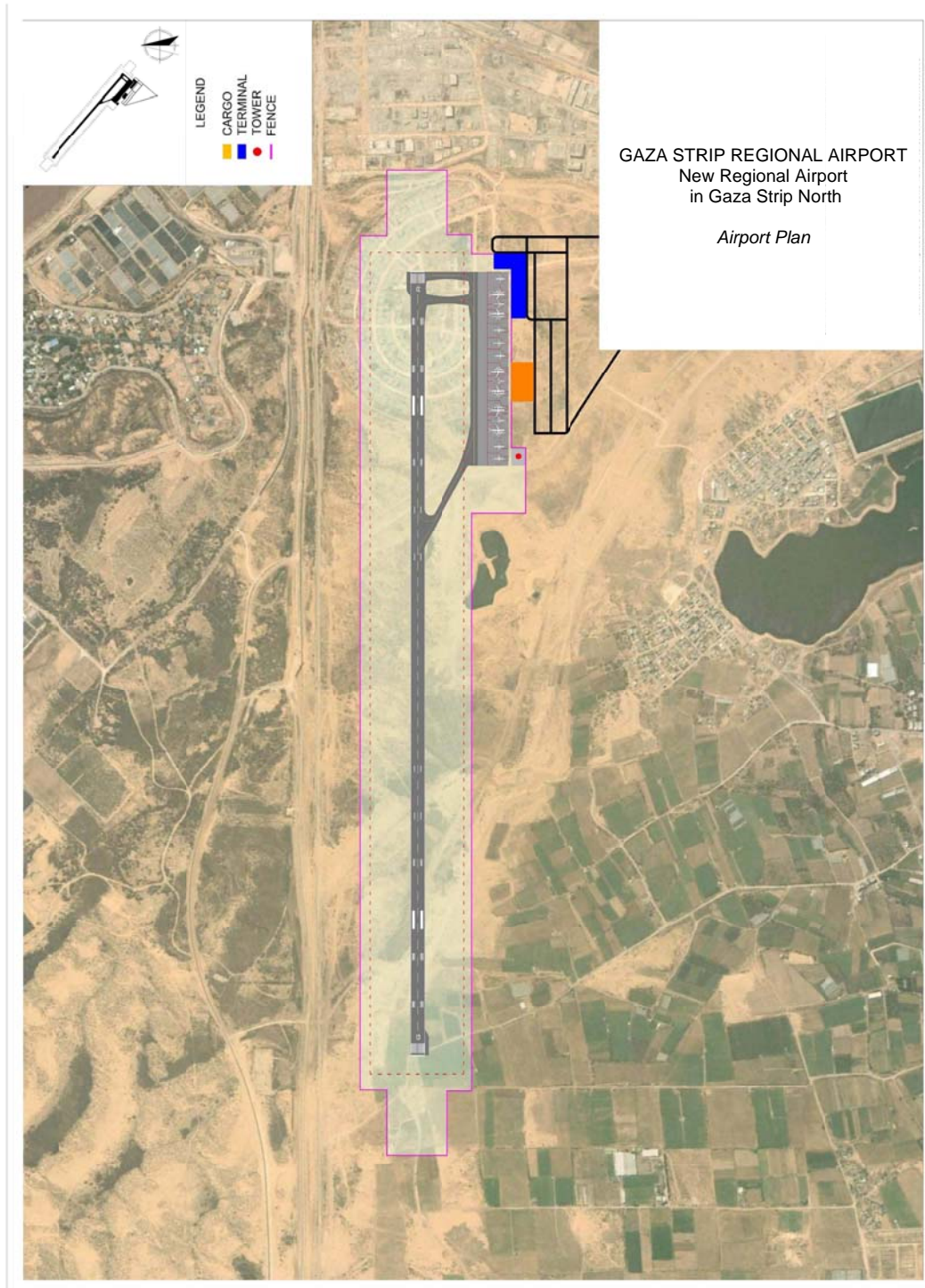


Figure 29. New Regional Airport in Gaza Strip's Northern Border: Airport Plan



4.2.3 New Airport in Khan Younis

During the visit at the Gaza Khan Younis potential site, the area was found compatible with the proposed new layout for the Gaza Strip Airport. Still, the survey team was informed by local authorities that the area had been earmarked for urban and residential development, Although the actual zoning plans have not formally provided.

The site is conveniently located between the recently refurbished Salah al-Din Road and the new Coastal Road, being currently completed and includes mainly farmland, dotted with greenhouses.

Tab 11. Khan Younis Regional Airport in Gaza Strip: Technical Specifications

Runway Length	2,500m
Runway Type	4D
Terminal Facility (one floor)	7,000m
Cargo Facility	9,000m
Apron	60,000sqm
Total Airport Site	1.20sqKm
Capacity	1.5Mppa (million pax per year)

Figure 30. Khan Younis Regional Airport in Gaza Strip: Site 3D View



Figure 31. Khan Younis Regional Airport in Gaza Strip: Runway Elevation

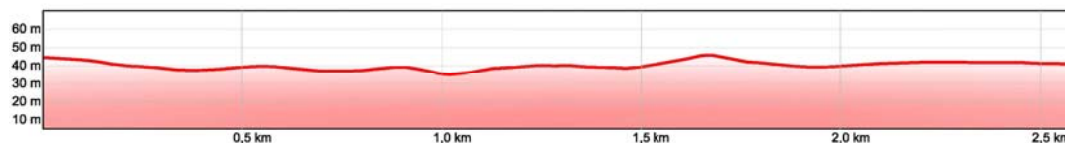
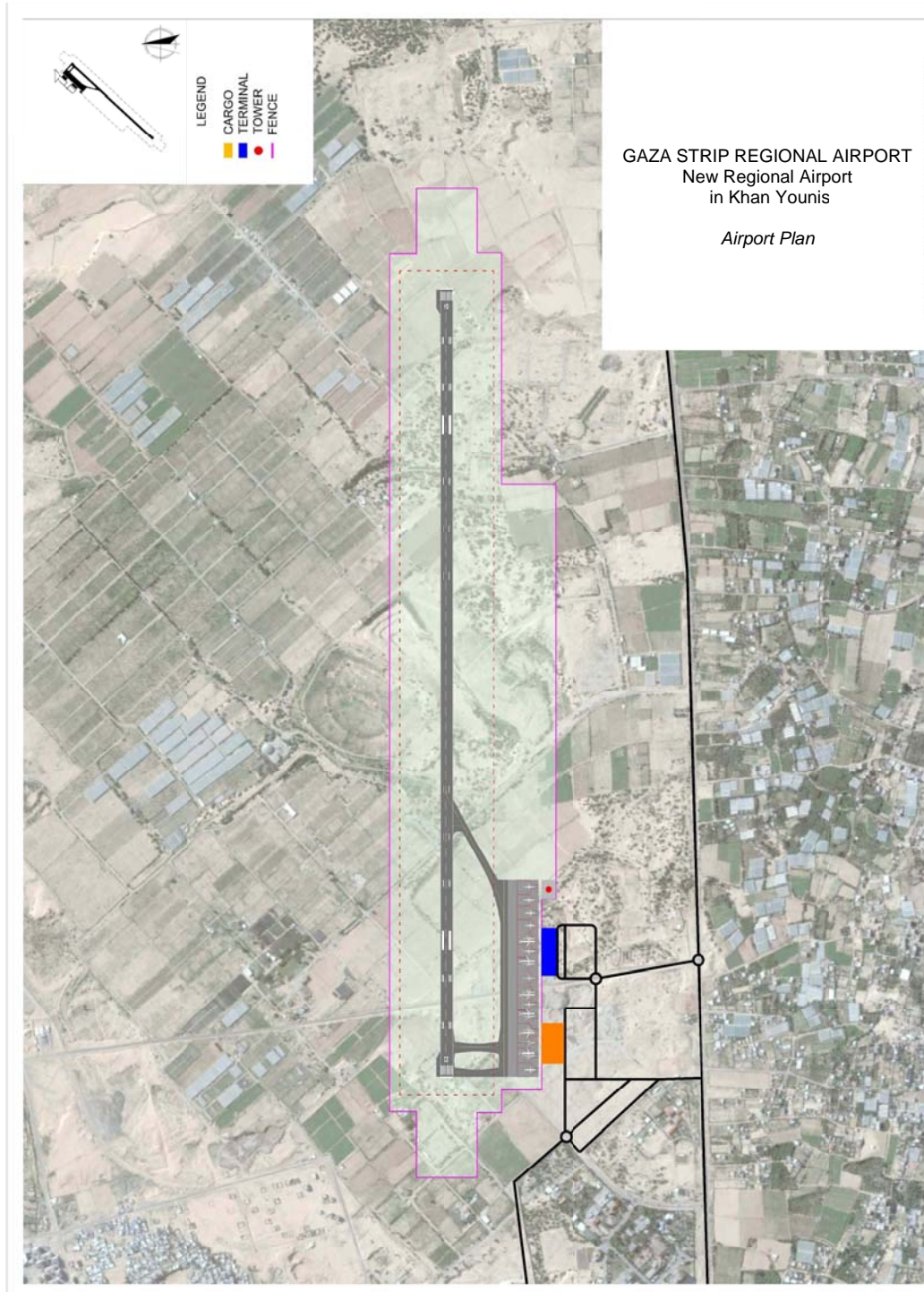


Figure 32. Khan Younis Regional Airport in Gaza Strip: Airport Plan



4.2.4 Comparative SWOT Analysis of Regional Airport Alternatives in Gaza Strip

The following comparative SWOT Analysis provides a simple yet effective tool to further elaborate on the viability of the alternatives proposed by NTMP for the implementation of the new West Bank International Airport.

Tab 12. Comparative SWOT Analysis for Gaza Strip Regional Airport Alternatives

		AIR TRANSPORT PROPOSALS FOR WEST BANK		
		Y. Arafat Regional Airport Rehabilitation	New Regional Airport North Gaza Strip	New Regional Airport Khan Younis
	Strengths	<ul style="list-style-type: none"> • Availability of Governmental Land Previous Aviation Use • Existing ATC Layout and Procedures • Limited Disruption of Arable Land 	<ul style="list-style-type: none"> • Availability of Governmental Land • Optimal Runway Orientation 	<ul style="list-style-type: none"> • Central Location • Existing Accessibility by Road
	Weaknesses	<ul style="list-style-type: none"> • Potential encroachment Distance from Seaside / Gaza Port Disrupted • Accessibility by Road Distance from main Residential Area 	<ul style="list-style-type: none"> • Distance from main Residential Areas • Consumption of Arable Land • Non Existing Accessibility by Road 	<ul style="list-style-type: none"> • Land Availability Encroachment Sub-optimal Runway Orientation Consumption of Arable Land
	Opportunities	<ul style="list-style-type: none"> • Proximity to new Route-Rail Corridor • Facilitated Access from Egypt Proximity to Rafah Crossing • Potential for Integrated Industrial Park Use of Unzoned Areas 	<ul style="list-style-type: none"> • Proximity to Bayt Hanoun Crossing • Proximity to new Gaza Port – North Potential Seaside Tourism • Potential for Integrated Industrial Park Use of Unzoned Areas 	<ul style="list-style-type: none"> • Facilitated Intermodal Integration Potential Intermodal and Commercial Development in Central Gaza
	Threats	<ul style="list-style-type: none"> • Proximity to International Border and Militarized Zone Airspace Restrictions Imposed by Neighbouring Countries 	<ul style="list-style-type: none"> • Proximity to International Border and Militarized Zone Airspace Restrictions Imposed by Neighbouring Countries 	<ul style="list-style-type: none"> • Adverse Zoning and Land-use Allocation to Residential Use

5 Aviation-related Economic and Market Prospects

5.1 Economic prospects, market, and challenges of Palestinian Airlines

With regards to the prospect of Palestinian Airlines resuming operations within the West Bank and Gaza Strip, it is prudent to say that first of all an operative base has to be provided for the Palestinian Airline; the airline new operative hub must be different from those temporally and currently used; within this framework, the re-opening of the Yasser Arafat Airport could be the first step for the renovation plan of the whole Palestinian Aviation.

Once the Yasser Arafat Airport would be reopened, the carrier could re-establish its hub in Gaza and re-launch a network of regional routes to EU and MENA destinations.

In order to do so, a new comprehensive AOC⁵ issued by the Palestinian MoT/CAA may be required in lieu of the current Egyptian one.

As a first essential step towards full viability, the carrier's management should consider achieving entry to the IOSA registry, the IATA Operational Safety Audit that, once achieved, would allow Palestinian Airlines to establish interlining and codeshare agreements with other IATA member carriers.

Noticeably, all IATA members are IOSA registered and must maintain the IOSA certification in order to retain IATA membership. As a natural follow up, Palestinian Airlines should apply for full IATA membership.

This process could take up to 24 months, but the IATA Regional office in Amman has already offered assistance to the Palestinian MoT, should application to IOSA / IATA membership will be considered.

5.2 Palestinian Airline prospects within the privatization framework

Current trends have shown an interest of selected investors in acquiring controlling stakes in other national carriers.

Clear and close examples are those of Etihad (with the recent expansion of the Etihad Equity Partners), Qatar Airways (Meridiana and IAG) and IAG (Air Lingus).

These (and other) investors⁶ could be interested in investing in the Palestinian Airlines, given the right conditions (included a viable regulatory framework), while providing the carrier with industry best practices and the financial means to turn the Palestinian Airlines in a successful regional player.

The availability of an aviation infrastructure with the re-opening of an operative base within West Bank and/or Gaza Strip would be vital to start the virtuous process and so arouse interest of the potential investors.

The IOSA registration and IATA membership would greatly increase the carrier's chance to establish operational, commercial and financial partnerships with other aviation industry players, towards a full-fledged privatization.

This can only successfully occur if the Palestinian MoT will champion the process and establish a committed team to complete the task.

⁵AOC: Air Operator's Certificate

⁶ Especially Arab investors coming from the Persian Gulf



6 Security Issues

The proposals for air transport sector envisaged by NTMP have to be considered among the most important and strategic projects for the future economic security of West Bank and Gaza Strip. It has also to be considered that, as happened during the last decades, the aviation sector needs very few pushes to start its virtuous economic circle and, comparing the investments involved, is far less expensive than others.

It is therefore important to consider a set of security related strategies within the planning and design process. *For more details, refer to* **AX.7 – Security Issues** *that provides security recommendations related to airport and aviation security measures, infrastructure security, proposals of restricted areas, handling cargo, and seaport border control and check.*