

ROAD AND TRANSPORTATION MASTERPLAN

PALESTINE

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III Road and Transportation Master Plan Overview

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1 Introduction

This chapter is aimed at providing a detailed overview of NTMP development in all phases and for all transport modes and sectors. To this end, a very synthetic and detailed listing of activities is shown hereafter in order to illustrate clearly the various steps and projects proposed for achieving a fully implemented Master Plan vision in Year 2045. The various sub-sectors are as follows:

- Road Transport;
- Rail Transport;
- Air Transport;
- Maritime Transport;
- Public Transport;
- Border Crossing Points;
- Logistics.

Each sub-sector is supported by the following information:

- Main needs;
- Infrastructure type;
- Location and network;
- Sector development projects by phase.

The last part of this chapter lists and describes the assessment procedures applied for validating the project programs in terms of:

- Technical and Economic Feasibility;
- Commercial and Financial Viability;
- Environmental and Social Sustainability;
- Legal Equitability;
- Juridical Acceptability.



2 Road Transport

2.1 Main Needs

The Road Network Development Planning needs focusing on qualitative and quantitative forward leaps. These include:

- Upgrading road design as well as road construction and maintenance operational standards based on advanced asset management principles
- Ensuring periodic reviews of the Master Plan in three-to-five year intervals for anticipating future needs and adapting to current changes
- Ensuring effective strategic coordination on Regional and Municipal Planning levels
- Exercising strict quality monitoring and control through methodical, executive-level audits and key performance indicators review
- Providing for legislation that takes into account administrative issues, aimed at materializing road safety and security and at preserving citizens' lives and properties^{*1}
- Reducing road accidents and environmental vehicles contamination*
- Building drivers' capacities and competence*
- Addressing urban and national traffic in order to provide multiple-route choices for national movements, by-passing urban agglomerations

2.2 Infrastructure Type

Palestinian Roads of all categories are included: Primary, Secondary and Tertiary or Local, as well as future city by-passes and ring roads, serving private traffic, Public Transport and heavy motorized vehicles (through dedicated slow lanes). *For more details, refer to: ¶IV.1 – Road Transport.*

2.3 Location and Network

- Areas A, B, C and Nature Reserves
- Main, Regional, Local and Proposed New Roads Networks
- Municipal to Regional Links and vice versa.

2.4 Sector Development Projects by Phase

2.4.1 Phase 1A (End of 2016 –2018) – 2-Year Investment Plan

- Conduct a Road Re-habilitation and Up-grading Program review, within a renewed National Roads Asset Management Scheme
- Run Regional and City Planning Conferences for National Roads – City Links shared Master Planning
- Open Palestine – Israel joint Road Asset Management and Development Committee
- Discuss the Opportunity for the institution of a National Road Development and Management Authority, Agency or Department

¹All the sentences indicated with the symbol “*” are taken from the document *MoT, Transport Vision Master Plan, 2015*



- Launch planning and design of ring and by-pass roads of major cities in West Bank and Gaza Strip
- Rehabilitate and upgrade existing roads connecting Ramallah-Nabulus
- Complete and implement partially (40%) rural roads currently on the MoPWH's program
- Launch planning and design activities for the Gaza Strip Eastern Expressway
- Rehabilitate and upgrade road connecting to Yasser Arafat Airport in Gaza Strip
- Rehabilitate and upgrade road/s linking to the Gaza Fishery Port
- Launch detailed feasibility study, planning and design for a full technical, economical, financial, environmental, legal, juridical and operational assessment on the road-rail-utilities dedicated West Bank – Gaza Strip Corridor
- Procure and install warning and guidance signs, as well as installing road safety barriers, reflectors, traffic lights and road marks^{*2}
- Rehabilitate and upgrade the road between Karem Abu-Salem BCP and Rafah BCP
- Rehabilitate and upgrade of the Salah Al Din central axis road in Gaza Strip
- Launch planning and design for new eastern road network connecting Nabi Musa-Hebron-Bethlehem
- Rehabilitate and upgrade the road connection to Karama Bridge BCP;
- Conduct detailed surveys of road inventory and conditions
- Restructure, organize and capacitate Roads Departments for planning and development, administration and management
- Conduct studies and organize activities to collect information regarding Roads Total Quality.

2.4.2 Phase 1 (2019 - 2024)

- Review legislation in relation to road and transportation planning, design, finance, tender, build, operate and maintenance.
- Plan, design and construct Gaza Strip Coastal Road
- Plan, design and construct Gaza Strip Main Connections to N-S Central Axis
- Issues to tender and construct New Gaza Strip Eastern Corridor
- Plan, design and construct Coastal Road to Bayt Hanoun Road Connection
- Plan, design and construct New Connection from Bayt Ummar - Surif – al Dhahiriya
- Plan, design and construct New Eastern Road Network: Nabi Musa to Bethlehem
- Plan, design and construct New Connection "Wadi al-Nar"
- Plan, design and construct New Ramallah Eastern By-pass Road
- Plan, design and construct New Nablus/Huwwara By-pass Road
- Plan, design and construct West Bank N-S Backbone Reinforcement
- Plan, design and construct Road Connecting Ramallah to Jericho (Road n.449)
- Plan and design West Bank Radial Road System
- Plan, design and construct New Eastern Road Network: Nabi Musa-Hebron-Bethlehem
- Plan and design New Western Connection: Tulkarm to Ramallah
- Partially implement rural roads sealing - Stage 2 (80%)
- Launch planning and design for West Bank radial road system connecting main cities and rural areas
- Partially implement urban ring-roads in West Bank Main Cities for Jenin, Hebron and Ramallah
- Implement first stage of the West Bank – Gaza Strip Corridor (road-rail-utilities) comprising mainly of the improvement of road n.35 connecting the Tarquimiya BCP to road n.60;

²All the sentences indicated with the symbol "*" are taken from the document *MoT, Transport Vision Master Plan, 2015*



- Carry out Land Acquisition and Possession, along the West Bank – Gaza Strip Corridor, starting Preliminaries for the West Bank – Gaza Strip Corridor;
- Plan main links from new logistics areas to city, to new industrial estates, to transportation hubs;
- Plan increased capacity of roads leading to border crossing, in particular, those expected to open to full operation in the next Phase;
- Identify, define and rule over required Land Acquisition;

2.4.3 Phase 2 (2025-2031)

- Adjust program, depending on relevant port, airport, rail, public transport, BCP and logistics development planning and traffic modelling outcomes;
- Review and Upgrade Asset Management System;
- Implement urban to peripheral road links, connecting inter-city rail system or external public transport hubs to urban areas;
- Implement increased capacity roads, leading to border crossing, expected to open to full operation in this phase;
- Implement main links from new logistic areas to city, to new industrial estates, to transportation hubs;
- Organize and Capacitate Ministries and Departments to new Administrative Set Up;
- Design and construct New Gaza East-West Road Connections
- Construct New Western Connection: Tulkarm to Ramallah
- Construct West Bank radial road system - Stage 1
- Design and construct Road Connecting Ramallah to Jericho (Road n.457/458)
- Design and construct West-East Road connecting Majdal to Road n°90
- Design and construct to completion all rural roads sealing - Stage 3
- Construct new West Bank - Gaza Strip Corridor - Stage 2 (100%)
- Construct urban ring-roads in West Bank main cities - Stage 2 (100%)

2.4.4 Phase 3 (2032-2037)

- Design and construct to completion West Bank radial road system - Stage 2

2.4.5 Phase 4 (2038-2045)

- Design and construct West Bank Perimeter Road System



3 Rail Transport

3.1 Main Needs

The objective need for a rail network stems from the country's need to link to a wider-area regionally-planned rail network linking the different countries of the Mashreq Region together. This need is also reinforced by the recent development of a regional transportation master plan that links all southern Mediterranean countries and is promoted by the European Union, through the Euro-Mediterranean Transport Cooperation for the preparation of Trans-Mediterranean Transport Network. Moreover, the freight movement generated by the implementation of a new commercial port in Gaza Strip will necessitate an alternative transport response to the already suffering road transport. Beyond the technical and engineering justification of the rail network implementation, it is considered a very strategic sector that will boost local economy by increasing employment, improving safety conditions on roads, shifting freight transport to rail hence reducing significantly road maintenance costs that witness incremental deterioration in sloping networks, as in the case of the West Bank. Albeit NTMP does not comprise a feasibility analysis, requiring a separate and detailed study, the multimodal traffic model presented in forthcoming chapters shows a significant increase in modal shift toward rail and increasing ridership that builds up gradually and exponentially till reaching its peak in year 2045 further to the significant increase in population and GDP. Rail is conceived in two types of connections: (1) International connections that link Rafah BCP, south of Gaza Strip, to Tell Al Bayda BCP, north-east of West Bank, linking hence Egypt to Jordan border crossing points. (2) National connections construed as the central spine that runs along the north-south backbone connecting major cities such as Hebron, East Jerusalem, Bethlehem, Ramallah, Nablus and Jenin. This same line will connect to the Israeli railway network through connecting to the Haifa-Irbid line.

3.2 Infrastructure Type and Function

Urban Light Train, Local, National, International, High/Medium Velocity, High/Medium Capacity, Passenger and Freight Trains are considered. *For more details, refer to: ¶IV.2 – Rail Transport.*

3.3 Location and Network

The following networks are taken into consideration and analyzed for Proposal:

- Urban and Interurban Network;
- Regional Network;
- National Network;
- International Network.

3.4 Sector Development Projects by Phase

In a first instance, the first section of the north-south national rail backbone will be implemented, from Nablus to Ramallah. In a later phase the same line will be extended northward and southward to reach Jenin and Al Jalameh BCP and BaniNa'im (Hebron Governorate), respectively. Therefrom, the national railway system links internationally, north west from Jenin, towards Haifa and north east to Irbid and Amman; south west, from BaniNa'im, to Gaza Strip and from Gaza Strip to Egypt. An alternative international rail link could be developed east of the above, running from BaniNa'im to Jericho and north again towards Irbid passing through



Tell Al Bayda BCP. The complete rail network includes internal loops to efficiently cover the entire territory.

3.4.1 Phase 1A (End of 2016 –2018) – 2-Year Investment Plan

- Conduct Feasibility Studies and Preliminary Design on the Master Plan proposed National and International Railway Project Network;
- Launch planning and design for the for the Implementation of Nablus to Ramallah Rail Link as first stage of the North-South Rail Backbone connection;
- Open and conduct Consensus Building bi-lateral Meetings, with the diplomatic supports of the EC and the Quartet, in order to negotiate the West Bank-Gaza Strip Corridor;
- Restructure, organize and capacitate a Palestine Rail Department;
- Launch detailed feasibility study, planning and design for a full technical, economical, financial, environmental, legal, juridical and operational assessment on West Bank-Gaza Strip Corridor.

3.4.2 Phase 1 (2019 – 2024)

- Implement Ramallah-Nablus rail connection;
- Launch detailed feasibility, planning and design for extension of the Ramallah-Nablus rail southwards towards BaniNa'im (Hebron Governorate);
- Launch detailed feasibility, planning and design for extension of the Ramallah-Nablus rail northwards towards Jenin;
- Undergo legal acquisition/possession procedures;
- International links and priorities re-negotiated.

3.4.3 Phase 2 (2025 – 2031)

- Launch detailed feasibility, planning and design of the Gaza Strip international rail connection, running along the eastern edge of the strip and connecting Rafah BCP to Bayt Hanoun BCP future development and link to West Bank and Jordan;
- Implement West Bank northern connection to international network;
- Implement the Ramallah-BaniNa'im connection southward;
- Implement the Ramallah-Jenin-Ai Jalameh BCP connection northward;
- Financial/Operational Options Evaluated and Submitted for International Partnership.

3.4.4 Phase 3 (2032 – 2037)

- Implement the Gaza Strip International rail connection, running along the eastern edge of the strip and connecting Rafah BCP to Bayt Hanoun BCP future development and link to West Bank and Jordan;
- Implement rail link to New Gaza Commercial Port;
- Launch planning and design and implement West Bank International rail connecting Hebron to Tell Al Bayda BCP passing through Jericho;
- Launch detailed feasibility, planning and design of western West Bank rail system;
- Launch detailed feasibility, planning and design of Tubas-Damyeh BCP rail connection;
- Financial/operational options evaluated and submitted for international partnership.

3.4.5 Phase 4 (2038 – 2045)

- Implement western West Bank rail system;
- Implement Tubas-Damyeh rail connection;

- International links reviewed and works carried out to meet international network and standards;
- Financial/operational options negotiated and entered into with international partners.



4 Maritime Transport

4.1 Infrastructures Type and Function

Different types of ports and functions are investigated for the fishery port, with relevant facilities, e.g. cold stores, fish market, spares and repairs, offices and amenities as well as for the commercial port, including RoRo, LoLo, container terminal, bulk terminal and relevant logistics and facilities.

Infrastructure types and operational functions include:

- Harbor Docking, Mooring, Bays, Berths, Floating or Fixed Island;
- Loading - Unloading Mobile Cranes, Portal Cranes, Conveyors;
- Storage, Cold Storage, Dry Silos, Container Sheds, Bulk Sheds, Secured Scanning Rooms;
- Repairs and Maintenance, Emergency, Amenities, Security, Offices;
- Passenger Port, with Local, International and Tourist Sections and relevant Facilities;
- Local Tourist Port and Facilities;
- Other: Off Shore Natural Gas Exploitation, Storing, Pre-Processing, Exporting and Distribution.

For more details, refer to: ¶V.4 – Maritime Transport.

4.2 Location and Network

- Two alternatives are proposed for the location of the new Gaza Commercial Port: (1) Gaza City South, and (2) Atatra (north of Gaza City), close to northern border;
- Rehabilitation and expansion of the current fishery port maintaining its current position;
- Joint with commercial port or separate, passenger port (with preference to joint, central position);
- Gaza local tourist port and facilities;
- South west off shore gas deposits;
- Dead Sea tourist shore facilities and eventual, future international sea transport routes.

4.3 Sector Development Projects by Phase

In a first instance, and for preliminary or concept Transportation Master Plan purposes and discussion, broadest hypotheses were made and options assessed, in particular to satisfy the urgency within the 2-year investment plan and Phase 1 (end of 2016-2024). Guidelines and general recommendations by the Palestine Ports Authority are respected, together with earlier consensus (e.g. Oslo Accords) and further expected consensus. It is assumed that port operability is urgently re-established, starting from current fishery port; alternatives in Gaza City South and Atatra (north of Gaza City) are shown, nevertheless the Consultant expressed preference to the location south of Gaza City, supported by a detailed comparative analysis.

4.3.1 Phase 1A (End of 2016 –2018) – 2-Year Investment Plan

- Negotiate Increased Fishing Mileage, together with reopening of Light Commercial port and Emergency Passenger Port, on current Fishing Harbor location;



- Develop relevant Fishery Port, with Facilities, e.g. Cold Stores, Fish Market, enhancing and fortifying the Harbor on sound foundation, ensuring safety of users³;
- Deepen the Harbor Basin, fortifying the Breakwater Structures and repairing the Northern Coast, in order to cease erosion of Ash Shati' Refugee Camp*;
- Launch planning and design activities of New Commercial Port, including RoRo, Bulk Terminal and relevant Logistics (1st Level), on current Fishing Harbor location;
- Develop Operation for a Passenger Terminal (1st Level) on current Fishing Harbor location;
- Improve the Shore area, within the Port, for City Leisure;
- Study Potentiality and Effects of Natural Gas Exploitation on Port needs;
- Launch detailed feasibility study, planning and design for the New Gaza Commercial Port;
- Structure Project Financing for Private or PPP for New Commercial Port;
- Renegotiate Foreign Trade Bilateral and Multilateral Agreements;
- Restructure, organize and capacitate Ports Authority for ports planning and development, administration and management.

4.3.2 Phase 1 (2019-2024)

- Revise legislation on: Ports Authority, licensing, taxation, extension of shore under Port Authority;
- Reorganize and Capacitate Ports Authority to new development and operational tasks;
- Develop Fishery Port (2nd level) on current location, with relevant facilities, e.g. cold stores, fish market, spares and repairs, offices and amenities and leisure;
- Implement Commercial Port facilities, including LoLo, RoRo, bulk terminal and relevant logistics (Phase 1) on final selected location;
- Negotiate Port Facilities, linked to natural gas exploitation;
- Launch International Concession Tender for Private or PPP for New Commercial Port;
- Coordinate Marine Development Plans with Governorates and Municipalities;
- Launch new, urban, coastal development tenders, together with Governorates & Municipalities.
- Complete the rehabilitation of existing Gaza Fishery Port Restructuring
- Complete the implement of the New Gaza Strip Commercial Port

4.3.3 Phase 2 (2025-2031)

- Award International Concession for Private or PPP New Commercial Port; alternatively, Go Ahead with New National Commercial Port Development;
- Study and negotiate Palestine and Jordan Dead Sea Marine eventual commercial and tourist Routes;⁴
- Develop Passenger Terminal, local and international;
- Develop Local Tourist Ports and Facilities;
- Plan for the development of a Palestine National Sea Fleet;
- Negotiate financing of National Sea Fleet;
- Negotiate new routes and commercial agreements with neighboring and distant countries;
- Develop further shore facilities and complementarities.

³All the sentences indicated with the symbol “*” are taken from the document *MoT, Transport Vision Master Plan, 2015*.

⁴Ad hoc pre-feasibility studies are needed to verify the viability of these proposals.

- Award New Coastal Development Projects, together with Governorates and Municipalities;
- Start implementation of new urban coastal development projects.

4.3.4 Phase 3 (2032-2037)

- Complete Commercial Port Facilities and relevant Logistics;
- Continue Implementation of new, urban, coastal development projects;
- Carry out National Sea Fleet Development Program and Partnerships;
- Implement new routes and commercial agreements with neighboring and distant countries.

4.3.5 Phase 4 (2038-2045)

- Complete Commercial Port facilities and relevant logistics;
- Continue implementation of new, urban, coastal development projects;
- Update and upgrade National Sea Fleet Development Program;
- Improve efficiency on new routes and commercial agreements with neighboring and distant countries;



5 Air Transport

5.1 Infrastructures Type and Function

Development schemes for passengers, cargo, heliport and emergency functions are studied in terms of national, regional and long-range air service, together with the potential offered by External Base International Airports. *For more details, refer to: ¶IV.3 – Air Transport.*

5.2 Location and Network

- Qalandiya, for Emergency, Heliport, Aero Club and Minor Regional Services
- Gaza Strip, as re-constructed regional (EU.MENA) Airport – category: ICAO-C
- West Bank, for a New International Airport – category: ICAO-F
- Amman as interim and temporary continued External Base International Airport

5.3 Sector Development Projects by Phase

In a first instance, and for Preliminary Transportation Master Plan purposes and discussion, the first and more practicable and viable hypothesis, that of re-constructing the Gaza Yasser Arafat Regional Airport in Gaza Strip, will be considered, already during the early phase of Phase 1, as required to satisfy urgent and normal conditions. Guidelines and general recommendations by the Palestine Aviation Authority, in conjunction with International Experts, will be respected, together with earlier Consensus (e.g. Oslo Agreement) and any further Consensus to be reached. Airport(s) Development to be eventually considered for further phases will be geared toward rational, viable and sustainable as well as total growth of Palestine and neighboring infrastructure system considerations. Aviation Services capacity will be strengthened and delivery enhanced, already in Phase 1A, to progress further as per requirements.

5.3.1 Phase 1A (End of 2016 –2018) – 2-Year Investment Plan

- Consider and negotiate Qalandiya to be re-developed and operated for Emergency Airport, Heliport and/or Aero Club purposes;
- Reconstruct and reopen to operations Gaza Yasser Arafat Airport – category: ICAO-C;
- Launch detailed feasibility, planning and design for the implementation of the New West Bank International Airport – category: ICAO-F;
- Carry out and submit new international airport financing structure;
- Collect Finance, Build, Operate and Transfer program proposals on the new West Bank International Airport for government's approval;
- Restructure the civil aviation department for planning, administration and management of proposed airports;
- Consider Amman as an interim and temporary continued External Base International Airport.

5.3.2 Phase 1 (2019 – 2024)

- Achieve progress on International Aeronautical approval pre-conditions as well as on bilateral and multilateral negotiations for airspace access and landing rights preliminary obtainment;
- Plan, design and complete construction of the Gaza Yasser Arafat Regional Airport – category: ICAO-C;



- Implement the first phase of the New West Bank International Airport – category: ICAO-F, for substantial completion and operation;
- Organize and capacitate the Aviation Department for enhancing service delivery;
- Increase fleet of the Palestine Airlines.

5.3.3 Phase 2 (2025 – 2031)

- Implement the second and final phase of the New West Bank International Airport – category: ICAO-F, for full completion and operation;
- Implement first stage of the New International Airport Logistics for substantial completion and operation;
- Enhance and upgrade the Aviation Department for enhancing service delivery;
- Increase fleet of the Palestine Airlines.

5.3.4 Phase 3/4 (2032 – 2045)

- Enhance and upgrade the Aviation Department for enhancing service delivery;
- Increase fleet of the Palestine Airlines.



6 Public Transport

Public Transport is examined and analyzed based on empirical data collected during an extensive on and off board survey for reconstructing current travel demand, traffic distribution patterns, Origin/Destination matrices, tariff structure, etc. Based on the above, a new plan is drawn to respond to current needs and inadequacies. Main needs are attributed to organizational, institutional and legislative issues that stop the public transport sector from developing further into a well-organized and reliable service, a key component for the success of Public Transport.

6.1 Infrastructures Type and Function

Development schemes for public transport addresses intercity buses, BRT services to be implemented in major cities connecting city edges with new rail stations, and cutting through congested urban areas, potential Light Rail Transit development to replace BRT services or to add on, intercity rail services, and international rail connection. *For more details, refer to: ¶V.5 – Public Transport.*

6.2 Location and Network

- Urban network (excluded);
- Planned BRT network;
- Potential LRT urban network;
- Intercity buses;
- Rail connection between cities;
- International rail connections linking to neighboring existing and planned networks.

6.3 Sector Development Projects by Phase

Public Transport network requires a significant investment given the current non-existence of a consolidated PT network. To this end, steps are drawn in order to allow for a gradual development of the sector in response to increasing demand, resulting from demographic changes and modal shift further to the implementation of the multimodal PT network. The full Public Transport Network is composed of: 5 Major Hubs (Gaza City, Hebron, East Jerusalem (with Bethlehem), Ramallah/AI Bireh/Beitunia, and Nablus), 23 Major Stations, distinguished between: Urban Major Poles and Extra-Urban Secondary Nodes. The Public Transport network is articulated in different phases accordingly:

6.3.1 Phase 1A (End of 2016 –2018) – 2-Year Investment Plan

- Run Regional and City Planning Conferences for Regional and National Public Transport reorganization;
- Establish new entity for the planning, administration and management of National Public Transport Services;
- Launch planning and detailed design of the proposed Public Transport Network including design of new hubs, stations and stops;
- Temporary refurbishment of existing major hubs and stations.



6.3.2 Phase 1 (2019 –2024)

- Launch detailed feasibility, planning and design for 5 BRT corridors in Ramallah, Nablus, East Jerusalem, Hebron and Gaza City;
- Procure intercity bus fleet – Stage 1 – around 50 buses;
- Implement rehabilitation and upgrading projects for all PT major hubs, major stations, bus stops and maintenance and parking depots;
- Organize, capacitate and further equip the National Public Transport Department for acquiring know how for advanced administration and operations.

6.3.3 Phase 2 (2025 –2031)

- Implement 2 BRT corridors: (1) Ramallah-AI Bireh-Beitunia (total length: 18km) and (2) Nablus (total length: 18km);
- Procure BRT fleet – Stage 1 – around 30 BRT;
- Procure intercity bus fleet – Stage 2 – around 50 buses;
- Further organize, capacitate and equip the National Public Transport Department for acquiring know how for advanced administration and operations.

6.3.4 Phase 3 (2032 –2037)

- Implement 2 BRT corridors: (1) East Jerusalem (length: 9km) and Bethlehem (length: 9km) and (2) Hebron (total length: 18km);
- Procure BRT fleet – Stage 2 – around 30 BRT.

6.3.5 Phase 4 (2038 –2045)

- Implement 1 BRT corridor: Gaza City (total length:18 km);
- Procure BRT fleet – Stage 3 – around 30 BRT.



7 West Bank - Gaza Strip Corridor

The right for a 'safe passage' or Transport Corridor between Gaza Strip and the West Bank, referred to hereafter as the "West Bank – Gaza Strip Corridor", was confirmed and an Agreement on three possible corridors was signed between the PNA and Israel. Since then, several corridors outlining attempts were made, the most complete of which is the relatively recent study by Louis Berger and Universal Group, who have evaluated, on behalf of USAID, a total of 10 transport alignments connecting West Bank to Gaza Strip along with a number of modal combinations, road only, rail only, and road and rail within the same corridor and with different cross-sectional configurations, at grade, sunken cross section for a road, and tunnel alternatives for rail.

The various alignments include an evaluation of ground level alternatives with two alternative end points on the West Bank – Tarqumiya and a second end point at a more southerly location in the West Bank as well as a tunnel alternative.

NTMP main task, in this regard, is focused on programming the strategic implementation steps of the subject West Bank – Gaza Strip Corridor.

7.1 Infrastructures Type and Function

The corridor accommodates for road, rail and utilities infrastructure.

7.2 Sector Development Projects by Phase

The WB-GS Corridor represents the most critical and valuable element for NTMP. Its negotiation and obtainment, in whatever fruitful and long or ever-lasting form, will be the most delicate and valuable accomplishment, as national benefits, for both, Israel as well as Palestine, greatly overwhelm costs, in any case or option.

7.2.1 Phase 1A (End of 2016 –2018) – 2-Year Investment Plan

- National road network planning, to include West Bank - Gaza Strip Corridor;
- National railways network planning and preliminary in-depth assessment to include West Bank - Gaza Strip Corridor;
- International rail links planning and preliminary in-depth assessment to include West Bank - Gaza Strip Corridor;
- First stage consensus gained on West Bank - Gaza Strip Corridor;
- West Bank - Gaza Strip rail connection negotiation progress based on 1993 agreement stage;
- International plans/priorities re-discussed;
- Financial/operational options evaluated;
- Conduct full technical, economical, financial, environmental, legal, juridical and operational assessment on dedicated rail and utilities link, from Gaza Strip to West Bank.

7.2.2 Phase 1 (2019 – 2023)

- West Bank - Gaza Strip Corridor (road, rail and utilities) initial works are launched including mainly land acquisition and implementation of new/ rehabilitation of existing road n.60 connecting the West Bank inlands to Tarqumiya BCP;
- Financial/operational options are evaluated and developed for securing funding.



7.2.3 Phase 2 (2024 – 2031)

- West Bank - Gaza Strip road connection is fully implemented and operative;
- Launch planning and design of the Rail connection running through the proposed Corridor within the overall International Railway network framework;
- Financial/operational options for operation and maintenance of road connection are evaluated and submitted for international partnership.

7.2.4 Phase 3 (2032 – 2037)

- West Bank - Gaza Strip rail connection is fully implemented and operative;
- Financial/operational options for operation and maintenance of Rail Corridor are evaluated and submitted for international partnership.

7.2.5 Phase 4 (2038 – 2045)

- West Bank - Gaza Strip Corridor is fully operative (road, rail and utilities);
- Maintenance and upgrading works for ensuring desired level and quality of service.



8 Border Crossing Points (BCPs)

8.1 Infrastructures Type

Relevant infrastructure includes: border crossing open areas, covered platforms, buildings and facilities, fences, security equipment and others.

8.2 Location and Network

Rehabilitation and upgrade of the following Border Crossing Points (BCP) is provisioned for gradual implementation.

8.2.1 West Bank

- Tulkarm-Faroun BCP;
- Damyeh BCP;
- Karama Bridge BCP;
- Tarqumiya BCP;
- Beitunia BCP;
- Al Jalameh BCP;
- Tell Al Bayda BCP;
- King Abdallah BCP;
- Bayt Jala BCP;
- Freijat (Al Dahriya) BCP.

8.2.2 Gaza Strip

- Bayt Hanoun BCP;
- Rafah BCP;
- Karm Abu Salem BCP.

8.3 Sector Development Projects by Phase

8.3.1 Phase 1A (End of 2016 –2018) – 2-Year Investment Plan

- Increase door-to-door tonnage through Al-Karama and Rafah BCP;
- Negotiate additional border crossing agreements and tonnage, also through bulk handling;
- Implement security and capacity logistics in cooperation with neighboring states;
- Negotiate immediate opening of Damyeh BCP, mainly for freight movements;
- Rehabilitate and upgrade Tulkarm-Faroun, Damyeh, Al-Karama Bridge, Tarqumiya, Beitunia and Rafah BCP to category A. *For more details, refer to: ¶VI – Logistics, BCPs and West Bank – Gaza Strip Corridor.*

8.3.2 Phase 1 (2019 – 2024)

- Rehabilitate and upgrade Al Jalameh, Tell Al Bayda, Bayt Hanoun, King Abdallah, Bayt Jala, and Freijat (Al Dahriya) BCP to category A;
- Rehabilitate and upgrade Damyeh, Al Karama Bridge and Karm Abu Salem BCP to category B.



8.3.3 Phase 2 (2025 – 2031)

- Rehabilitate and upgrade Al Jalameh, Tell Al Bayda, Tulkarm-Faroun, Tarqumiya and Bayt HanounBCP to category B;
- Rehabilitate and upgrade King Abdallah, Bayt Jala and Rafah BCP to category C

8.3.4 Phase 3/4 (2032 – 2045)

- Conduct ordinary maintenance and upgrade (where required) of BCP infrastructure and facilities.



9 Logistics Areas

9.1 Infrastructures Type

Relevant infrastructure includes: road lines, short and long term stationing for trucks, buses and cars, check gates, platforms, tellers, offices, rest rooms and general amenities, loading – unloading and storage areas, logistics, technological security check systems and information processing.

9.2 Location and Network

The following logistics areas are taken into consideration:

9.2.1 West Bank

- Jenin District Logistics Area;
- Tulkarm District Logistics Area;
- Jericho District Logistics Area;
- Bethlehem District Logistics Area;
- Hebron District Logistics Area;
- Damyeh National Logistics Area.

9.2.2 Gaza Strip

- Gaza District Logistics Area;
- Gaza New Commercial Port National Logistics Area.

9.3 Sector Development Projects by Phase

9.3.1 Phase 1A (End of 2016 –2018) – 2-Year Investment Plan

- Launch detailed feasibility study for a National Logistics Network and Implementation Program;
- Launch planning and design of Damyeh National Warehouse project in a location to be specified.

9.3.2 Phase 1 (2019 – 2024)

- Implement first stage of National Logistics Program;
- Implement new District Warehouses in:
 - Jenin
 - Tulkarm
 - Jericho
 - Bethlehem
 - Hebron
 - Gaza City
- Implement new National Warehouses in:
 - Damyeh (early Phase 1)
 - Gaza Port Area.



9.3.3 Phase 2 (2025 – 2031)

- Implement second stage of National Logistics Program;
- Implement new District Distribution Centers in:
 - Jenin
 - Tulkarm
 - Jericho
 - Bethlehem
 - Hebron
 - Gaza City
- Implement new National Distribution Centers in:
 - Damyeh
 - Gaza Port Area.

9.3.4 Phase 3/4 (2032 – 2045)

- Implement third/ fourth Stage of National Logistics Program.



10 NTMP Development Maps by Phase

NTMP development in all phases and for all transport modes and sectors is illustrated in the following five maps:

- Multi-Modal Transport Network (Early Phase 1A: 2018);
- Multi-Modal Transport Network (End Phase 1: 2024);
- Multi-Modal Transport Network (End Phase 2: 2031);
- Multi-Modal Transport Network (End Phase 3: 2037);
- Multi-Modal Transport Network (End Phase 4: 2045).

The maps listed above are also provided in larger format (ISO UNI A1) in [Annex 3. Maps by Phase](#).

Figure 1. Multi-Modal Transport Network (End Phase 1A: 2018)

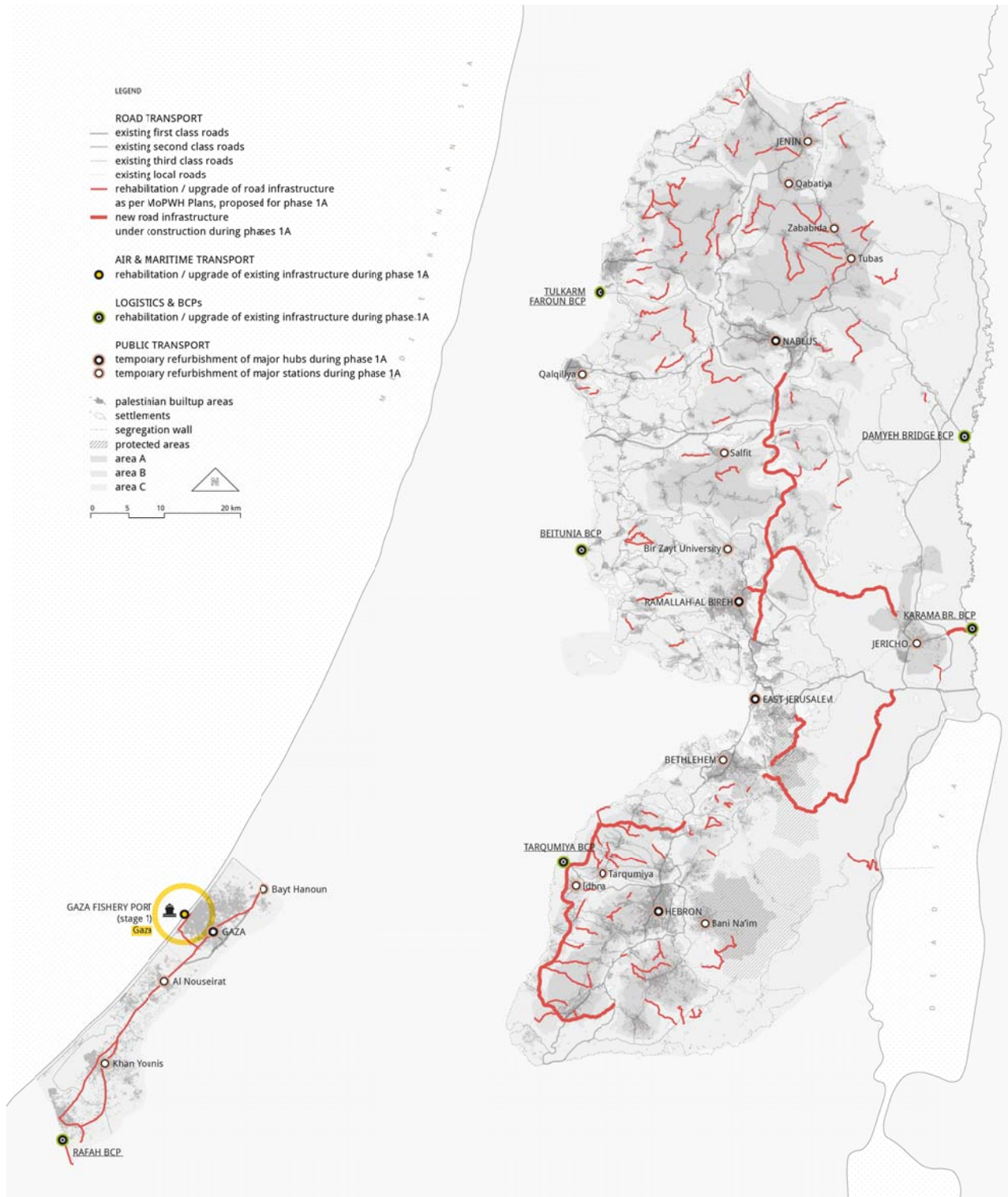


Figure 2. Multi-Modal Transport Network (End Phase 1: 2024)

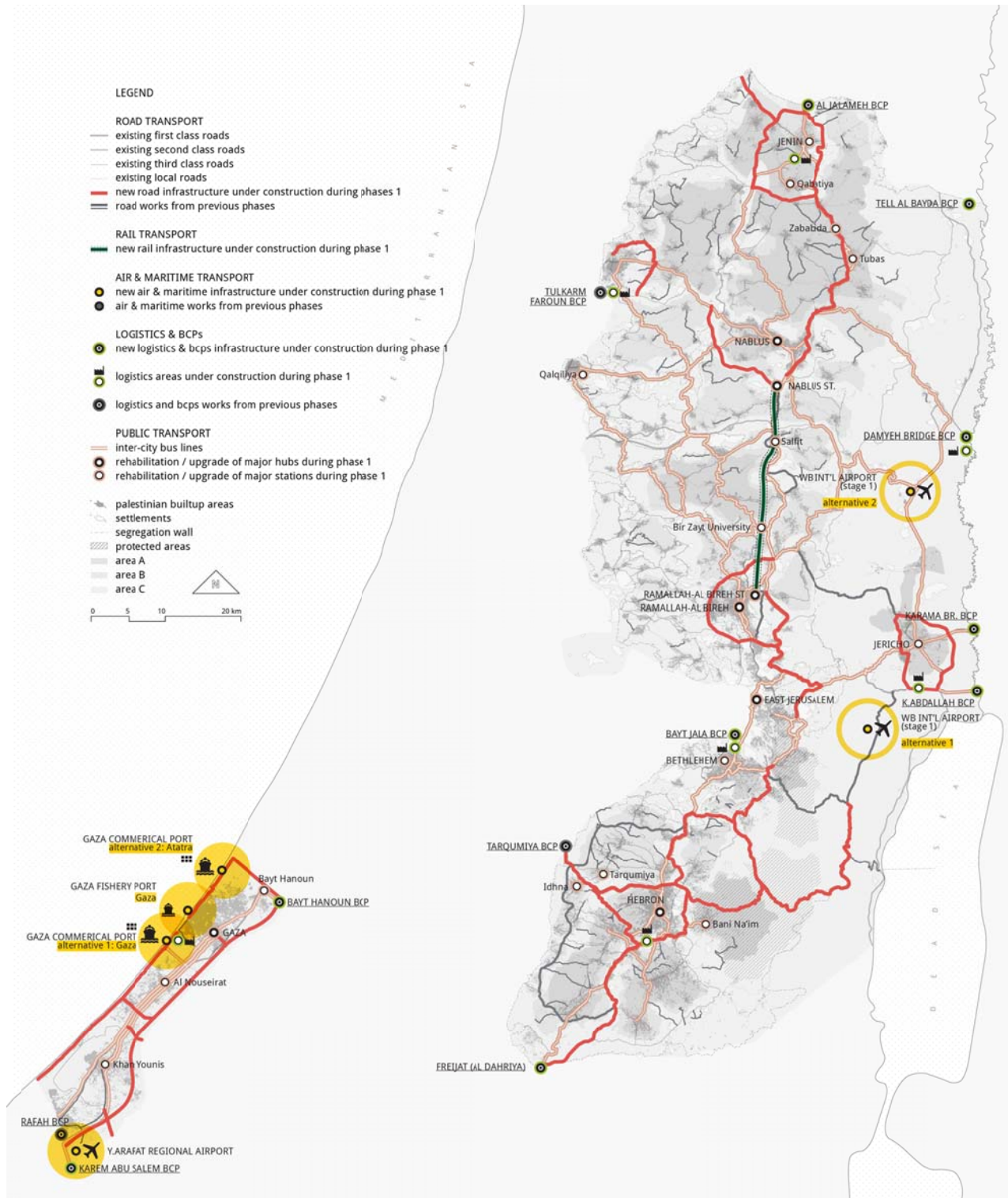


Figure 3. Multi-Modal Transport Network (End Phase 2: 2031)

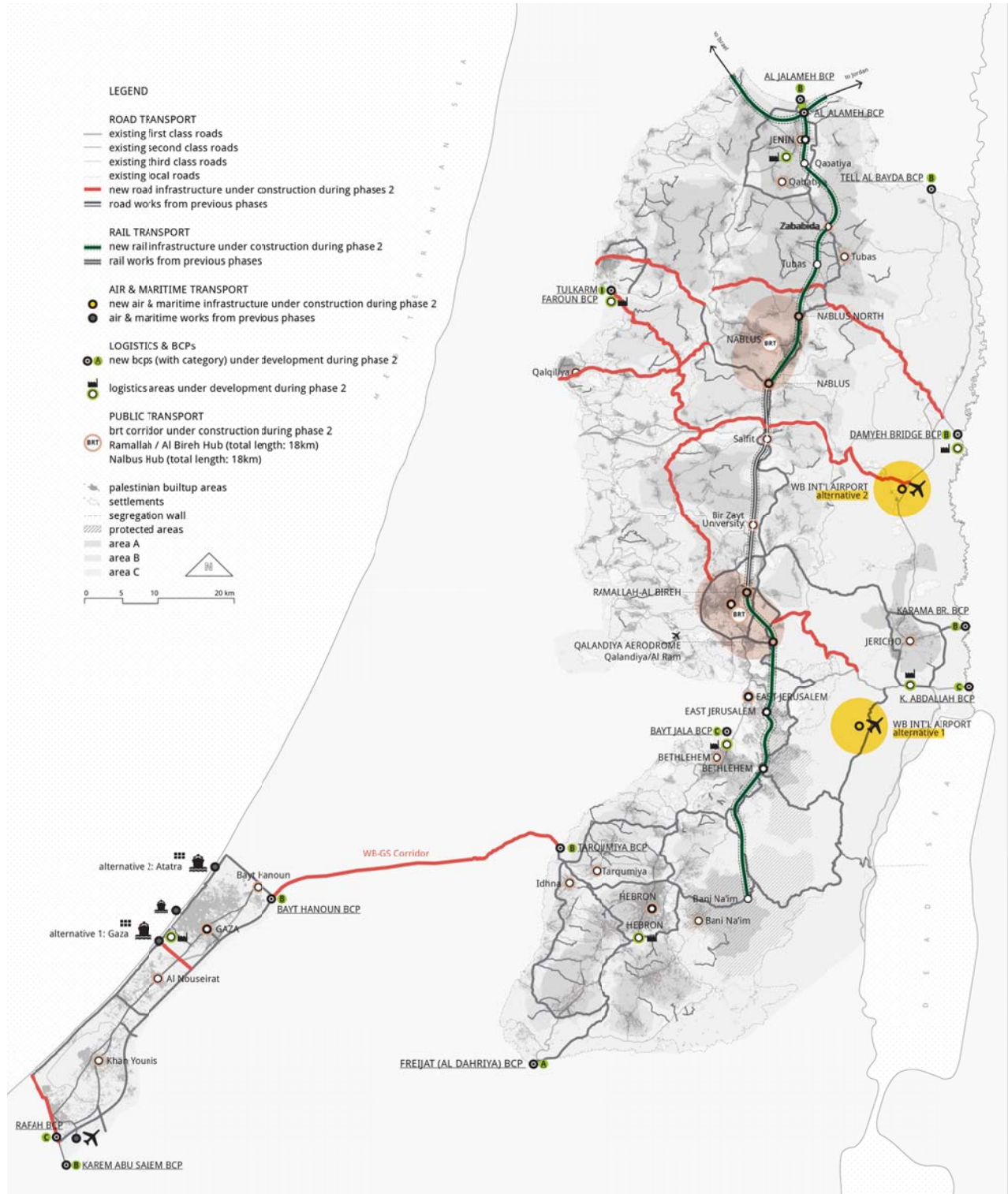


Figure 4. Multi-Modal Transport Network (End Phase 3: 2037)

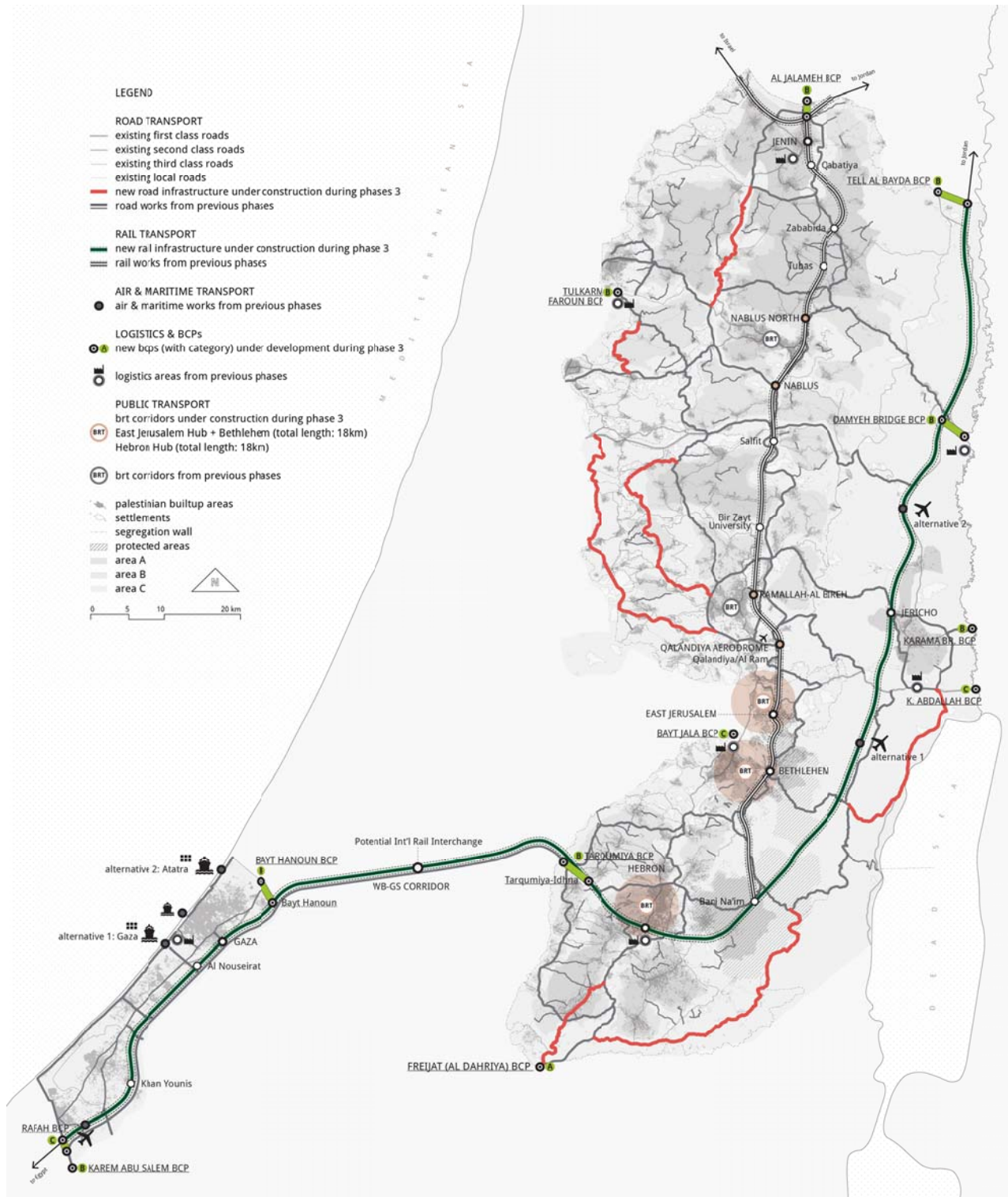
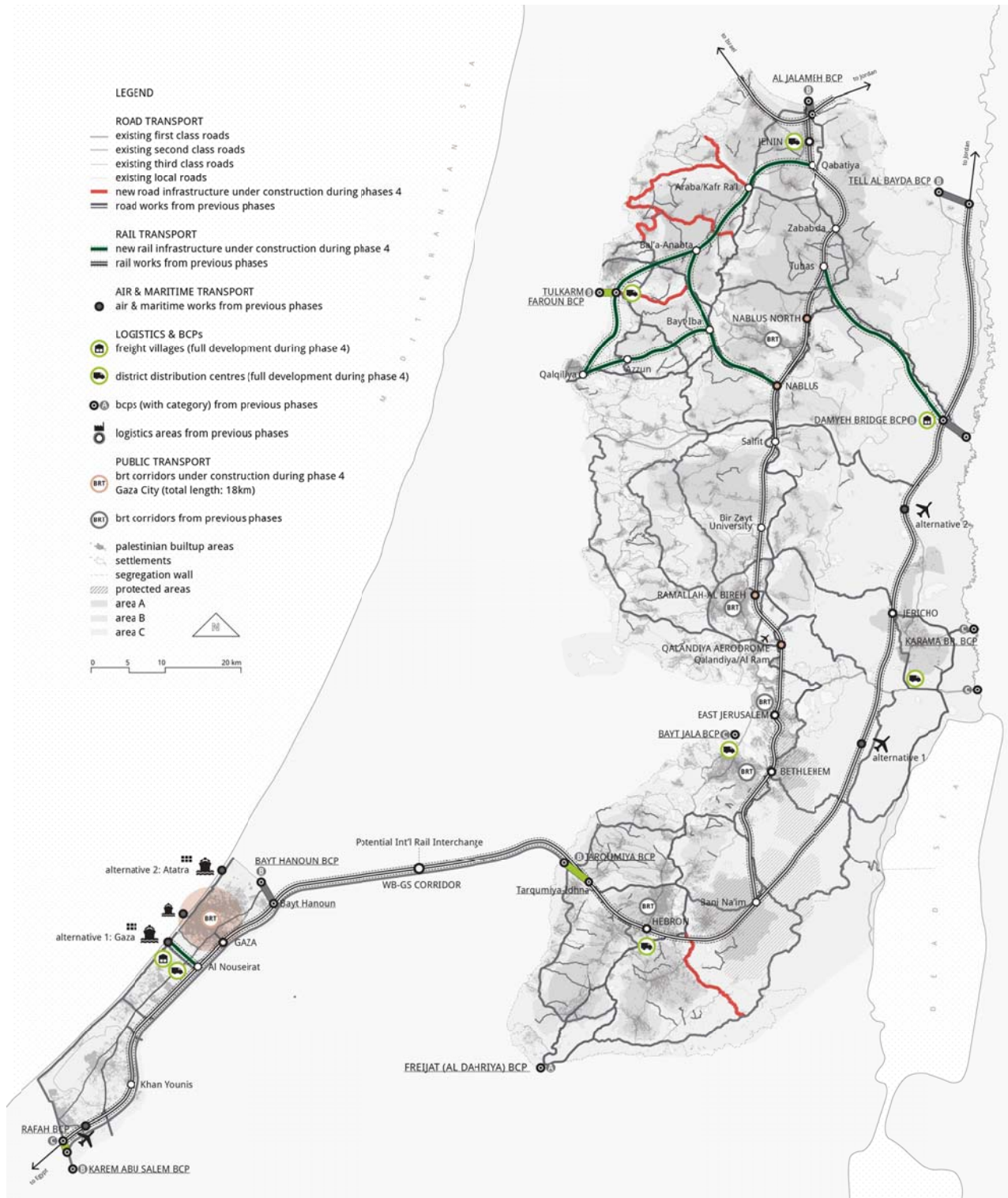


Figure 5. Multi-Modal Transport Network (End Phase 4: 2045)





11 Assessment Procedures

NTMP is assessed in terms of (1) technical and economic feasibility, (2) commercial and financial viability, (3) environmental and social sustainability, (4) legal equitability and (5) juridical acceptability. Assessment procedures are limited to the generic nature of the Master Plan and further detailed studies are required to ensure a detailed assessment study per project. Assessment procedures are summarized below and addressed in detail in the following chapters:

- **Technical and Economic Feasibility** are assessed based on international standards and comparable timing and prices for road development, rehabilitation and maintenance. Conventionally assessed through a set of technical and economic analyses, stems from technological (design) and methodological (method statement) best options evaluation, hence from economic effects alternative valuing (value engineering). Feasibility studies can be presented at different levels of detail, ranging from concept architecture to in depth engineering; for NTMP purposes, feasibility of Projects was limited to general planning and concept architecture, with relevant preliminary budget estimates and SWOT Analyses, aimed at best addressing the Terms of Reference for future needed Feasibility Studies and Preliminary Design.
- **Commercial and Financial Viability** are assessed through Net Present Value calculations of all projects. Conventionally represented on the basis of commercial and financial analyses, leads to profitability or bankability projections, generally valued on Internal Rates of Return, Net Present Value and Cost Effectiveness terms. Viability engineering and management can extend to further Project Financing proposal details; for NTMP purposes, viability assessment was limited to projects IRR and NPV, while some forms of Project Financing, e.g. PPP, BOT, BOOT, Partenariat, Sponsorship, Donation, have been treated in the separate Sub Sectors Documentation.
- **Environmental and Social Sustainability** is preliminarily assessed through first and second level evaluation of environmental and social impact considerations as well as through the quantification of benefits on employment per economic activity. Project and program sustainability is assessed in terms of the broadest set of geophysical, socio-political and economic impacts, induced by the project on total (land and people) environment. The resulting document can become a voluminous Total Environment Impact Study; for NTMP purposes, only general and preliminary impacts needed to be analyzed but, where appropriate for each imminent or urgent Project, further studies were recommended.
- **Legal Equitability** is assessed in general terms to ensure compliance with international standards and practices in terms of institutional setup, land acquisition, expropriation compensation laws and others. Project equitability is assessed in terms of the verified, fully respected or compensated legal rights, enjoyed by physical or juridical recognized bodies. For NTMP purposes, an analysis of the current national and international legal and juridical set up were carried out, in order to provide advice on the eventual framing of master agreements, land acquisition or expropriation compensations, temporary use or borrowing of resources, contracting, etc.
- **Juridical Acceptability** is based on international and national regulatory legislation as well general public consensus. Project acceptability is assessed in terms of the juridical conformity to supranational or national laws, international conventions and regulatory agreements, together with international as well as local standards and regulations. In this case of NTMP, Consensus Building, stemming out of a well-considered acceptability assessment, represents the most effective Master Program implementation instrument.