

# SUMP FOR LARNACA

## WP13: SUMP SUMMARY (D13.2)

31<sup>st</sup> May 2021

### Contracting Authority

Public Works Department, Ministry of Transport, Communications and Works of the Republic of Cyprus



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# 1. INTRODUCTION

In recent years Cyprus Central Government has been engaged in the process of **upgrading** its **strategic transport planning tools**. This initiative aims to streamline urban development policies, render them more coherent with the changed macro-economic context, while also support a better alignment between local policies and the national and international debates currently taking place.

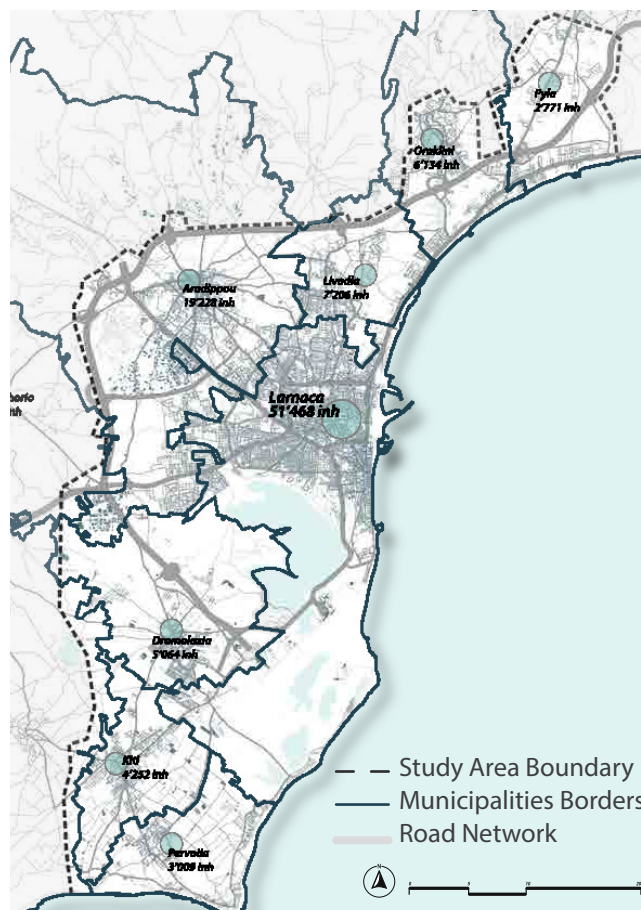
As part of this effort, the Public Works Department of the Ministry of Transport Communications and Works commissioned the project '**Consultancy Services for the development of a Sustainable Urban Mobility Plan (SUMP) for the Greater Urban Area of the city of Larnaca**' to a Consortium led by **MobilityinChain**. The project, co-funded by the EU through the Competitiveness and Sustainable Development Programme (2014-2020), officially started on 2 July 2018, and was completed on the 24 of September 2020.

The other members of the Consortium that provided consultancy services include **REDAS Engineering** (surveys, ITS and logistics), and **TeMA** (public transport and economics). **Nicolaides and Associates** (Environmental consultants) acted as sub-contractor to the lead consultant.

This report presents the final Sustainable Urban Mobility Plan in a compressed format, and provides an overview of the process and rationale that led to the selection of the measures included in the Plan. (For more details, see Final SUMP Report.

## 1.1 Study Area

Larnaca is the third largest city in the Country, after Nicosia and Limassol, and has, according to the 2011 Census data, an urban population of 84,591. In addition to Larnaca, the area covered by the SUMP includes the municipalities of Aradippou, Livadia and Dromolaxia-Meneou, as well as parts of the communities of Voroklini, Pyla, Kalo Chorio, Kiti and Pervolia. The whole study area is **148 sq. km** and has a **population of around 103,000 (approx. 36,000 households)** based on the 2011 census data. **Substantial functional relationships therefore exist among its constituent parts;** mainly between the centre and the outer areas but also, albeit to a more limited extent, between the outer urban centres.



WP13 - D.13.2 - Fig. 1 - The Planned Area

Municipality	km <sup>2</sup>
Larnaca	32.54
Aradippou	55.27
Livadia	8.71
Dromolaxia - Meneou	21.84
Communities	km <sup>2</sup>
Voroklini	15.01
Pyla	28.76
Kiti	8.23
Pervolia	8.08
Kalo Chorio	27.58
<b>Planned Area</b>	<b>148.80</b>

WP13 - D.13.2 - Tab. 1 - The Planned Area

## 1.2 SUMP Approach: Phases and Activities

The development of the Sustainable Urban Mobility Plan for the Greater Larnaca area followed approved European Guidelines. The key milestones in this step by step approach are:

- A **political decision** initiates the SUMP process and provides overall **guidance** and **leadership**;
- A sound analysis informs **scenario building** and supports decision making;
- A **shared vision, objectives** and **targets** set the strategic direction;
- **Integrated measure packages** are defined that can deliver the objectives and targets;
- **Measure packages** are **divided into actions** (actionable tasks) that are further operationalised, including in terms of responsibilities and financing;
- Based on all previous decisions, a SUMP is adopted that combines a **long-term vision** and clear **implementation plan**;
- Overall measure coordination and **regular monitoring** ensure efficient and adaptive implementation;
- **Systematic evaluation** of the implementation provides the basis for the next planning cycle.

It is worth noting that production of the SUMP, according to the ELTIS guidelines, do require **a shift in paradigm**, with regard to the way strategic plans tended to be drafted. More specifically, they call for:

- The **involvement of citizens and stakeholders**, starting from baseline analysis, to the development of a shared vision and the definition of the measures to be included in the plan;
- A commitment of the decision-makers to favour transport mobility options that are **genuinely sustainable** from an economic, social and environmental point of view;
- A **joint up planning approach** capable of bring together various agencies in charge of planning (land use, housing, energy, transport and forestry), horizontally, across departments, as well as vertically,

through the tiers of government.

Table 2 below show the shift in approach promoted by the guidelines:

Transport Planning		Sustainable Urban Mobility Planning	
Focus on traffic	→	Focus on people	
Primary objectives: Traffic flow capacity and speed	→	Primary objectives: <b>Accessibility</b> and <b>quality of life</b> , including social equity, health and environmental quality, and economic viability	
Mode-focussed	→	<b>Integrated development of all transport modes</b> and shift towards sustainable mobility	
Infrastructure as the main topic	→	<b>Combination</b> of infrastructure, market, regulation, information and promotion	
Sectoral planning document	→	Planning document <b>consistent with related policy areas</b>	
Short and medium-term delivery plan	→	Short and medium-term delivery plan embedded in a <b>long-term vision and strategy</b>	
Covering an administrative area	→	Covering a <b>functional urban area</b> based on travel-to-work Flows	
Domain of traffic engineers	→	<b>Interdisciplinary</b> planning teams	
Planning by experts	→	Planning with the <b>involvement of stakeholders and citizens</b> using a transparent and participatory approach	
Limited impact assessment	→	Systematic <b>evaluation</b> of impacts to facilitate <b>learning</b> and improvement	

WP13 - D.13.2 - Tab. 2 - Source: ELTIS (2019), p. 10.

Such methodological changes related to the plan-making process have substantial knock-on effects on the definition of the mobility measures and transport policies included within the plan. **From a supply driven approach centred on measures providing services and infrastructure components, the SUMP in fact moves to the definition of packages of measures tasked with providing, upgrading and digitalising infrastructure and services, as well as with altering some key constituent factors of mobility demand.** In other words, the Plan is expected to take full advantage of the tools that focus on **mobility demand management**.

It is widely acknowledged that in order to de-carbonise and render more sustainable the transport sector, three groups on issues need to be factored in:

- Some **key aspects at the origins of mobility trends**: existing territorial features, demographic trends and socio-economic dynamics, and the negative and positive effects generated by the existing mobility patterns (e.g. land consumption, air and noise pollution etc.);
- The **hidden costs** brought about by the **transport sector**, such as unsafe road conditions leading to serious accidents and casualties;
- The implications of a lack of **efficient allocation and use of public funding** at a time of significant fiscal stress for local authorities and government departments alike.

Table 3 shows all project deliverables:

WP			Deliverables
Phase 1: Preparing well			
WP-1	Plan stakeholder and citizen involvement	1.1	Stakeholders and Citizens Involvement Plan
		1.2	Web-site and Social Media Services Implementation
WP-2	Review of existing relevant studies and data	2.1	Review of existing land use, transport and related studies/plans
		2.2	Critical Review of Transport Network and Previous Studies
		2.3	Transport Modelling Plan
WP-3	Data gathering and collection	3.1	Survey Datasets
		3.2	Data Summary Report
WP-4	Development of the transport model	4.1	Transport Modelling Report
		4.2	Transport Models
		4.3	Model Manual
WP-5	Analysis of problems and defining Operational Objectives	5.1	Problem Analysis Report
Phase 2: Rational and transparent goal setting			
WP-6	Develop a common vision, set priorities and targets	6.1	Vision Statement and Targets
Phase 3: Elaborating the plan			
WP-7	Generation of future scenarios	7.1	Scenario Development Report
WP-8	Development of scenario models and evaluation	8.1	Technical Modelling Report with Scenario Evaluation
		8.2	Presentation to Stakeholders
WP-9	Selection and appraisal of preferred scenario	9.1	Strategic Environmental Impact Assessment
		9.2	Scenario Appraisal Report
Phase 4: Delivery of the plan			
WP-10	Formulation of the SUMP	10.1	Draft SUMP Report
		10.2	Strategic Environmental Impact Assessment (final version)
WP-11	Preparation of an implementation, monitoring and evaluation plan	11.1	Implementation Plan
		11.2	Monitoring and Evaluation Plan
WP-12	Preparation of a promotion and marketing Strategy	12.1	Promotion and Marketing Plan
WP-13	Production and adoption of the SUMP	13.1	Final SUMP Report

WP13 - D.13.2 - Tab. 3 - SUMP Project Deliverables

## 2. BASELINE ANALYSIS

### 2.1 Data collection and transport surveys

In order to properly frame and dimension mobility and transport demand, a number of surveys were undertaken during the Summer and Autumn of 2018. This represents the baseline year adopted in all Plan's analyses and modelling exercises. The type and quantity of surveys carried out are summed up in Table 4.

Type of Surveys	Type	Winter	Summer
<b>Travel demand:</b>			
Household interview surveys	interviews	1800	0
Bus Occupancy Surveys	locations	10	8
Origin-Destination surveys	survey stations	10	0
<b>Traffic:</b>			
Traffic signals data		*	*
Manual classified turning counts	junctions	35	0
Classified link counts	locations	8	0
Automatic traffic counters	sites (bidir.)	25	7
Bus passenger counts & Bus services	bus routes	6 + 8	2
Pedestrian link counts	locations	10	5
<b>Journey times:</b>			0
Car journey time surveys	routes	5	2
<b>Parking:</b>			
Parking supply			
Parking demand (off-street)	locations	20	6
Parking demand (on-street)	segments	10	5
<b>Public transport network:</b>			
Bus demand		**	**
<b>Road collision analysis/ Road accident statistics:</b>			
Collision analysis		***	***

\* Data provided by PWD; \*\* Data on aggregate bus demand by route in 2014 provided by PWD; \*\*\* Collision data made available by the Police.

WP13 - D.13.2 - Tab. 4 - Transport Surveys Undertaken

The baseline analysis supported the construction of a Zero Scenario, as well as the identification of critical mobility and transport issues (i.e. the balance between demand and supply), environmental (i.e. noise and pollution) and social (e.g. road accidents) impacts generated by transport related activities. By and large the analysis focused on:

- **Territorial context:** offering a snapshot of:
  - Existing demographic trends as those emerge from census official datasets and additional information provided by CYSTAT;
  - Socio-economic trends (at the urban, planned area and district scale) with regard the number of employers and employees by sector as well as the workforce place or residence;
  - Location and dimension of key mobility attractors within the planned area (i.e. those facilities providing services to citizens and firms) divided by type: educational and cultural facilities, as well as health, leisure and sport related facilities.
- **Current supply of transport infrastructure and services** at 2018 for public and private transport of people and goods:
  - The road network (infrastructure, laws and regulations);
  - The network and services making-up the urban and intercity public transport offer;
  - The bicycle network;
  - Allocation and regulations related to on-street and off-street parking;
  - How goods move within the planned area (focus on the airport and the sea port).
- **Transport demand** that led to the generation of a trip matrix based on demographic data and *ad hoc* transport and household surveys (see below);
- **Transport Impacts.** Impacts as present in the planned area were considered with regard to their social dimension (no. of accidents and no. of fatalities); their environmental dimension (trends related to GHG emission, energy consumption, acoustic indices etc.).

What proposed in the remainder of this Section is a concise summary of the key trends identified.

## 2.2 Assessment of urban mobility within the planned area

Based on Household surveys, interviews and various traffic counts, the findings emerging from the baseline analysis of the existing mobility conditions return an image of **an area that is highly car-dependant**; a mobility pattern shared with many other Cypriot metropolitan areas.

The current mode share shows strong reliance on private passenger vehicles for all type of journeys (92%), with a large number of short trips also undertaken this way.

The public transport urban service is characterised by low ridership levels and are mainly used by those who do not have access to a car. This is very articulated in terms of number of routes and bus stops but such great coverage is achieved at the expense of frequencies with which services are provided. Bus stops conditions and infrastructure were found to vary significantly.

By and large, walking is predominantly used for very short trips or for accessing the car, while cycling does not really play a part in Larnaca, and in Cyprus more generally.

All those factors are mirrored within the realms of land use development and the supply of transport infrastructure and services.

While, due to commercial and real estate development pressure that fluctuates according to market cycles, Larnaca city centre finds it increasingly problematic to maintain a mixed used character having a strong mixed tenure residential component within it, around Larnaca and in its outer areas, over the past 40 years or so a spontaneous dispersed growth pattern has materialised.

This took advantage of the availability of cheap developable land near major arteries as well as vacant plots. Such low-density development is almost impossible to serve efficiently by public transport, and hence, it reinforces all needs related to owning a car; with the primary one being able to park near the property, and at destination.

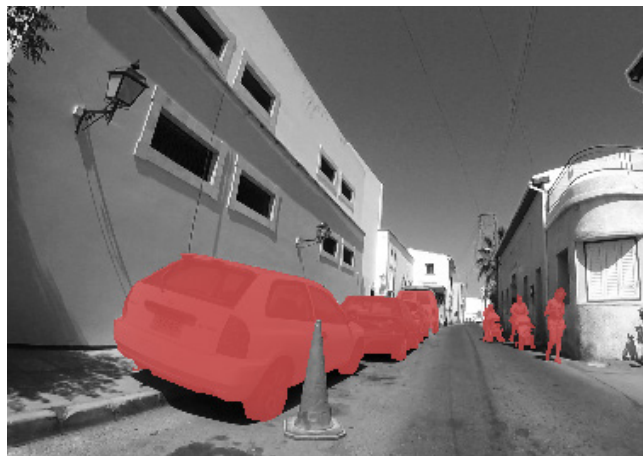
Transport supply, namely the provision of networks and services, reflects and strengthens such travel behaviour. For example, only isolated segments of cycle lanes are available along the coast and few major arterial roads but the network is neither continuous, nor comprehensive. Similarly, outside the city centres, pedestrian facilities tend to be poor or non-existing, making it difficult or even dangerous to walk between some places and destinations.



WP13 - D.13.2 - Fig. 2 - Delivery truck during rush hour in Stadiou Str.



WP13 - D.13.2 - Fig. 3 - Sidewalk with obstacles in Ermou Str.



WP13 - D.13.2 - Fig. 4 - Illegal parking in Mehmet Ali Str.



WP13 - D.13.2 - Fig. 5 - Delivery van illegally parked in Ermou Str.

With regard to parking supply within the city centre, cars parked on-street occupy a precious portion of what are often narrow roads. Moreover, the limited provision of parking bays for delivery vehicles, (together with unregulated access to the city centre), contributes to create situations of temporary congestion and hazards for pedestrians.

Clearly, the limited availability or inadequacy of infrastructure and services does not encourage the use of other modes of transport.

**This said, Larnaca, with its centuries of history and its compact city centre, being a coastal city with a strong leisure and tourist vocation, has the potential to become a extremely walkable city;** a city with public realms of high environmental quality outside popular locations, key leisure facilities and along main transport corridors.

**During the last few years Larnaca municipality already launched a robust public realm upgrade programme which so far has included a number of key roads,** among which Nikolaou Rossou, Pavolou Valsamaki, the streets around the Church of St. Lazarus, but also Athenon Avenue and Piale Pasha. Streets were paved with cobble stones; sidewalks surfaces levelled and brought either at grade with the street, or almost at grade with a 0.3 meter curbed edge, protected from vehicular traffic thanks to short bollards and/or flower beds.

Finally, it is important to stress one of the main findings emerging from the baseline analysis, namely that **Greater Larnaca's road network is not congested and, in many instances, it has significant spare capacity.** Concentrations of traffic may occur, at times during the day and at night in some specific locations (such as near schools or night clubs), but these are seasonal phenomena and can be easily dealt with through management and people's cooperation.



WP13 - D.13.2 - Fig. 6 - Recently refurbished P. Valsamaki Str.



WP13 - D.13.2 - Fig. 7 - Recently refurbished Ag. Lazarou Str.



WP13 - D.13.2 - Fig. 8 - Recently refurbished Kodrigktonos Str.



WP13 - D.13.2 - Fig. 9 - Recently refurbished Piyale Pasha Str.

## 3. STRATEGY, OBJECTIVES AND TARGETS

### 3.1 Consultation process and outreach events

Over the past years, participation has proven to be an effective tool to improve and enrich complex, multidimensional transport and urban regeneration projects. **Citizens and stakeholder groups possess local, highly valuable information about their city much of which is intangible and non-reflected in written reports or statistics.** Capturing part of that specialised knowledge so that it can be factored in the planning and decision-making process is a key goal of participation.

The drafting of the SUMP benefited from debates and workshops with various stakeholders differently related (and/or interested in) the future of the planned area. More specifically, **three project committees were created, each having direct access to project information and engaged in the step-by-step decision-making processes.** The three Committees created were:

- **The Project Steering Committee** that included personnel from:
  - Public Works Department (PWD)
  - Ministry of Transport Communications and Works (MTCW)
  - Directorate of Control
  - Department of Town Planning and Housing (Mol)
  - Larnaca Municipality.
- The **Key Stakeholder Committee** that included staff from:
  - Aradippou Municipality
  - Livadia Municipality
  - Dromolaxia-Meneou Municipality
  - Cyprus Police
  - UCLAN University
  - Department of Environment
  - Cyprus Tourism Organization
  - Planning Board
  - District Administration
  - Community Representatives
  - Scientific and Technical Chamber of Cyprus
  - Larnaca Chamber of Commerce and Industry

- Larnaca Tourism Board
- Larnaca International Airport Operator
- Cyprus Confederation of Professional Craftsmen and Shopkeepers
- The **Wider Stakeholder Group** that included the general public as well as any other private, public or third sector stakeholder interested in participating in the process.

While **the PSC followed project development closely**, and was tasked with providing feedback on each project deliverable generated by the Consultants, **the involvement of the KSC and the WSG was structured around three project gateways, which mirrored key decision-making moments in the development of the plan.** If the kick-off and final presentation events are excluded, these encompassed:

- **Gateway #1 Visioning Exercise:** The validation of the SUMP high-level objectives, the creation of a shared vision and definition of operational objectives
- **Gateway #2 Issue and Options Stage:** The provision of feedback on the alternative plans scenarios and input into the decision of which should become the Preferred Plan Scenario
- **Gateway #3 Feedback on Proposed Policies:** The provision of feedback on draft SUMP policies based on the preferred plan scenario.

Although the broad topics debated (i.e. milestones reached in the plan-making process) coincided, venue and consultation techniques used to engage the various Committees were instead tailored to the number and type of audience. Feedback was collected through facilitated sessions held as part of the live events, and through paper and online questionnaires.

### 3.2 SUMP's Vision and High-level Objectives

The Vision has been defined by the Key Stakeholder Committee, taking on board the results of the outreach events. Consultation activities related to the definition of the vision took place during the third week of April 2019. Sessions were held with the mayors and representatives of local authorities within the study area at Larnaca's municipality, and the general public at the House of

Phase 1: Preparing well		Phase 2: Goal setting		Phase 3: Elaborating the plan		Phase 4: Delivery of the Plan	
Sept. 2018		April 2019		Sept. 2019		May 2020	Sept. 2020
Activity 1: KSC Kick-off event		Activity 4: KSC Visioning event		Activity 7: KSC Feedback on scenarios		Activity 9: Bilateral consultations for formulation of SUMP proposals	Activity 10: KSC Final SUMP Presentation
WP1	Key Stakeholders Committee (KSC)	WP6	Key Stakeholders Committee (KSC)	WP8	Key Stakeholders Committee (KSC)	WP10	WP13
Activity 2: SUMP Information Session		Activity 5: General Public Visioning event		Activity 8: Feedback on Scenarios from the Wider Stakeholder Group			Activity 11: Final SUMP Presentation
WP1	Wider Stakeholder Group	WP6	Wider Stakeholder Group	WP8	Wider Stakeholder Group		WP13
Activity 3: Problems Definition		Activity 6: Input into the Vision					Activity 12: Input into Draft SUMP's Policies
WP1	Online Questionnaire	WP6	Online Questionnaire				WP13
							Online Questionnaire

**Profiles of Participants:** **No. of activities:**

Key Stakeholders Committee (KSC)

5

Wider Stakeholder Group (WSG)

4

Letters and Arts in Larnaca. A number of subsequent sessions were also held with the Key Stakeholders Committee, again at municipality premises, and the Project Steering Committee at PWD offices in Nicosia. In addition, feedback was collected via online questionnaire.

The bottom-up process which led to the definition of a shared Vision for Larnaca in 2030 benefited from the following inputs:

- Presentation of the results of the baseline analysis (WP2 and WP3);  
→ Feedback from the public on existing problems
- Analysis of problems (WP5);  
→ Feedback from the public on problem definition
- The need to validate the High-level Objectives set in the project Terms of Reference.

The **5 High-Level Objectives** driving the definition of the Vision are:

- **Economic efficiency:** improve the efficiency and cost-effectiveness of the transport network in providing for the transportation of persons and goods;
- **Environmental sustainability:** minimise emissions, pollutants and energy consumption associated with transport;
- **Accessibility and social inclusion:** ensure all citizens are offered transport options that enable access to key destinations and services;
- **Safety:** ensure personal safety and security within the transport system;
- **Quality of life:** contribute to enhancing the attractiveness and quality of the urban environment and urban design for the benefits of citizens, the economy and society as a whole.

The interactive debates on definition of the key mobility challenges faced in Greater Larnaca led to **27 ambition statements**. These were then **grouped into 8 'families'** and are presented below.

## An accessible city, easy to navigate and tour

- In 2030, people in and around Larnaca will use **active modes of transport**, rather than cars, **for** the bulk of their **short journeys** (shorter than 1 km).
- In 2030 the **Larnaca Central Business District will have become** an extremely **walkable** area, characterised by wide sidewalks. Parking on them will be considered socially despicable and **pedestrian circulation will be given priority** over vehicular circulation **at all times**.
- In 2030, **residents and tourists will cycle more than in the past**. This is mainly due to bicycle sharing schemes (electric and traditional) now being widely available within the consolidated urban fabric of the wider area, but also because a substantial amount of new bicycles paths is now available.
- The city centre has its own fully connected loop of itineraries, and new connections among key locations in and around Larnaca are now available. The new bicycle paths are shaded and designed 'Copenhagen-style', so that parked cars protect cyclists against moving vehicles rather than the other way around.
- Residential zones and Traffic Limited Zones will make cycling practical and safer even on shared paths.
- In 2030, thanks to the **removal of approximately 50% of the architectural barriers**, Larnaca has become a friendlier environment for families with young children and people with disabilities.
- **Pedestrian, cyclists and other non-motorized transport users** in 2030 **will feel safe** when moving around within the urban centres, and will spend an increased amount of time in public places. They will not feel threatened by the presence of cars and lorries travelling at high speed.

## Quality places for residents and tourists

- In 2030, a number of **pilot projects will have been successfully implemented that adopt a “shared surface approach”**, where pedestrian, cyclists, personal mobility electric devices, and potentially buses are not segregated.
- A **much improved joint-up public realm and transport infrastructure design** will offer ease of movement for all, and by 2030 **will have contributed to a significant reduction of all typologies of road accidents** in the planned area.
- In 2030, **high environmental quality public spaces** outside the most popular locations and along main transport corridors, **succeeded in encouraging people to shop and spend time outdoor** in the proximity of key leisure facilities.

## The city centre as a wide area supporting active mobility

- The Central Business District is the heart of Larnaca; its living room. This area possesses a unique sense of place and acts as an economic engine that will take Larnaca into the future.
- **Newly pedestrianised areas will make the city centre more attractive than today.** The increase in footfall will benefit commerce, retail, food and beverages, and other business located within the pedestrianised areas.
- For the parts of the CBD that are not going to be pedestrianised, **vehicular access will be regulated though a system of permits and/or a levy to access the city centre.** Alternatively, **the cost of on-street parking will be significantly increased** following the first half an hour.

## Guarantee public transport and shared mobility access to key services and facilities

- In 2030, **residents and tourists in Larnaca will have several different options to choose from to reach their desired destinations.** This will allow, *inter alia*, the possibility to commute daily from the planned area's outer centres to Larnaca using other means than private passenger cars. Among them, a **high-quality urban public transport service, sharing schemes for cars and bicycles, bicycle routes, on demand services** etc.
- In 2030, Larnaca will have an urban public transport that offers **a competitive alternative to the use of private vehicles.**

## Bringing the more peripheral neighbourhoods closer to the urban centre

- In 2030, a number of **options not revolving around the car will be available to users to commute** from more peripheral areas, to the closest urban centre.
- In a similar fashion, to commute into Larnaca from one of its satellite urban centres, it will be possible to choose from different means of transport.
- **Sustainable mobility corridors will have been created between Larnaca city centre and the other Municipalities in the study area.**

## A more sustainable transport system

- A number of interventions to refurbish the network outside the city centre will be undertaken in order to **substantially reduce the magnitude** of the road infrastructure and, by doing so, **increase the road network's permeability and facilitate pedestrian circulation**. Main corridors, areas with higher footfall and areas closer to key attractors will be prioritized.
- **Access to the city centre for delivery of goods will be regulated.**
- In 2030, Larnaca will act as **beacon for other EU municipalities**. Some of the initiatives implemented will be showcased to others to point out how **costal Mediterranean cities** can move towards adopting a more sustainable transport system.
- **Within the city centre, on-street parking will be selectively but aggressively removed.**
- **Outside the city centre, on-street parking will also be managed, especially along the main commercial spines.** Along these, off-street parking every 500-700 m. will be available. The road space saved will be redistributed (and re-designed) to facilitate the circulation of public transport and provide space for additional bicycle lanes.
- In 2030, in Larnaca, thanks to dedicated horizontal and vertical sign posts, it is extremely clear where you can and where you cannot park the car, and **parking regulation will be enforced in a strict and timely fashion.**

## Clean fuels and vehicles

- Mainly **through fiscal measures**, in 2030 a sustained trend will be observable whereby **the fleet of municipality owned vehicles, PT buses and taxis, but also private passenger cars are incrementally replaced with hybrid, zero emission, or much less polluting vehicles.** A network of charging station is by this date substantially in place across the island.
- **Larnaca will offer** its residents, but particularly its visitors, **distinctive and iconic mobility options.** A number of options should be investigated. Among them, public hire schemes for electric 3 wheels scooters and the implementation of taxi boats.

## A transport system safe for all

- In 2030, the entire study area will have a road system that is safe and effective for all users.
- **A safer environment will be created by changing the balance of street space allocated to cars, pedestrians and cyclists.** More specifically, interventions will be enacted to have safer crossings at junctions among main roads and roundabouts, improve safety and reduce the fear of crime on the public transport network, and deliver road safety improvements that reduce the number and severity of accidents.

### 3.3 SUMP's Operational Objectives and related Core Targets

The statement of ambitions were then coupled with the Operational Objectives they relate to together with current Baseline values and 2025 and 2030 targets.

Where possible, alignment was sought with the evaluation framework applied in CIVITAS PLUS II. **It is worth noting that targets have to be realistic in order to be credible and harness synergies between different stakeholder groups and individuals.**

At the same time there is a matter of 'path dependency', which means that where one is heading depends a great deal on where one is coming from. Table 2 below presents the SUMP Operational Objectives and related targets.

THEME	OPERATIONAL OBJECTIVES
1. An accessible city, easy to navigate and tour	1.1 Guarantee adequate accessibility to Larnaca through the optimisation of the transport offer and the development of an integrated mobility system
	1.2 Reduce average travel times
	1.3 Reduce sporadic congestion generated by drivers looking for a place where to park their car in the city centre AND 1.4 Rationalise on-street parking within the city centre
	1.5 Propose the selective pedestrianisation of certain streets within the city to facilitate walking and cycling as a mean of travel within the city centre and the other city centres
	1.6 Improve the conditions and availability of pedestrian routes inside and outside the city centre and removal of architectural barriers
2. A more sustainable transport system	2.1 Increase the number of trips undertaken using sustainable means of travel AND 2.2 Reduce car dependency for systematic daily movements
	2.3 Incentivise sustainable mobility
	2.4/5 Reduce energy consumption and GHG emissions related to the road transport sector
	2.6 Protect and conserve sensitive areas from noise and air pollution

INDICATORS	CURRENT BASELINE	TARGET 2025	TARGET 2030	CIVITAS PLUS II INDICATOR
KPI-023: Total length of bicycle network (paths)	25.4 km	40km	52km	
KPI-034: Satisfaction level of PT services	n.a. +	+50%	+75%	✓
KPI-035: No. of monthly / yearly travel cards for the urban service	n.a. +	+25%	+35%	
KPI-012: No. of cars accessing the city centre	3'851	-15%	-40%	
KPI-037: PT performance	(appr.) 7'000	25'000	42'000	✓
KPI-047: Total amount of pedestrianised areas	3'770	+100%	+200%	
KPI-048: Total amount of traffic-calmed areas (i.e. Home zones)	1	3	8	
KPI-046: Total amount of space dedicated to sustainable mobility	73'620	+150%	+400%	
KPI-009: Average travel time by sustainable modes [min/km]	2.13	-1.70 (PT only)	1.70 (PT only)	
KPI-019: Number of on-street parking spots in the city centre	494	-40%	-80%	
KPI-020: No. of off-street parking spaces in the city centre	2'199	-10%	-30%	
KPI-022: No of free / paid parking spaces within the city centre	0	+8	+8	
KPI-045: Total amount of surface space dedicated to parking within the city centre [sqm]	160'342	-20'000	-25'000	
KPI-047: Total amount of pedestrianised areas	3'770	+100%	+200%	
KPI050a: Full Pedestrianized Area [Km]	0.83	3,87	5,02	
KPI050b: Sidewalk Enhancement [Km]	7,03	34,11	88,59	
KPI-047: Total amount of pedestrianised areas	3'770	+100%	+200%	
KPI-003: Kilometres travelled by car	230'442	172'961	175'672	
KPI-006: Modal share sustainable transport within Larnaca	30.%	62.1%	62.1%	✓
KPI-007: Modal share sust. trans. within the study area (excl. Larnaca)	3.8%	9.9%	14.7%	✓
KPI-023: Length of bicycle networks	25.4 km	40km	52km	
KPI-035: No. of monthly / yearly travel cards for the urban service	n.a. +	+25%	+35%	
KPI-036: No. of monthly / yearly travel cards for the regional service	n.a. +	+25%	+35%	
KPI-037: PT performance	(appr.) 7'000	25'000	42'000	✓
KPI-01: Car ownership [cars/1000 inh.]	613	597	582	✓
KPI-032: No. of buses accessible to disable people		aim for total	aim for total	
KPI-034: Satisfaction level of PT services	n.a. +	+50%	+75%	✓
KPI-047: Total amount of pedestrianised areas	3'770	+100%	+200%	
KPI-054: No. of information and communication campaigns implemented	-	10	20	
KPI-038: CO2 emission road transport sector	61'913	-8,48%	-17,72%	✓
KPI-039: Noise pollution generated by vehicles using road infrastructure	n.a. +	-1,52%	-2,73%	✓
KPI-038: CO2 emission road transport sector	61'913	-8,48%	-17,72%	✓

THEME	OPERATIONAL OBJECTIVES
3. Quality places for residents and tourists	3.1 Enhancement of the public realm taking into consideration the needs of all users and stakeholders
	3.2 Promote innovation and efficiency within the realm of urban logistics operations
4. A transport system safe for all	4.1 / 4.2 Reduce the number of road accidents and improve road safety with a particular emphasis on the youths, the elderly and people diversely able
	4.3 Undertake communication campaigns to encourage road users to driving behaviours which are safe and respectful of others
5. Renewed awareness	5.1 Encourage younger generations to adopt more sustainable travel modes
	5.2 Gain awareness of residents' and tourists' mobility habits, investigating, monitoring and upgrading the quantitative evidence available on mobility habits and patterns
	5.3 Structure data collection by enabling automated or semi-automated processes
6. The CBD as a wide area supporting active mobility	6.1 Reduce the number of passenger cars accessing the city centre
	6.2 Reduce the average speed of vehicles within the city centre in order to favour active mobility and improve road safety
	6.3 Guarantee the availability of spaces capable of supporting active mobility, including the extension and state of repair of the various pedestrian and bicycle networks
7. Bring the more peripheral neighbourhoods closer to centre	7.1 / 7.2 Bring the more peripheral neighbourhoods closer to the urban centres present in the study area, in particular Larnaca City
	7.3 Enhance the availability of information related to the more convenient options to move within Greater Larnaca

INDICATORS	CURRENT BASELINE	TARGET 2025	TARGET 2030	CIVITAS PLUS II INDICATOR
KPI-048: Total amount of traffic-calmed areas (i.e. Home zones)	1	3	8	
KPI-044: Ad ad-hoc surveys pre and post pedestrianisation	0	+5	+5	✓
KPI-022: No. of parking bays dedicated to the loading and unloading of goods within the LTZ	0	+8	+8	
KPI-049a: Access to the external cordons	116'000	-5%	-8%	
KPI-049b: Access to the internal cordons	140'000	-5%	-8%	
KPI-015: No. of pedestrians and cyclists involved in accidents	n.a. +	-40%	-60%	✓
KPI-016: No. of people injured	n.a. +	-25%	-50%	✓
KPI-017: No. of pedestrians and cyclists injured / fatal accidents	327	-40%	-60%	✓
KPI-054: No. of information and communication campaigns implemented	-	10	20	
KPI-054: No. of information and communication campaigns implemented in schools	-	10	20	
KPI-031: No. of sharing scheme subscriptions (car-sharing, bike-sharing etc.)	0%	+30%	+50%	
KPI-051: ITS online systems and services implemented	-	-	3	
KPI-012: No. of cars accessing the city centre	3'851	-15%	-40%	
KPI-018: No of vehicles travelling within the city centre at a speed above 30 Km/h, 50 Km/h, and 70 Km/h	n.a.	-12%	-25%	✓
KPI-023: Total length of bicycle networks	25.4 km	40km	52km	
KPI-032: No. of buses accessible to disable people		aim for total	aim for total	
KPI-046: Total amount of space dedicated to sustainable mobility	73'620	+150%	+400%	
KPI-047a: Total amount of pedestrianised areas in the city centre [sqm]	3'770	+100%	+200%	
KPI050a: Full Pedestrianized Area [Km]	0.83	3,87	5,02	
KPI050b: Sidewalk Enhancement [Km]	7,03	34,11	88,59	
KPI-023: Total length of bicycle networks	25.4 km	40km	52km	
KPI-031: No. of sharing scheme subscriptions car-sharing, bike-sharing etc.)	0%	+30%	+50%	
KPI032: No. of buses accessible to disable people		aim for total	aim for total	
KPI-051: ITS systems and online services implemented	-	-	3	
KPI-054: No. of information and communication campaigns implemented	-	10	20	

THEME	OPERATIONAL OBJECTIVES
8. Guarantee multi-modal accessibility to key services & facilities	8.1 Maximise the number of options available to users to reach key services and facilities
	8.2 Provide clear and complete information in multiple languages on the options available to users
9. Support joint-up thinking	9.1 Support joint-up thinking on transport planning matters among all municipalities and communities present in the study area

INDICATORS	CURRENT BASELINE	TARGET 2025	TARGET 2030	CIVITAS PLUS II INDICATOR
KPI-031: No. of sharing scheme subscriptions car-sharing, bike-sharing etc.)	0%	+30%	+50%	
KPI-054: No. of information and communication campaigns implemented in multiple languages	-	10	20	
N/A	-	-	-	✓

## 4. SUMP'S MEASURES

This Section presents the package of measures that, taken as a whole, form the Plan Scenario. Such measures respond to the Plan's High-level and Operational Objectives, and relate directly to its Core Targets. In other words, **these measures can be conceived as a recasting into policies of the SUMP overarching strategy.**

**The SUMP measures were grouped into 10 thematic sets and encompass:**

- **Traffic management plans** for the urban centres within the study area;
- Review of **public transport** provision;
- **Pedestrian measures** and initiatives aimed at enhancing the quality of the public realm;
- Upgrading of **cycling infrastructure**, services and facilities;
- Parking management and related policies;
- **Traffic calming** and traffic safety programme;
- Policies catering for the **needs of specific groups**;
- Smart mobility and **intelligent transport systems**;
- Urban freight **logistics**;
- **Joined-up** and strategic **land use planning and transport policies.**

The SUMP has a **10-year horizon**, with measures conceived for implementation in the **short (2020-2025) or medium term (2025-2030)**. The phasing of the measures was informed by:

- The **existing policies** and residents' and city users' expected level of **acceptance** for the new proposals;
- The **complexity of the measure** proposed, not simply in engineering terms, when the construction of a new piece of infrastructure is recommended, but also with regard to many demand management policies, which require the buy-in from a number of stakeholders;
- The **cost implications** (revenue and capital) of each measure proposed;
- The **temporal dimension** of the initiatives proposed, i.e. the degree of maturity of the measure (project idea; feasibility study; initial design stage etc.); their acknowledgment in statutory plans and strategies, and the dependencies they have with other measures also to be implemented as part of the SUMP.

### 4.1 Larnaca City Centre Traffic Management Plan

**In order to make the compact city centre a more pedestrian friendly environment that can take full advantage of its waterfront and retail potential, a number of area-based measures were devised.** Those are expected to work together, and provide residents, tourists and city users with a number of alternative mobility options capable of curbing car-dependency. Key area-based measures for **Larnaca City Centre** encompass:

- A **sidewalk enhancement programme** and the **pedestrianisation** of a number of roads;
- A **new one-way system** and **restricted vehicular access to a portion of the city centre**;
- **Reduction of on-street parking** and new rules for urban logistics, including bays for loading and unloading operations.

Interventions are also envisioned for the **outer urban centres** present in the planned area. For those, a mixture of the following measures is proposed:

- **Cycle lanes** connecting the network to the urban centres;
- **Bike sharing schemes**;
- **New Home zones**;
- New **circulations system**;
- **Sidewalk enhancement** programme;
- **Public realm upgrades**;
- Additional Pedestrian **crossings**.

#### 4.1.1 Pedestrianisation scheme and sidewalk enhancement programme in Larnaca City Centre

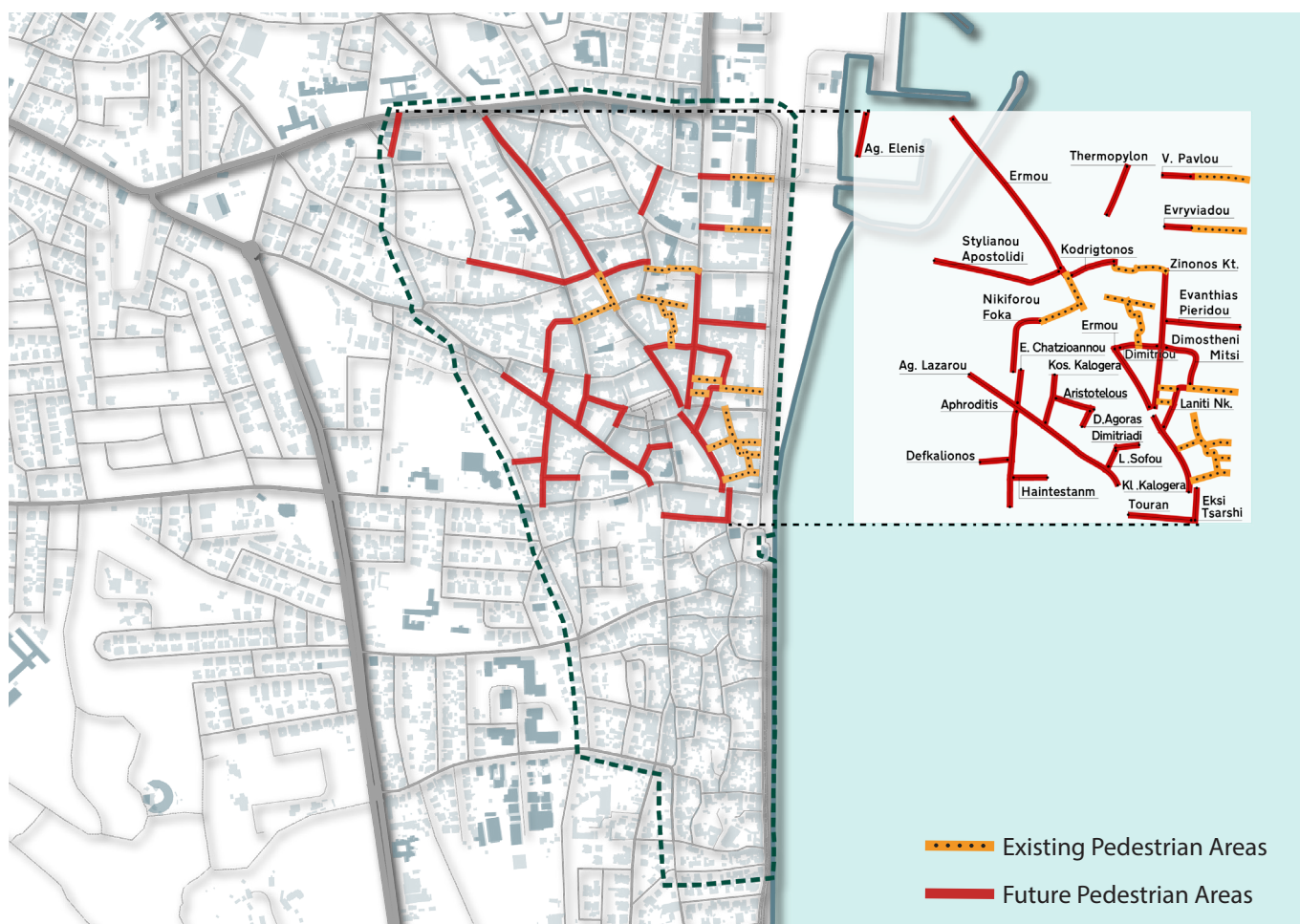
Existing pedestrian streets within the city centre include part of Ermou St., Nicou Dimitriou St., Kleanthi Kalogera, Watkins Street (Λαϊκή Γειτονιά). A **number of additional roads are earmarked for incremental pedestrianisation**. New pedestrianised areas will maintain access to private parking spaces and the servicing of premises will occur taking advantage of the loading and unloading bays that will be provided within the city centre and on its edges.



WP13 - D.13.2 - Fig. 12 - Existing Pedestrianisation Laiki Geitonia



WP13 - D.13.2 - Fig. 13 - Existing Pedestrianisation Laiki Geitonia



WP13 - D.13.2 - Fig. 11 - Pedestrianisation scheme

**In addition to fully pedestrianised areas, a sidewalk enhancement programme is also envisioned.**

This plan's measure aims to continue the Larnaca municipality's city centre upgrade programme which included Nikolaou Rossou, Pavolou Valsamaki, the streets around the Church of St. Lazarus, but also Piale Pasha. As in previous interventions, streets will be paved with cobble stones; sidewalks surfaces levelled and brought either at grade with the street, or almost at grade with a 0.3 meter curbed edge, protected from vehicular traffic thanks to short bollards.

The roads earmarked for enhancement in the city centre are:

- |                       |                         |
|-----------------------|-------------------------|
| • Stadiou             | • Ermou                 |
| • Armenikis Ekklesias | • Konstantinou Kalogera |
| • Apostolou Varnava   | • Kostaki Pantelidi     |
| • Stasinou            | • Konstantinou Savva    |
| • Zinonos Kitieos     | • Kosma Lysioti         |
| • Filiou Zannetou     | • Ifaistou              |
| • Lordou Vyronos      | • Nikolaou Rossou       |
| • Zinonos Pierides    | • Eksi Tsarshi          |
| • Viktoros Ougko      | • Mehemet Ali           |
| • Galileou            | • Oum Haram             |
| • Vasileos Evagorou   | • Sakkaria              |

As discussed in more detail in Sec. 4.1.5, in order to provide the space needed to accommodate pedestrian flows, with the exclusion of loading and unloading bays, parking for disabled, and few paid parking spaces, on-street parking will be radically curtailed and reorganised. The cross section treatment will depend on existing conditions. Better access will be provided with sidewalks ranging from 1.6 m. to 7.2 m.

The sidewalks' enhancement measure also aims at providing selected axes leading to outer areas, with better walking facilities, so to encourage access to public transport and to on demand micro mobility options. While some interventions are programmed for the period up to 2025, others will be completed in the period 2025-2030.



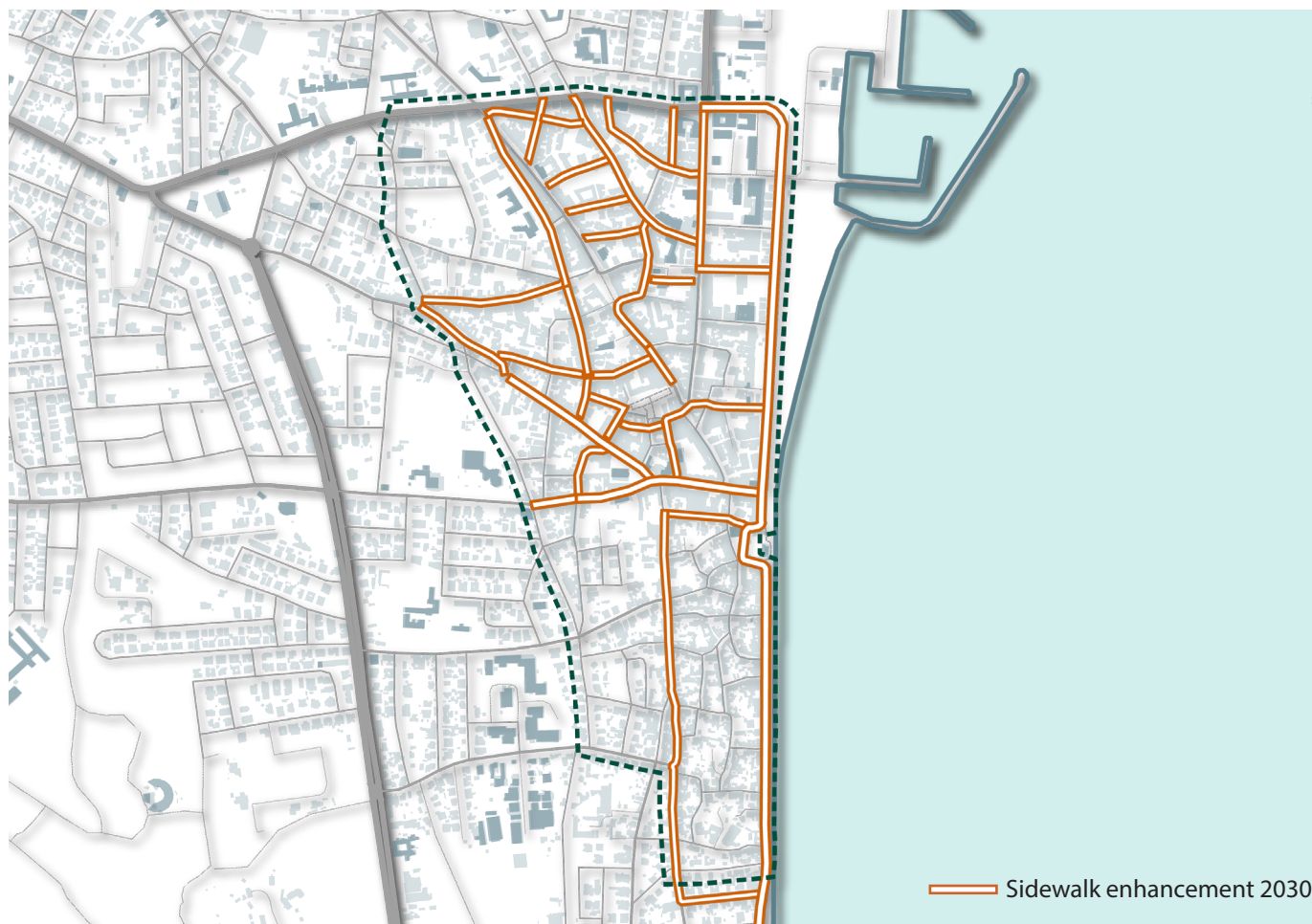
WP13 - D.13.2 - Fig. 14 - Recently refurbished Piyale Pasha



WP13 - D.13.2 - Fig. 15 - Recently refurbished Agiou Lazarou



WP13 - D.13.2 - Fig. 16 - Recently refurbished Kodrigktonos



— Sidewalk enhancement 2030

WP13 - D.13.2 - Fig. 17 - Sidewalk enhancement programme (cobble stone streets)



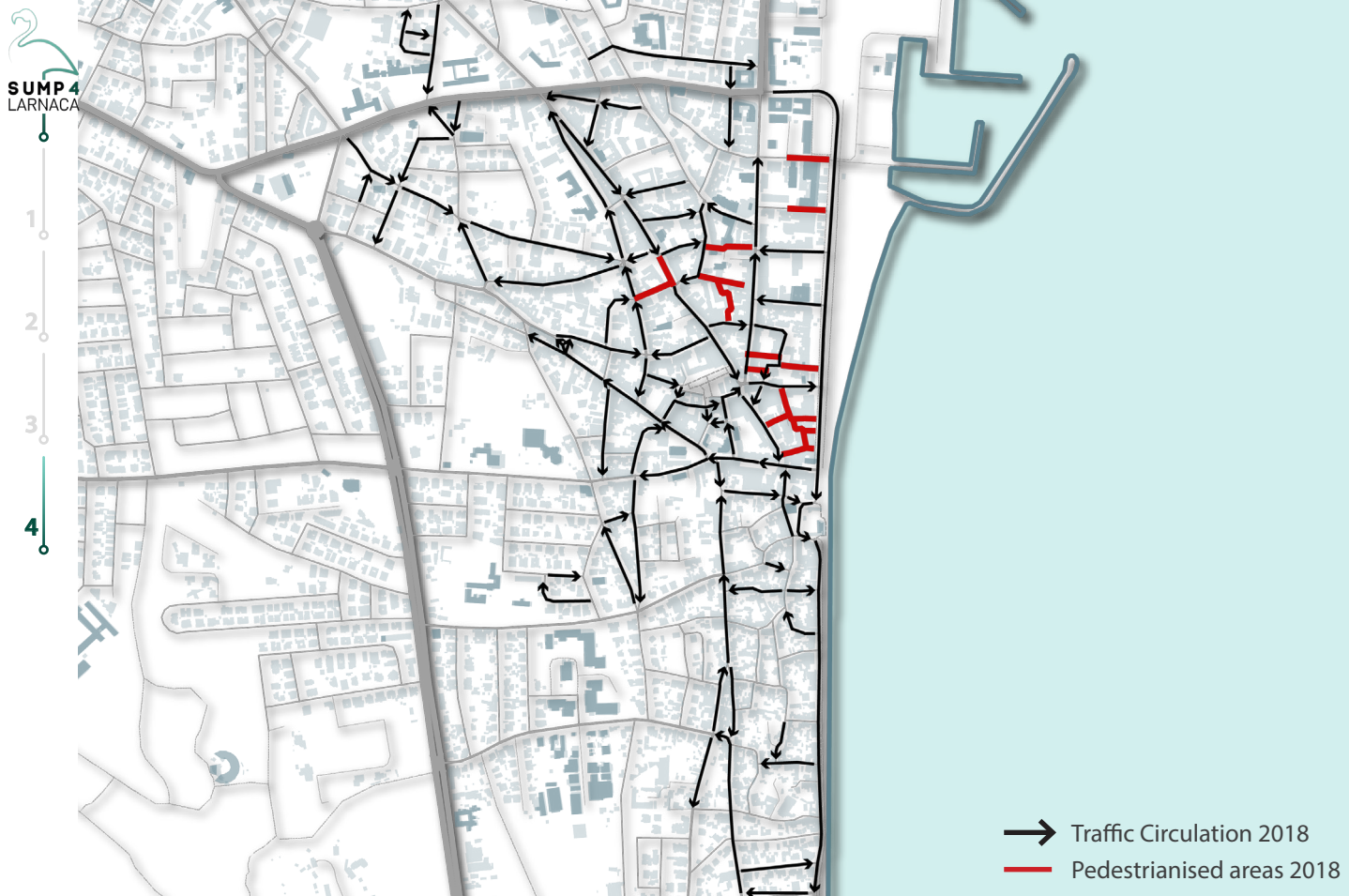
WP13 - D.13.2 - Fig. 18 - Existing Pedestrianisation Laiki Geitonia



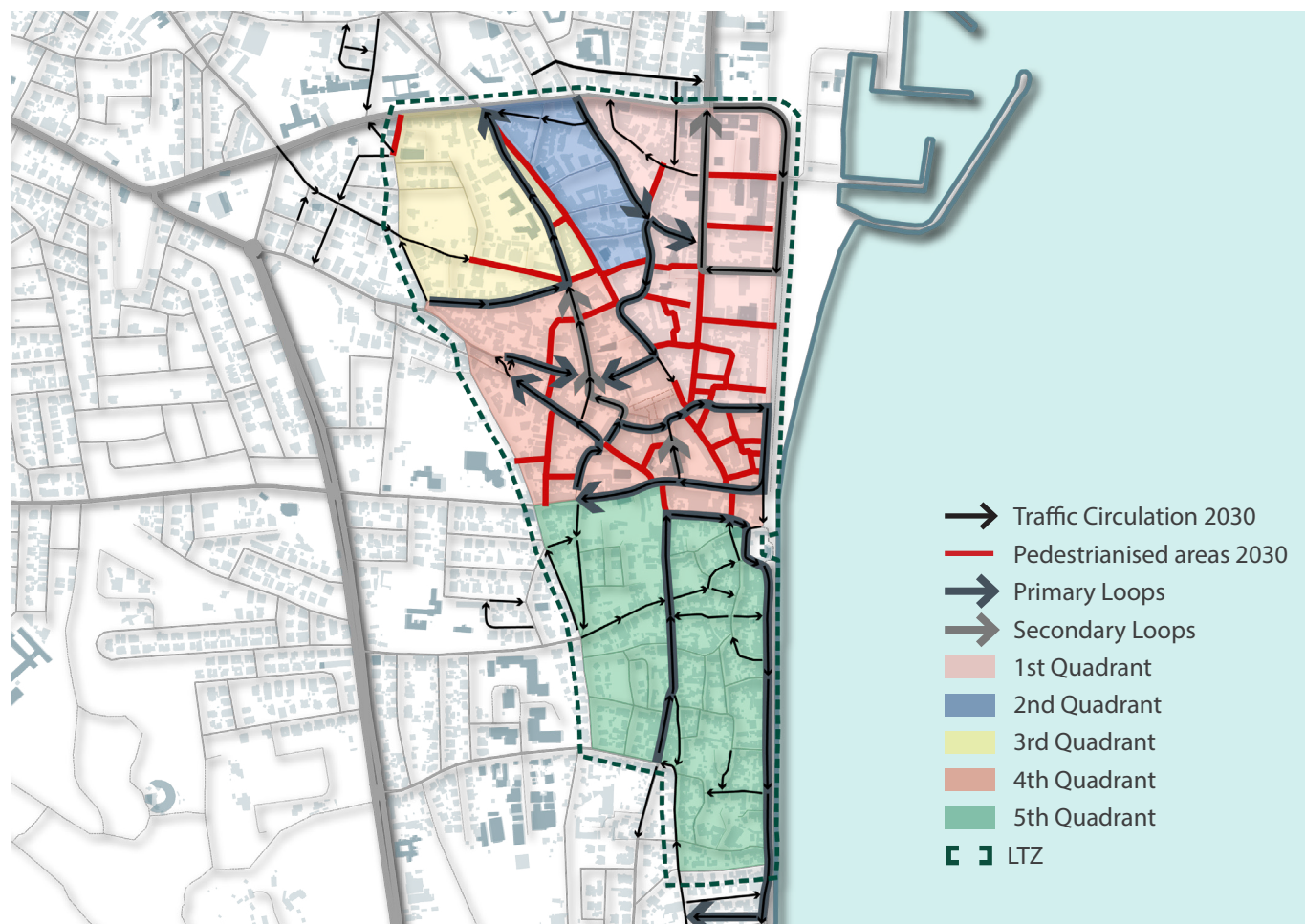
WP13 - D.13.2 - Fig. 19 - Athenon Avenue existing loading and unloading

#### 4.1.2 New one-way system in Larnaca City Centre

**In order to strongly discourage through traffic, a new one-way system is proposed for the city centre.** At a conceptual level this is achieved through the creation of a system of loops and quadrants. Vehicles accessing the city centre from one quadrant will follow the new one-way system and will have few (or no options) available to them to cut across the city centre and access another quadrant. Rather, the one-way system will bring them to the limit of the pedestrian areas, and out again within the same quadrant (n.b. although some limited access between quadrants is retained, the circulation is organised in a way that such trips are highly discouraged). **This measure will act as a stepping-stone facilitating the creation, at a later date, of the Limited Traffic Zone.**



WP13 - D.13.2 - Fig. 20 - Existing Traffic Circulation and Pedestrian Areas



WP13 - D.13.2 - Fig. 21 - Traffic Circulation, Pedestrian Areas, Loops, Quadrants and LTZ Perimeter

### 4.1.3 Limited Traffic Zone in Larnaca City Centre

In order to support the effort to render the Larnaca city centre a more pedestrian-oriented environment, while also maintaining a sustainable balance between demand and supply for on-street and off-street parking, **a Limited Traffic Zone (LTZ) is planned for implementation in the period 2027-2030.** This will inhibit vehicular access within the LTZ to non-permit holders during most of the daytime (e.g. 8.00 to 19.00), and it is conceived as a seasonal measure that can be activated in the busiest summer / autumn months. **A permit system linked to vehicles plate numbers will be created** and access points to the LTZ will be provided with CCTV system to check if incoming and outgoing vehicles have indeed a permit to circulate and park within the LTZ.

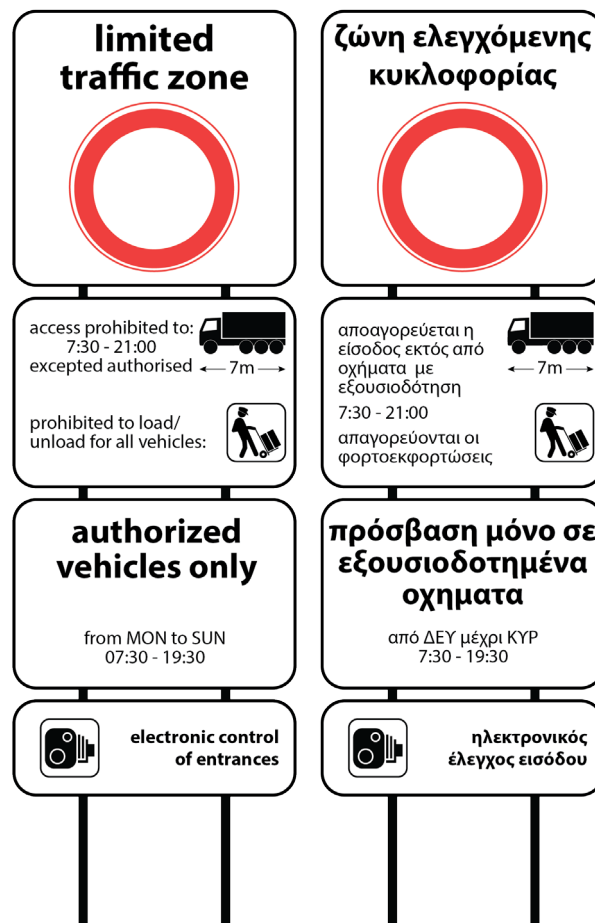


WP13 - D.13.2 - Fig. 22 - Limited Traffic Zone Area

Depending on the needs of the users, permits will be either permanent or temporary. User categories eligible for permanent passes encompass:

- People owning private car spaces;
- City centre residents not owing a private car park;
- Commercial operators and business owners with premises within the LTZ;
- People with disabilities;
- Clients of hotels and Bed&Breakfast.

Temporary passes will typically last 24 hours and could last up to 48 hours. In special circumstances, the permit office will be able to grant longer passes lasting between 48 hours and 6 months. Temporary passes will be granted in the following instances:



WP13 - D.13.2 - Fig. 23 - LTZ proposed signposts



WP13 - D.13.2 - Fig. 24 - Athenon Avenue Photo-realistic proposal (future condition)

- Loading and unloading of heavy goods and perishable goods;
- Transport of people with temporary impediments to movement (with doctor's letter);
- Traders and sellers of heavy goods equipment;
- Firms which have been granted the temporary right to park on sidewalks within the LTZ for relocation purposes or other;
- Bringing pupils to kindergartens, crèche facilities and elementary schools;
- Clients of car paint and repair shops, and other light industrial uses, sited within the LTZ;

Access and parking policy for delivery vehicles is detailed below.

#### 4.1.4 Improving road network capacity through ITS in Larnaca City Centre

ITS is used to improve performance of transport systems. In recent years, the Public Works Department joined a number of European projects, and invested a substantial amount of resources in the implementation of ITS schemes in Cyprus' main urban areas. Within Larnaca city centre, the ITS solutions put forward include:

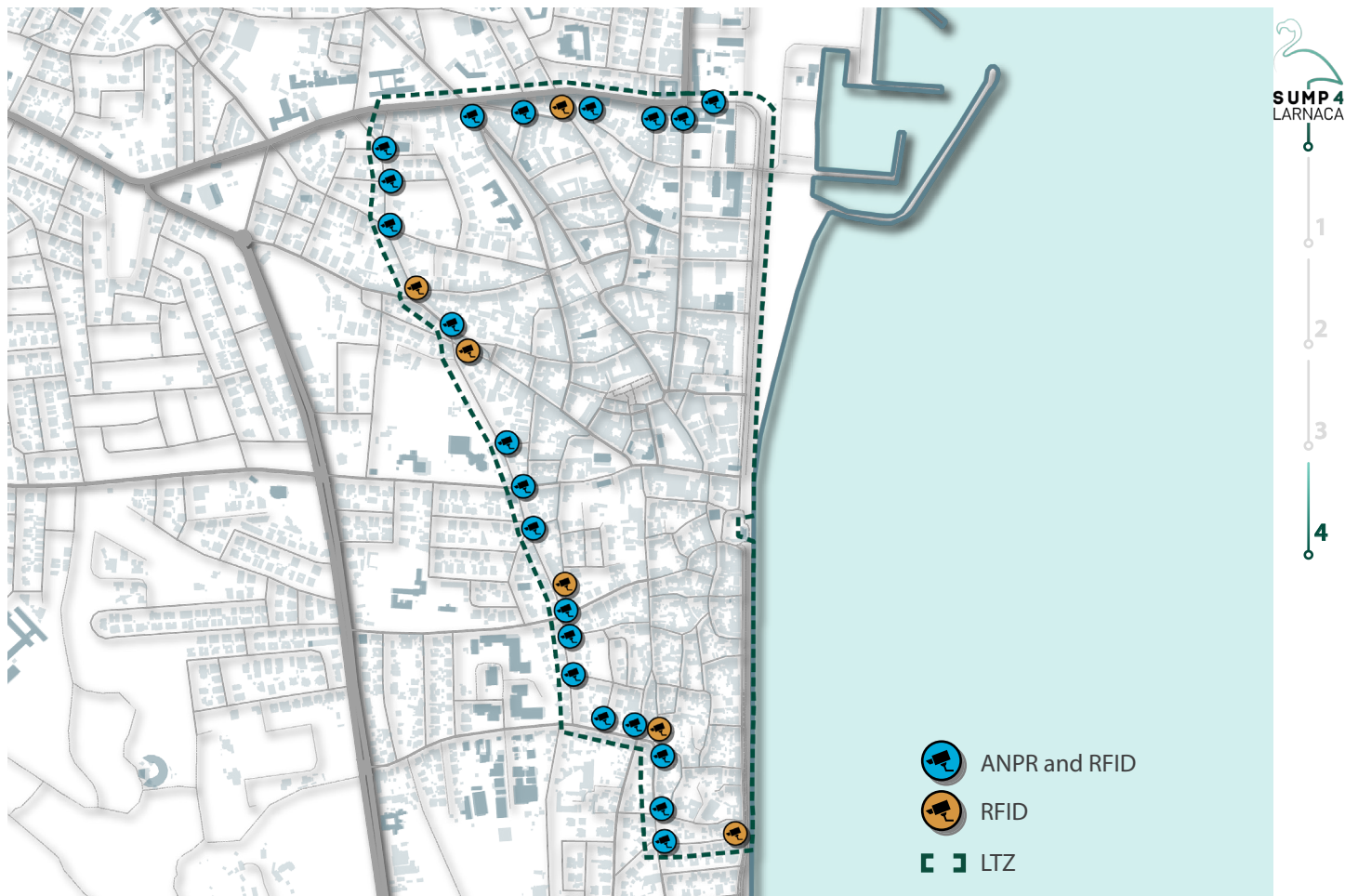
- **Additional equipment to the intersections along the primary and secondary PT axes** to be controlled through the UTCC;
- **ANPR cameras and/or RFID receivers to control access to the LTZ** and keep in check illegal parking practices;
- **Provision of Variable Message Signs (VMSs)** to inform users of parking availability;
- **CCTV on main PT axes and bicycle routes to monitor usage and ensure illegal parking** does not occur on such lanes;

Information on the quantity, location and specs of the technology recommended are provided in Sec. 4.8 below.

#### 4.1.5 Parking management policy in Larnaca City Centre

The parking policy implementation area covers the entire planned area; however, the detailed assessment was performed for three areas:

1. The **Limited Traffic Zone**, which is slightly larger than the City's CBD - this area is divided in 19 TAZs;
2. The **area external to the TLZ** and contained within the limits of the urban ring road (Kyprianou-Kranidioti-Nikou and Despoinas Pattichi-Faneromenis) - this area is divided in 70 TAZs;



WP13 - D.13.2 - Fig. 25 - Athenon Location of the LTZ's gates

3. **The strip limited by the beach on the east, the Lake on the west, the Airport to the south and the city to the north.** This area is scattered in 8 TAZs.

The CBD shows in 2030 a shortfall of “private” parking that equates to -2255 units. This can be partially compensated by the increased residual supply in public parking as a result of the significant investment in public transport that the SUMP calls for (-1,500 parking spaces of visitors and employees in 2030 vs 2018). However, **the available 3,943 “private” parking spaces in this area match the anticipated parking demand for residents in 2030 (4,000 units).**

**The policy and the associated regulation intend to safeguard these units for residents while diverting the parking demand of employees, hotels and other city users towards public off-street parking lots.**

In these locations, the different user-specific daily parking occupation profiles will allow for a synergistic use of the available supply. Nevertheless, a quantum of parking demand (max. 1,700 veh of employees and visitors) will be “expelled” outside the city centre.

This approach is in line with the objective of significantly reducing on-street parking in the core of the city centre. (For more details, see Sec. 5.5 below). More specifically, the policy seeks to:

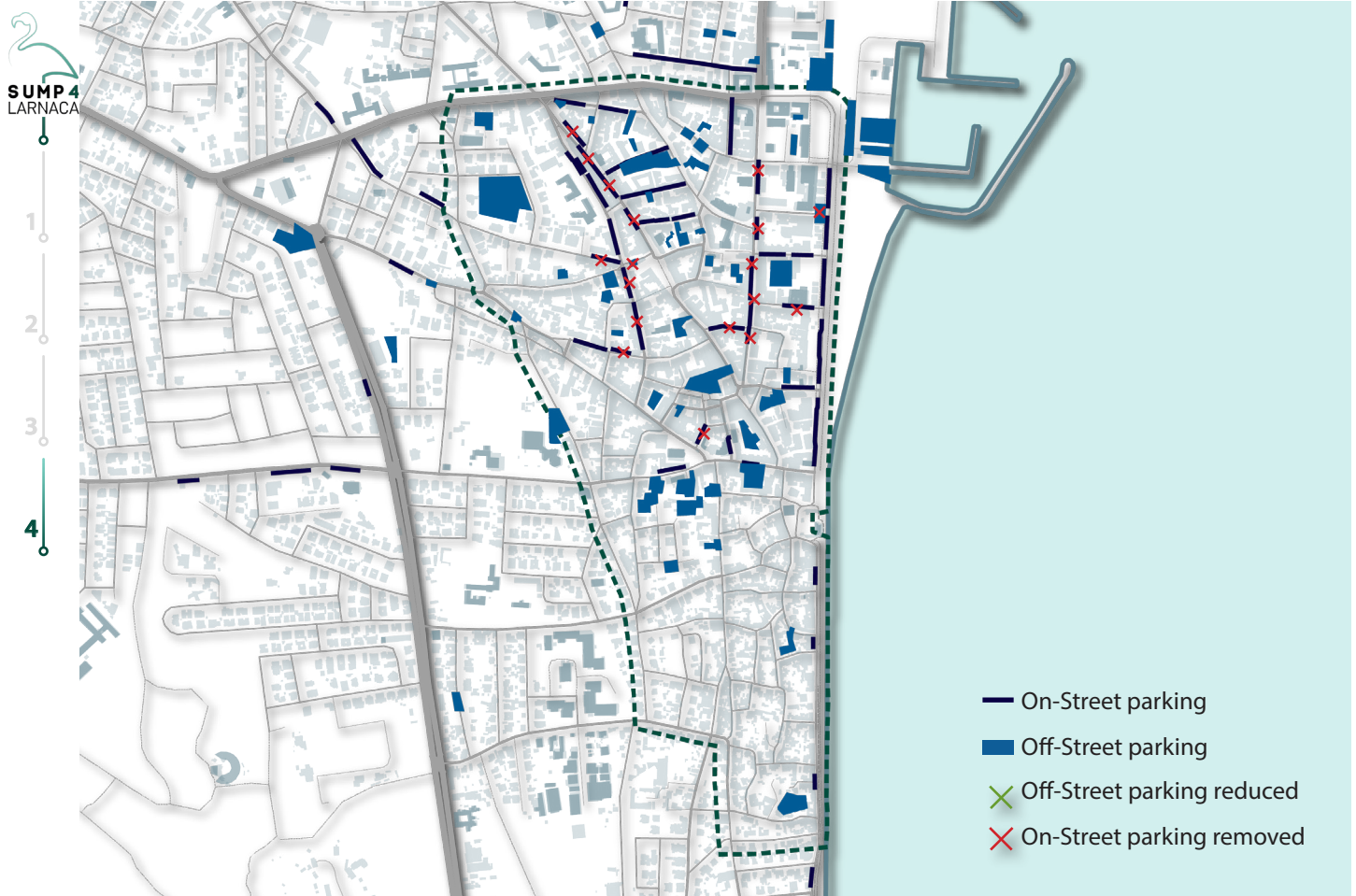
- Repurpose most of the 494 units of on-street parking;

- Reduce up to 600 units in parking lots in the area;
- Reconfigure the freed space so to encourage active mobility.

**The reduction of more than 1,000 units shall be gradually achieved with the on-street component being removed as a priority followed by the off-street one.**

The plan can be implemented even if the LTZ is not implemented whereas it is necessary to wait until such moment to foresee the reduction of the parking supply in off-street parking lots. In parallel, the municipality could:

- Promote and fast-track projects of urban regeneration and the re-construction of urban plots so to increase the on-plot parking provision for the residential component;
- Increase the share of private cars in public off-street parking's by encouraging seasonal cards for night parking, or adopting similar solutions. This would essentially mean, in the short term, pushing parking out of the streets into enclosed lots where the enforcement of parking rules and tariffs is more effective.



WP13 - D.13.2 - Fig. 26 - LTZ - Parking Management Plan

#### 4.1.6 *Urban logistics in Larnaca City Centre*

Entertainment, retail, hotels and other tourist facilities can be thought of as the heart of Larnaca's CBD, and it is therefore important that catering and delivery services to all premises within the city centre are guaranteed in a flexible and efficient way. At the same time, the narrow roads forming the bulk of this part of the road network do not allow easy temporary parking for medium and large size vehicles. **Evidence suggests it is not uncommon for parked commercial vehicles to give rise to localised congestion.**

In order to streamline delivery services to all premises within LTZ, the creation of **a new system of loading and unloading bays** is envisioned. These will be located on the **edges of the LTZ**, as well as **inside it**. **Access** within the LTZ will be **restricted** to certain times only (late evening, night and early morning). Couriers and other agents will still be able to deliver goods outside of such delivery hours; however, they will not be allowed in the city centre.

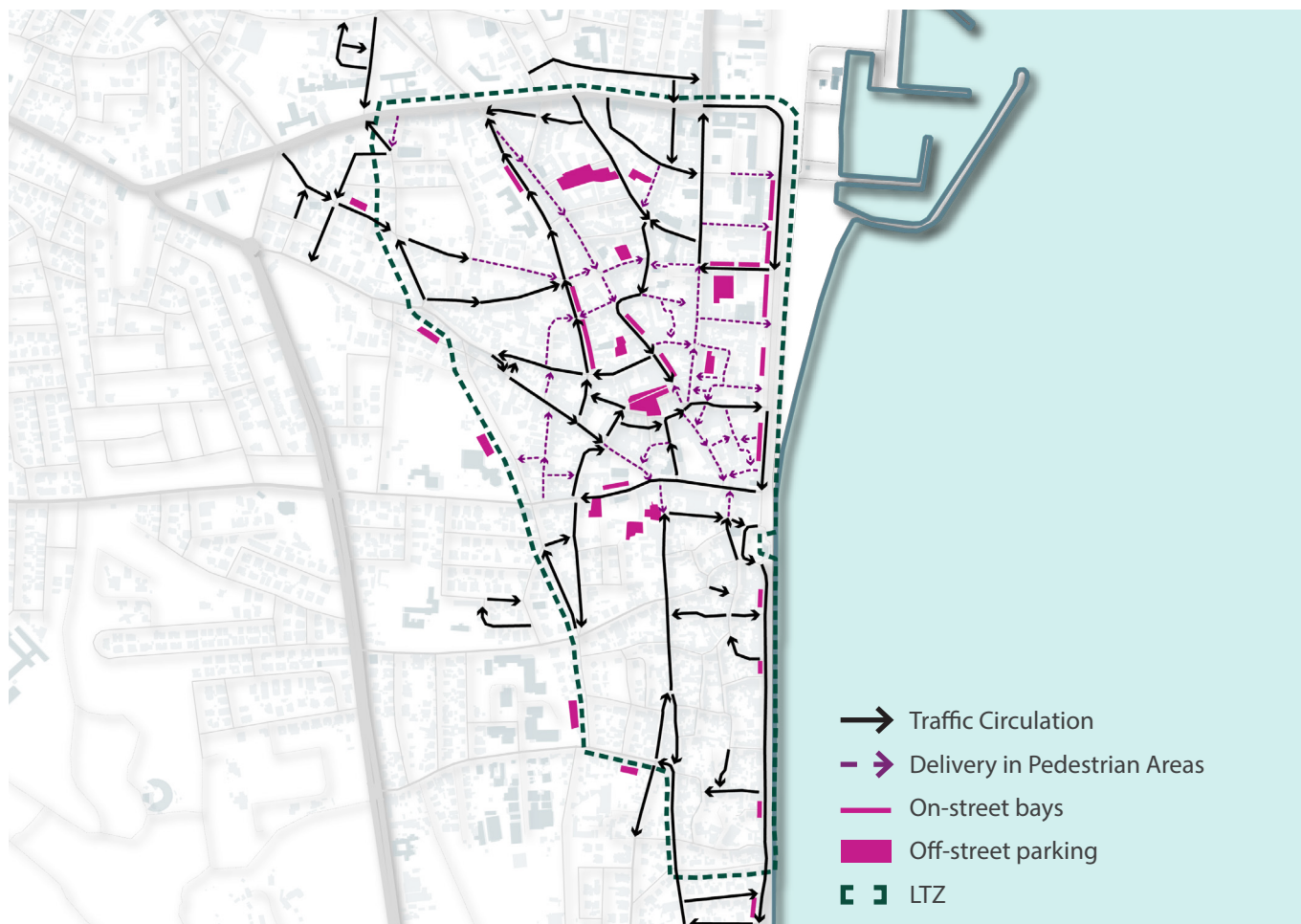
They will instead have to use dedicated bays located just outside the LTZ's boundaries, and complete their mission using trolleys to cover the last mile. (n.b. the loading and unloading bays located on the cordon put each building within the LTZ at a maximum range of 800 m. from such parking bays).



WP13 - D.13.2 - Fig. 27 - Urban Logistics within the City Centre



WP13 - D.13.2 - Fig. 28 - Urban Logistics within the City Centre



WP13 - D.13.2 - Fig. 29 - Urban Logistics within Larnaca City Centre

Finally, as discussed in more details in the Final SUMP Report, additional interventions are also envisioned for the **outer urban centres** present in the planned area. For those, a mixture of the following measures is proposed:

- **Cycle lanes** connecting the network to the urban centres;
- **Bike sharing schemes;**
- **New Home zones;**
- **New circulations system;**
- **Sidewalk enhancement** programme;
- **Public realm upgrades;**
- Additional Pedestrian **crossings**.

## 4.2 Public Transport

### 4.2.1 Urban Bus Route Network

The **high-levels goals** and the underlying principles that guided the restructuring of the urban network are:

- To provide a service responding to the travel needs of people who do not currently use public transport;
- To increase passenger base to secure the economic viability of the public transport services;

- To support employment growth by improving connectivity between residential and employment areas;
- To improve the quality of service for existing passengers - to help maintain the existing passenger base and, in some cases, generate additional trips;
- To be cost effective - many private bus operators attempt to tailor the service levels they offer to meet demand;
- To contribute to social inclusion, for instance by providing services that meet the needs of people even on routes which have proven not commercially profitable.

The key actions undertaken to effectively increase the mode share of public transport are:

- The implementation of **hierarchical network system with primary and secondary lines** routed according to the principle of directness;
- Bus lines that are designed in light of the city's structure, and the city's active and less active nodes;
- Retention of the network's current basic structure based on the pivotal role of the Central Bus Station. The idea is to retain the Central Station, its location as well as its role as interchange point among all urban and extra-urban services. As a result of this process,

**the proposed network takes the shape of a star with rays in every radial direction from the city centre towards the periphery;**

- All lines exchange in the Central Bus Station with the exception of the circular line;
- All lines intersect with a circular line that provides more convenient transfers for orbital movements;
- **The frequency of single services is determined on the basis of modules of 15 minutes modules (15-30-60) according to the density of population and relevance of the activities. The frequency increases closer to the city centre** as the lines converge from the selected PT corridors;
- The service was designed not only to perform well in peak times, but also to offer **consistent services during night time and weekend days.**

From what mentioned above, it follows that it is from the reading of combined frequencies that the hierarchical structure of the lines emerges. Fig. 29 presented overleaf, show the network layout comprising 19 lines operating during the daytime.

Interchanges, provided that they are designed appropriately and are operated correctly, are the essence of any scheme that promotes efficiency and that is ridership-oriented. Fig. 30 displays the location of the **28 interchanges across the network.**

Important features of the proposed network include a strong convergence on the Central Station through Spirou Kyprianou, Makariou III, Grigory Afxenthiou, and Athinon. A direct and integrated connection with the Industrial areas (Lines F and G) along Lemessou, and Ellades as well as Girva Digeni is provided. The new service offers:

- **A 10' combined frequency to/from the Airport** (Lines I, L, L/) with a headway of 30 min each offset by 10 minutes on the clock during the peak hour and a 20' combined frequency constant throughout the day;
- **A 5' headway between the Centre of Aradippou and Larnaca** which ensures seamless integration with the city of Larnaca and the rest of the network - a very competitive service that aims to integrate accessibility between the first two centres of the area.
- **A 15' headway with Oroklini and Livadia;**

- **3 runs/h** in the peak hour with **Pyla.**
- **A 15' accessibility to the industrial area.**

More generally, stronger alignments from the peripheral areas to the city centre and vice versa are achieved. As a result, the network becomes easier to understand from the user's point of view. Finally, interchanges are used to accomplish most of the trips within the urban area.

#### 4.2.2 *PT Axes*

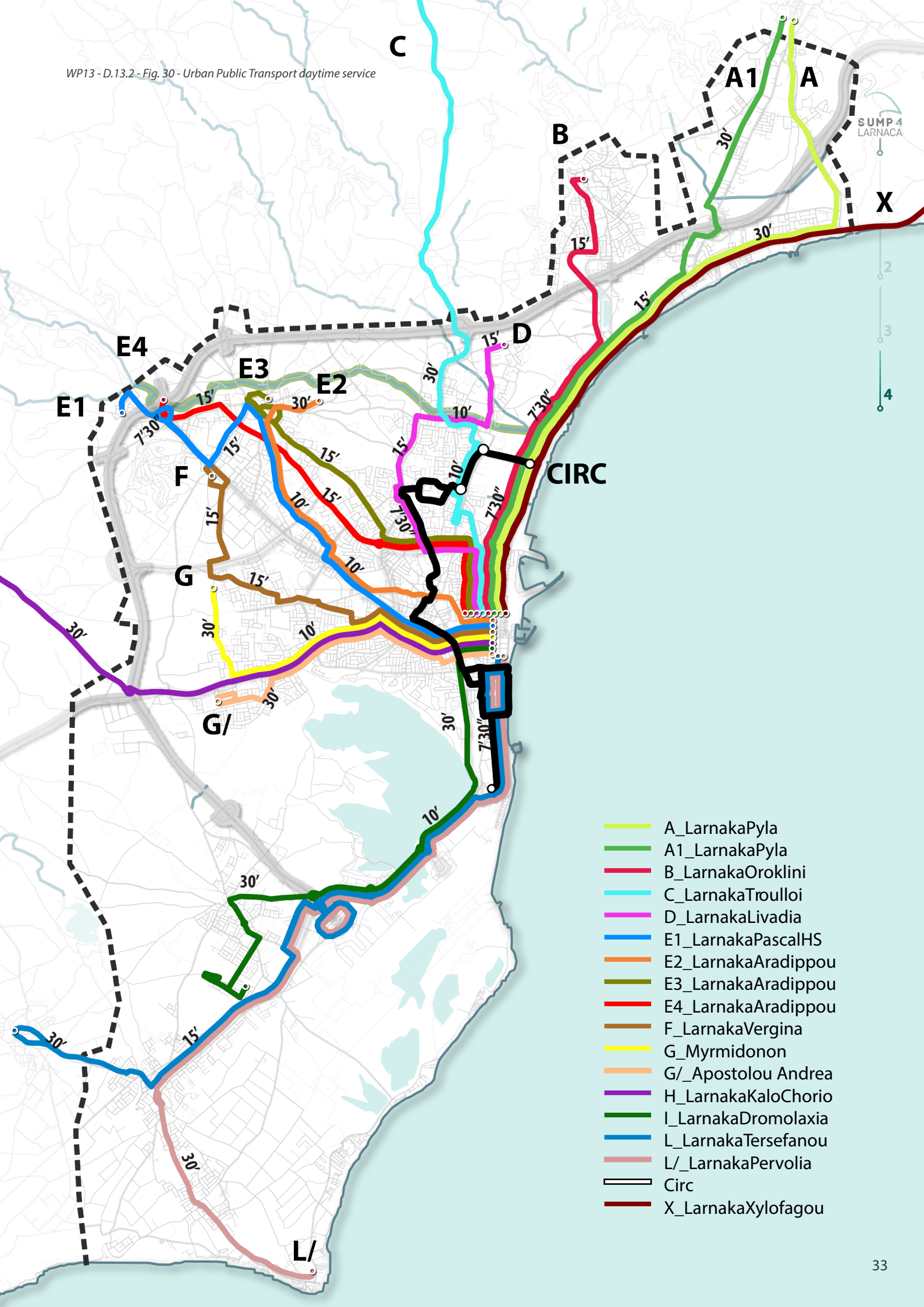
The network design was informed by the identification of a number of Public Transport Corridors, or PT Axes, that support radial connections between Larnaca and its outer areas. **PT Axes are segments where public transport frequency is high enough to deserve improvements to ensure reliability of service and high commercial speed.**

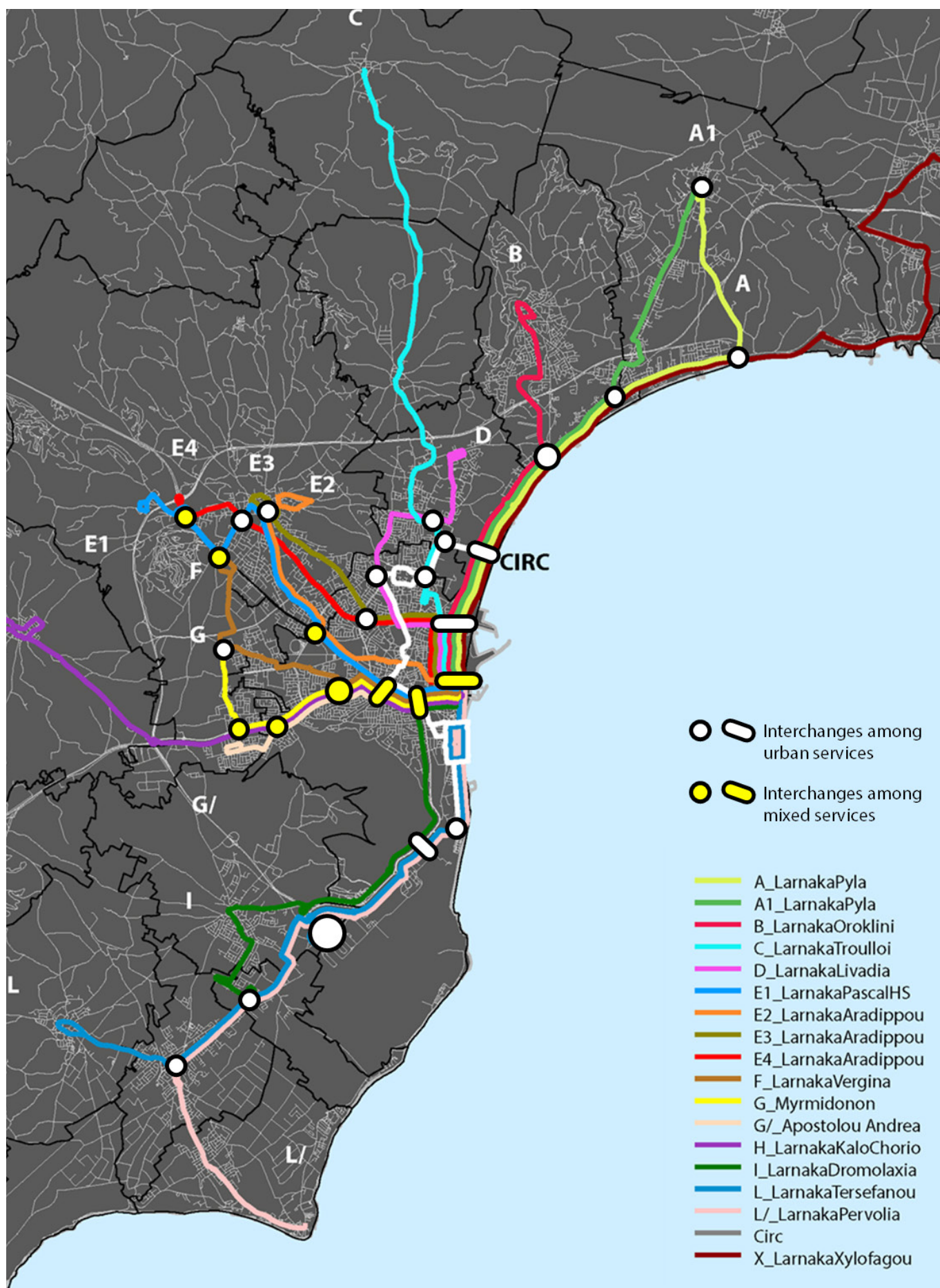
Their total length equates to 57.5 km and these are classified as either Main PT Axes, or as Secondary PT Axes. Main Axes are those hosting 3 or more urban services (35.6 km.), while Secondary Axes are characterised by the presence of either 1 or two lines (21.9 km.).

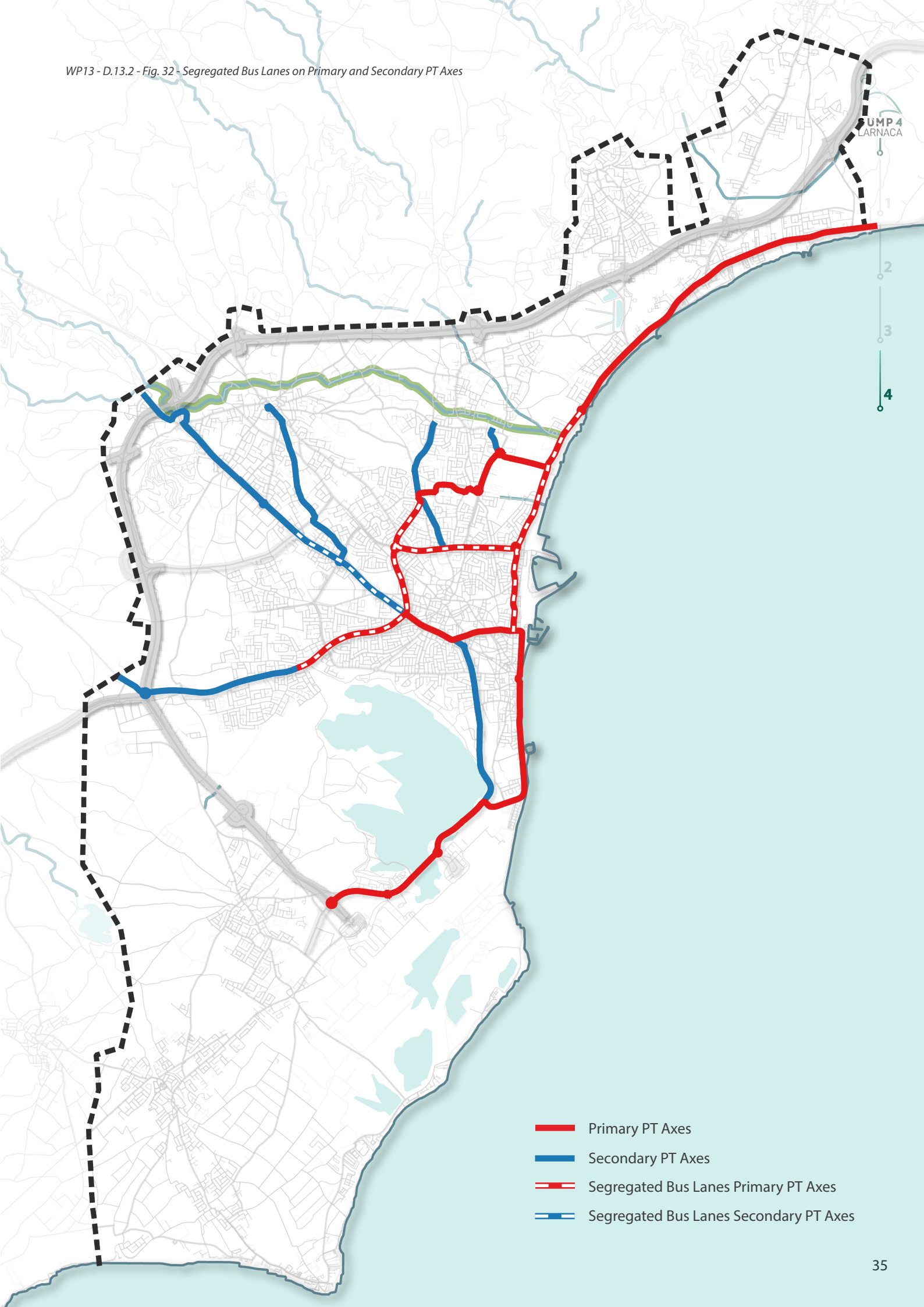
PT Axes are conceived so to include a mixture of the following:

- Construction of segregated lanes by reducing general traffic lanes or by eliminating general traffic;
- Removal of friction from the road side by eliminating legal/illegal parking;
- This may also lead to the widening of pedestrian realm or the introduction of cycle lanes and related parking facilities.

The PT axes in fact aim to facilitate the integration and consolidation of alternative modes of transport to the car, including cycling facilities such as parking racks, and on demand micro-mobility options.







#### 4.2.3 Central Bus Terminal (CBT)

The renewal of Larnaca Bus Station is proposed. This will host urban and interurban services, regional distance bus services, airport shuttles, and potentially other private services. The access and exit of buses from the bus station area will be regulated by an automatic access control system.

In order to increase the safety of passengers and workers, a CCTV system with high resolution cameras should be installed inside the bus station. An automatic ticket office will be installed for the issuing of travel tickets, which will accept, in addition to cash payments, the main credit cards. Vending machines for hot and cold drinks will be provided. The complete renewal of shelters and bus stop signs, with the introduction of the most recent version of info-mobility technology should also be considered of the station's redevelopment.

The station will also have an equipped waiting area, as well as a waiting room for drivers, where all travel information will be available. In addition, a complementary space with different amenities for passengers will also be provided.

#### 4.2.4 Bus Stops and Bus Stop Locations

The SUMP's proposed transit network was designed assuming that **569 bus stops** will **act as access points for the users**. The network design recommends these are ideally spaced at an average distance of 300m. **It is expected that the 30% of the future 569 stops will be "smart stops", while the remaining 70% of the stops will only be refurbished.**

**The new upgraded smart stops (171) will provide shading from the sun and real-time information on waiting times.**

The bus stop hierarchy emerging from this framework is as follows:

- Central Station;
- Interchange bus stops - any stop where two services either Urban, District or Urban and District provide the first opportunity for the transfer of passengers.
- Standard bus stops – any other stop that could further be classified in relation to observed crowding and usage.



WP13 - D.13.2 - Fig. 33 - Example of automatic access control system



WP13 - D.13.2 - Fig. 34 - Example of Bus Station light structure



WP13 - D.13.2 - Fig. 35 - Example of display system

## 4.3 Pedestrian Measures and Enhancement of the Public Realm

**An assessment was conducted on selected key routes in order to analyse the quality of the existing pedestrian network.** The assessment was based on a set of performance indicators. Among them, the availability of seating areas; street lights; vegetation; integration of public realm with bus stops; presence of objects generating cluttering; pavement quality and material, and sidewalk width.

**The audit undertaken indicates that** although some important streets within Larnaca and the outer urban centres, such as Aradippou and Oroklini, were recently refurbished and cater for good pedestrian connectivity, **the bulk of the network is still underdeveloped.**

In order to make walking easier with the city and the outer centres, but also to encourage the undertaking of on foot short journeys, including access to public transport stops, a number of measures were devised. The rationale for those is provided below:

- **Increased width:** in high density areas, pedestrians need to be able to walk comfortably unhindered by parked cars and other obstacles such as commercial billboards;
- **Repair and maintenance:** physical barriers, uneven surfaces, cracks in the pavement tend to represent a safety hazard for people carrying luggage, and for people with limited mobility (e.g. elderly with walking frames, disabled but also families with prams);
- **Attractive street-scape:** public realms that are inviting to use, socialise in and which lead to a perception of safety act also as a lever in encouraging us to undertake short and medium distance trips by walking;
- **Improvement of pedestrian routes along the main users' desire lines:** since walking is a physical activity, the lengthening of a journey can substantially diminish the willingness of individuals to walk. Accordingly, key pedestrian route should be kept as direct as possible (e.g. with regard to where road crossings should occur).

### 4.3.1 *Measures foreseen outside the city centres*

**The sidewalk enhancement programme applies to 3 distinct types of areas: urban city centres, the commercial spines, and the main radial routes connecting Larnaca with the outer centres.** Measures pertaining Larnaca city centre sidewalk enhancement programme are detailed in Sec. 4.1 and therefore they are not repeated here.

Interventions along main radial routes, which are also part of the PT Axes system, and along the Commercial Spines will change according to existing conditions and needs. These shall include:

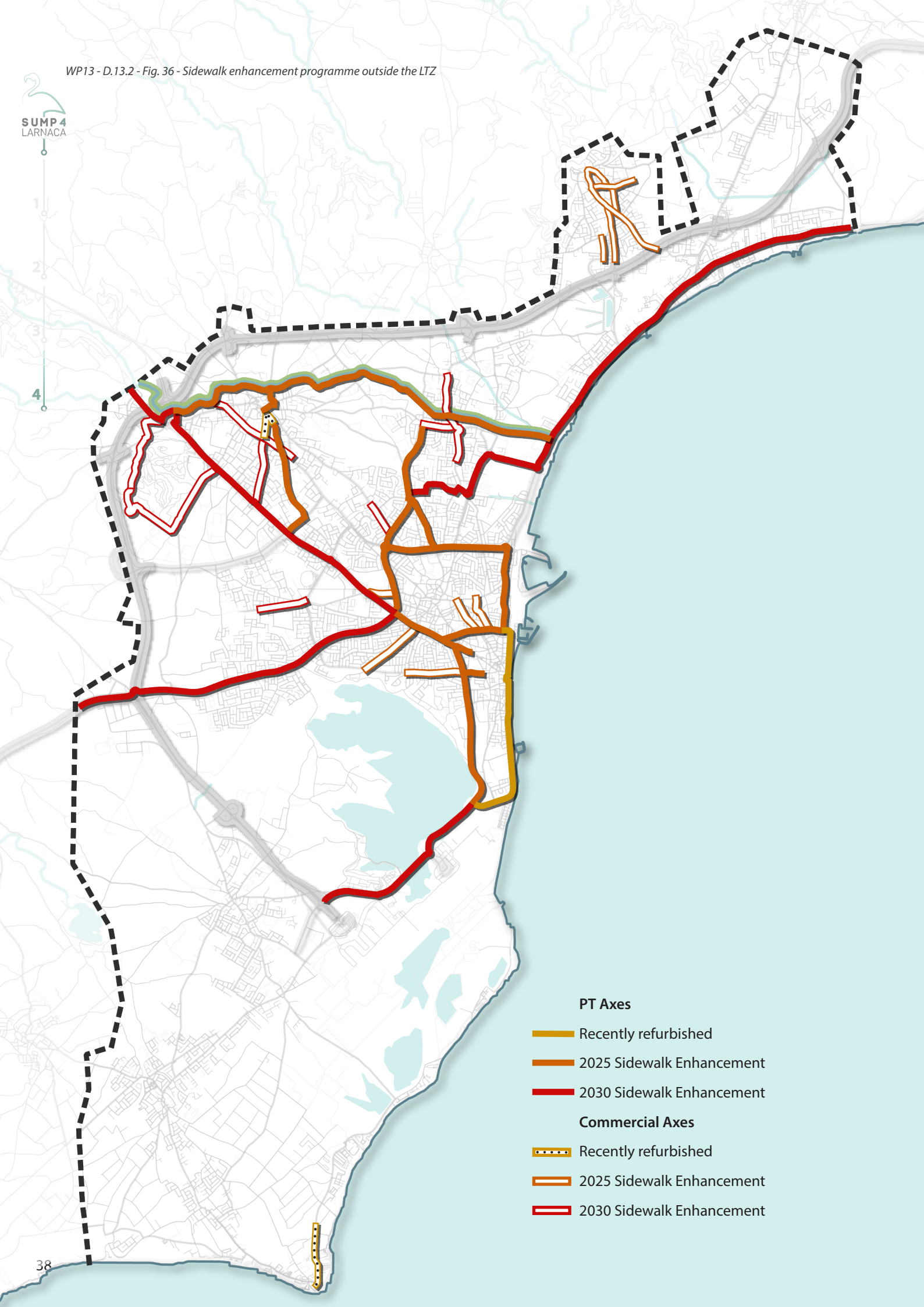
- Creation of **new sidewalks** were not existing;
- **Widening and repair of existing sidewalks** generally, and more specifically, to provide better pedestrian access to bus stops;
- **Upgrade of street furniture** to include: provision of bollards where needed to eliminate legal/illegal parking, better street lightening, and planting of trees to provide shading.

**In terms of quantity and quality of provision, it is recommended the standard defined in the 'The Street-scape Manual, part of the Integrated Nicosia Mobility Plan (2010) are applied.** This document provides detailed indications related to footpath width, and the presence of street furniture and vegetation, which vary according to the available road section.

**At a general level, footpaths width will be upgraded to range from 2 to 3 meters for residential roads, and from 2.8 to 4.5 meter for main roads. Surface need to be even and in good condition so that sidewalks can be used safely also by people with limited mobility. Tactile pavers should also be deployed at least near the intersections, where crossing is allowed and in the proximity of the bus stops.**

The removal of traffic signs, commercial billboards, rubbish bins and similar objects should be pursued when those hinder pedestrian movement. In total 27.07 km of urban roads are earmarked for redevelopment in Phase 1 (2020-2025), and 54.47 km for phase 2 (2026-2030).

Fig. 36 shows the part of the network, outside the LTZ, affected by the programme.



#### 4.3.2 Associated administrative or policy measures

In order to maintain a focus on building a more walkable city, measures related to the maintenance and improvement of pedestrian infrastructure need to be perceived as a matter of high priority in terms of capital and revenue expenditure allocations within city budgets, but also, this has to be streamlined into the planning process.

With regard to the former aspect, substantial fiscal stress on city budgets implies the availability of resources for capital investments and maintenance is increasingly scarce. **Strong political commitment is therefore needed to make sure initiatives aimed at improving pedestrian conditions are given a high level of priority in a consistent manner over a number of years.**

In relation to the latter, in recent years, a large number of the street-scape design manuals have been produced, which consider in a more holistic way the needs of all road users. Those documents however tend to be given a non-statutory status, and when new schemes go through the planning application process, road designs are checked against statutory guidance such as the Design Manual for Roads and Bridges. Those type of documents tend to focus almost solely on vehicles movements but nowadays, there is a growing general awareness that roads perform a much wider function than simply moving vehicles. They are, first and foremost public spaces, that is, spaces of relationship shared among many users: pedestrians, cyclists, public transport users, drivers, and passengers of public and private vehicles.

If statutory documents recommend a certain treatment of a given intersection, while advisory documents such as informal street-scape manuals put forward a different approach, it is no wonder that civil servants or development control officers will adhere to statutory guidelines. The problem is clearly a policy one and it is to be found upstream.

Specific administrative and policy measures to increase public space, safety and quality of pedestrian infrastructure include:

- **Amend engineering-led statutory road design guidelines for these to acknowledge and accept sustainable mobility paradigms** (e.g. with regard to the provision of additional road permeability for non-

car users, the favouring of active mobility modes etc.);

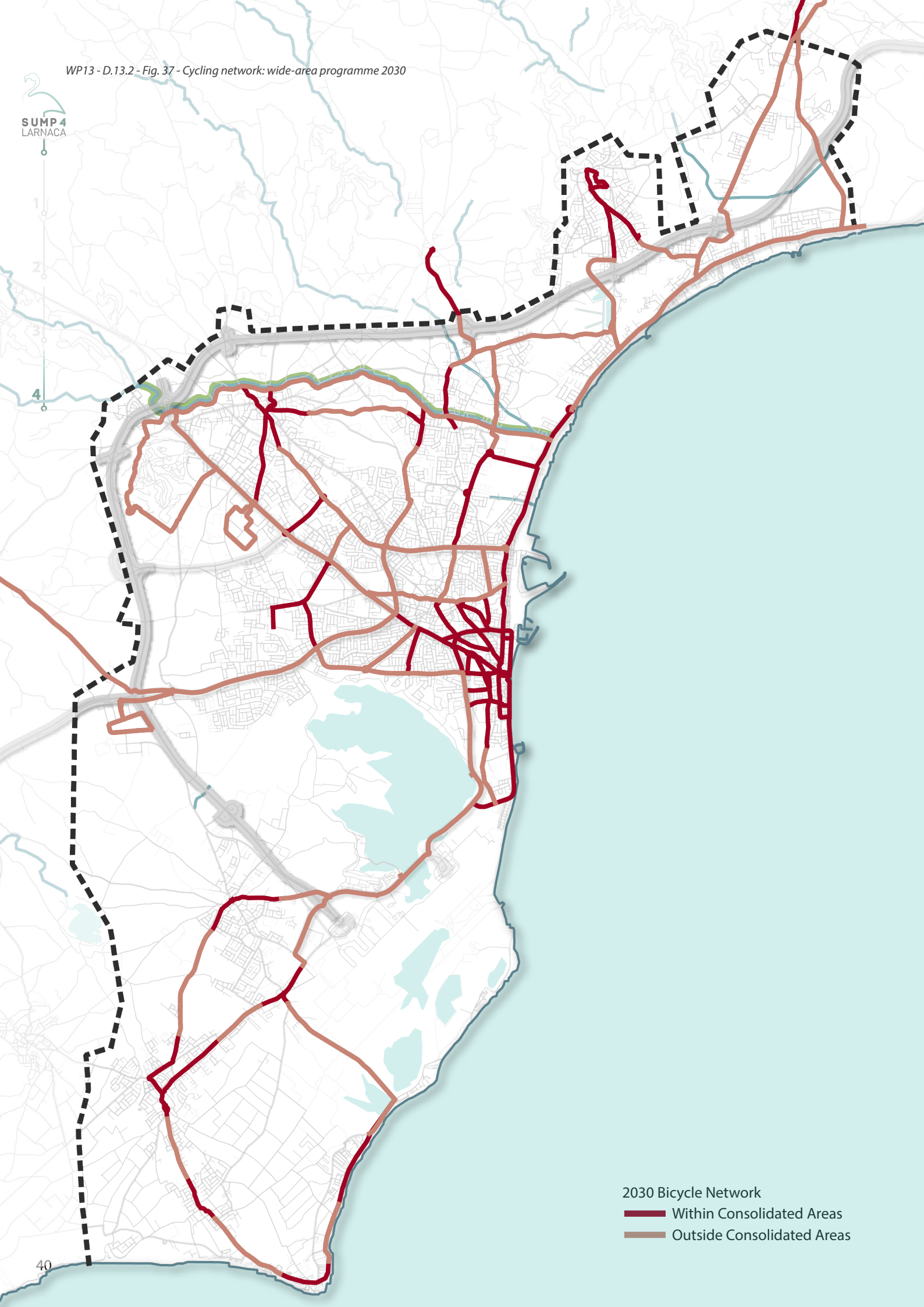
- **Require the provision of land for pedestrian infrastructure as part of residential and commercial development control procedures;**
- Encourage private developers to provide (unilateral undertakings) (or pay for in commuted sums) **sidewalk enactment in and around the site to be developed;**
- Promotion of information campaigns and school initiatives such as the Walking bus.

## 4.4 Cycling

With regard to cycling, the SUMP's main aim is to put in place **a framework that hinges as much on the construction of additional hard infrastructure, as it does on the added value of policies that focus on parking management, public realm enhancements, and the integration of private and public transport modes.** Such an approach calls for a change of perspective. Rather than be conceived as mainly linked to recreational and other free-time activities, bicycles should be thought of as a primary means of transport that can be used for daily trips, including commuting to work or going to school and university, but also to run errands and do some shopping.

### 4.4.1 Bicycle network

As Larnaca has only limited cycling infrastructure in place and a relatively low mode share, the intervention logic followed was to **first to begin to expand the existing network connecting the most used facilities city-wide, which are currently not served by the existing routes. More links are then added, and more routes developed, gradually interconnecting separate parts of the existing network.** In order to contain capital expenditure, the construction of fully segregated bicycle lanes is recommended only where the nature and speed of vehicular traffic is not compatible with cycling safety requirements. Elsewhere, existing routes and, following the implementation of traffic calming measures, local roads are instead favoured.



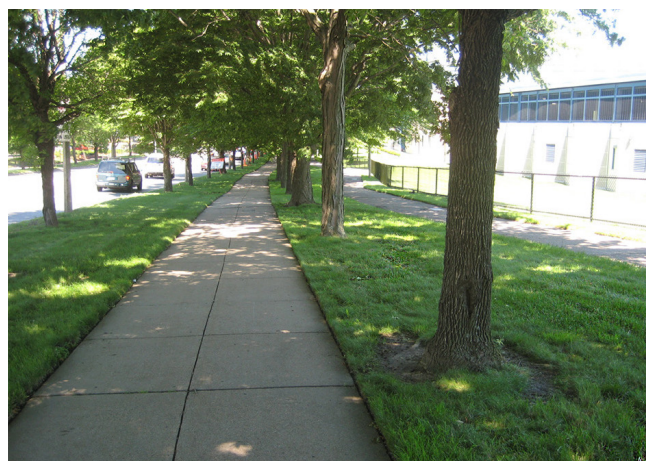
2030 Bicycle Network

- Within Consolidated Areas
- Outside Consolidated Areas

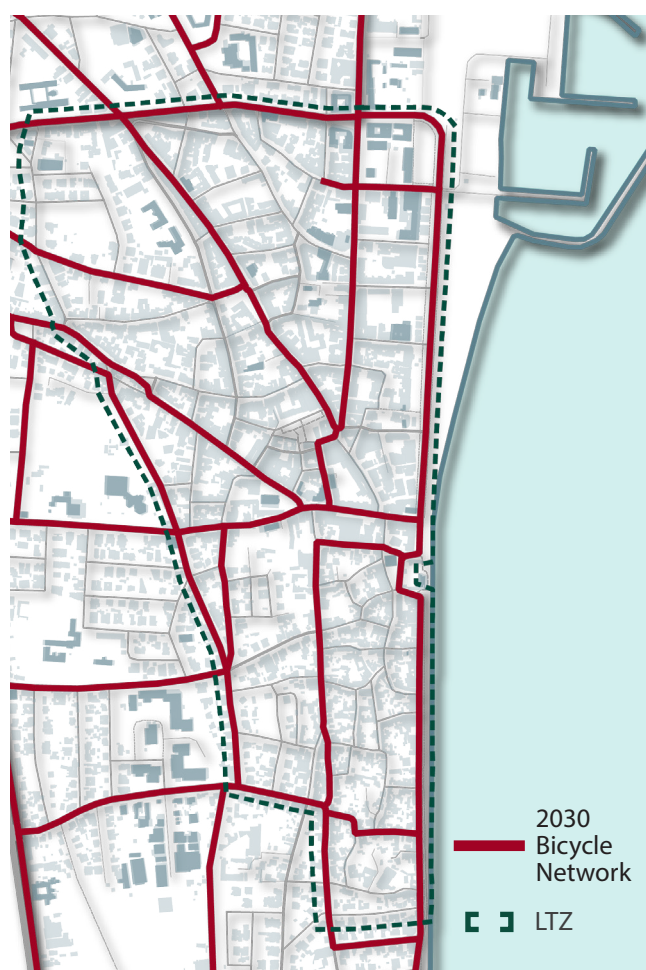
#### 4.4.2 *Services and Facilities for cyclists*

Together with the construction of safe cycling paths connecting key attractors and POIs, a second set of SUMP measures focuses on the **services and facilities aimed at supporting cycling**. The quantum of these services and facilities needs to be tailored to the different urban areas and their prevailing functions (e.g. residential, commercial and business, educational etc.). More specifically, the SUMP recommends the provision of:

- **Bicycle parking spaces:** secure parking spaces with bicycle racks designed according to a single modular system applicable across the District will be provided. Larger quantities should be made available in all sites hosting key attractive functions (e.g. tourist destinations, schools and universities, public services, and Park&Ride locations). Parking spaces for cycling in the city centre will be provided on-street by refurbishing and transforming existing car parking stalls.
- **Implementation of a bike sharing system** (e-bikes and regular bicycles): as free-floating and/or docked management mode (See Report 7.1, pp. 74). The introduction of the scheme will be articulated in 2 phases, with phase 1 occurring between 2020 and 2025, and phase 2 programmed for the period 2026-2030. In phase 1, if the docking station option is selected, there will be 7 to 8 of stations allocated between the city centre and the main other tourist destinations. These should have at least 50% of the fleet composed of electric bicycles. Such a system could make available approx. 80 bikes. If the scheme is instead conceived as free-floating, phase 1 fleet should encompass approximately 120 units. In Phase 2, depending on data emerging from the implementation of phase 1, 8 more stations and 60 to 80 more bicycles (or an additional 100 free floating bicycles) could be added to serve the outer urban centres. Alternatively, 16 more stations with 120 more bicycles, (or 200 free floating bicycles) could be added to serve the entire District.
- **Creation of a bicycle parking structure** for secure overnight storage in the proximity of the Larnaca Bus Station. Walking and cycling as a form of mobility, not only has the potential to become the preferred option in the undertaking of short trips, but these could and should also act as a feeder service to



WP13 - D.13.2 - Fig. 39 - Shading example



WP13 - D.13.2 - Fig. 38 - Cycling network within the City Centre 2030

public transport for longer journeys. The provision of enclosed, covered bike parking facilities for commuters is therefore an important ingredient in the cycling package. The bike park will be covered by CCTV cameras and, to add to security, access is by a proximity card which is issued after registering on-line. The facility will also have bike repair stands for small jobs like fixing punctures.

- **Shading of key bicycle paths.** Because of the high temperatures experienced during most of the summer period, in order to ensure that a shift towards more sustainable mobility habits occurs among tourists and residents alike, it is important enough shading is provided along the main bicycle routes. Such interventions tend to comprise tree planting and other forms of nature-based solutions, but can include artificial canapés depending on the context of their application. A detailed analysis of the orientation of specific segments, vis a vis the built form and the different solar exposures generated during the day is needed, and should form part of the preliminary studies commissioned to expand and upgrade the network.

## 4.5 Parking Management

The Parking Management Plan covers the entire planned area, but a more fine-grain analysis (and related spatial solutions) is provided for the following areas:

1. The Limited Traffic Zone. This area is divided in 19 TAZs;
2. The area external to the LTZ and contained within the limits of the urban ring road (Kyprianou-Kranidioti-Nikou and Despoinas Pattichi-Faneromenis) - this area is divided in 70 TAZs;
3. The strip limited by the beach on the east, the Lake on the west, the Airport to the south and the City to the north. This area is scattered in 8 TAZs.

### 4.5.1 *Larnaca City Centre*

This area includes the most attractive destinations in the city during both daytime and night time. It features a limited population, but it hosts a variety of urban

hotels, retail, F&B and tertiary activities. The built form is consolidated and has a vibrant atmosphere, and on-plot parking is seldom provided. The result is that on-street parking is used to legally or illegally support parking needs of residents and employees that stay in the area for long time, while off-street parking lots and structures, that are quite evenly distributed, are occupied by visitors. The fundamental difference between these groups is that visitors are often transient population who is willing to pay for parking even for longer periods (6 or 7 hours) what is a very limited tariff, if compared with typical mainland Europe.

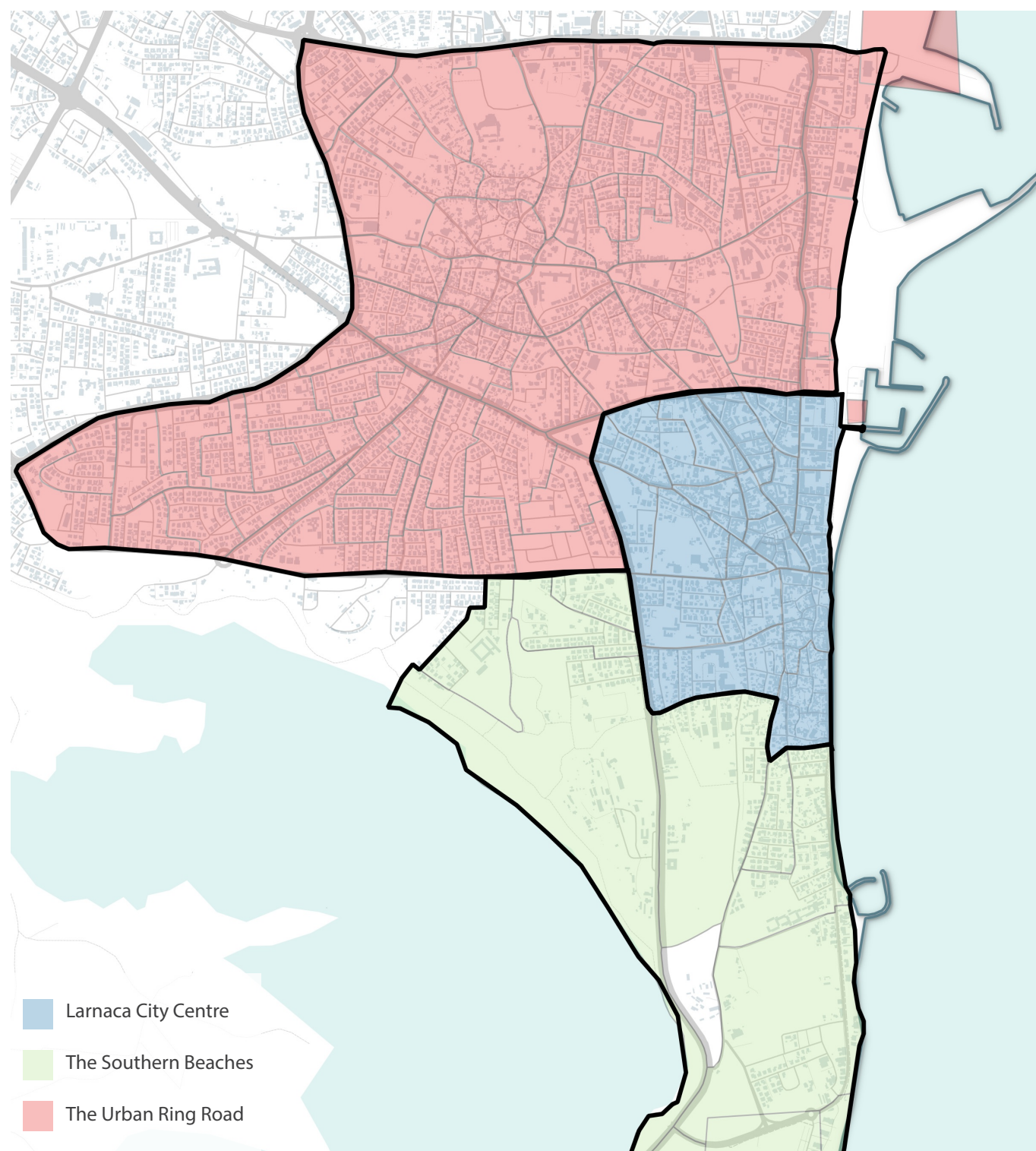
Vice versa, residents and stable workers, who know their way around the city centre and are familiar with the low probability of being fined for illegal parking, also know the streets where parking, although formally forbidden, is tolerated. Although quite stressful, this makes on-street parking cheaper (almost free) compared to the off-street parking, where the payment of the tariff is certain.

The result is that there is residual capacity in off-street parking while streets in the city centre are fully occupied with vehicles to the detriment of the urban quality and liveability. The refurbishment of selected areas initiated by Larnaca Municipality set a direction which is embraced and brought forward in the SUMP.

### 4.5.2 *The Southern Beaches*

This area stretches south of the City Centre towards the airport and McKenzy Beach. The area qualifies as one among the most attractive during summer nights as well as during not excessively hot summer days as many beaches and a marina are located along the coast. The blocks not directly facing the shoreline are generally residential properties, often used as second properties for rent in the summer period. With the exception of the northern area adjacent to the historic city centre, the fabric is constituted by several modern apartment buildings with plot parking and amenities. Roads are often local but regular in size and offer a substantial on-street parking supply, that supports Piale Pasa, which is the main thoroughfare but with limited opportunities for on-street parking. The inner edge of this part of the city is Artemidos which is a dual carriageway four lane road characterized by a lack of active building frontages: it is the preferred route to the airport from the city centre and it is seldom congested.

WP13 - D.13.2 - Fig. 40 - Parking Management Plan - Central Areas



### 4.5.3 The urban ring road

This area represents the cordon around the city centre and it is located within the first ring road of Larnaca. It comprises Spyrou Kyprianou Blvd, Giannou Kranidioti and Faneromenis. The urban fabric includes various building typologies, including detached houses where most of the population lives. This is among the densest areas in the city. Streets are arranged in a grid-like fashion. Such grid brings together the orbital and the radial street' alignments, with the presence on its edges of the historic city centre. Many civic uses are located in this part of the city and on-street parking is widely available along most of the secondary and local road networks.

The availability of a significant amount of unregulated on-street parking suggests that the use of on-site parking, even when available, is perceived as a less convenient option.

**The overall balance suggests that the supply in the three city's sub-areas is globally meeting the demand; Sub-areas 1 and 3 have shortfall in provision, while Sub-area 2 has a large surplus. However, a direct comparison between the total supply and the total demand is a rather excessively simple way to address the matter.**

- **Larnaca City Centre has an overall shortfall of 823 cpb. The 2,693 publicly accessible parking spaces of Sub-area 1 are just meeting the visitors parking demand (2,458 cpb).** Also, the 3,943 private spaces seem adequate for the residents car park demand of 2,973. However, the remaining demand of 1,921 cpb associated with employees can partially be paired with the private provision, and partially compete with visitors for a space either on-street or in the parking lots. The resulting picture is that streets in the city centre are over parked during the daytime especially late in the morning and illegal parking accounts for one third of the total cars parked.

It may well be that in Larnaca city centre, where large office blocks are absent and many professionals have their practices in residential buildings, parking demand nominally labelled as "employees" can effectively access private parking. Such users would not accept to pay for parking by the hour given the length of their stay. Personalised arrangements with local owners are the norm. Visitors' demand can instead be meaningfully related to the publicly accessible provision.

- **The area of the Southern Beaches has an overall surplus of approximately 11,900 cps.** By comparing the visitors parking demand with the publicly accessible parking provision, it emerges that provision meets the demand. The same can be said about the residential demand and the private provision. Similarly to Sub-area 1, it is the "employees" parking demand that, depending on the circumstances, can either access private provision or seek a publicly accessible parking space. In the first case, the overall private provision is sufficient to meet the demand from all residents and all employees, whereas public provision is only sufficient to respond to visitors demand.

Importantly also, the pressure on public parking varies from TAZ to TAZ depending on the concentration of tertiary, commercial and civic facilities as well as the distance from the city centre.

As a matter of fact, sub area 2 locally represents a back-up "lot" that supports parking needs of the city centre.

- **Finally, the Urban Ring Road, similarly to the city central area has an overall shortfall of 1,294 cpb.** Visitors demand is actually exceeding the available supply defining a clear need for turnover parking in the area. The private parking provision is sufficient to meet residents and employees parking demand.

Sub-area	On-street	Off-street	Total Publicly Accessible Parking Supply	Total Not Publ. Acces. Parking Supply	Total Supply
1	494	2,199	2,693	3,943	6,636
2	7,914	1,990	9,904	32,234	42,138
3	1,196	1,736	2,932	4,949	7,881
Total	<b>9,604</b>	<b>5,925</b>	<b>15,529</b>	<b>41,126</b>	<b>56,655</b>

WP13 - D.13.2 - Tab. 6 - Summary of Parking Provision in the parking policy area

#### 4.5.4 Proposed Strategy

A differentiated strategy is proposed with regard to user profiles.

##### Residents

Proposed measures for residents include:

- Introduction of new types of regulated parking such as:
  - Resident's parking permits for first, second, third (and additional) vehicles to be obtained upon submission of the relevant application and at a proportionally increasing price (e.g. the permit for the second vehicle costs twice the permit for the first vehicle, etc...)
  - Suspension of on-street parking limitations overnight in all policy areas from 21:00 until 8:00. Limitations to residents parking (depending by the area) resume during daytime.
  - Residents permits entitle residents privileged conditions as specified on the local signage and variable by the area.
  - Residents in sub-area 1 are entitled free short-stay 15' on-street during day time.
  - Residents in sub-area 1 are entitled special discount rates for seasonal tickets in off-street parking structures.
  - Residents in sub-area 2 and 3 are entitled to parking fee exemption where designated by the PMP. Free resident parking will be provided mainly in limited and designated parking provision in off-street parking lots/structures;
  - Residents in sub-area 2 and 3 are entitled free short-stay 30' on-street during day time.
- Promote the creation of parking cooperatives tasked with the scope of regenerating or building new spaces for residential parking off-street.
- Residents' permits shall be valid for sub-area sectors in the proximity of one's address only.

##### Hotel Guests

Proposed measures for hotel-guests include:

- Use of parking for hotel guests shall not be free of charge and shall be transparently exposed in the bills. This is to discourage guests to use cars rentals during their stay in Larnaca and rely on public transport and

shared mobility. One of the targets of the plan is to increase public transport use among tourists.

- Parking can be free only for hotels that own their own off-street parking facility.

##### City Users & Visitors

Proposed measures for non-residents include:

- All non-residents shall be subject to paid parking or time limitations depending to the sub-area and the proximity to a key attractor.
- Tariffs shall be set in a way that discourages long stay in sub-area 1.
- A progressive reduction of on-street parking spaces is envisaged to promote public realm improvement and beautification. Reductions are expected to be in the range of 30% by 2025 and 70% by 2030.

#### 4.5.5 Proposed Measures

##### 4.5.5.1 City Central Area

Sub-area 1 shows a shortfall of "private" parking supply in the region of -2255 units. This can be partially compensated by an increased residual supply in public parking. However, the 3,943 private parking spaces match the anticipated parking demand for residents in 2030.

The policy and the associated regulation intend to safeguard these units for residents, while diverting the parking demand of employees and hotels towards public off-street parking lots. In these locations the different user-specific daily parking occupation profiles will allow for an optimised use of the available supply.

Nevertheless, a quantum of parking demand (max. 1,700 veh of employees and visitors) will potentially be "expelled" by the sub-area 1 towards the adjacent sub-area 2 or onto public transport or bikes. The outcome will depend on the new equilibrium that these categories will find in the new system. The modelling exercise carried out suggests that the set of measures altogether manages to reduce the car use by 10% and 16% in the AM and PM peak hours.

The large supply in sub-area 02 is mostly dictated by the extension of the road network and the built form. It is

Sub-area	Total Pub. Access. Parking Supply	Total Not Pub. Access. Parking Supply	Car Park Demand Hotels 2018	Car Park Demand Residents 2018	Car Park Demand Employees 2018	Car Park Demand Visitors 2018	Car Park Demand Hotels 2030	Car Park Demand Residents 2030	Car Park Demand Employees 2030	Car Park Demand Visitors 2030
1	2,693	3,943	107	2,973	1,921	2,458	107	4,000	2,091	1,359
2	9,904	32,234	28	12,685	8,232	9,342	28	17,058	9,473	7,702
3	2,932	4,949	70	1,714	1,188	3,616	70	2,305	1,280	3,405
Total	<b>15,529</b>	<b>41,126</b>	<b>205</b>	<b>17,372</b>	<b>11,340</b>	<b>15,416</b>	<b>205</b>	<b>23,363</b>	<b>12,843</b>	<b>12,466</b>

Balance "Private" Parking (including employees)

Sub-area	Parking Supply	Car Park Demand 2018	Car Park Demand 2030	Balance 2018	Balance 2030 @ unchanged supply
1	3,943	5,001	6,198	-1,058	-2,255
2	32,234	20,945	26,559	11,289	5,675
3	4,949	2,972	3,655	1,977	1,294
Total	<b>41,126</b>	<b>28,917</b>	<b>36,411</b>	<b>12,209</b>	<b>4,715</b>

Balance "Public" Parking:

Sub-area	Parking Supply	Car Park Demand 2018	Car Park Demand 2030	Balance 2018	Balance 2030 @ unchanged supply
1	2,693	2,458	1,359	235	1,334
2	9,904	9,342	7,702	561	2,202
3	2,932	3,616	3,405	-684	-473
Total	<b>15,529</b>	<b>15,416</b>	<b>12,466</b>	<b>113</b>	<b>3,063</b>

WP13 - D.13.2 - Tab. 7 - Demand-Supply Balance for Public and Private parking in the centre of the city in 2030.

WP13 - D.13.2 - Tab. 8 - Demand-Supply Balance for Public and Private parking in the centre of the city in 2030 with revised supply.

Sub-area	On-street	Off-Street	Pub. Access. Parking Supply	Not Pub. Access. Parking Supply	Balance Public 2030	Balance Private 2030	Residents	Hotel Guests	Employees	Visitors
1	50	1,600	1,650	3,943	291	-2255	4,000	107	2,091	1,359
2	6,914	1,990	8,904	32,234	1,202	5675	17,058	28	9,473	7,702
3	696	1,736	2,432	4,949	-973	1294	2,305	70	1,280	3,405
Total	<b>7,660</b>	<b>5,326</b>	<b>12,986</b>	<b>41,126</b>			<b>23,363</b>	<b>205</b>	<b>12,843</b>	<b>12,466</b>

likely that people will look at "parking a little further away" before considering other options. However, as mentioned in the previous paragraphs, parking in sub-area 02 will not be free. As discussed in Sec. 4.1, the SUMP aims to significantly reduce on-street parking provision in the city centre core. More specifically, the recommendation is for:

- The repurposing of most of the 494 units of on-street parking;
- The reduction of up to 600 units in parking lots in the area;
- Reconfiguration of the freed space so to encourage active mobility.

The reduction of more than 1,000 units shall be gradually achieved with the on-street component being removed as a priority followed by the off-street one.

#### 4.5.5.2 The Urban Ring

Sub-area 2 shows a large surplus of both private and public parking. Accordingly, the anticipated tailored removal of on-street parking (- 1,000 cpb in all sub-area

02) along the transit corridors should not be perceived as problematic. This portion of the city is also quite large and varying conditions are likely to emerge between the TAZs.

Essentially, Sub-area 2 will absorb in the first place the parking demand expelled by the adjacent Sub-area 1 (City Centre) following the progressive reduction of parking supply in this area. This phenomenon is expected to be a temporary one, which will need to be monitored but will be mitigated by an increase in the use of PT services. Moreover, the parking policies for sub-area 02 are designed so to mitigate this phenomenon.

#### 4.5.5.3 The Southern Beaches Area

Sub-area 3 shows a shortfall of "public" parking of approximately 500 units, but a solid surplus of 1,300 "private" parking units. The area needs intervention for streetscape and enhancement of the public realm to reconnect the shoreline (Pyale Pasa) with the blocks at the back. Therefore, a share of on-street parking is anticipated to be progressively removed in favour of better accessibility for cyclists, pedestrians and micro-mobility.

The overall balance is positive and therefore policies are aimed at facilitating the use of selected private lots to support visitors demand. Prior to intervention, micro-scale tailored analyses are recommended so to maximise the economic and social benefits of the intervention.

#### 4.5.6 Parking Management Office

The handling of permits, the day-to-day operation and the implementation of the Parking Management Plan (PMP) requires dedicated staff within a Parking Management Office (PMO). The PMO conceives, promotes, implements and overviews the PMP. Its responsibilities are detailed below.

The PMO:

- Receives and evaluates parking permit applications from residents wishing to obtain the parking permit;
- Receives applications for Persons with Special Needs (PSN) parking and other special arrangements based on medical records and other credentials;
- Takes municipal decisions to create loading/unloading parking bays in the urban network based on type and levels of demand and supply in the corresponding parking zone;
- Uses a geo-referenced software application to monitor and control supply and demand attributes of on- and off-street parking;
- Receives, evaluates or re-evaluates off-street parking license procedures in all controlled areas;
- Evaluates parking balance per parking zone and make informed decisions on the level of meeting residential demand (issuing more parking permits or not);
- Evaluates the implemented pricing scheme in terms of average occupancy rate/ average parking time per vehicle during peak hours and off-peak;
- Suggests modifications to the pricing scheme;
- Executes the monitoring plan of the SUMP for what concerns the parking policy KPIs.

#### 4.5.7 Parking Tariffs

As mentioned above a key activity of the PMO is the planning and monitoring of parking tariffs. The proposed scheme is based on three sub-areas which are likely to be distinctive in their parking fees, however, all should be revised every year on the basis of adaptive mechanisms that relate the tariff charged with the amount of residual capacity in the specific area considered.

**The decision related to the level of parking fee could therefore be based on a clear and transparent principle: if the residual capacity in the sub-area is below 15%, then the parking fees shall be subject to an increase of 10%. This process should be reversible (i.e. should parking be too empty either parking fee is reduced, or a reduction of the parking supply should be considered).**

Initial tariffs are set as follows:

- In Sub-Area 1
  - The prices for parking on-street shall range between 1,50 €/h and 2,00 €/h without reductions for longer durations.
  - The prices for parking off-street shall range between 1,00 €/h and 1,50 €/h with the possibility for reductions for longer durations and season tickets for residents, business owners, hotel operators.
- In Sub-Area 2
  - The prices for parking on-street shall range between 1,00 €/h and 1,50 €/h without reductions for longer durations.
  - The prices for parking off-street shall range between 0,80 €/h and 1,00 €/h with the possibility for reductions for longer durations and season tickets for residents, business owners, hotel operators.
- In Sub-Area 3
  - The prices for parking on-street shall range between 1,00 €/h and 1,50 €/h with reductions for longer durations. Daily Tickets in Sub-area 3 (the beaches) are likely to be the main purchased solution for the summer season.

## 4.6 Traffic Safety

Road safety plays an important role in the SUMP and this, with its many dimensions, should be conceived as an integral component of all infrastructural upgrade and interventions. **Road safety improvements can not only reduce road accidents and the consequences of those, but a perception of having safe environments where to circulate on foot or by bicycle can also play a role in supporting a modal shift away from passenger vehicles.**

**In relation to road safety, in the SUMP in addition to the building of infrastructure dedicated to pedestrians, public transport and bicycle users, two main measures are identified:**

- Traffic calming-related initiatives, and;
- Proposed changes to the way a number of intersections and major junctions operate in the planned area.

These are complemented by a set of ancillary measures described later in this Section.

### 4.6.1 *Traffic Calming Programme*

In the SUMP, a general reduction of vehicles speed, which represents a central plank of any road safety policies, is addressed through **the application of the concept of 'Home Zones' at a city-wide scale**. Home Zones are present in many European cities and tend to be implemented in residential areas. Within them, a reduced 30 Km/h speed limit is set, and the street layout is rearranged overtime so to better meet the needs of residents, children, pedestrians and cyclists.

**A piecemeal implementation of this measure is envisioned, with priority given to:**

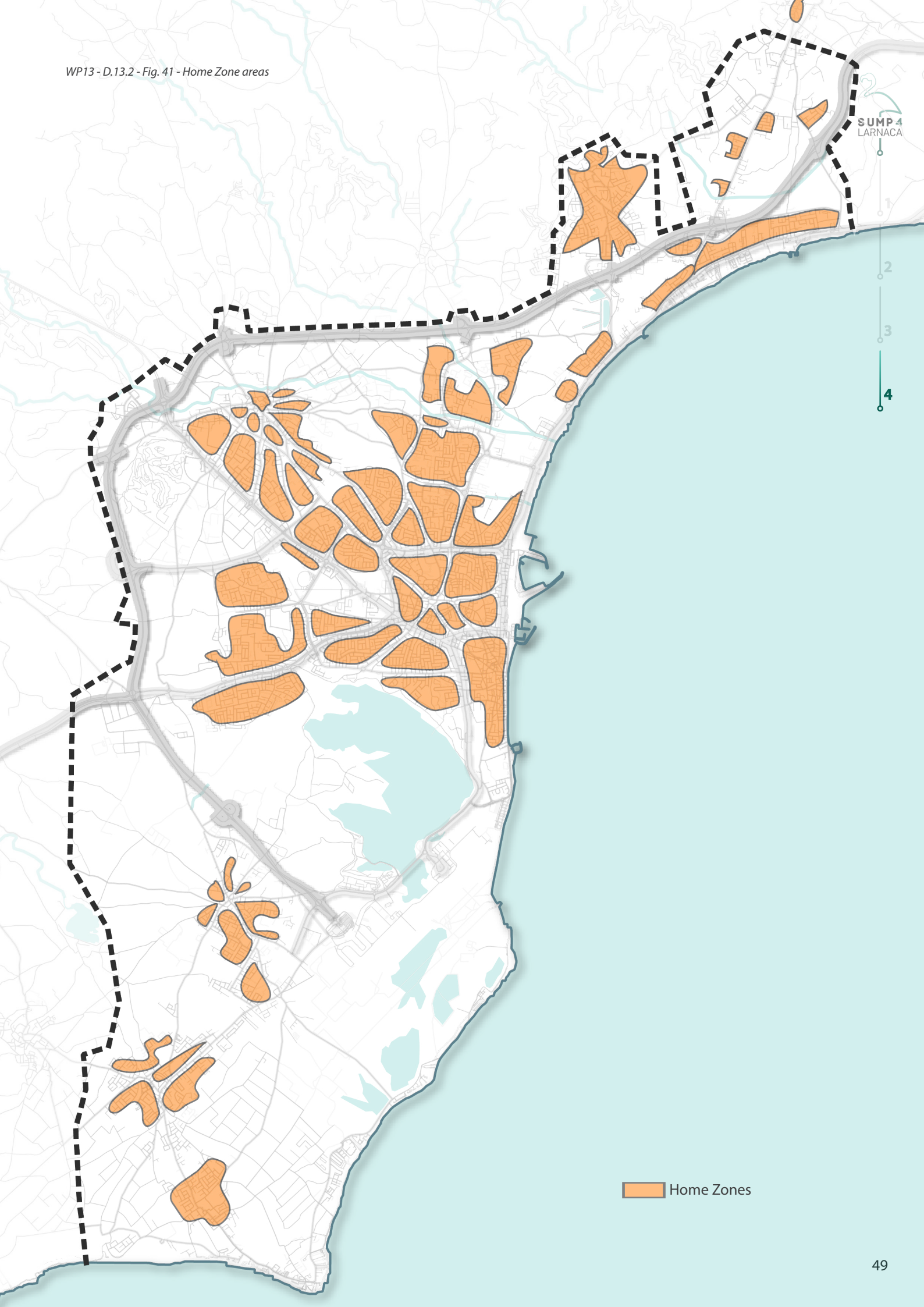
- High density residential areas;
- Areas hosting schools and kindergartens;
- Presence of POIs such as religious buildings, public sector offices, and other significant spaces used by the local community;
- Areas experiencing excessive through traffic;
- Areas where large number of road accidents are recorded.

The implementation of Home Zones, particularly in the inner parts of the Larnaca, provides the basis on which to further articulate and develop mobility and land use joined-up policies. This proves particularly to be the case in relation to the so called 'Environmental Areas' (See Sec. 4.10).

At a project level, the improvement of existing environmental areas should include:

- The removal (or a significant reduction) of through traffic;
- A clear identification of the 'entrance doors' so to render the driver aware of the nature of the area and support changes in driving behaviour;
- The definition of redesign interventions of the road section such as to make it impossible to reach speeds above the set limits;
- The acknowledgment that the public realm should to be reorganized as a place for social activities.

**As shown in the figure overleaf, Home Zones are also proposed for all main urban cores within the outer centres.**



Home Zones

The need to render a number of intersections more pedestrian-friendly was identified in the baseline analysis; emerged as a matter of high priority during outreach events organised as part of the SUMP, and was identified as key issue needing attention in the Problem Analysis Report.

**In terms of junction upgrade, three types of measures are foreseen within the SUMP.**

1. Geometrical changes to **junctions located on the perimeter of the LTZ** and identified by Larnaca Municipality as in need of reconfiguration;
2. **Signalisation of high-velocity multi-lane roundabouts;**
3. Junctions where changes are recommended **as a result of the Black Spot Analysis.**

More details on all of these, including their location and recommendations related to geometric changes to be made to junctions are provided in the full Final SUMP Report.

## 4.7 Policies for Groups with Special Needs

This group of users is here understood to include all people with limited mobility. Among them: blinds and other visually impaired people, wheelchair users, persons with limited mobility disabilities, the elderly, and children.

When moving around the planned area, problems experienced by the people belonging to this group do not differ significantly from everyone else. This said, for them such problems can be insurmountable and may result in a trip been cancelled.

**As part of the SUMP, the measures defined to support equal mobility focus on:**

- Sidewalks conditions;
- Pedestrian crossings and traffic lights;
- Public transport stops and fleet characteristics;
- Disabled parking spaces;
- Creation of accessible routes linking key Points of Interests.

### 4.7.1 Sidewalks condition

**Wide pedestrian pavements along all urban streets having surfaces that are level, cleared from clutter, with small joint spaces, and properly drained, will go a long way in safeguarding the rights of people with limited mobility.** For the visually impaired, the provision of tactile pavers is a must without which orientation can be extremely problematic. In a similar fashion, the availability of resting areas and benches is an important feature of streetscape design. Where possible, sidewalks should be conceived without stairs or curbs so to facilitate theirs use for people on wheelchairs, but also young families with proms and alike. Such upgrade interventions should be systemic in nature and affect the entire network, but priority should be given to the key routes identified below.

### 4.7.2 Crossings

Road crossings represent an important component of pedestrian routes and potentially constitute an enhanced hazard for people with limited mobility. Safe pedestrian crossings differ in type, appearance, materials and the colours used. The key issue is for the colour/material used to indicate where to cross to be in strong contrast with the road asphalt. For crossings with traffic lights, it is important those are equipped with warning systems for visually and hearing-impaired people; that waiting time are long enough for people with reduced mobility to cross the road, and that tactile pavers are present to indicate the limit of the sidewalk. More details with regard to the key routes identified are provided below.

### 4.7.3 Parking

Dedicated parking areas for disabled are present within the city centre, as well as elsewhere in the planned area. This said, they are only few stalls and those are not always properly maintained and clearly marked. As part of the parking management policy, the number of parking for disabled people in and around the city centre will be significantly increased (see Sec. 4.5).

### 4.7.4 Public Transport

Currently in Larnaca there are only few bus stops, and buses allocated to the urban service, that can be used also

by disabled people, elderly with wheelchairs or needing walking frames, but also parents with prams. Bus stops as well as buses need to be designed and equipped with facilities that support people with mobility limitations. This implies having a platform that is wide enough for manoeuvring a wheelchair unaided, while buses should be gradually replaced with low-floor buses. In addition to the initiatives above, the SUMP also foresees the creation of accessible routes linking major destinations with locations of daily activities around home, work and leisure buildings and facilities, as well as access to public transport (i.e. bus stops).

#### 4.7.5 Improved accessibility for people with limited mobility

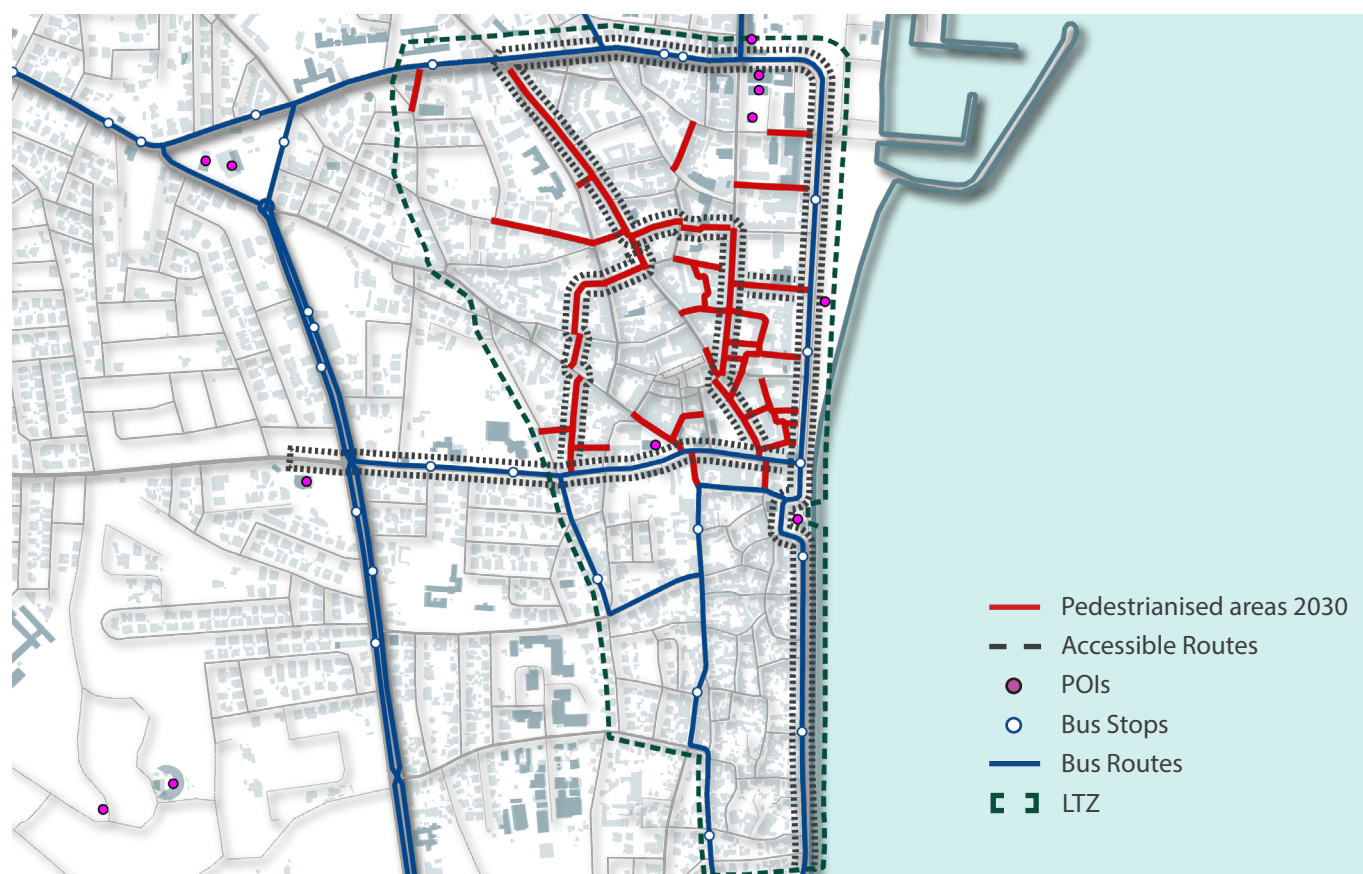
**In order to provide access to and connectivity between major destinations as well as to locations of daily activities around home, work and leisure**

**activities, an accessibility network of access chains was created. With very few exceptions, the network follows pedestrianised streets and connects also public transport facilities and car parking.**

Initiatives aimed at upgrading existing infrastructure will encompass:

- Sidewalks (tactile pavers on footways and pavements supporting orientation of visually impaired with sidewalks to be designed without any stairs or curbs);
- Pedestrian crossings with large and easy to reach buttons equipped with visual and audio signals;
- Ramps and staircases having slightly ascending stairs with marked steps, handrails, integrated detectable warning surfaces with visual and tactile elements;
- Good quality public lightning (i.e. light intensity, light distribution and light density).

The key routes devised are presented in Fig. 42 below.



WP13 - D.13.2 - Fig. 42 - Accessible routes in Larnaca city centre

## 4.8 Smart Mobility and Intelligent Transport Systems - ITS

In recent years, the concept of Smart Mobility and Intelligent Transport Systems has become increasingly popular among local authorities and transport agencies. In this Section, the SUMP's ITS package for Larnaca is presented. Proposed interventions relate to following realms:

- Traffic Management within Larnaca City Centre;
- ITS improvements related to public transport operations;
- Parking management and guidance systems;
- Sharing mobility systems;
- Urban freight transport;
- Road safety measures supporting active mobility modes (pedestrian and cyclists).

### 4.8.1 Local Traffic Management Control Centre (LTMCC)

In 2009, the Strategic ITS Master Plan of Cyprus was adopted. This document recommended the development of a Control Centre in all Island's main cities. Currently there is a Central TMCC located in Nicosia, to which the other LTMCC (Local Traffic Management Control Centre) would also refer. However, this orientation has not been confirmed by PWD and therefore the investments in ITS have been diverted towards the centralisation in the PWD of the Traffic Management Control Centre in Nicosia. The first tranche of funds, relating to the decade 2010-2020, has therefore not been used and awaits future developments. In this regard, no short-term changes are expected.

The creation of a LTMCC in Larnaca is recommended. This can be done gradually completing the existing systems by adding the different modules described in the following paragraphs. An integrated LTMCC for the City of Larnaca would allow the efficient management of different sub-systems. This way traffic flows and congestion on road axes, efficiency of signalised intersections and priority schemes, bus service management, sharing mobility, parking system, road safety and information to users would be managed most efficiently.

**On the one side, the LTMCC acts as a data hub, retrieving information from any on-street and on-board sensor/device, including datasets related to bus ticketing, parking payments, and sharing mobility use.** Real time data will be used to define any possible action or measure needed that requires a timely implementation (e.g. a road accident or the removal of illegally parked cars). Those datasets will also feed the historical database, that grows overtime and it is used to analyse changing trends in traffic conditions and the needs of users, and understand which parts of the system are in need of expansion or technological upgrade.

**On the other, the LTMCC acts as a distributor of information to all equipment 'on the ground', providing datasets to users' app, navigations systems** (such as Variable Message Signs (VMS)), waiting times at bus stops, and web sites. By cross-referencing the information and data received, the LTMCC will also be able to allow to activate specific on-site measures such as priority scheme for bus services or the redirection of drivers in instances of severe accidents.

### 4.8.2 Centralised Urban Traffic Control: System Upgrade

The PWD is currently in the process of installing a new centralised Urban Traffic Control (UTC) system. This is expected to be procured in 2021 and be operating in 2022-23 in Nicosia and Limassol. However, Larnaca is not included, at least not at the first stage of the new traffic control system project.

In the SUMP, in addition to a LTMCC, it is proposed to include Larnaca within the new centralised UTC project and equip buses with AVM devices.

In Phase 1 (2020-2025), the following intersections should be equipped with smart traffic lights and connected to the new centralised UTC:

- G. Kranidioti Rd / Stratigou Timaya;
- Gr. Avxentiou Ave / L. Pieridi St;
- Grigori Afxentiou Ave / Ermou;
- Griva Digeni Ave / Grigori Afxentiou Ave;
- Makariou III Ave / Archiepiskopou Kyprianou;

- Makariou III Ave / Grigori Afxentiou Ave / Athinon;
- Makariou III Ave / Kleovoulou Papakyriakou;
- Grigori Afxentiou Ave / Lord Byron St;
- Griva Digeni Ave / 1 Aprilou St.

In Phase 2 (2025-2030) the following intersections will be upgraded to be centrally and dynamically controlled by the new centralised UTC:

- Artemidos Ave / Larnaca Court House;
- Markou Drakou / Louki Akrita;
- Panagouli Ave / Terpsichoris St;
- Artemidos Ave / Okkular.

#### 4.8.3 Traffic Detection

Traffic data in the urban road network are needed to have a comprehensive view of traffic flows conditions, but also to provide the UTC the information it requires, in real time and with the necessary level of detail. **Proposed road sections to be monitored include locations along:**

- **Main axes connecting Larnaca city centre to the outer areas;**
- **All road approaching signalized intersections** and especially those used by public transport;
- **All roads providing an access the LTZ.**

The selected technological solutions allow (de minimum) for the collection of information about vehicles' class and speed for each within a short time window (15 minutes).

- CCTV Cameras: the most advanced video image processing system use 3D Object Tracking,
- ANPR cameras are used where reserved public transport lines are planned.

Cameras will be installed in the following locations:

- Athinon Avenue;
- Faneromenis Avenue (near Byzantine Museum St. Lazar);
- Griva Digeni Avenue (near int. Leonida Kioupi Street);
- Gregori Afxentiou Avenue;
- Makariou III Avenue (near int. Kosti Palama);

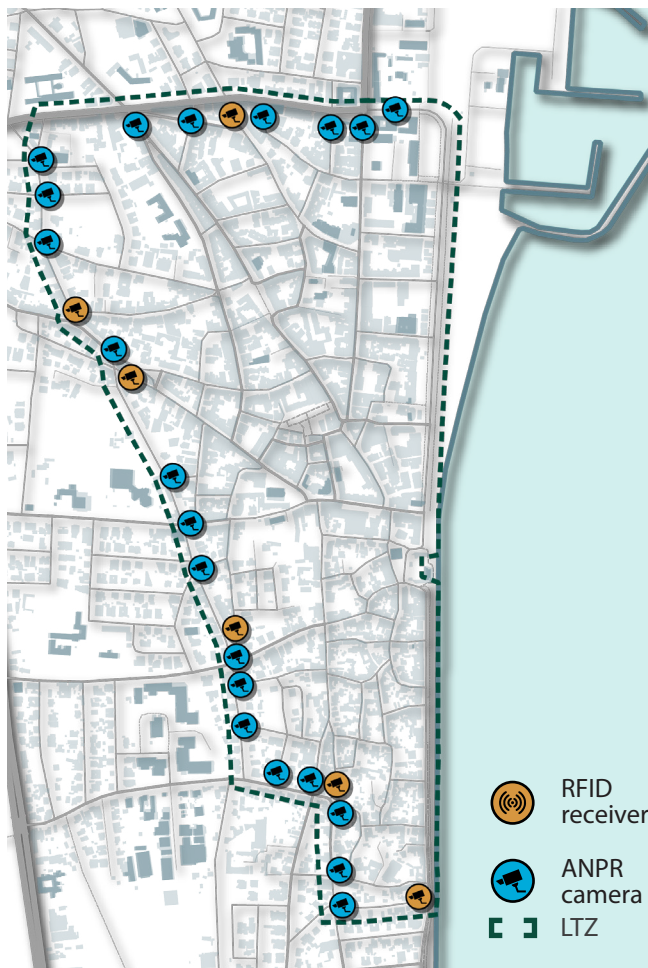
- Panagias Chrysopolitisas;
- Giannou Kranidioti Avenue;
- Petraki Kyprianou Street;
- Makariou III Avenue (near int. Golgon Street);
- Spyrou Kyprianou Avenue;
- Piyale Pasha;
- Thuzane Street;
- Artemidos Avenue;
- Faneromenis Avenue (near int. Kalymnou Street);
- Inomenon Ethnon;
- Griva Digeni Avenue (near roundabout B2);
- Kyriakou Matsi Avenue;
- Lisou Santama Street;
- Alex. Panagouli Avenue;
- Ammochostou Avenue.

#### 4.8.4 ITS solutions for the Larnaca Limited Traffic Zone

##### 4.8.4.1 ANPR camera system

**ANPR cameras will be installed at virtual gates on the LTZ's boundaries to control traffic flows**, unauthorised use of reserved lanes and for parking management purposes. ANPR cameras should be installed in proximity of 27 access roads to the LTZ. The cameras automatically recognize the number plate of any vehicle accessing the LTZ, and compares it with the "white list" of authorised vehicles. The back-office platform can handle temporary as well as permanent permits; allows for the configuration of the system (i.e. turn on/switch off), and for changes to the access scheme (i.e. time windows per vehicle type/class).

To control access to the LTZ and the respect of regulations, a combination of two different technologies is proposed. As mentioned, ANPR cameras will be used to verify permits lined to vehicles entering the area, while RFID readers will be used to control the duration of the stay and road used while exiting the LTZ.



WP13 - D.13.2 - Fig. 43 - ANPR cameras and/or RFID receivers' locations to control LTZ access

#### 4.8.4.2 Permits management

**A single platform to manage all permit related to urban mobility is proposed.** In order to streamline back office work, a digital and automated processes is proposed for the handling of permit requests and the issuing of passes.

#### 4.8.4.3 Integrated Parking Management and Guidance System

A Parking Guidance System is implemented to facilitate the management of parking spaces and to support the redirection of traffic towards areas with available parking spaces and/or along preferred routes with lower levels of congestion.

With regard to occupancy of on-street parking spaces within the city centre, video-based hardware is once again the proposed solution. This is because a single camera allows for the monitoring of up to 20/25 parking spaces, depending on the geometry of the parking space (i.e. parallel or perpendicular to the road), local features such as the presence of trees, and the exact location where the device can be mounted safely and securely.

A minimum of 10 ANPR cameras are required to control access to the monitored parking areas; number of installations could increase depending on their layout and the number of access points for each.

The same results can be achieved using sensors located on or under the road surface. If this option is pursued, one sensor per parking space is required.

Adopting the proposed technological solution will allow to control and the curbing of illegal parking practices, while also increasing the efficiency of the designed parking system.

Such information is made available to users in different ways. For those users not having or using web or app-based solutions, information is provided in real time using Variable Message Signs sited in key locations within the network. To facilitate reading of information to all users, information on mobile apps and web are provided in different languages.

#### 4.8.4.4 Advanced Parking Payment System within the LTZ

**Advanced Parking Payment System are rapidly becoming the most popular option for both on and off-street parking areas. The proposed payment system is based on the vehicles' number plate, to be used no matter the selected method of payment.**

Such service could be provided by Larnaca Municipality, developing a specific mobile app, and/or by international Companies such as EasyPark, which give the option to adopt this payment method to any user who is registered with them, regardless of the Country in which the account is held.

Although mobile app-based solutions are offered to users, the presence of parking meters and the availability of payment machines are also envisioned. These devices are to be located close to any entrance/exit of parking areas and along streets where on-street parking is provided. Drivers should walk less than 150/200 meters to reach the closest one.

#### 4.8.5 *Dynamic Bus Display*

**Dynamic Bus Displays will be used to make Public Transport more appealing to potential users.** Mirroring the information available on the web and/or on mobile apps, the proposed displays to be installed at the Bus Stops (see Sec. 4.2) will provide users with both static and real time data on fleet circulation.

**Installation is proposed for 171 bus stops to be transformed in “smart stops”.** In the Central Bus Terminal, large graphic displays will also be installed. These will allow the display of scrolling messages regarding the service (change of route, timetables, delays etc.). In order to provide a complete service, such displays are equipped with an audio system that broadcast the messages displayed in an audio format.

## 4.9 Urban Freight Logistics

The city of Larnaca has characteristics that make adequate management of freight and urban logistics within its city centre indispensable. The nature of the urban texture, the number of residents, the location of services and commercial activities as well as hotels, lead to a high demand for urban freight transport.

Evidence collected as part of the road surveys suggests that within the city centre, Zinonos Kiteos road, Athenon avenue and Odos Ermou have a considerable number of light vehicles transiting or parked. Such flows are linked to the servicing of the many hotels, restaurants, cafes present in the area.

Moreover, the commercial international airport and seaport play a key role in the Cyprus economy. The latter is located close to the heart of the city; something which calls for careful management of urban freight transport.

**Proposed interventions to mitigate or eliminate these effects encompass:**

- **Limiting LGVs flows and banning HGVs flows in central area of the City;**
- **Directing freight flows along predefined and preferable routes;**
- **Improve performance along preferable routes,** such as changes to intersections and their regulation.

#### 4.9.5.1 Last mile delivery within Larnaca’s city centre

For last mile delivery within Larnaca’s city centre, dedicated spaces for the loading and unloading of goods will be made available. **Direct delivery to premises located within the LTZ will be restricted to certain times only** (night and early morning). Couriers and other agents will still be able to deliver goods outside of such delivery hours; however, they will not be allowed within the LTZ. Instead they will have to use dedicated bays located just outside the LTZ boundaries, and complete their mission using trolleys to cover the last mile. More information is provided in Sec. 4.1.

#### 4.9.1 *Larnaca airport traffic*

Larnaca International Airport is one of the main international gateways of Cyprus and serves Larnaca as well as other cities.

**The following routes should become those prioritised by commercial vehicles to/from the airport. Along all these routes, road-signs will be installed to direct vehicles. Electronic navigation systems (web and mobile app) or printed maps to direct drivers along these routes will also be made available. (It is worth noting that those are already the routes used by most of commercial operators).**

- Airport to/from other important cities: B4 and A3 roads will be suggested and used for any connection, while A5 is only used to go to Limassol and A2/A3 are only used as gateways to Nicosia.
- Airport to/from the industrial zones of Larnaca districts: A3 motorway followed by Ellados Avenue (E323) as well as A3 motorway followed by the Eleutherias Avenue (B2) will be suggested and used
- Airport to/from the City centre: flows to/from the southern part of the city are directed along the B4 road while those to/from the west and north areas of the city are directed along the B4 and A3 and further use the preferred roads to access the city.



WP13 - D.13.2 - Fig. 44 - Routes from/to the airport

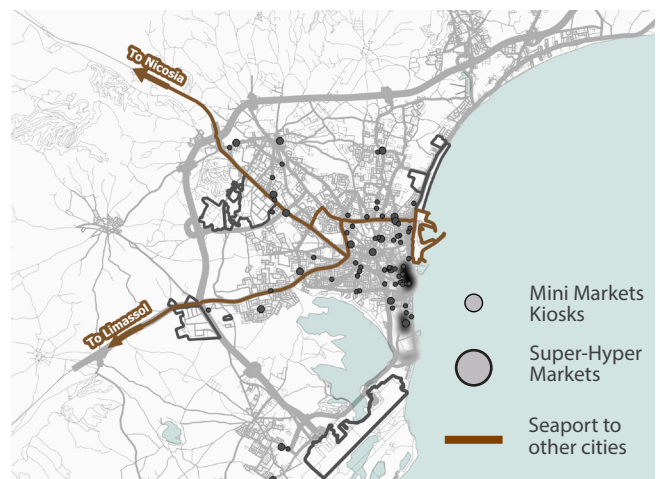
#### 4.9.2 Larnaca port traffic

The commercial Port of Larnaca is one of the most important transport infrastructures on Cyprus. Freight traffic to/from the seaport mainly pertains HGVs. The seaport is situated approximately 2 km from the town centre and this generates important effects on urban mobility.

**In order to reduce negative impacts such as noise and pollutant emissions and, possibly, risk of accidents, HGVs should not be allowed in the local urban road network. Rather, such flows will be funnelled through preferred routes on major roads that have the necessary geometric and functional characteristics. The following routes are recommended:**

- Seaport to/from other important cities: freight traffic flows use motorway A5.
- Seaport to/from the industrial zones of Larnaca district: freight flows are directed on the route that connect to the two main industrial zones in the municipality of Aradippou.
- Seaport to/from refineries: short route that insists on the primary road Ammochostou.

Along all these routes, road-signs will be used to direct vehicle. Electronic navigation systems (web and mobile app) or printed maps to direct drivers along these routes will also be made available.



WP13 - D.13.2 - Fig. 45 - Routes from/to seaport

## 4.10 Strategic Planning and Policies

It is a well-known fact that transport can be thought of as function of land use. In other words, people and goods undertake journeys, and are moved, for a variety of reasons, and these can be better understood by looking at trip origins and destinations. Such locations will inevitably tend to be buildings of some sorts, if for building we accept a wide definition that includes depots, rail stations, waste facilities etc. It follows that the patterns of movement are closely related to the manner in which land uses are arranged. By rearranging land uses, travel patterns can be altered.

What it is less acknowledged is the fact that the opposite is also true. Provide different or better mobility options, and people may change where they choose to live and/or work. This is why it is often claimed that poor coordination between transport and land use planning is likely to result in unsuccessful policies in both domains.

**One of the greatest contributions that the future new local development plan could provide in achieving greater sustainability, would be to successfully curb low density suburban development and to promote a compact city form; this way substantially reducing the need to travel.**

This requires bringing as much population, and as many functions as possible, back into Larnaca city centre, while also facilitating population and employment growth in the urban cores of the more peripheral areas. Given the forces at play and the lack of robust fiscal tools available to middle- and low-income perspective buyers and tenants, efforts in this direction were not very successful in the past. This is also due to the fact that the planning system in the recent past has been tasked with achieving economic development policy objectives that, strictly speaking, have little to do with a balanced allocation of land uses.

**At an operational level, the planning system can assist the implementation of the SUMP through:**

- Development of joint sectoral policies;
- Provision of components of sustainable urban mobility infrastructure as part of the development process in accordance with pre-determined and fixed standards;
- Provision of components of sustainable urban mobility infrastructure as part of negotiated development.

#### 4.10.1 Home Zones as Environmental areas

In order for Home Zones to perform at their best, a number of them could be identified as environmental areas within the new statutory local development plan for Larnaca, currently under development. Environmental areas cover entire neighbourhoods and tend to be conceived as urban 'organisational units' comprising a number of smaller blocks forming a polygon.

Within environmental areas, the streets, while supporting travelling, are also conceived like places where children's games, local resident gatherings, strolls, resting, sport and cultural activities are actively encouraged through the provision of adequate street furniture and shading.

Each street had its own 'environmental capacity' which is set with regard to its use, the amount of pedestrian traffic it generates, the volume of vehicular movement to be allowed and the character of the adjacent buildings. When the Environmental Area concept is applied at a Larnaca city scale, most of the city takes on a cellular structure consisting of environmental areas set within an interlocking transport and mobility networks (see Sec. 4.6).

#### 4.10.2 Infrastructure provision through the planning system

In order to obtain planning permission, developers need to provide land and/or facilities that are ancillary to the development. This, by law, occurs according to pre-determined standards. Among the items to be provided there tend to be local estate roads, link-up to mains water, drainage and sewerage, and parking.

With regard to transport and public works, such standard such be amended so to:

- Reduce quantum of private and public parking provision within the city centre;
- Require new residential development to provide on-plot parking (see Sec. 5.5);
- Cancel minimum parking requirement for certain type of development in highly accessible contexts;
- Include new standards for the provision of sustainable mobility infrastructure such as bicycle lanes and parking spaces for bicycles (see Sec. 5.4).
- Ask the developer for commuted sums as gap funding to support the refurbishment of sidewalks in and around the development.

In addition to the above, *ad hoc* requirements are negotiated for medium and large-scale developments.

Several development schemes either undergoing implementation or fully completed have been factored in the SUMP reference scenario, among them the Metropolis Mall and the H2020 sponsored Cyprus Marine and Maritime Institute. Two additional large-scale developments in the pipeline, to occur along the waterfront, and which are likely to substantially alter functional relationships in and around Larnaca city centre are the redevelopment of Larnaca port and marina, and the redevelopment of the Larnaca Refinery Area located between Larnaca and Livadia. In both instances, two different consortia comprising international and Cypriot private sector developers and investors are currently negotiating with central and local government, and local stakeholders, and implementation times are still uncertain.

As mentioned above, with regard to both those development schemes, it is of pivotal importance planning gain is extracted in order to support the construction and maintenance of Larnaca's sustainable urban mobility infrastructure and services defined in the SUMP. Their implementation may not occur within the SUMP timeframe, and changes to plans and strategies are likely in the next few years. This said, it is important the mobility vision laid out in the SUMP, and the principles underpinning the development of the various networks are embraced and maintained.

## 5. SUMP'S IMPLEMENTATION

In order to facilitate the enactment of the measures foreseen in the SUMP, an Implementation Plan was also prepared. This Section provides an overview of the Plan, which is tasked with:

- Defining a clear time line for when the various SUMP's measures should be phased in;
- Highlighting key dependencies among the Plan's measures, and between these and the wider context they fit in;
- Providing cost estimates for the Plan's measures;
- Identifying a potential lead stakeholder in charge of the delivery of each measure, and define the other parties involved.

The SUMP has a 10-year lifespan, and the Implementation Plan is organised into two phases, to which a third is added. There is a short-term and a medium-term period, respectively (0 to 5 years and 5 to 10 years) to which a longer time horizon is added (10+ years).

It is clear that the SUMP's measures relate to each other on a number of levels, e.g. functionally, geographically, and in terms of funding sources. On a basic 'functional' level, the realisation of a given measure can be fully (or partially) dependent upon the completion of one or more other initiatives.

For example, with regard to urban logistics, the successful enforcement of the last mile delivery policy for the Larnaca city centre is likely to require the availability of the ITS system developed as part of the Limited Traffic Zone initiative. In a similar fashion, the construction of some parts of the bicycle network, particularly in locations where bicycle paths are not foreseen as having a dedicated lane, will first require the introduction of a number of traffic calming measures on roads where such network components are going to be sited.

Other more subtle dependencies can also be identified. These opportunities and constraints tend to stem from construction management or public finance related considerations, and from the possibility of bundling together regulatory and constructional tasks.

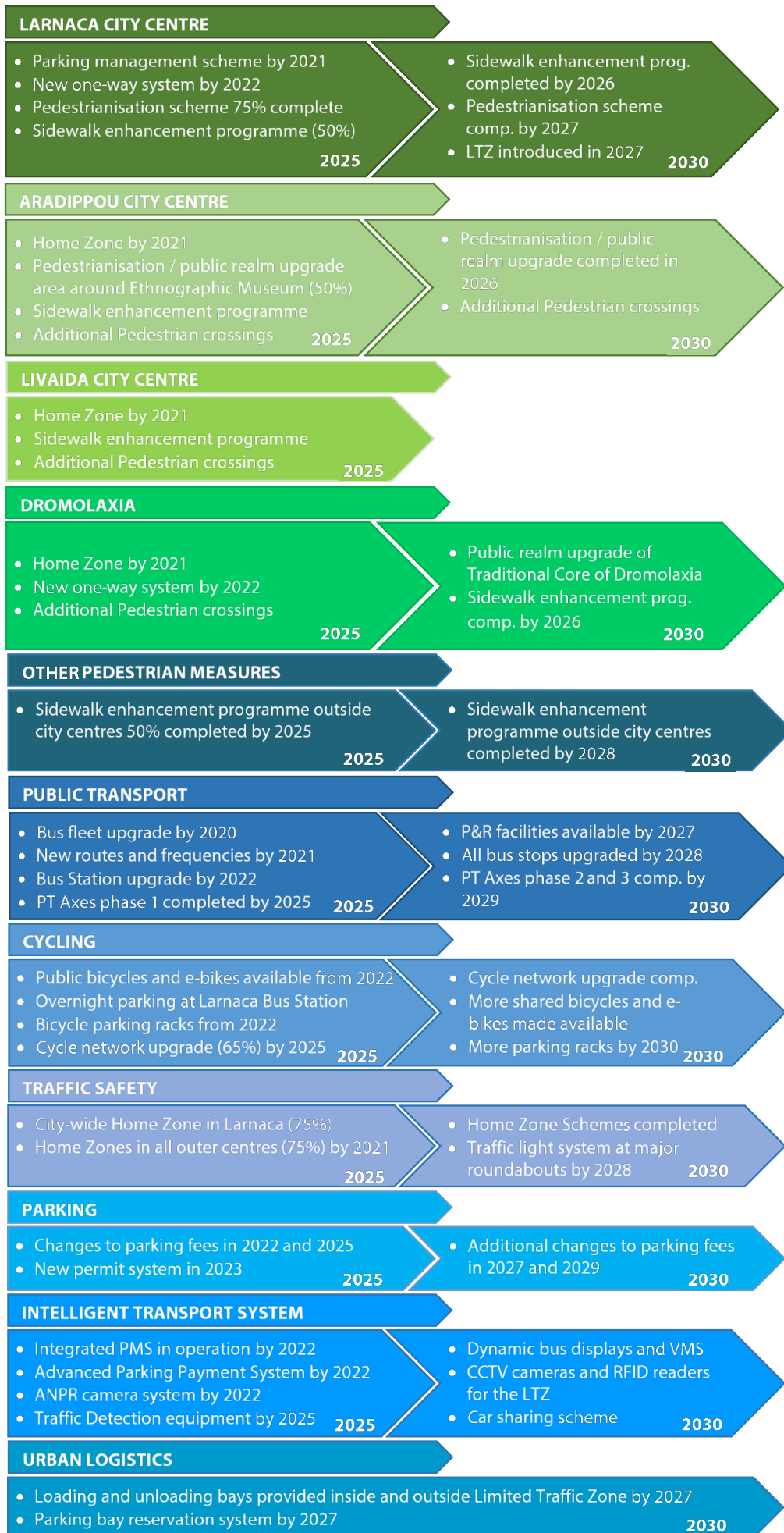
It is widely acknowledged that the SUMP's effectiveness is highly dependent on the possibility of matching the funds needed to implement the measures, with public budgets, municipal, regional, national, private and international funding regimes, as well as with other

financial instruments. To this end, the Plans includes global costs estimated related to capital and revenue expenditure for all SUMP's measures.

Once the plan is adopted, the implementation phase should begin. The hope is that the SUMP's Implementation Plan will ignite a debate leading to a formal agreement between politicians, civil servants, officers and other stakeholders with regard to the sources of finance available.

For the purpose of the Implementation Plan, policies were categorised as either being sectoral (i.e. those policies that apply to the entire study area), or area-based (essentially all those measures included in the four City Centre Traffic Circulation Plans).

Fig. 46 overleaf presents the key SUMP's measures in a way that allows to appreciate, for each of them, the various implementation stages; i.e. what will be available, when.



WP13 - D.13.2 - Fig. 46 - SUMP's Measures Overview

## 6. CONCLUSIONS

The Final SUMP Report, submitted for approval to the PWD and the Project Steering Committee, is the result of the work undertaken by the Consortium led by MobilityinChain, with substantial assistance granted from the Ministry of Transport Sustainable Mobility Unit, and Larnaca's Planning Department and the Chief Engineer's Office.

The Ministry and the Local Authorities in the planned area, through the decision to work on a strategic plan, aimed to ramp-up institutional capacity while also engage in recent international debates and experiences related to mobility planning.

During the development of the plan, technical workshops were held with the Project Steering Committee and Key Stakeholder Committee, which allowed for their feedback to coincide with important stages in the decision-making process. Among them:

- The presentation of the main outputs of the baseline analysis, which provided a snapshot of existing transport and mobility conditions, and framed the impacts generated by those;
- Choices related to how best, and when, to involve local residents and other stakeholders in the plan-making process, including third sector organisations;
- The identification of the Plan's operational objectives and of the hierarchical structure linking those together. This is something that in turn implied exploring how the plan could strategically inform users' transport choices over the next ten years;
- Iterative amendments and fine-tuning of specific policies while still upholding the Plan's strategy and objectives previously agreed upon.

The Greater Larnaca SUMP encompasses many measures which stem from the Ministry's and the Local Authority's intention to piggyback and further articulate successfully completed urban regeneration initiatives. Mobility is in fact simultaneously cause and effect of urban change; with the need to reduce transport, generating substantial ripple effects on the quality of life, work and leisure of residents, visitors, and city users.

To sum up, some of the distinctive features characterising the Greater Larnaca SUMP are:

- It is one of the first mobility plans to be developed nationally, which follows the ELTIS Guidelines issued by the EU;

- It is a document that, through the definition of a coherent set of measures aimed at fostering sustainable mobility, provides the Ministry and to the municipalities, with access to additional funding sources, nationally through block grants and the Operational Programme-ESIF, and internationally through EU competitive funding regimes such as the LIFE and the INTERREG programme;
- It is a plan developed on the basis of sub-national grass-root participation of local communities, and of many other stakeholders interested in debating site-specific interventions;
- It brings together a technical assessment of infrastructure-led interventions, with an appraisal of the measures focused on demand management. This means that in the SUMP, the need to assess the measures' effectiveness and efficiency from a technical point of view, achieved by deploying traditional indicators generated through the transport model, is coupled with the scoping of the expected environmental and social impacts;
- It is conceived as a working tool for institutional stakeholders, and provides them with global cost estimates for the interventions foreseen in the Plan. Resources (including financial ones) in fact are finite, and the SUMP recognises that in such a context, capital projects requiring public expenditure need to be selected taking advantage of a transparent prioritization mechanism.

### SUMP's Priorities

The SUMP therefore puts forward a vision related to mobility in Greater Larnaca spanning across the next 10 years. The vision is the result of an understanding of the territorial dynamics as framed in various sectoral strategies and plans. But it is also based on the results of the outreach events, which included a public awareness rising exercise that explored some of the profound changes that are currently taking place within transport; trends the SUMP needs to be able to harness and respond to. We are in fact witnessing substantial innovation taking place in the realm of mobility services, with such innovation propelled as much by technological advancements as by a shift in demand, and more generally, by the changing mobility needs of local residents, tourists and city users.

Such awareness is a central plank of the rationale according to which Plan's policies were developed. More specifically, emphasis was placed on:

- The issue of **quality/accessibility/interface** of the **public realm** and **mobility infrastructure**; this being the case for vehicular movement (squares and streets), as well as for public transport (accessibility to the service and quality of bus stops). Traffic calming measures, the parking policy and the pedestrianisation of some parts of the city centre support a reduction in car use, in favour of active mobility (i.e. walking and cycling);
- The bicycle not narrowly conceived as linked to recreational and other free-time activities, but rather as a primary means of transport. Larnaca not only can count on a favourable climate, but also on a compact city centre and a flat topography throughout the planned area, and these represent ideal conditions to foster cycling take-up. Such form of mobility can be incentivised through the **expansion and the stitching-up of the existing network of cycle lanes**. In order to increase its use, it is in fact important that riding a bicycle not only is, but it is also perceived as, safe, attractive and comfortable. The potential for this transport mode to attract a considerable share of demand is highlighted in the evaluation of the Plan Scenario.
- **Enhancement of Public Transport provision**, with particular regard for the construction of segregated lanes, the upgrade of bus stops and the walking itineraries leading to them, the deployment of a fleet having a low (or zero) environmental impact, and the provision of park and ride facilities and a renewed central bus station;
- **Innovation in the mobility system** with electrically powered shared systems and on-demand micro mobility options. Some of the SUMP's measures (e.g. access to the LTZ and parking management policies) aim also to support the generation of a critical mass of demand that will make the provision of such services economically viable from the point of view of private operators. In this context, a clear separation of responsibilities between the public sector (which performs a regulatory role), and private sector (which invests and manages) is maintained;
- Aspects related to **urban freight logistics**. Larnaca with its airport and seaport, and its abundant

- offer of tourist facilities, particularly along the coast, experiences substantial HGV and LGV flows, respectively in the part of the road network leading to and from the port, and in and around the city centre. With regard to urban logistics, the SUMP identifies a range of measures that go from forbidding access the bulk of local urban road network to HGVs, to regulating access to delivery vehicles within the city centre;
- The last aspect strongly endorsed by the SUMP is the need for both the Ministry and the Local Authority to invest in **ITS infrastructure**, and more specifically in a twin system made of a central (Nicosia) and a local (Larnaca) urban control centre capable of collecting and disseminating data related to transport flows and mobility demand. Data harvesting is quickly asserting itself as a core feature of all future mobility systems. In this regard, the SUMP recommends a possible system architecture, defining the hardware upgrades needed, as well as a system of indicators to monitor the effectiveness of the policies implemented.

It is worth noting that car ownership in Cyprus, set at 613 vehicles per 1000 inhabitants, is among the highest in Europe and, perhaps more to the point, Cyprus has one of the highest increase rates over the past 15 years. Abundant evidence suggests that regardless of geographical location, size or Country considered, inverting consolidated transport trends (e.g. private passenger car ownership) is a complex operation.

In the last 30 years or so, road works and upgrades in the District of Larnaca have mainly focused on improving conditions for vehicular traffic, while investments on sustainable mobility lagged behind. Such infrastructure deficit now compounds the costs of the measures defined in the SUMP, but it is worth noting that such economic effort will support the high-level goal of de-carbonising the nation's economy, and will have a long-lasting impact on the development of the visitor economy.

The overall economic capital investment foreseen in the SUMP is substantial; in the region of 80 million Euros, with funding needed, necessary coming from municipality block grants, ministerial budgets, EU projects and EIB-led initiatives.

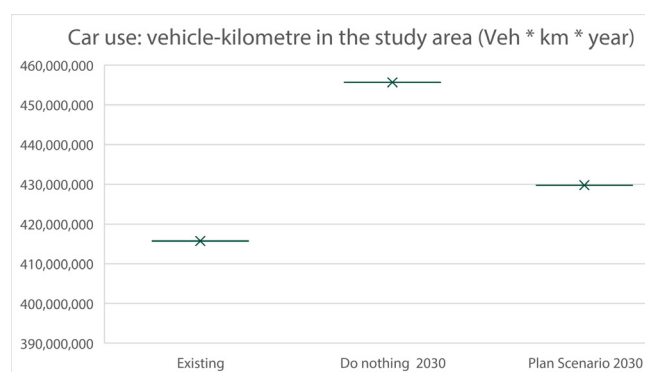
With this level of investment, the SUMP measures have a strong impact and are effective in reaching the Plan's High-level Objectives with regard to the total

amount of kms travelled by car, in the rebalancing of travel mode share, and in achieving a substantial reduction of GHG emission as well as of the number of serious road accidents. However, such gains can be obtained only through a concerted implementation of all Plan's measures. This, for example, implies adopting all measures capable of steering demand towards those transport modes having the lowest (or zero) environmental impact, while at the same time supporting the policies (e.g. the Limited Traffic Zone and the parking management plan) that bring to the surface the environmental and social costs associated with the use of private vehicles.

In other words, it is clear that supply-side solutions alone (e.g. the provision of sustainable mobility infrastructure) will not be enough to reach the goals set. Success in achieving behavioural change is necessarily linked to the prevailing urban form and the land use model adopted. Urban sprawl processes inevitably lead to a stretching out of the distances between the places where we choose to live, work, study, socialise and consume, which in turn means that, in order to satisfy our mobility needs, we get even more car dependent. This is because suburban cul-de-sac type of neighbourhoods, with their convoluted shape and low-density housing patterns have proven nearly impossible to serve by PT and by other means of transport. Cross-connecting and inter-working such services is therefore one of the few practical ways of connecting at least some of the suburbs and using the demand to the centre to provide far better service levels than could be justified by the intra-suburban markets alone.

To conclude, the SUMP, because of its nature, should not be conceived as a static and formal document, but rather as dynamic tool that ultimately aims to strike a balance giving enough detail and guidance on which measures should be implemented when, while also building a framework that is sufficiently flexible to allow for adjustments triggered by future changes in society, technology and/or in transport systems.

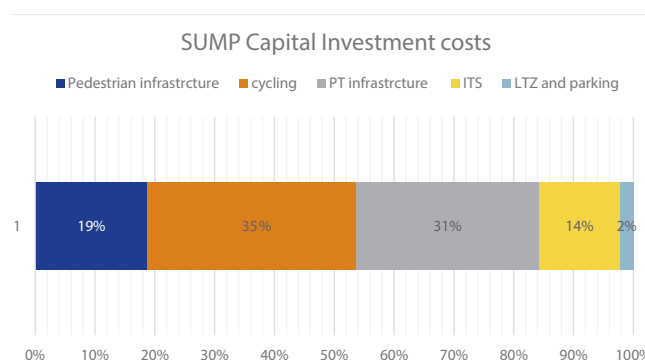
Once the plan is adopted, the implementation phase should begin. The hope is that the SUMP's Implementation Plan will ignite a debate leading to a formal agreement between politicians, civil servants, officers and other stakeholders with regard to the sources of finance available. A set of supplementary policies directed at further defining and better contextualising individual interventions may be needed.



WP13 - D.13.2 - Fig. 47 - Car use: vehicle-kilometre in the study area (Veh \* km \* year)

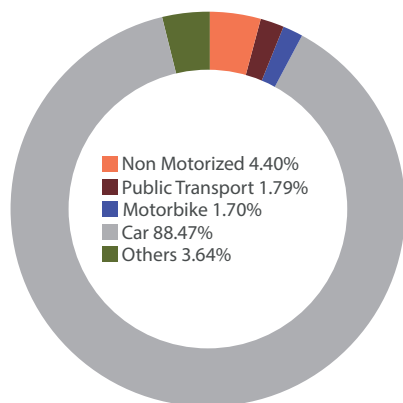


WP13 - D.13.2 - Fig. 48 - Bicycle and walking: passenger \* km \* year in the study area

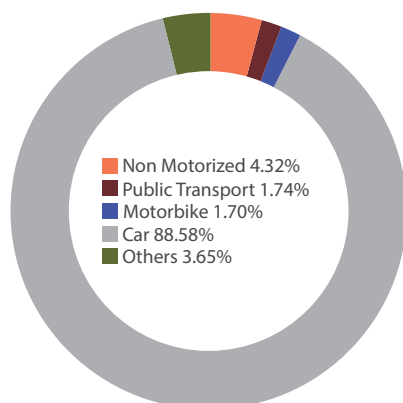


Total capital investment: €72.548.800  
(€81.628.800 with overheads)

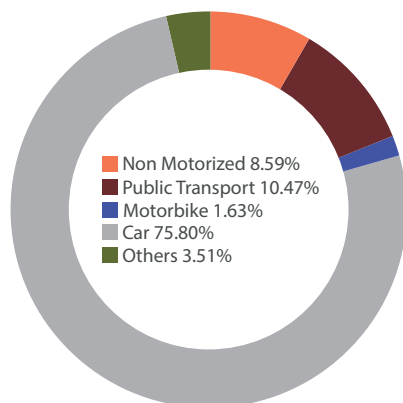
WP13 - D.13.2 - Fig. 49 - SUMP Capital Investment Costs



WP13 - D.13.2 - Fig. 53 - Mode share: current urban mobility on a working day



WP13 - D.13.2 - Fig. 54 - Mode share: urban mobility on a working day Do nothing 2030



WP13 - D.13.2 - Fig. 55 - Mode share: urban mobility on a working day Plan Scenario 2030

## Client



**Republic of Cyprus**

Ministry of Transport,  
Communications and Works  
*Public Works Department*



**European Union**  
Cohesion Fund



Structural Funds  
of the European Union in Cyprus

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