

# Naama Initiative

## Airspace Assessment

Analysis of Segregated Airspace for the  
sUAS Activities in Urban Spaces

April 2020

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Comments:

- The altitudes in the document are provided in feet above mean sea level (AMSL), except where expressly noted otherwise.
- The information extracted from AIP Israel is based on the 20/2 amendment (effective date March 26, 2020).
- The dimensions in the document are provided in accordance with Natinal Air Regulations (dimensions), 5776 - 2016 (effective date March 28, 2016).

Important Comment: This document, including the airspace dedicated for sUAS activities in urban environment, is intended to serve as advisory information for the initiative’s participants and is subject to the final approval of the CAAI and IAF. The initiative’s participants are entitled to use the data for the purpose of preparation and planning, under the assumption that it is possible that changes and/or adjustments will be made, as part of the examination and approval process implemented by CAAI and/or IAF.

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## A Glossary of Abbreviations and Terms

Abbreviation	Meaning
AGL	Above Ground Level
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Service
ANSP	Air Navigation Service Provider
ATC	Air Traffic Control
ATM	Air Traffic Management
ARC	Air Risk Class
BVLOS	Beyond Visual Line-Of-Sight
CAA	Civil Aviation Authority
CVFR	Controlled Visual Flight Rules
EASA	European Union Aviation Safety Agency
FAA	Federal Aviation Administration
FIR	Flight Information Region
GNSS	Global Navigation Satellite System
GRC	Ground Risk Class
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
MEDUSA	Methodology for U-Space Safety Assessment
NASA	National Aeronautics and Space Administration
NOTAM	Notice to Airmen
RFI	Request for Information
SiS	Signal-In-Space
SORA	Specific Operations Risk Assessment
sUAS	Small Unmanned Aircraft System
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System (S)
USSP	UTM System Service Provider
UTM	Air Traffic Management
VFR/CVFR	(Controlled) Visual Flight Rules
VLL	Very Low Level
VLOS	Visual Line-Of-Sight
WGS-84	World Geodetic System — 1984
IFR	Instrument Flight Rules
VFR/CVFR	(Controlled) Visual Flight Rules
UA	Unmanned Aerial Vehicle
M	Meter(s)
NM	Nautical Mile
MOD	Defense establishment
AMSL	Above Mean Sea Level (altitude)
AGL	Above Ground Level (altitude)
Km	Kilometer
Ft.	Foot (feet)
CAA	Civil Aviation Authority
ATM	Air Transport Management

## 1. Background

AGL Aviation LTD was requested to conduct an assessment and analysis of the national airspace of the State of Israel in order to identify certain airspace volumes that can be used by sUAS, as part of the Urban Mobility in the Aerial Dimension Project (hereinafter - Na'ama) led by Ayalon Highways. The engagement of AGL Aviation in the Na'ama Project is executed under the Matrix Co. The project's objective is to facilitate enhanced utilization of unmanned aerial vehicles (hereinafter - UA) in an urban environment. The airspace volumes that were analyzed were selected after several discussions with stakeholders such as the defense authorities, CAA, aircraft operators, suppliers and municipalities.

In Israel, the airspace is saturated with infrastructures serving various sectors of civil and military aviation. The areas of interest defined for the project are a series of urban areas that according to an initial analysis can potentially serve as a basis for economically feasible commercial drone activity.

The aeronautical infrastructures in the areas of interest examined under the project serve primarily general aviation (private and commercial), and low-flying Israel Air Force training missions.

Any aeronautical infrastructure requires a defined volume for the operation and separation of various aircraft, as well as separation from the ground and from obstacles, to supply an acceptable level of safety for users of the airspace, as well as for people and property on the ground.

In addition, the aerial infrastructure serving the various aviation sectors, were planned according to the existing constraints and considerations in the examined areas of interest, which in turn affect the airspace, for example, prohibited, restricted and dangerous areas for flight<sup>1</sup>.

Globally, projects such as the Na'ama Project are being promoted under the title of UAS Traffic Management (hereinafter - UTM), which aims to bring UA activity to urban spaces, *inter alia* by means of synchronizing with the existing Air Traffic Management system and creating mechanisms which enable multiple UA activity in crowded urban areas. The regulatory authorities that are leading the development of the UTM operating concept are SESAR and

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<sup>1</sup> These are published in AIP Israel, "Section ENR 5.1 - Prohibited, restricted and danger areas for flight" and in specific areas where UA flight is prohibited.

Eurocontrol in a project called U-Space, and the FAA and NASA, which are leading in the US the UTM Research Transition Team (RTT) Initiative.

UTM operational concept are in various stages of development throughout the world. A fundamental component mentioned throughout the professional literature of the International Civil Aviation Organization (ICAO) and the other leading regulatory authorities engaged in UTM, is the analysis of the airspace (hereinafter - Airspace Assessment), which comprises a preliminary phase for unmanned aerial vehicle activity in the airspace and understanding their effect on the airspace.

An assessment of select airspace volumes was conducted in accordance with the methodology developed under the auspices of the U-Space Project and underwent a process of operational experimentation in the airspace of the control zone of the aerodrome in Riga, Latvia<sup>2</sup>.

The significance of the airspace volume assessment is the analysis of all the relevant aerial infrastructure vis-a-vis the areas of interest that enable UA activity in the framework of Project Na'ama. The analysis is conducted on the basis of the required platform and its characteristics, for example, the required separation between UAs and manned aircraft, and the conversion of altitude references (from AMSL to AGL), etc. The analysis' results presented in Section 4 of this document, will comprise a foundation for assessing possible UA activity in the airspace of the State of Israel, and describe the airspace volumes available for activity and their unique operational characteristics.

The document focuses on the aspects of airspace and airborne operations. It does not discuss the separation of aircraft from obstacles and obstructions (structures, powerlines, antennas, trees, etc.) as well as the topics of personal safety while flying above areas of high density and changing importance (population concentrations, kindergartens, privacy sensitive areas and so forth) in the framework of the UA activity in the airspace volumes that were assessed.

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<sup>2</sup> Eurocontrol, Final Report of Riga CTR Airspace Assessment, Edition 1.0, 29.11.2019

## 2. Reference data

An analysis of airspace volumes for future UA activity in the framework of Project Na'ama, includes potential volumes for nine major cities throughout the country, from Karmiel in the north to Eilat in the south, in addition to designated airspace volumes that were requested by the proposing entities participating in the project.

These cities were selected as potential sites for UA activity in cooperation with the CAA, for two main reasons. The first is that these are densely and highly populated cities, in which the economic feasibility of various initiatives in fields pertaining to service to the individual (for example, food and package deliveries, and so forth) exist in a higher probability than in areas with a sparse population. The second, pertains to the cities' location in relation to aerial infrastructure. As previously noted, the airspace in the State of Israel is saturated with infrastructures, and the selected sites were those that in the eyes of the CAA and the analysts, were found to have a preliminary feasibility to incorporate UA activity as part of the project, in addition to the existing infrastructure.

The airspace volume tested in each city, was determined as a 3 km radius from primary dispatch points. The dispatch points were set in large-scale commercial centers, relatively clear of obstacles, comprised of multiple relevant services compatible to air transport. Dispatch points enable maximum coverage of the city's area in a defined range. The volume altitude was set at a minimum altitude of 40 meters AGL (approximately 130 feet AGL) as an assumption aiming to minimize any exposure on the part of the public to noise, minimizing any invasion of privacy and enhancing the safety of those individuals present within the area of the activity zone, in the event of an aircraft malfunction/emergency. The maximum altitude of the airspace volume was set at 120 meters AGL (approximately 400 feet AGL, that complies with the VLL definition of U-space).

In addition to the airspace volumes selected by the CAA as potential areas (those having the prospects of a relatively high level of applicability), additional activity areas were examined as part of the support provided by Project Na'ama for the various company sponsored initiatives. There is a certain advantage to performing an airspace assessment for the purpose of a designated activity since the aircraft operator's specifications are more precise, thus making it possible to adapt the airspace volume in an optimal configuration for the proposed activity while utilizing the acceptable planning indices in the UTM concepts noted above.



The table below is a concentration of the data concerning the examined airspace volumes.

ID	City	Distribution Center	Airspace Volume Request	ITM		WGS 84	
				Y	X	E	N
1	Tel Aviv	North Market	CAA	184870	668561	34°50'16.77"	32°06'35.55"
2	Beersheva	Azrieli Hanegev Shopping Mall	CAA	180433	572554	34°47'41.27"	31°14'38.06"
3	Ashdod	Ofer Lev Ashdod Shopping Mall	CAA	166715	634026	34°38'51.08"	31°47'51.88"
4	Karmiel	Gan Ha'ir Commercial Center	CAA	229162	758562	35°18'29.53"	32°55'18.95"
5	Jerusalem	Jerusalem Central Bus Station	CAA	219367	632944	35°12'12.59"	31°47'21.15"
		Malcha Shopping Mall	CAA	217862	628766	35°11'15.43"	31°45'05.48"
6	Haifa	Ofer Grand Canyon Haifa Shopping Mall	CAA	197073	743915	34°57'55.80"	32°47'22.85"
		Azrieli Haifa Shopping Mall	CAA	201010	743904	35°00'27.09"	32°47'22.76"
7	Eilat	Mall HaYam Shopping Mall	CAA	195204	384748	34°57'15.17"	29° 33'00.91"
8	Hod Hasharon	Sharonim Shopping Mall	Flytrex	190971	671084	34°54'09.21"	32°07'58.08"
9	Kadima	Kadima-Tzoran Industrial Zone	Flytrex	192696	686976	34°55'13.43"	32°16'34.15"
10	Beit Yanai	M Haderech Shopping Mall	Flytrex	187717	698883	34°52'01.72"	32°23'00.19"
11	Netanya	Agamim Center (South)	CAA	187189	692596	34°51'42.28"	32°19'36.06"
		Ofer Hasharon Shopping Mall	CAA	186152	688576	34°51'03.14"	32°17'25.44"
12	Hadera	Mall Hahof Village Hadera Shopping Mall	CAA	192912	704887	34°55'19.88"	32°26'15.61"
		Ofer Lev Hadera	CAA	190316	705371	34°53'40.44"	32°26'31.07"

Table 1 - Concentrated data of examined airspace volumes



### 3. Methodology

The methodology for the analysis and assessment of airspace, i.e. Airspace Assessment, is in various phases of development across the globe, and is not included in any international or largely accepted framework of regulation (such as EASA, ICAO or the FAA).

Currently, UA activity in various airspaces is conducted under the auspices of the Specific Operational Risk Assessment (hereinafter - SORA), commonly acceptable by regulatory authorities throughout the world, and in Israel in particular.

The UTM concept formulated by the two leading organizations, Eurocontrol and the FAA, aspires to analyze the airspace in as a comprehensive manner as possible, to constitute a foundation for generic flight activity of various aircraft operators, and thus absolving these operators from conducting their won dedicated airspace assessment.

As stated, the methodology for executing an Airspace Assessment is in the development phase, there are isolated test cases in which aa analysis of this type has been conducted, for example the analysis of the Riga airspace as part of the U-Space project conducted by Eurocontrol. The Airspace Assessment in Riga relies on adapting the SORA principles to a new methodology known as MEDUSA.

The Airspace Assessment in the framework of Project Na'ama is based upon an adaptation of the methodology noted above, as the most advanced UTM operational concept today. The methodology contains five stages, as described in the figure below.

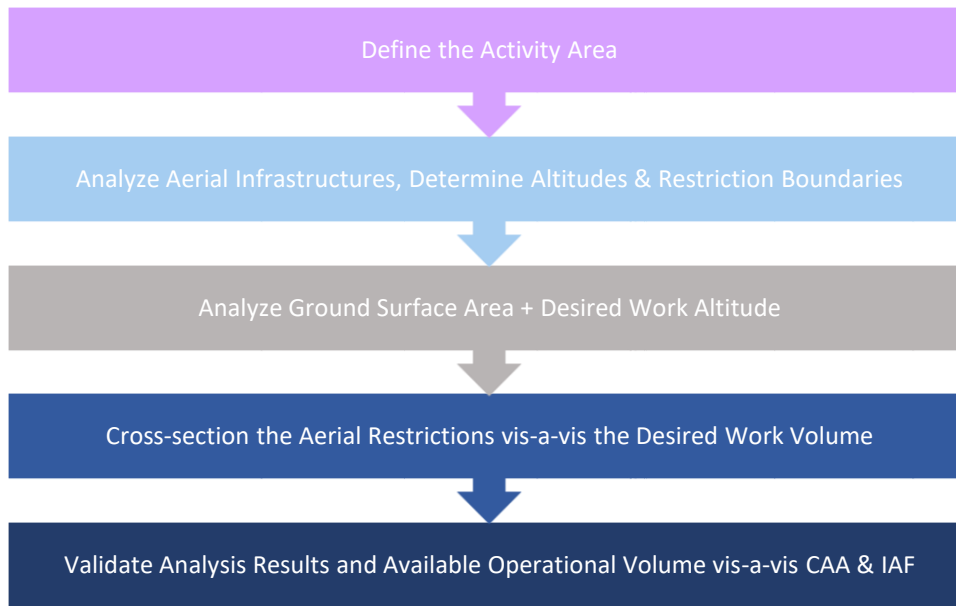


Figure 1 - A description of the Airspace Assessment process as part of Project Na'ama

### 3.1. Defining the activity area

The first stage in the Airspace Assessment process, is the geographic delimitation of the area of interest. As part of the Na'ama Project, the designated area of interest is defined as a circle within a 3 km radius from the central distribution points. Central distribution points are characterized as a concentration of multiple suppliers (e.g., shopping centers), available ground infrastructure (accessible rooftop/ground surface, relatively large and to the extent possible, obstacle free) and an optimal coverage of the area of the city and population concentrations in the confines of the area. Definition of the area of interest's airspace volume is based on the point of origin from where the activity will occur from ground level up to an altitude of 120 meters AGL (when the intended flight altitude is from a 40 meters AGL).

Initiatives, in the framework of Project Na'ama, that requested to fly outside the analyzed airspace volumes in city centers, were done by accepting the delimited activity area as set by the proposing entity.

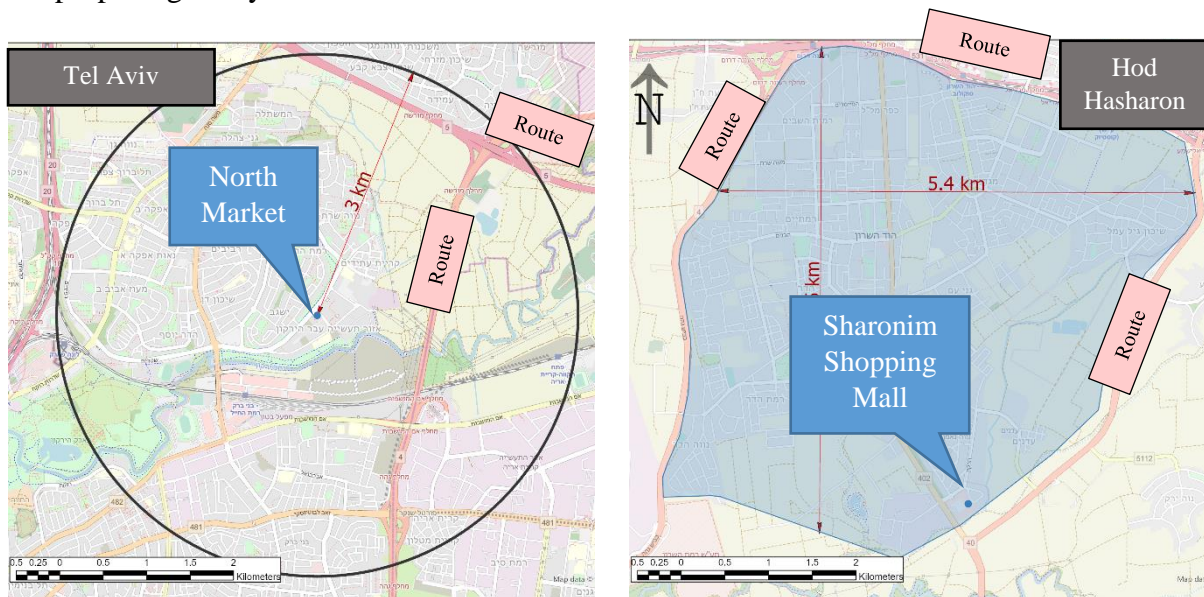


Figure 2 - Illustrating the delimitation of the activity areas

### 3.2. Analyzing aerial infrastructures

The next stage, after delimiting the activity areas, calls for a mapping of the various overlapping aerial infrastructures. These aerial infrastructures contain on the one hand, infrastructures serving a variety of aviation sectors (e.g., helicopter routes, general aviation areas, parachuting

zones, etc), and on the other, areas that affect the airspace but do not serve any aviation needs such as prohibited, restricted and danger areas.

Various standards exist for each aerial infrastructure to separate their users from obstacles (a constraint that is translated into a minimum flight altitude), as well as various standards concerning the required separation from the aircraft operating in the infrastructure. For example, Controlled Visible Flight Rules routes (hereinafter - CVFR) serving general aviation are designed according to a standard of 2 km width (1 km on each side of the route) extending a protective zone in the route buffer width at an altitude of 500 ft./152.4 m below the route's altitude.

A product of this stage is a compilation of aerial infrastructures in the activity area, while considering the required protective zones for the entire infrastructure, and providing a full picture of the airspace volumes separated from the aerial infrastructures. At this stage, the separation from ground level was not taken into consideration.

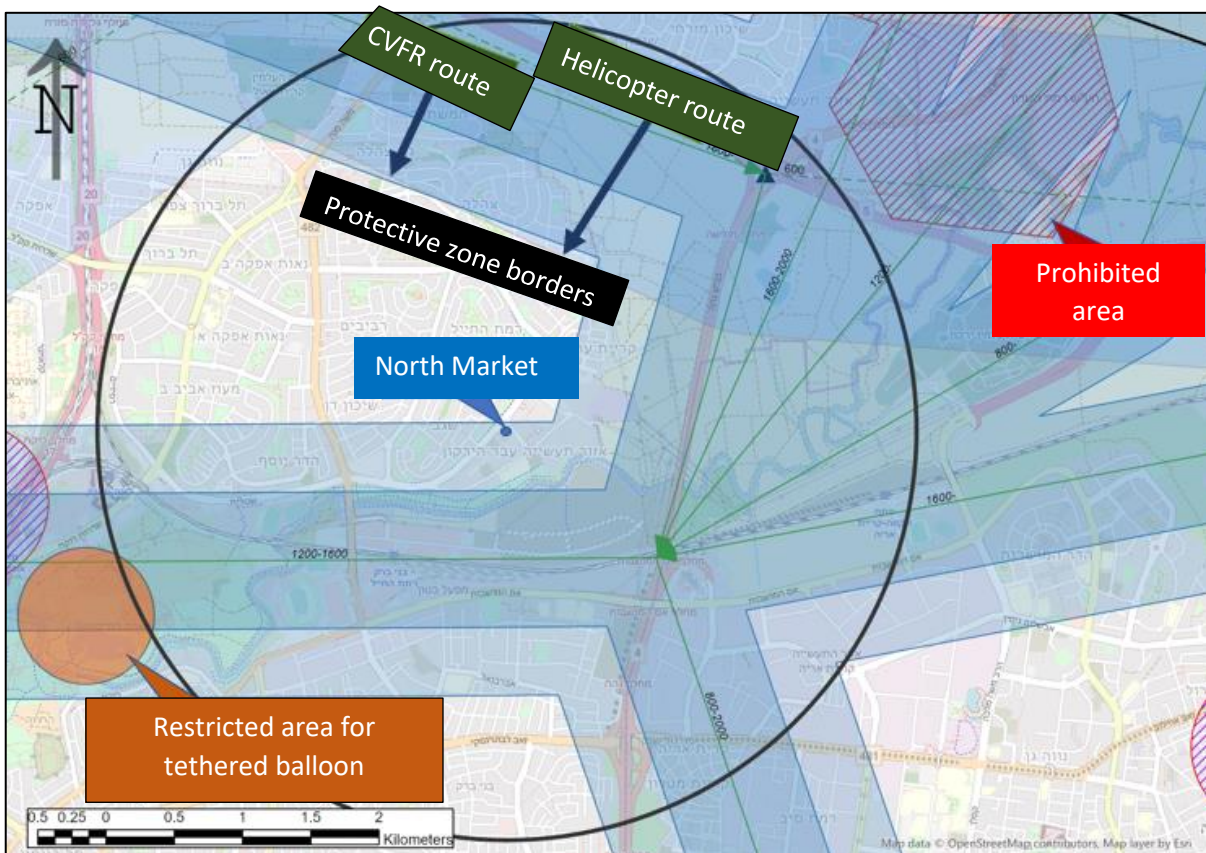


Figure 3 - Illustrating an analysis of aerial infrastructures in the North Tel Aviv and Bnei Brak area

### 3.3. Surface analysis



The analysis at this stage refers to the ground relief, *i.e.*, the topography of the activity area, without reference to the relief/plot (natural/artificial obstacles on the surface). The surface model is critical, since UA flight in these airspaces is conducted at an altitude above to ground level (hereinafter – AGL). UA operations altitude is added to the surface/ground level thus providing the requested airspace activity volume.

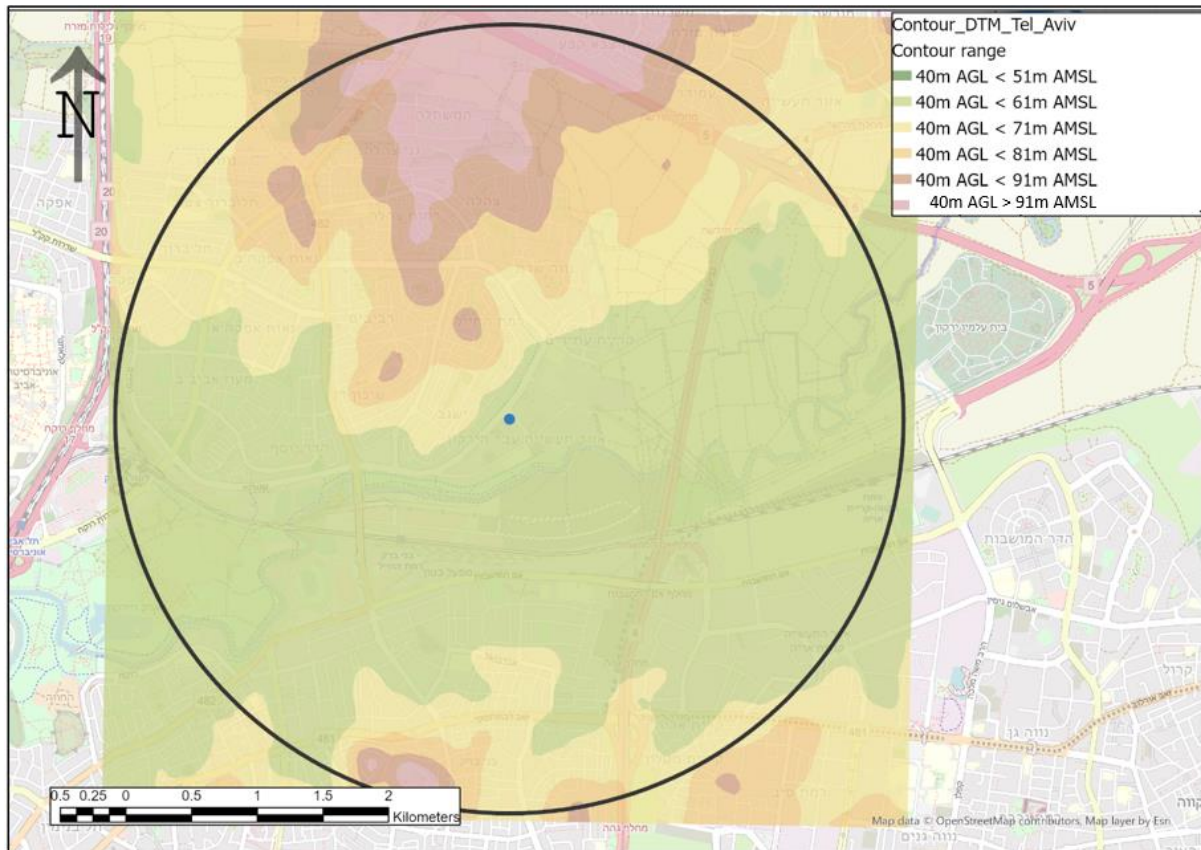


Figure 4 - Illustrating surface analysis

### 3.4. Cross-sectioning aerial infrastructures with the requested activity altitude

Following an analysis of the aerial infrastructure as well as that of the requested activity, we then examine a cross-section of these two volumes, which are results of the previous stages. When intersecting the results of the analyzes, it is necessary to analyze the volume of the activity with reference to one absolute height. While existing aerial infrastructure planning relies exclusively on absolute height, *i.e.*, Above Mean Sea Level (hereinafter - AMSL), the airspace volumes of UAs are designed Above Ground Level.

After converting the requested work volumes of UA operators to a joint altitude system, *i.e.*, absolute altitude (AMSL), a cross-sectioning is conducted of the aerial infrastructures and their affiliated protective zones opposite the requested activity volume.

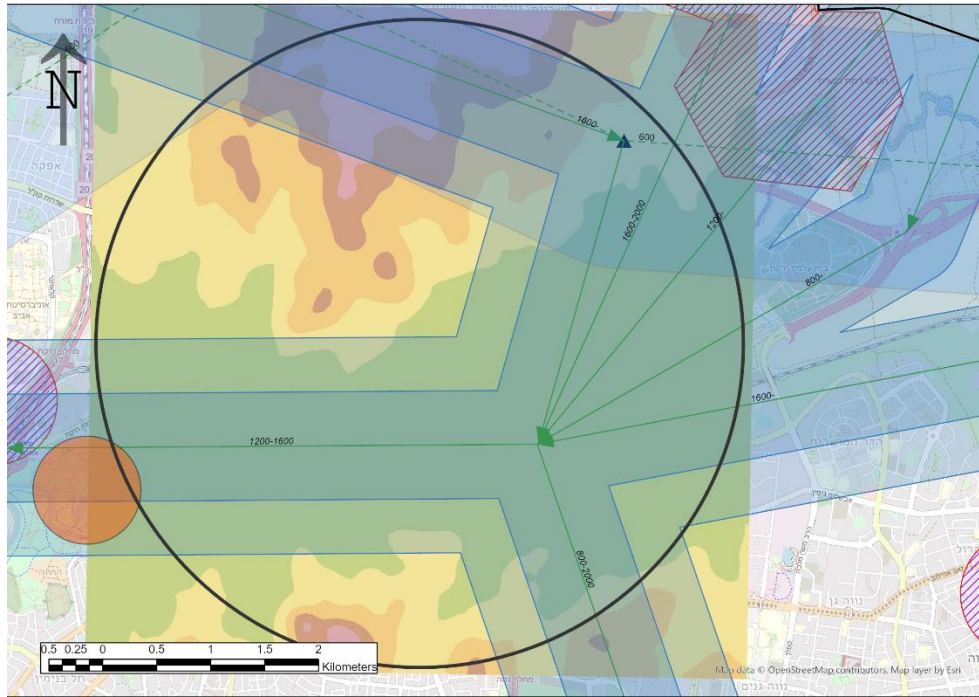
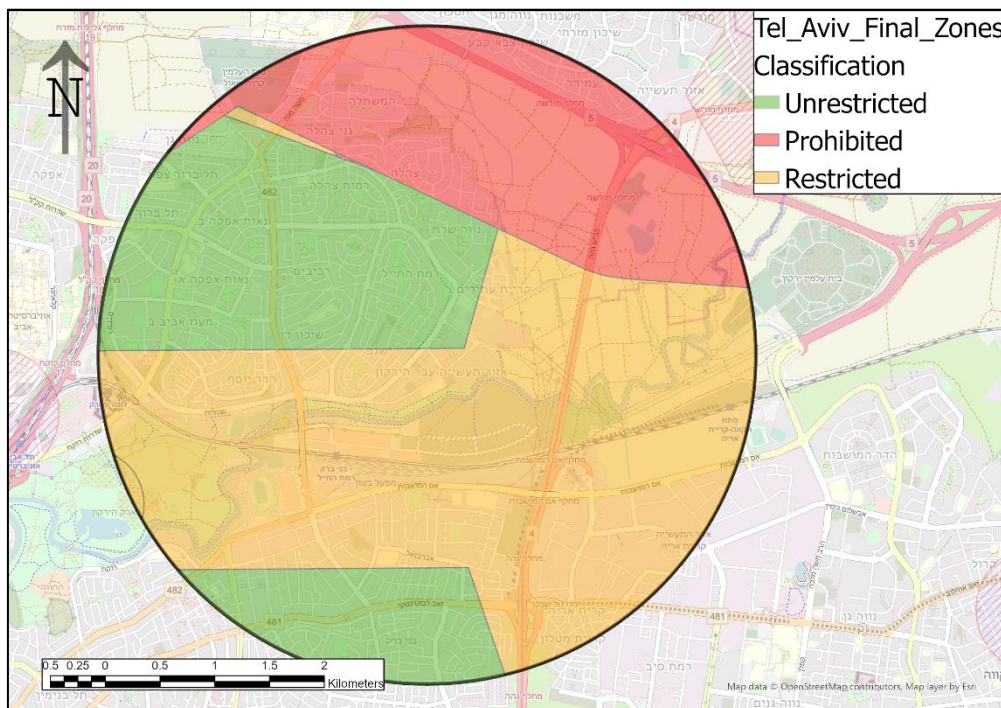


Figure 5 - Analyzing aerial infrastructures opposite the requested work volume relative to the ground level

The product of this stage is a mapping and classification of airspace volumes available for UA activity that complies with the operational requirements of aircraft operators while preserving



accepted standards for separation from aerial infrastructure, thus securing and ensuring an acceptable level of safety. The UA area of operation is then classified into three different classifications: An area of Unrestricted Operations, an area of Restricted Operations and an area where activity is prohibited.

An area where activity is prohibited, which is marked in red, is an area where flight is prohibited at the required minimum altitude of 40 MASL without infiltrating a protective zone of another aerial infrastructure, thus endangering on one hand aircraft utilizing the neighboring infrastructure (in the case of an infrastructure that cannot be coordinated).

An area of Unrestricted Operations, which is marked in green, is an area where it is possible to operate at all of the requested altitudes, *i.e.*, up to an altitude of 120 meters AGL, without any restrictions, as long as manned aircraft activity in the area is routine<sup>3</sup>.

An area where activity is restricted, marked in orange, is where activity is permitted under certain stipulations. For example, in the area of Yarkon Park, there is a restricted area relating to the activity of a tethered hot-air balloon, and as such pre-flight preparations in the airspace require coordination with the balloon operator to understand whether or not there is activity during the requested timeframe. Additional stipulations can include certain altitude restrictions, a restriction against activity during certain hours of the day, and so forth.

### 3.5. Validation of the analysis results

The final stage of the activity area analysis is a validation of the analysis results by the CAA as the regulatory agency and responsible for the planning and development of the Flight Information Region and of Air Transport Policy and Regulation in its jurisdiction<sup>4</sup>. This stage will also contain references to the various stakeholders, such as relevant ATM units and additional regulatory entities (MOD/IAF).

It should be clarified that the various existing aerial infrastructures in the Israeli airspace serve a variety of sectors, which include both civil and military aircraft. Therefore, it is only correct that the validation of the analysis' results will be conducted by two regulatory entities, the

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<sup>3</sup> In other words, activity performed in the published aerial infrastructures, differentiated from emergency activity by state aircraft and others (police, military, medical evacuation), an aircraft malfunction that requires evacuation of the space or any security need requiring airspace evacuation.

<sup>4</sup> Aviation Law, 5771-2011, Section D: Air Traffic Control Zone, Clause 82



CAA, by virtue of its powers and responsibility for civilian aviation safety, and the IAF, which is trusted with responsibility over the military aviation infrastructure.

Validation and certification of the analysis' results vis-a-vis the above-mentioned regulatory authorities comprise a final stage, which enables the requested aircraft activity in the examined areas.

#### 4. Airspace Analysis

This section presents the products of the assessment of the selected airspace volumes in the framework of Project Na'ama. As detailed in Clause 3.4, this product contains the general details of each airspace volume, and the various flight zone classifications (unrestricted, restricted and prohibited) in its boundaries.

It is important to note that the analysis does not set operational requirements and conditions for activity, rather it defines the airspace volumes available for aerial activity solely within the boundaries of the areas of interest. Any aircraft operator interested in operating in the specified airspace volumes must confirm the approval of the activity in accordance with the airspace assessment, opposite IAF and CAA as the regulatory authorities trusted with the task of preserving flight safety in the State of Israel.

#### 4.1. Tel Aviv - North Market

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.1.	Tel Aviv	North Market	CAA	3 km radius	184870	668561	34°50' 16.77"	32°06' 35.55"

Table 2 - A concentration of data for the Tel Aviv - North Market airspace volume

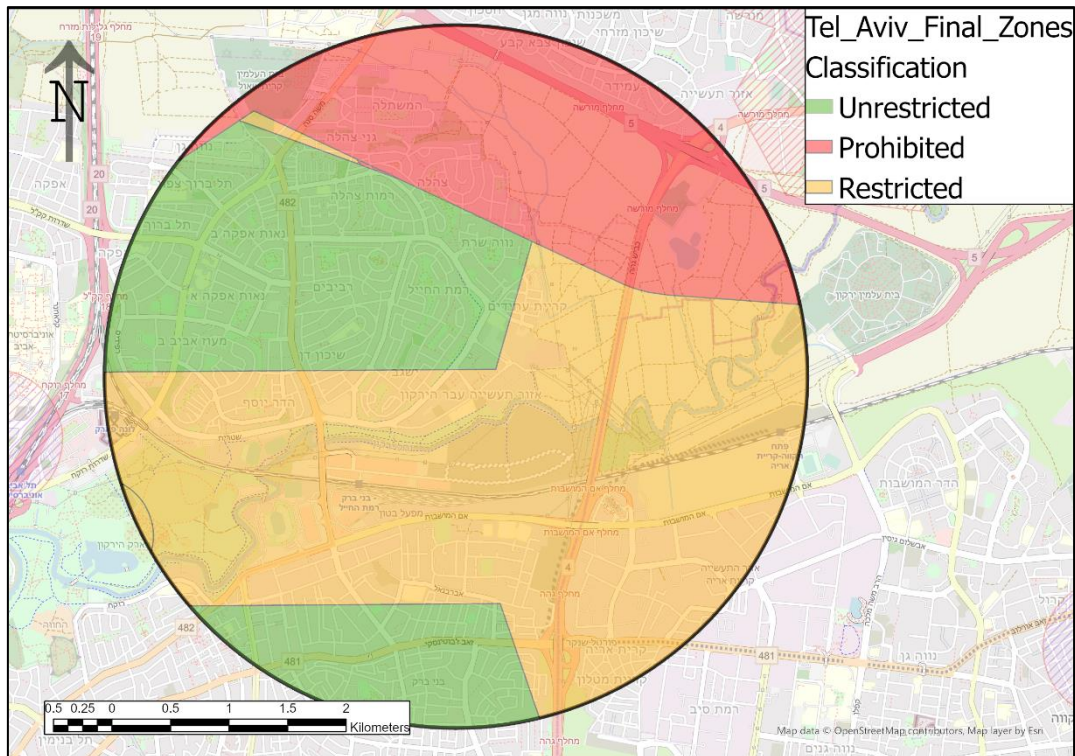


Figure 7 - Flight zone classification in the Tel Aviv - North Market airspace volume

The airspace volume that surrounds the “North Market” in Tel Aviv is positioned between several different ATM units. The volume’s southern portion falls within the realm of the Ben Gurion - LLBG tower control zone, and its other portion, the larger of them falls under the control zone of the Air Force ATC Unit 506 (“Pluto” Control). In addition to the Ben Gurion - LLBG control zone situated to the south of the airspace volume; in its northern portion sits the control zone belonging to the Herzliya Aerodrome - LLHZ, which serves multiple users in the private and commercial, general aviation sector, as well as many helicopters flying at low altitudes.

Most of the airspace volume is available for activity, where The airspace is divided according to the following classification zones:

### Unrestricted Operations

In the zones classified in green, it is possible to operate unrestricted up to an altitude of 120 meters AGL.

### Restricted Operations

In the zones classified in orange, it is only possible to operate up to an altitude of 91 meters AMSL due to CVFR routes crossing at a minimal altitude of 800 FT. AMSL above the airspace volume. It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### Prohibited Operations

Through the northern portion of the airspace volume a helicopter route crosses at an altitude of 600 FT. AMSL, which prohibits any additional aerial activity in the zone's northern zone, and therefore it is classified in red, i.e., a zone where activity is prohibited.

#### **4.1.1. Conditions for operating in the airspace volume**

Prior to any activity in this airspace volume, it is necessary to attain the approval of the ATM units surrounding the zone, i.e., the ATM units "Pluto", LLBG Tower, and LLHZ Tower.

Furthermore, aerial activity must be coordinated *a priori*, according to AIP Israel.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing activity whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.1.2. Contact details**

- 4.1.2.1. ATC 506 ("Pluto") - TBD
- 4.1.2.2. Herzliya Tower – 09-9719554, 09-9719559, Fax: 09-9719574
- 4.1.2.3. Ben Gurion Tower – 03-9758110, 03-9758666
- 4.1.2.4. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219



#### 4.2. Beersheva Airspace - Azrieli Hanegev Shopping Mall

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.2.	Beersheva	Azrieli Hanegev Shopping Mall	CAA	3 km radius surrounding the dispatch center	180433	572554	34°47'41.27"	31°14'38.06"

Table 3 - A concentration of data for the Beersheva airspace volume

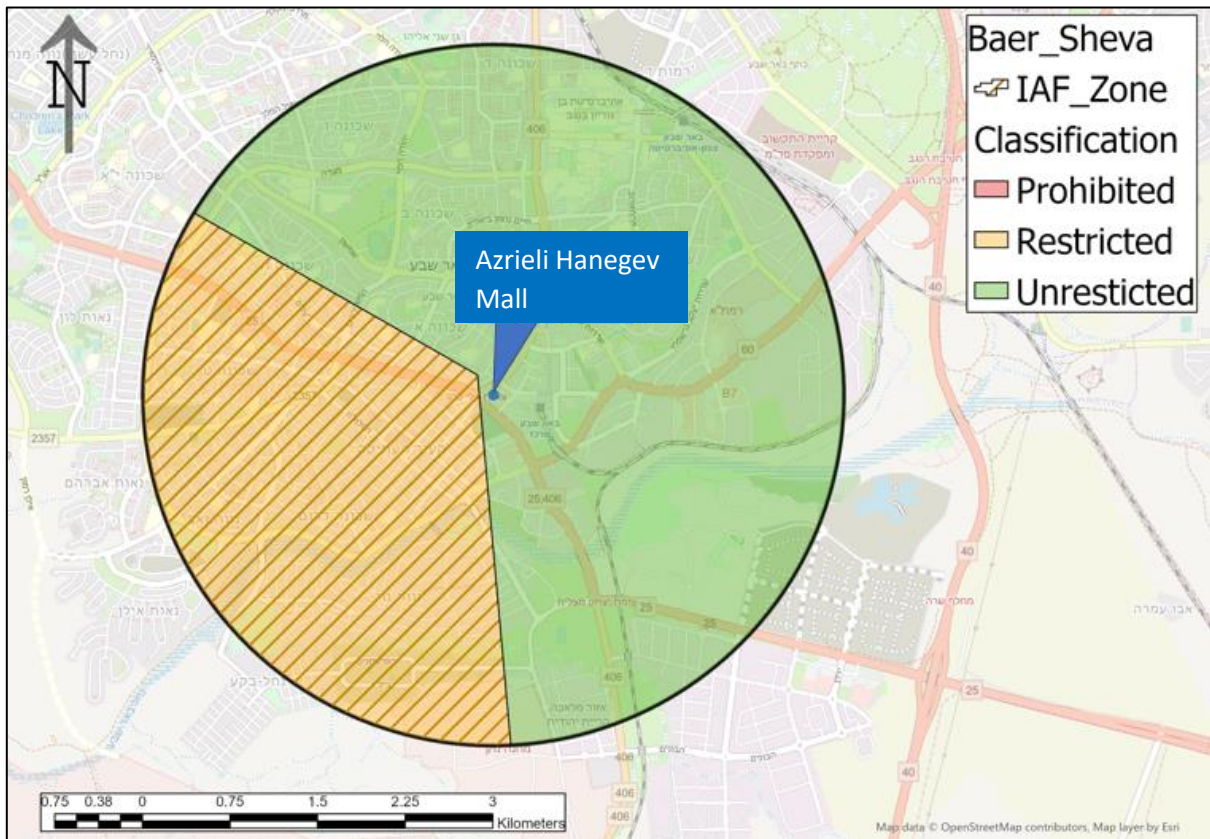
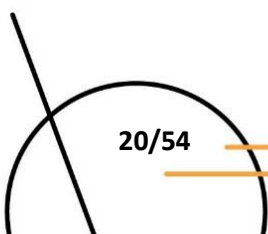


Figure 8 - Flight zone classification in the Beersheva airspace

The airspace volume in the Beersheva airspace surrounding the “Azrieli Hanegev Shopping Mall” dispatch center falls in the realm of two ATM units - ATC 509 (“Hagav” Control) of the Air Force, and the control towers of the Hatzetim Air Force Base (“Hatzetim” and “Kedem” Towers) situated to the west of the city of Beersheva. The airspace zone overlaps between the requested Beersheva air space and that of the Hatzetim control towers marked in the figure in orange and diagonal lines. The Soroka Medical Center is in Beersheva and often the location for medevac flights.

The airspace is divided according to the following classification zones:



### Unrestricted Operations

In zones labeled in green it is possible to operate unrestricted up to an altitude of 120 meters AGL.

### Restricted Operations

The area labeled in orange belongs to the control zone of the Hatzerim AFB, activity in the airspace is subject to *a priori* coordination and approval of the activity by the Air Force, including predicted activity times. Activity in this airspace is possible up to a maximum altitude of 1,500 FT. AMSL. It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### Prohibited Operations

There are no areas where activity is prohibited in the Beersheva airspace.

#### **4.2.1. Conditions for operating in the airspace volume**

As previously stated, use of this airspace is conditional upon *a priori* coordination vis-a-vis the Air Force in the event that the aerial operator wishes to operate within the restricted zone.

Prior to any activity in this airspace volume, coordinated publication is required of the restrictions noted by AIP Israel, in addition to telephone approval prior to the start of any activity from the controlling ATM units in the area, i.e., “Hagav” ATC, the “Hatzerim” and “Kedem” control towers (also in the event of aerial activity from outside the airspace volume that may overlap the tower’s control zone).

“Soroka” Medical Center is situated within the Beersheva airspace and often serves as the destination for medevac helicopters that land at the hospital’s heliport. During any helicopter medical evacuation to/from the above mentioned medical center, aerial activity in the airspace is required to cease, until removal of the said restriction by “Hagav” ATC.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing activity whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.2.2. Required Contact Numbers**

- 4.2.2.1. ATC 509 (“Hagav”) - TBD
- 4.2.2.2. Hazerim Control Tower - TBD
- 4.2.2.3. Kedem Control Tower - TBD
- 4.2.2.4. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219



### 4.3. Ashdod Airspace - Ofer Lev Ashdod Shopping Mall

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.3.	Ashdod	Ofer Lev Ashdod Shopping Mall	CAA	3 km radius surrounding the dispatch center	166715	634026	34°38'51.08"	31°47'51.88"

Table 4 - A concentration of data for the Ashdod airspace volume

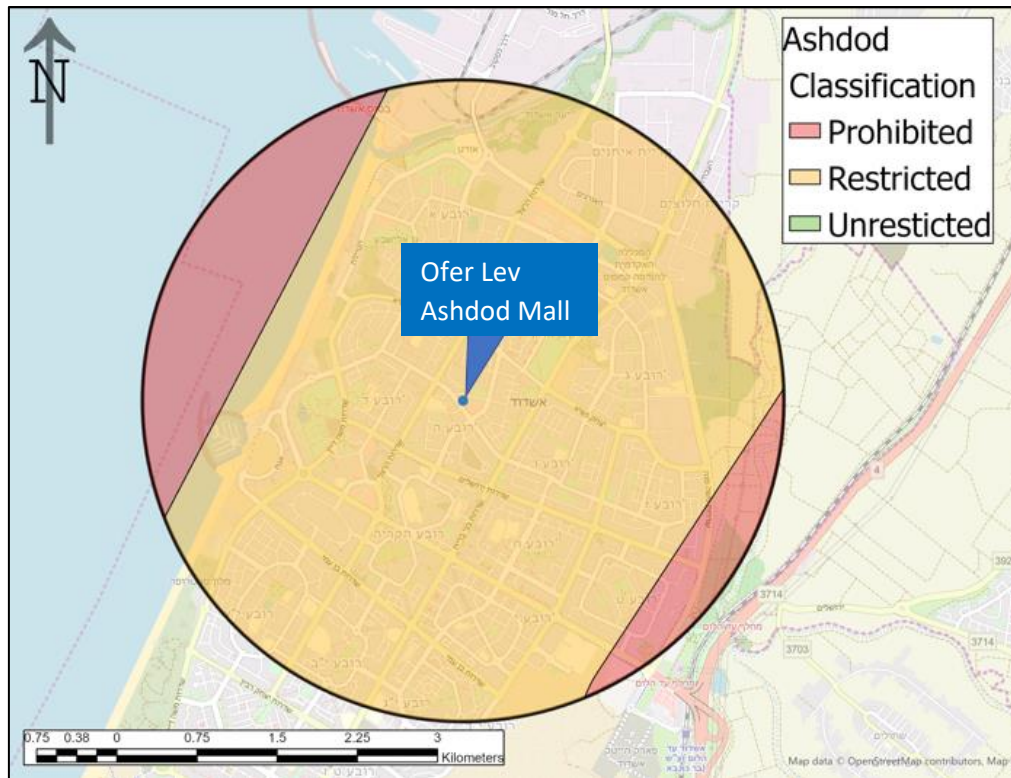
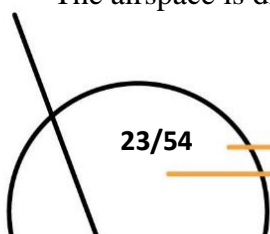


Figure 9 - Flight zone classification in the Ashdod airspace

The airspace volume in the Ashdod airspace surrounding the “Ofer Lev Ashdod Shopping Center” dispatch center falls within the realm of the control zone of the Hatzor AFB. Hatzor AFB is an operational base, and as such, characterized by its execution of unplanned flights

Use of this airspace is subject to Air Force approval for operating within the volume. Because of the aerial activity in within the control zone, IAF has the authority to stop any activity within the airspace volume at any given time. Aerial operators in this airspace volume must be capable of ceasing their activity within seconds of receiving notification from Hatzor tower ATC.

The airspace is divided according to the following classification zones:



### Unrestricted Operations

There is no Unrestricted Operations zone in the Ashdod airspace.

### Restricted Operations

The activity in the Hatzor control zone, labeled orange, is conditional upon *a priori* coordination and approval of the activity by the Air Force, including predicted activity times. Activity in this airspace is possible up to a maximum altitude of 300 ft/ 91 meters AMSL, due to the aerial activity within the Hatzor Tower control zone.

It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### Prohibited Operations

Adjacent to the area of operations, particularly in its eastern and western portions, are low altitude VFR routes, which make it impossible to conduct UA aerial activity beneath the protective zone. Consequently, the eastern and western portions of the airspace volume are classified as Prohibited Operations zones.

\*Nevertheless, aerial activity in the eastern route is possible; however, only during weekends, and requires that aerial operators seek CAA approval to enable such activity in the eastern portion of the airspace volume during the days when flight is prohibited in this route.

#### **4.3.1. Conditions for operating in the airspace volume**

As previously noted, use of this zone is conditional upon advanced coordination vis-a-vis the Air Force, and AIP Israel, which will publish the necessary restrictions for operating within the airspace volume.

In addition, prior to the start of any activity, it is necessary to attain telephone approval from the ATC unit with responsibility for the control zone, i.e., the Hatzor AFB Control Tower.

“Assuta” Medical Center is situated within the Ashdod airspace and often serves as a destination for medevac helicopters that land at the hospital’s heliport. During any helicopter medical evacuation to/from the above-mentioned medical center, aerial activity in the airspace is required to cease, until removal of the said restriction by the Hatzor AFB Control Tower.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing operation whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.3.2. Required Contact Numbers**

- 4.3.2.1. ATC 509 (“Hagav”) - TBD
- 4.3.2.2. Hatzor AFB Control Tower - TBD
- 4.3.2.3. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219

#### 4.4. Karmiel Airspace - Gan Ha'ir Commercial Center

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.4.	Karmiel	Gan Ha'ir Commercial Center	CAA	3 km radius surrounding the dispatch center	229162	758562	35°18'29.53"	32°55'18.95"

Table 5 - A concentration of data for the Karmiel airspace volume

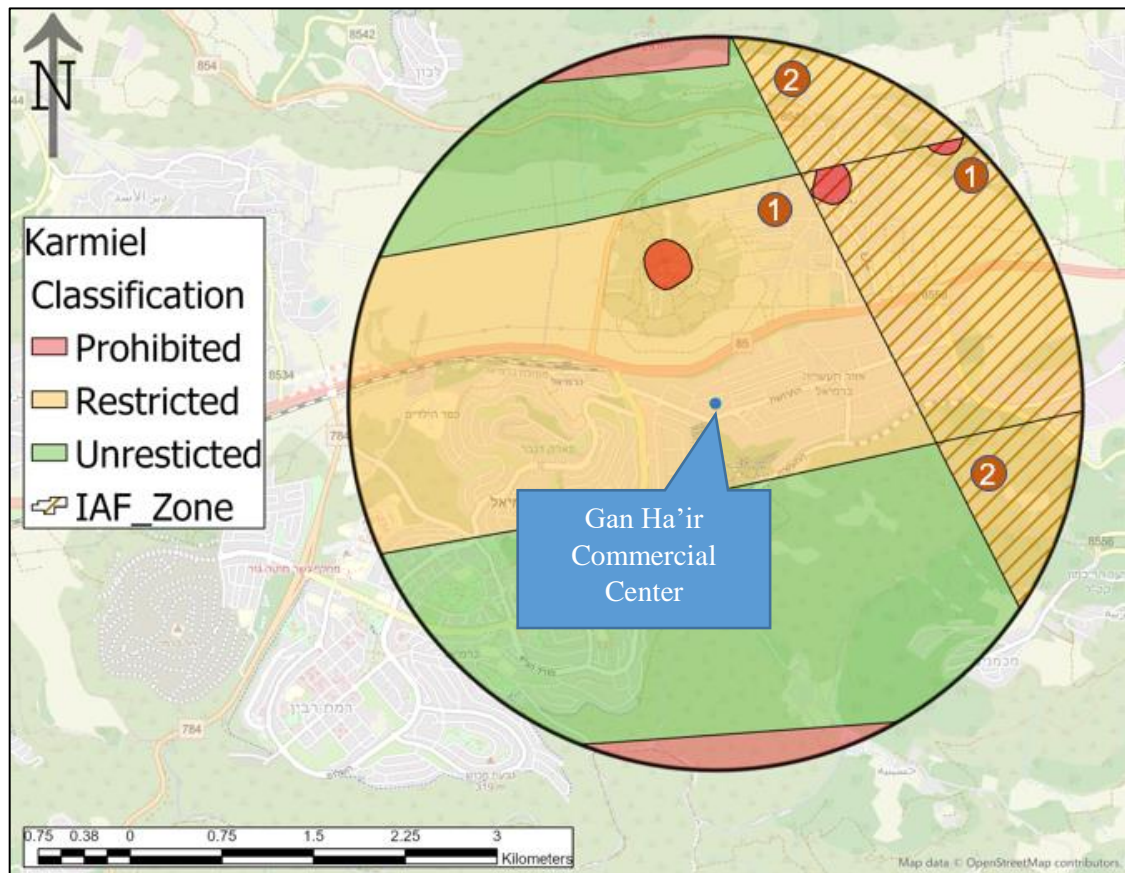


Figure 10 - Flight zone classification in the Karmiel airspace

The airspace volume in the Karmiel airspace surrounding the “Gan Ha’ir Commercial Center” dispatch center falls in the realm of the control zone of the 506 ATC unit (“Pluto” Control) of the Israeli Air Force. This airspace is situated between Air Force training zones used for practicing low-level flight of a variety of aircraft, training zones for helicopters are situated to the north and south of the airspace volume, while its eastern section provides an infrastructure for low-level training flights for the Air Force’s combat and transport squadrons.

In addition, there are several civil aviation infrastructures such as VFR routes that cross the airspace volume at a minimum altitude of 1,700 FT. AMSL, and a sport aviation zone titled the “Karmiel Bubble” that is active during weekends, and fully overlaps the requested airspace, under the control zone responsibility of “Pluto” ATC; however, the flight in this airspace is low-altitude flight without radio contact with the above mentioned ATC.

The airspace is divided according to the following classification zones:

### **Unrestricted Operations**

In the zones classified in green, it is possible to operate unrestricted up to an altitude of 120 meters AGL.

### **Restricted Operations**

Activity within the Air Force training zone marked as previous stated by diagonal lines, is conditional upon *a priori* coordination and approval of the said activity by the Air Force, including predicted activity times, up to a maximum altitude of 2,000 FT. AMSL.

In the areas labeled Zone 1, activity is permitted up to an altitude of 1,200 ft./ 365 meters AMSL.

In the areas labeled Zone 2, activity is permitted up to an altitude of 120 meters AGL, which means that the desired area falls within the altitude restrictions, subject to coordination with the Air Force concerning use of the airspace.

It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### **Prohibited Operations**

The northern and southern sections of the airspace overlap with the Air Force helicopter training zones that are designated AGL, and therefore flight in these areas is prohibited. In addition, there are areas where the topography does not enable flight at a minimum altitude of 40 meters AGL without penetrating the protection zone of the VFR route that crosses the airspace at a minimum altitude of 1,700 FT. AMSL.



#### **4.4.1. Conditions for operating in the airspace volume**

Prior to any activity in this airspace volume, coordinated publication is required of the restrictions noted by AIP Israel, in addition to telephone approval prior to the start of any activity from the controlling ATM unit in the area, *i.e.*, “Pluto” ATC. It should be emphasized that the condition for activity in this airspace during weekends and holidays, its publication of an aerial closure restricting the area of the “Karmiel Bubble”.

As previously stated, in the event that the aerial operator is interested using the airspace’s eastern zone, it is necessary to attain *a priori* approval vis-a-vis the Air Force, including hours of operation, and a maximum restricted altitude of approximately 2,000 FT. AMSL.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing activity whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.4.2. Required Contact Numbers**

4.4.2.1. ATC 506 (“Pluto”) - TBD

4.4.2.2. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219

#### 4.5. Jerusalem Airspace - the Central Bus Station (CBS) Complex and the Malcha Shopping Mall

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.5.	Jerusalem	Central Bus Station	CAA	3 km radius surrounding the dispatch center	219367	632944	35°12'12.59"	31°47'21.15"
		Malcha Shopping Mall			217862	628766	35°11'15.43"	31°45'05.48"

Table 6 - A concentration of data for the Jerusalem airspace volume

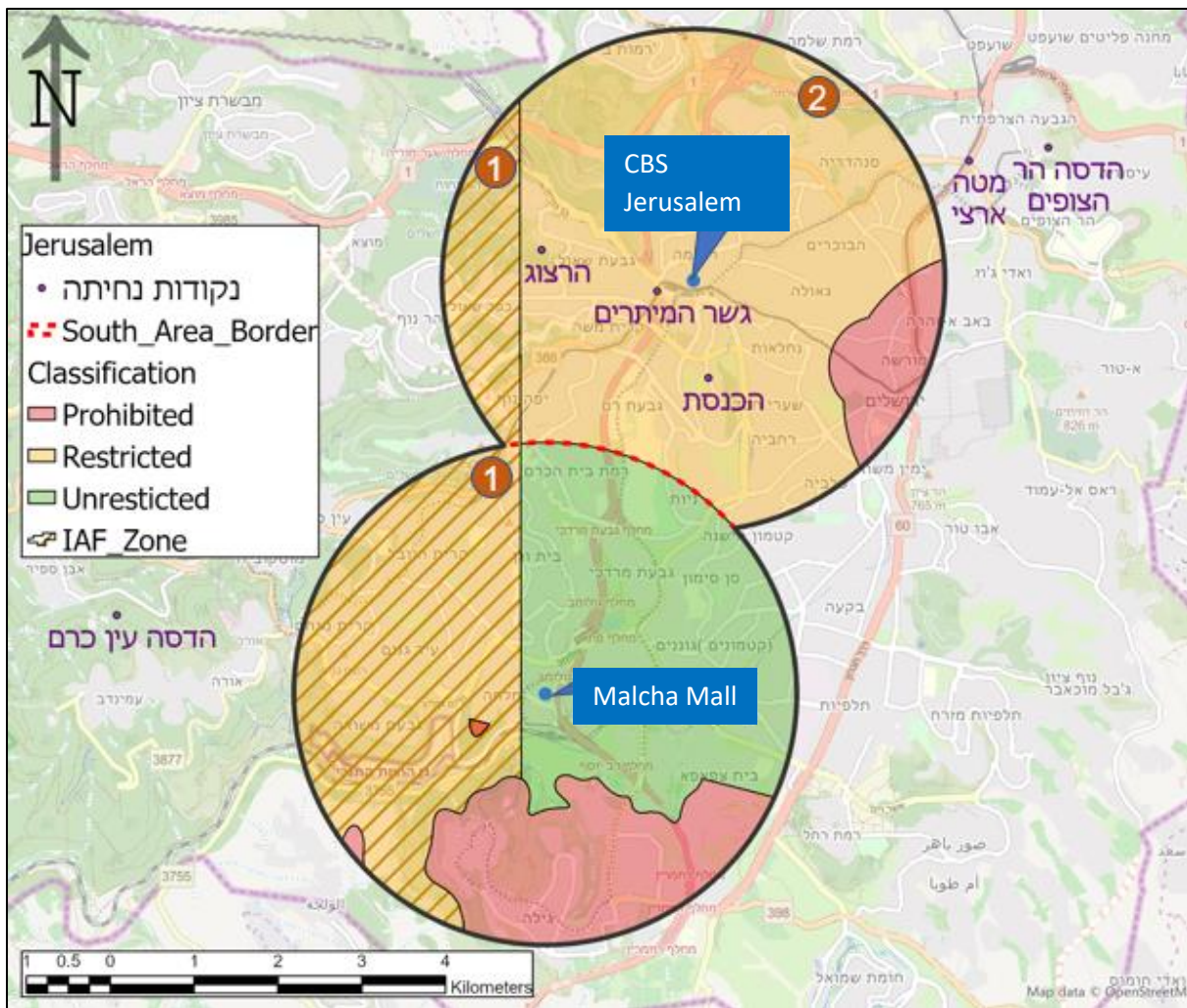
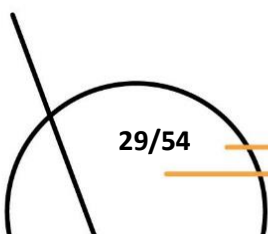


Figure 11 - Flight zone classification in the Jerusalem airspace

The airspace volume in the Jerusalem airspace surrounding the “Central Bus Station” and the “Malcha Shopping Mall” dispatch centers fall in the realm of the control zone of the ATC 506 unit (“Pluto” Control) of the Israeli Air Force. The western portion of the airspace





contains an Air Force training zone that is used by combat and transport squadrons to practice low altitude flying.

In addition, there are several civil aviation infrastructures such as VFR routes that cross the southern portion of the airspace volume at a minimum altitude of 3,000 FT. AMSL, as well as multiple heliports in the volume's northern section, in the radius surrounding the "Central Bus Station" dispatch center.

The airspace is divided according to the following classification zones:

### **Unrestricted Operations**

In the zones classified in green, it is possible to operate unrestricted up to an altitude of 120 METERS AGL.

### **Restricted Operations**

Activity within the Air Force training zone marked as previous stated by diagonal lines and labeled Zone 1, is conditional upon *a priori* coordination and approval of the said activity by the Air Force, including predicted activity times, up to a maximum altitude of 3,000 FT. AMSL.

In the airspace volume's northern section labeled Zone 2, aerial activity is permitted up to an altitude of 120 meters AGL; however, during helicopter landing/takeoff at the heliports within the area, activity in this area is prohibited, rather in the southern airspace, the border of which is marked as a broken red line.

It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### **Prohibited Operations**

Flight is prohibited in the eastern section of the airspace surrounding the Old City of Jerusalem and the Temple Mount. In addition, there are areas where the topography does not enable flight at a minimum altitude of 40 METERS AGL without penetrating the protection zone of the VFR route that crosses to the south of the airspace at a minimum altitude of 3,000 FT. AMSL.

#### **4.5.1. Conditions for operating in the airspace volume**

Prior to any activity in this airspace volume, it is first necessary to check for any planning flights to/from the relevant heliports, and coordinated publication is required of the restrictions noted by AIP Israel, in addition to telephone approval prior to the start of any activity from the adjacent ATM unit in the area, i.e., “Hagav” ATC.

As previously stated, in the event that the aerial operator is interested using the airspace’s western zone, it is necessary to attain *a priori* approval vis-a-vis the Air Force, including hours of operation, and a maximum restricted altitude of approximately 3,000 FT. AMSL.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing activity whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.5.2. Required Contact Numbers**

- 4.5.2.1. ATC 506 (“Pluto”) - TBD
- 4.5.2.2. ATC 509 (“Hagav”) - TBD
- 4.5.2.3. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219

#### 4.6. Haifa Airspace - Ofer Grand Canyon, Haifa Azrieli Shopping Malls

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.6.	Haifa	Ofer Grand Canyon Haifa Shopping Mall	CAA	3 km radius surrounding the dispatch center	197073	743915	34°57'55.80"	32°47'22.85"
		Azrieli Haifa Shopping Mall			201010	743904	35°00'27.09"	32°47'22.76"

Table 7 - A concentration of data for the Haifa airspace volume

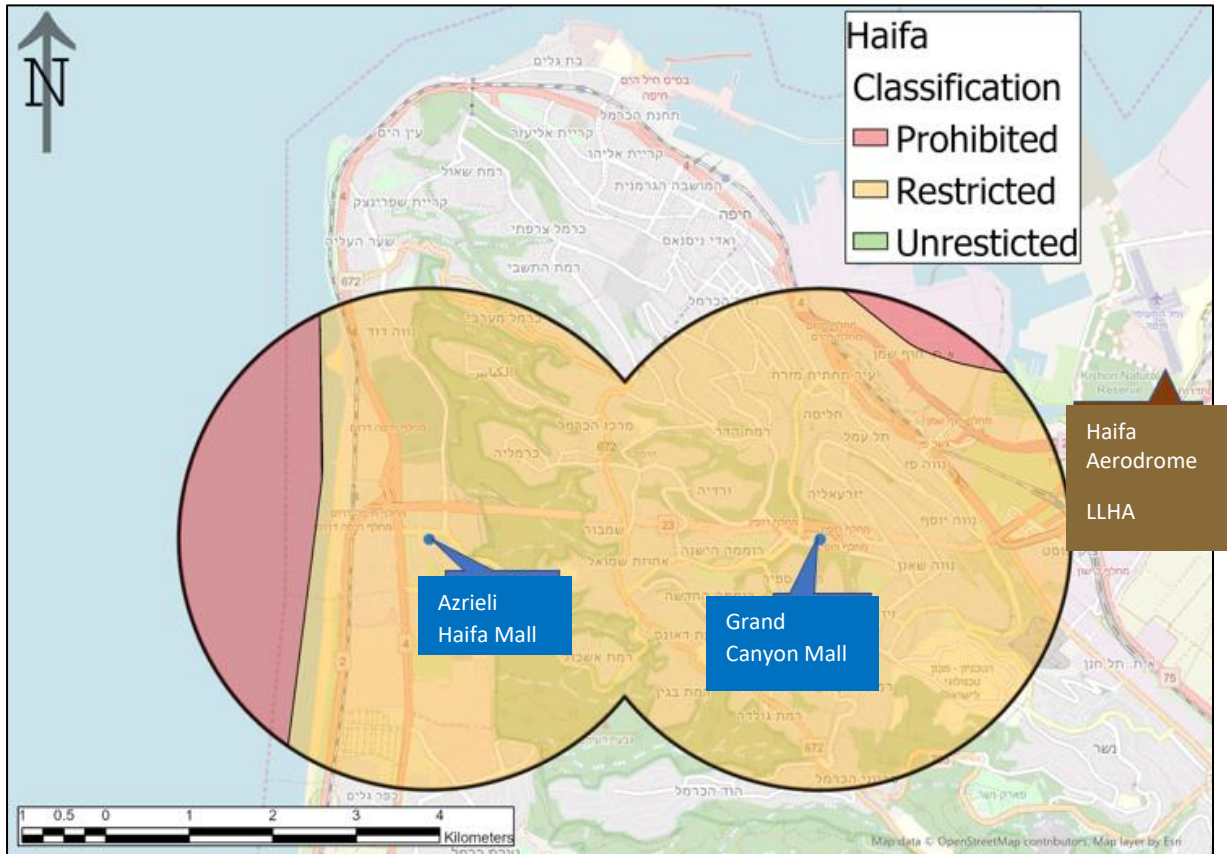


Figure 12 - Flight zone classification in the Haifa airspace

The airspace volume that surrounds the “Grand Canyon” and “Azrieli Mall” dispatch centers is situated between two different ATM units. Most of the airspace, particularly its northern section falls within the realm of the Haifa - LLHA tower control zone, and its other, southwestern portion falls under the control zone of the Air Force ATC Unit 506 (“Pluto” Control). The Haifa Aerodrome serves multiple user in the general, private and commercial aviation sectors. In addition, the area to the southeast of the airspace volume falls within the

control zone of the Ramat David AFB control tower. Use in this airspace is conditional upon *a priori* coordination and approval by the Haifa Tower, since most of the airspace volume fall under the control zone of the Haifa Aerodrome Control Tower.

The airspace is divided according to the following classification zones:

### **Unrestricted Operations**

The Haifa airspace contains no zones where it is possible to operate without restriction up to 120 meters AGL.

### **Restricted Operations**

The lion's share of the airspace is classified orange, thereby meaning that it is possible to operate within its borders; however, under certain stipulations. As previously noted, use of the airspace is conditional upon advance approval of the Haifa Aerodrome Control Tower. Subsequent to the issuance of the control tower's approval, operations in the airspace volume is permitted up to an altitude of 1,500 ft./ 457 meters AMSL. According to this restriction, the Haifa Aerodrome will be restricted to an altitude of 2,000 FT. AMSL above the areas of the airspace volume (i.e., 500 ft. above operations).

It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### **Prohibited Operations**

VFR routes at an altitude of 400 FT. AMSL, serving primarily for the approach and departure of helicopters to/from the Haifa Aerodrome are located in the northeastern and the western sections of the airspace volume. The low altitude of the route does not allow for aerial activity at the separation require beneath it, and therefore the zone is classified at prohibited for flight.

#### **4.6.1. Conditions for operating in the airspace volume**

Prior to any activity in this airspace volume, it is necessary to attain the approval of the ATM units surrounding the zone, i.e., ATC "Pluto", and LLHA Tower. Furthermore, aerial activity must be coordinated *a priori*, according to the times defined in AIP Israel.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and

capable of ceasing operation whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

**4.6.2. Contact details**

4.6.2.1. ATC 506 (“Pluto”) - TBD

4.6.2.2. Haifa Tower - Telephone: 04-8476120, Fax: 04-8476122

4.6.2.3. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219



#### 4.7. Eilat Airspace - Mall HaYam Shopping Mall

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.7.	Eilat	Mall HaYam Shopping Mall	CAA	3 km radius surrounding the dispatch center	195204	384748	34°57'15.17"	29° 33'00.91"

Table 8 - A concentration of Eilat airspace data

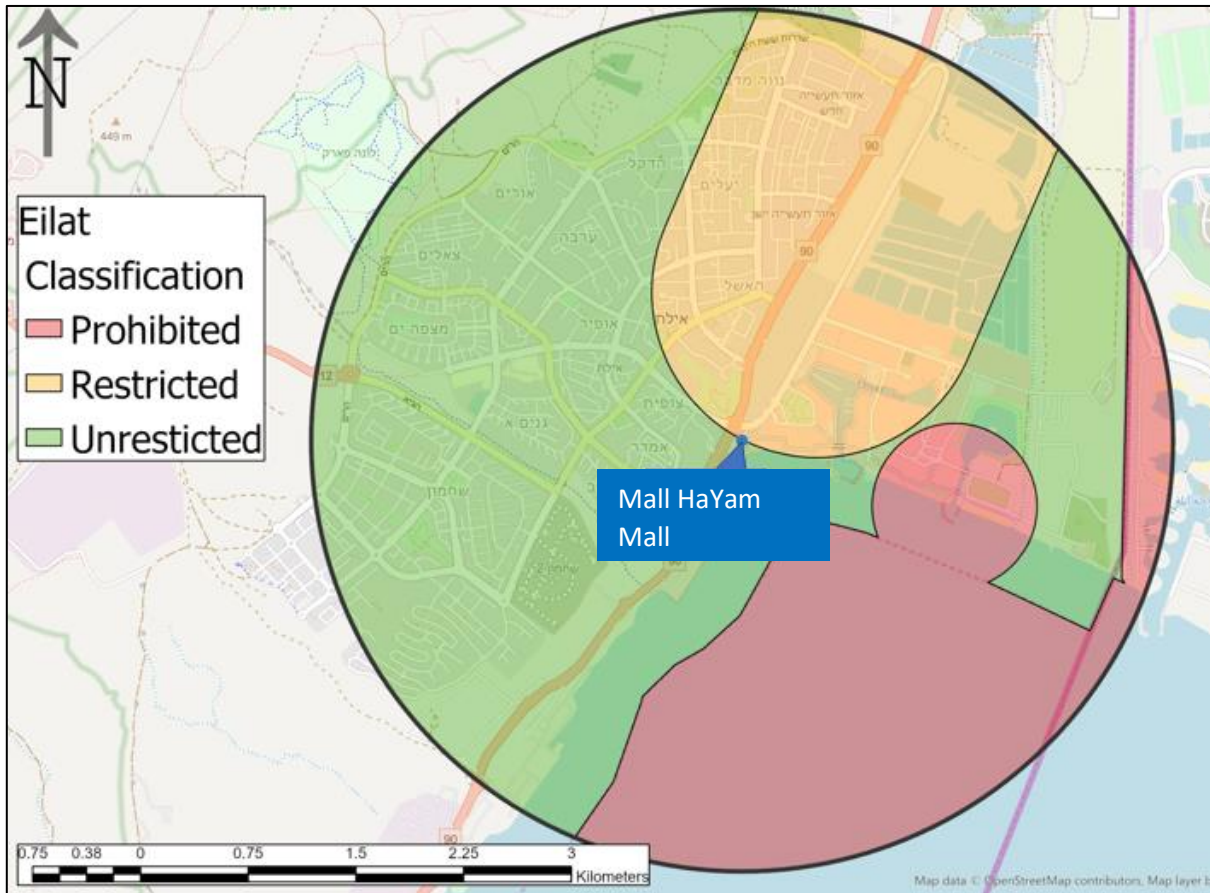


Figure 13 - Flight zone classification in the Eilat airspace

The airspace volume in the vicinity of the “Mall HaYam Shopping Mall” dispatch center falls within the control zone of the Eilat Control Tower (the Ilan and Assaf Ramon Aerodrome). Above the Eilat airspace there is a VFR route that during the week serves the general aviation sector, and in addition, the sports aviation sector, during the weekends. Minimum flight

altitude during the week is 2,500 FT. AMSL; however, during weekends, due to the sports aviation, minimum flight altitude drops to 700 FT. AMSL.

The Josephtal Medical Center is in Eilat and often the location for medevac flights.

In addition, there is an active sky-diving area in the eastern portion of the city.

The airspace is divided according to the following classification zones:

### **Unrestricted Operations**

In most of the Eilat airspace, in those zones labeled in green it is possible to operate unrestricted up to an altitude of 120 meters AGL.

### **Restricted Operations**

The zone classified orange falls beneath the VFR route leading to/from the city. During the week this area is unrestricted, and it is possible to operate up to an altitude of 120 meters AGL; however, on weekends, the activity in this zone is restricted to a maximum altitude of 200 ft./60 meters AMSL.

It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### **Prohibited Operations**

Due to the proximity to the international border, no flights are to be conducted more than 300 m from the shoreline. In addition, no flights will be conducted in the skydiving drop zone. The areas prohibited for flight are marked in red.

#### **4.7.1. Conditions for operating in the airspace volume**

Prior to any activity in this airspace volume, it is necessary to attain the approval of the ATM unit surrounding the zone, i.e., LLER Tower (Eilat - Ramon). Furthermore, aerial activity must be coordinated *a priori*, according to the times defined in AIP Israel.

“Josephtal” Medical Center is situated within the Eilat airspace and often serves as a destination for medevac helicopters that land at the hospital’s heliport. During any helicopter medical evacuation to/from the above mentioned medical center, aerial activity in the airspace is required to cease, until removal of the said restriction by “Hagav” ATC/Ramon Tower.



Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing operation whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.7.2. Contact details**

4.7.2.1. ATC 509 (“Hagav”) - TBD

4.7.2.2. Ramon Tower (Eilat) - 08-9553666

4.7.2.3. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219

#### 4.8. Sharonim Shopping Mall - Hod Hasharon

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.8.	Hod Hasharon	Sharonim Shopping Mall	Flytrex	5.5 km X 5.5 km	190971	671084	34°54' 9.21"	32°7' 58.08"

Table 9 - A concentration of data for the Sharonim Shopping Mall, Hod Hasharon airspace volume

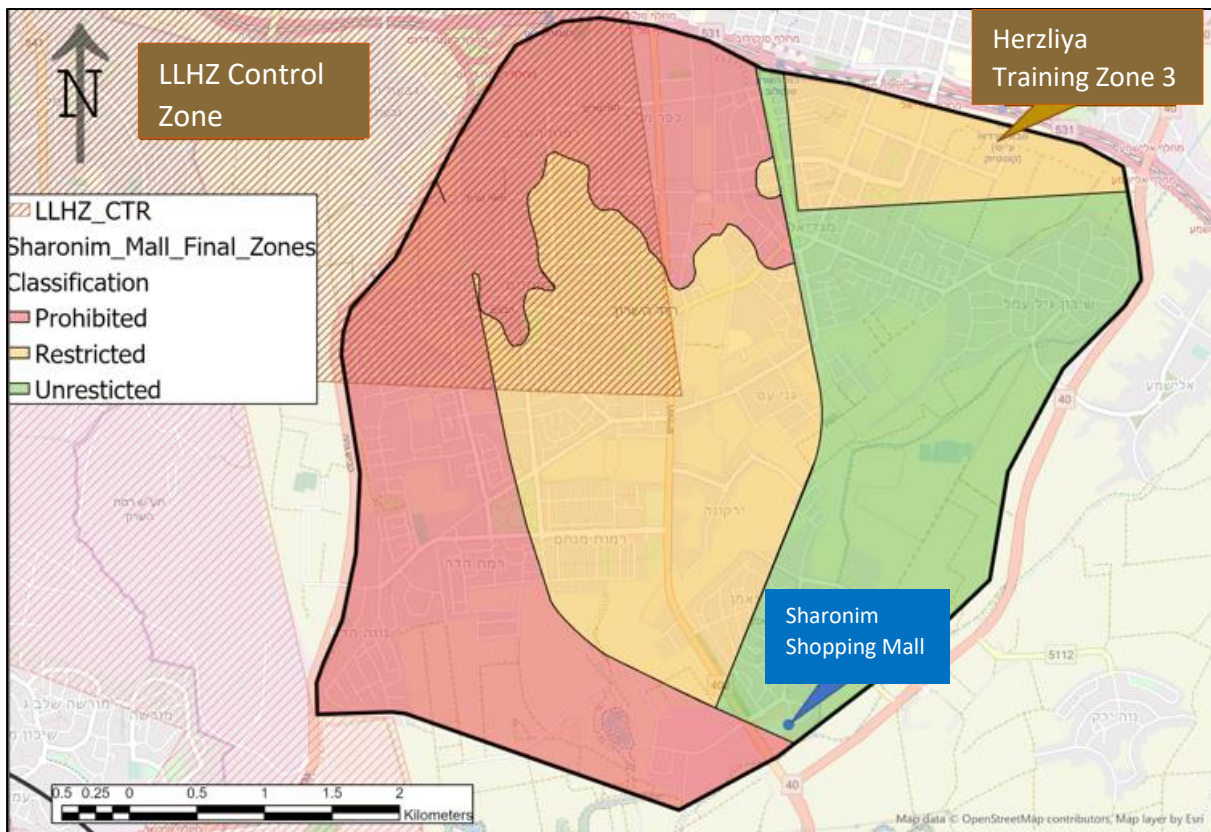
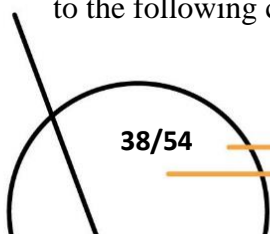


Figure 14 - Flight zone classification in the Sharonim Shopping Mall, Hod Hasharon airspace

The airspace volume surrounding the Sharonim Shopping Mall in Hod Hasharon is situated between several various ATM units. The volume’s northwestern portion falls within the realm of the Herzliya Aerodrome - LLHZ tower control zone, and its other portion, the larger of them falls under the control zone of the Air Force ATC Unit 506 (“Pluto” Control). The Herzliya Aerodrome serves a variety of private general aviation sectors, as well as many helicopters flying at low altitudes. In addition, the zone to the south of the airspace volume falls within the LLBG tower control zone.

Most of the airspace volume is available for activity, where The airspace is divided according to the following classification zones:



### **Unrestricted Operations**

In the zones classified in green, it is possible to operate unrestricted up to an altitude of 120 meters AGL.

### **Restricted Operations**

In zones classified orange it is possible to operate under certain stipulations. In the orange zone that is situated in the volume's northeastern section, there is an overlap with Training Zone 3 for light aviation that fall under the control of the Herzliya Aerodrome Tower. Minimum flight altitude in the area is 1,000 FT. AMSL, and therefore maximum flight altitude for UA operations in the volume under the zone is 500 ft./139 meters AMSL.

In the orange zone in the volume's center it is only possible to operate up to an altitude of 91 MASL due to CVFR routes crossing at a minimal altitude of 800 FT. AMSL above the airspace volume. It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### **Prohibited Operations**

In the northern section of the airspace volume, the higher ground levels, do not enable flight at the minimum altitude of 40 meters AGL without penetrating the protective zones defined for the CVFR routes above the volume, and therefore these areas are classified as red zones where flight is prohibited.

In addition, in the volume's southwestern portion, there is an approach/departure route at an altitude of 400/600 FT. AMSL that serves primarily helicopters to/from the Herzliya Aerodrome. The low altitude of the route does not allow for aerial activity at the separation require beneath it, and therefore the zone is classified at prohibited for flight.

#### **4.8.1. Conditions for operating in the airspace volume**

Prior to any activity in this airspace volume, it is necessary to attain the approval of the ATM units surrounding the zone, i.e., the ATM units “Pluto”, LLBG Tower, and LLHZ Tower.

Furthermore, aerial activity must be coordinated *a priori*, according to the times defined in AIP Israel.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing operation whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.8.2. Contact details**

- 4.8.2.1. ATC 506 (“Pluto”) - TBD
- 4.8.2.2. Herzliya Tower – 09-9719554, 09-9719559, Fax: 09-9719574
- 4.8.2.3. Ben Gurion Tower – 03-9758110, 03-9758666
- 4.8.2.4. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219

4.9. Kadima-Tzoran Industrial Zone, Kadima

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.9.	Kadima	Kadima-Tzoran Industrial Zone	Flytrex	5.1 km X 4.3 km	192696	686976	34°55'13.43"	32°16'34.15"

Table 10 - A concentration of data for the Kadima airspace volume

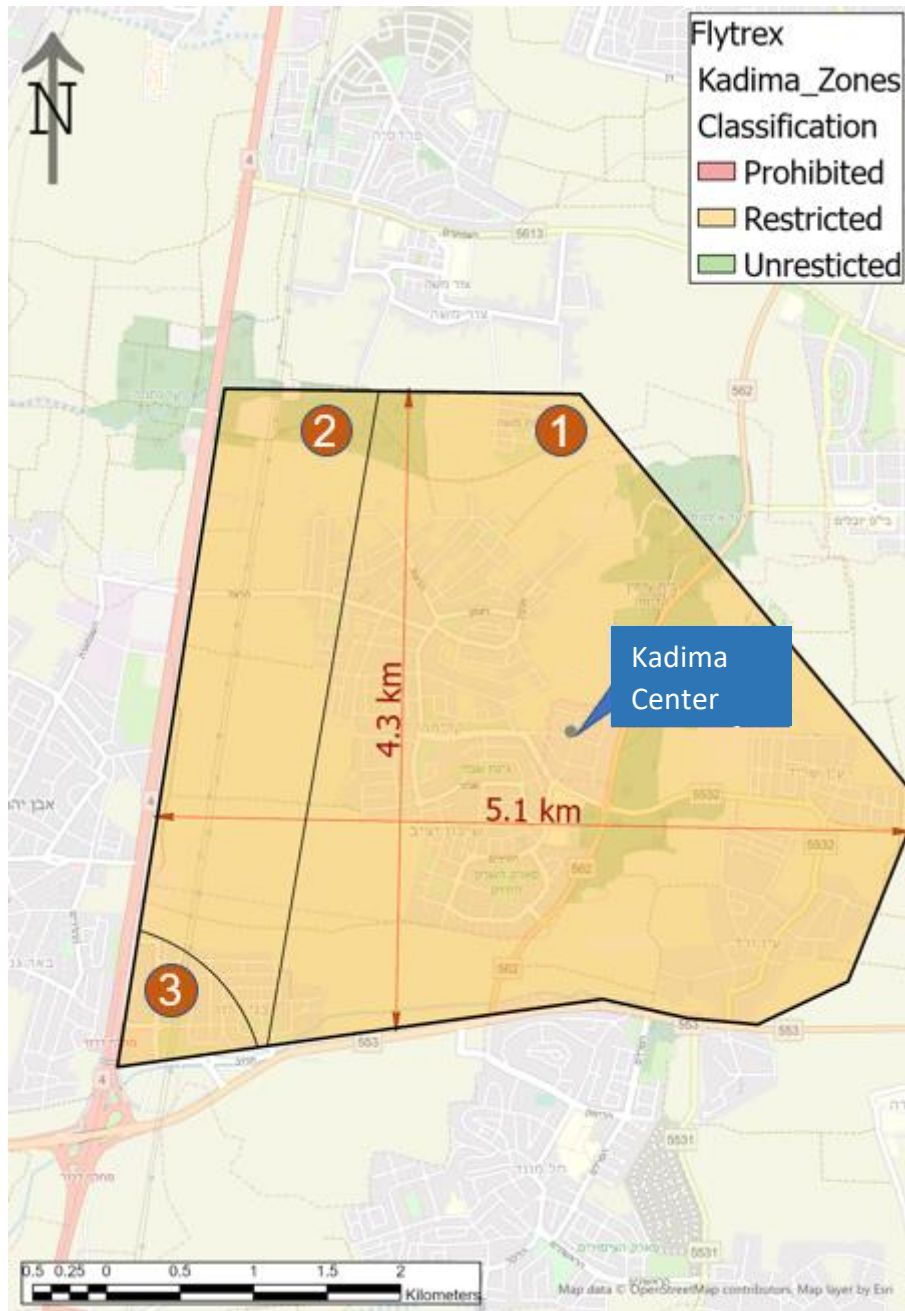


Figure 15 - Flight zone classification in the Kadima airspace



The airspace volume that surrounds the “Kadima Center” in Kadima is situated between two different ATM units. Above the area of the airspace is Training Zone 9 for light aviation, which is under the control of the Herzliya Aerodrome. Outside the boundary of Zone 9, the airspace falls under the control of ATC 506 (“Pluto” Control) of the IAF.

In full overlap with the operational airspace, is a sport aviation zone known as the “Southern Hasharon Bubble”, which although it falls under the control of “Pluto” ATC, because of the low level flying in this airspace, it is without radio communications with the ATM unit. As previously noted, to the east of Route 4 is Training Zone 9 for light aviation, which belongs to the Herzliya tower. Flight in this zone is conducted at a minimum altitude of 500 FEET AGL. Division of utilization times in the zone, as well as its ATM fall under responsibility of the Herzliya tower.

**Utilization in the Kadima airspace is subject to the establishment of an aerial closure that restricts the area of the Southern Hasharon Bubble and limits the minimum flight altitude in the Herzliya Training Zones to a minimum altitude of 1,000 FT. AMSL to enable UA operations in the desired area.**

In addition, west of the zone along Route 4, VFR route crosses serving aerial traffic to/from the Herzliya Aerodrome. The minimum flight altitude in the route varies, e.g., north to the Bnei Dror Junction the minimum altitude is 1,500 FT. AMSL, while south of Bnei Dror Junction the route’s minimum altitude is 800 FT. AMSL.

The airspace is divided according to the following classification zones:

### **Unrestricted Operations**

The Kadima airspace contains no zones where it is possible to operate up to 120 METERS AGL without restriction.

### **Restricted Operations**

In the zones classified orange it is possible to operate under certain stipulations:

The orange zone labeled Zone 1 falls under the Training Zones of Herzliya, serving General Aviation type aircraft. As previously mentioned, the condition for operation in the Kadima airspace is a restriction of the areas to a minimum altitude of 1,000 FT. AMSL, which enables UA operations up to an altitude of 500 ft./152 meters AMSL.

The orange zone labeled Zone 2 falls under a VFR route at a minimum altitude of 1,500 FT. AMSL, which enables UA operations up to an altitude of 1,000 ft./304 meters AMSL.

The orange zone labeled Zone 32 falls under a VFR route at a minimum altitude of 800 FT. AMSL, which enables UA operations up to an altitude of 300 ft./91 meters AMSL.

It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### **Prohibited Operations**

There are no areas where activity is prohibited in the Kadima airspace.

#### **4.9.1. Conditions for operating in the airspace volume**

As previously noted, use in this zone is subject to the restrictions of the aerial infrastructures such as “The South Hasharon Bubble” and the Herzliya Training Zone. Prior to any activity in this airspace volume, coordinated publication is required of the restrictions noted by AIP Israel, in addition to telephone approval prior to the start of any activity opposite the controlling ATM units in the area, i.e., “Pluto” ATC and the Herzliya Aerodrome.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing operation whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.9.2. Contact details**

- 4.9.2.1. ATC 506 (“Pluto”) - TBD
- 4.9.2.2. Herzliya Tower – 09-9719554, 09-9719559, Fax: 09-9719574
- 4.9.2.3. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219

#### 4.10. M Haderech Shopping Mall - Beit Yanai

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.10.	Beit Yanai	M Haderech Shopping Mall	Flytrex	1.9 km X 4.3 km	187717	698883	34°52'01.72"	32°23'00.19"

Table 11 - A concentration of data for the M Haderech airspace volume

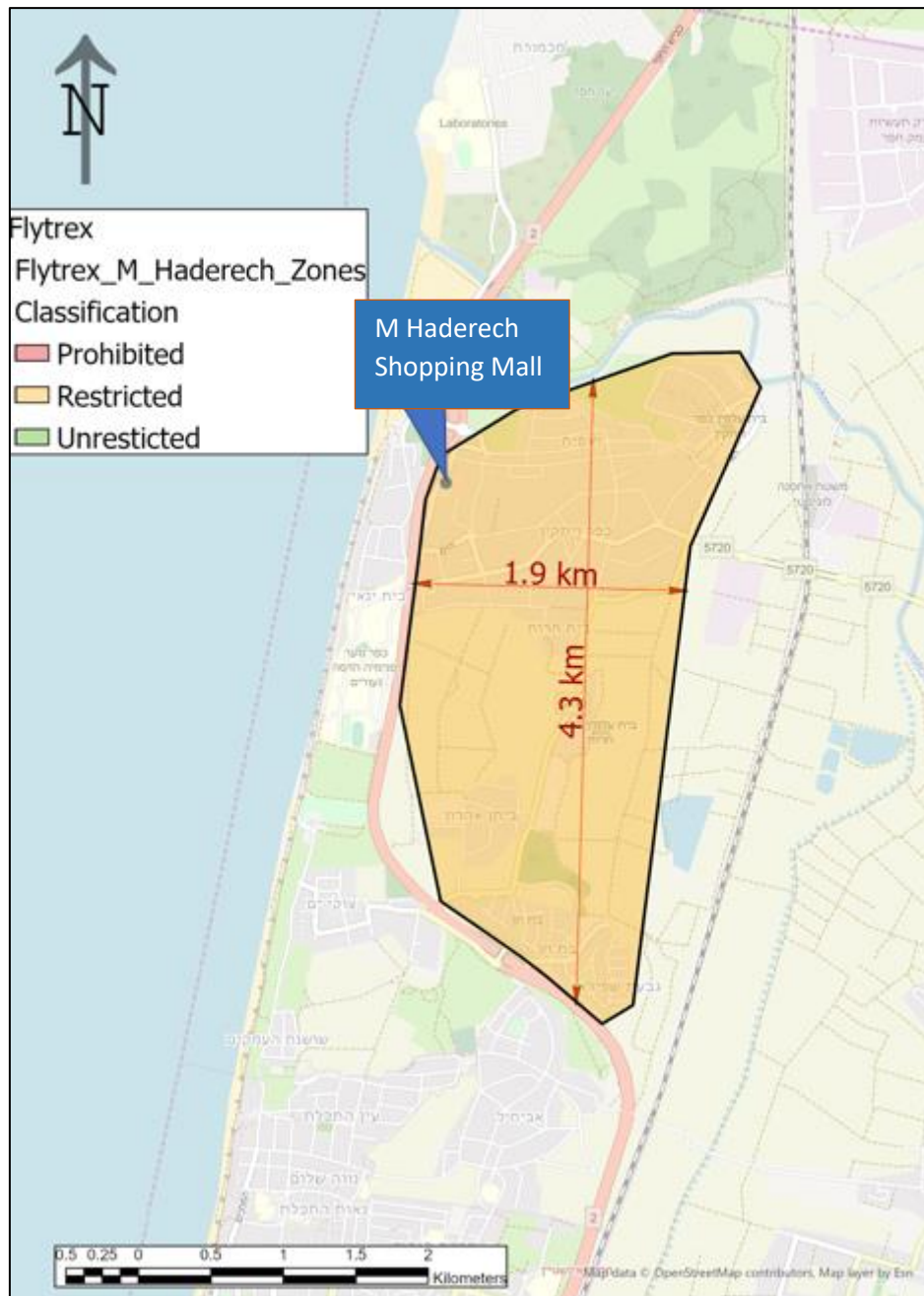


Figure 16 - Flight zone classification in the M Haderech airspace

The airspace volume surrounding the “M Haderech Shopping Mall” in Beit Yanai, falls under the control zone of the ATM unit ATC 506 (“Pluto” Control) of the IAF.

In full overlap with the operational airspace, is a sport aviation zone known as the “Southern Hasharon Bubble”, which although it falls under the control of “Pluto” ATC, because of the low level flying in this airspace, it is without radio communications with the ATM unit. In addition, above the M Haderech airspace is Training Zone 12 for light aviation, which is under the control of the Herzliya Aerodrome. Flight in this zone is conducted at a minimum altitude of 500 FEET AGL. Division of utilization times fall under the Herzliya tower, while ATM is the responsibility of “Pluto” ATC.

**Utilization in the M Haderech airspace is conditional upon the establishment of an aerial closure that restricts the area of the Southern Hasharon Bubble and limits the minimum flight altitude in the Herzliya Training Zones to a minimum altitude of 1,000 FT. AMSL to enable UA operations in the desired area.**

The airspace is divided according to the following classification zones:

### **Unrestricted Operations**

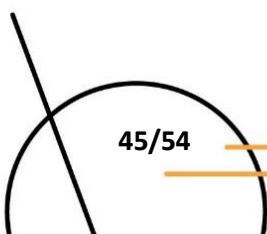
The M Haderech airspace contains no zones where it is possible to operate up to 120 METERS AGL without restriction.

### **Restricted Operations**

In zones classified orange it is possible to operate under certain stipulations. The orange zone falls under the Training Zones of Herzliya, serving General Aviation type aircraft. As previously mentioned, the condition for operation in the Kadima airspace is a restriction of the areas to a minimum altitude of 1,000 FT. AMSL, which enables UA operations up to an altitude of 500 ft./152 meters AMSL.

### **Prohibited Operations**

There are no areas where activity is prohibited in the M Haderech airspace.



#### **4.10.1. Conditions for operating in the airspace volume**

As previously noted, use in this zone is subject to the restrictions of the aerial infrastructures such as “The South Hasharon Bubble” and the Herzliya Training Zone. Prior to any activity in this airspace volume, coordinated publication is required of the restrictions noted by AIP Israel, in addition to telephone approval prior to the start of any activity from the controlling ATM unit in the area, i.e., “Pluto” ATC, and the ATM unit responsible for the division of the resource, i.e., the Herzliya Aerodrome Control Tower.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing operation whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.10.2. Contact details**

4.10.2.1. ATC 506 (“Pluto”) - TBD

4.10.2.2. Herzliya Tower – 09-9719554, 09-9719559, Fax: 09-9719574

4.10.2.3. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219



#### 4.11. Netanya Airspace - the “Agamim Center” and “Ofar Hasharon” Shopping Malls

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.11.	Netanya	Agamim Center	CAA	3 km radius surrounding the dispatch center	187189	692596	34°51' 42.28”	32°19' 36.06”
		Ofar Hasharon Shopping Mall			186152	688576	34°51' 3.14”	32°17' 25.44”

Table 12 - A concentration of data for the Netanya airspace volume

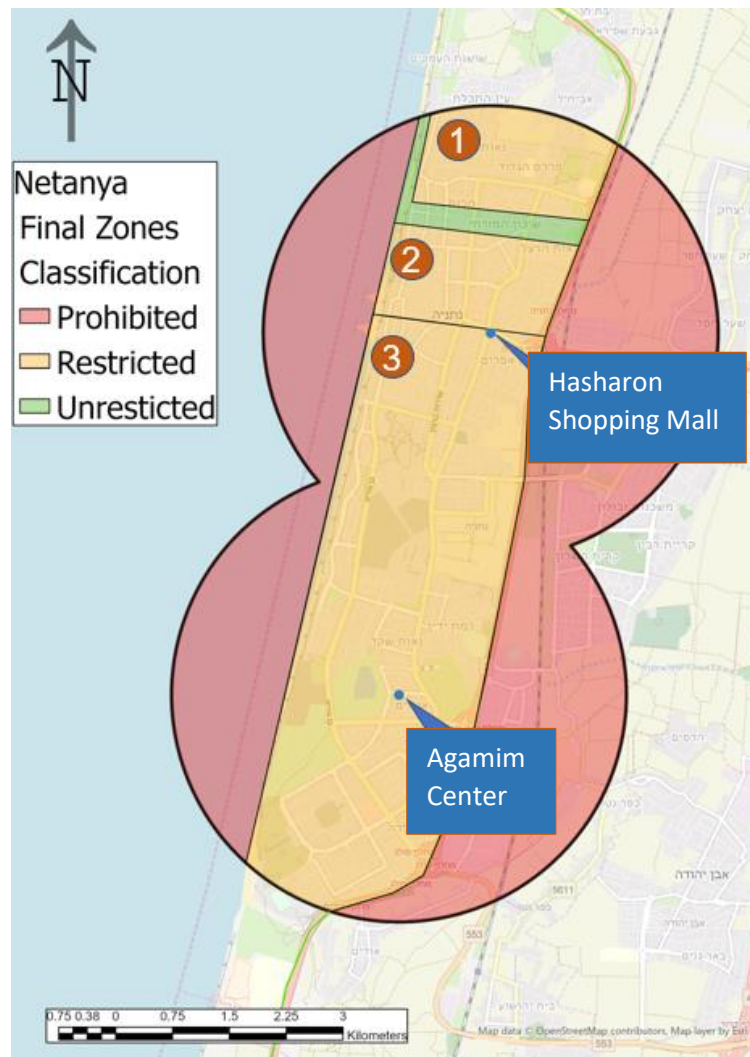


Figure 17 - Flight zone classification in the Netanya airspace

The airspace volume in the Netanya airspace surrounding the “Ofar Hasharon Shopping Mall” and the “Agamim” Center are situated between several various ATM units. South to Route 57,

above land, is the Number 8 Light Aviation Training Zone, under the control of the Herzliya Aerodrome Control Tower. The other portion of the airspace volume falls under the control of ATC 506 (“Pluto” Control) of the IAF. It should be noted that west of Route 2, there is a sports aviation zone, which fall under the control of “Pluto” ATC; however, flight in this airspace is at a low altitude and without radio communications with the ATM unit.

The Laniado Medical Center is in Netanya and often the location for medevac flights.

Most of the airspace volume is available for activity, where The airspace is divided according to the following classification zones:

### **Unrestricted Operations**

In the zones classified in green, it is possible to operate unrestricted up to an altitude of 120 meters AGL.

### **Restricted Operations**

In zones classified orange it is possible to operate under certain stipulations. The orange zones labeled as Zones 1 and 3 fall under the Training Zones 12 and 8 for light aviation (respectively). As previously noted, south to Route 57 the training zone are controlled by the Herzliya Aerodrome, and northward the training zones are controlled by “Pluto” ATC. Minimum flight altitude in these areas is 1,000 FT. AMSL, and therefore maximum flight altitude for UA operations in the volume under the zone is 500 ft./139 meters AMSL.

In the orange zone labeled Zone 2 it is possible to operate up to an altitude of 1,000 ft./304 meters AMSL due to CVFR routes crossing at a minimal altitude of 1,500 FT. AMSL above the airspace volume.

It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### **Prohibited Operations**

In the volume's eastern portion, each of Route 2, there is VFR zone (uncontrolled) that serves the sports aviation sector. The zone is defined by Route 2, and aircraft operations are conducted from ground level up to an altitude of 700 FT. AMSL, and therefore the area is classified red and flight prohibited.

In addition, in the volume's western portion, a VFR route serves north/southbound helicopter traffic along the coastal plain at a minimum altitude of 400 FT. AMSL. The route's center is located 1 km west of the shoreline, such that the width of the route's protective zone has no impact on the airspace east of the shoreline. The low altitude of the route does not allow for aerial activity at the separation require beneath it, and therefore the zone is classified at prohibited for flight.

#### **4.11.1. Conditions for operating in the airspace volume**

Prior to any activity in this airspace volume, it is necessary to attain the approval of the ATM units surrounding the zone, i.e., the ATM units "Pluto", and LLHZ Tower.

Furthermore, aerial activity must be coordinated *a priori*, according to the times defined in AIP Israel.

It should also be noted that the "Laniado" Medical Center is situated within the Netanya airspace and often serves as a destination for medevac helicopters that land at the hospital's heliport. During any helicopter medical evacuation to/from the above mentioned medical center, aerial activity in the airspace is required to cease, until removal of the said restriction by "Pluto" ATC.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing operation whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### 4.11.2. Required Contact Numbers

4.11.2.1. ATC 506 (“Pluto”) - TBD

4.11.2.2. Herzliya Tower – 09-9719554, 09-9719559, Fax: 09-9719574

4.11.2.3. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219

#### 4.12. Hadera Airspace - “Ofar Lev Hadera” and “Mall Hahof Village” Shopping Malls

ID	City	Distribution Center	Airspace Volume Developer	Airspace Volume Dimensions	The New Israel Network		WGS 84	
					Y	X	E	N
4.12.	Hadera	Mall Hahof Village Hadera Shopping Mall	CAA	3 km radius surrounding the dispatch center	192912	704887	34°55'19.88”	32°26'15.61”
		Ofar Lev Hadera			190316	705371	34°53'40.44”	32°26'31.07”

Table 13 - A concentration of data for the Hadera airspace volume

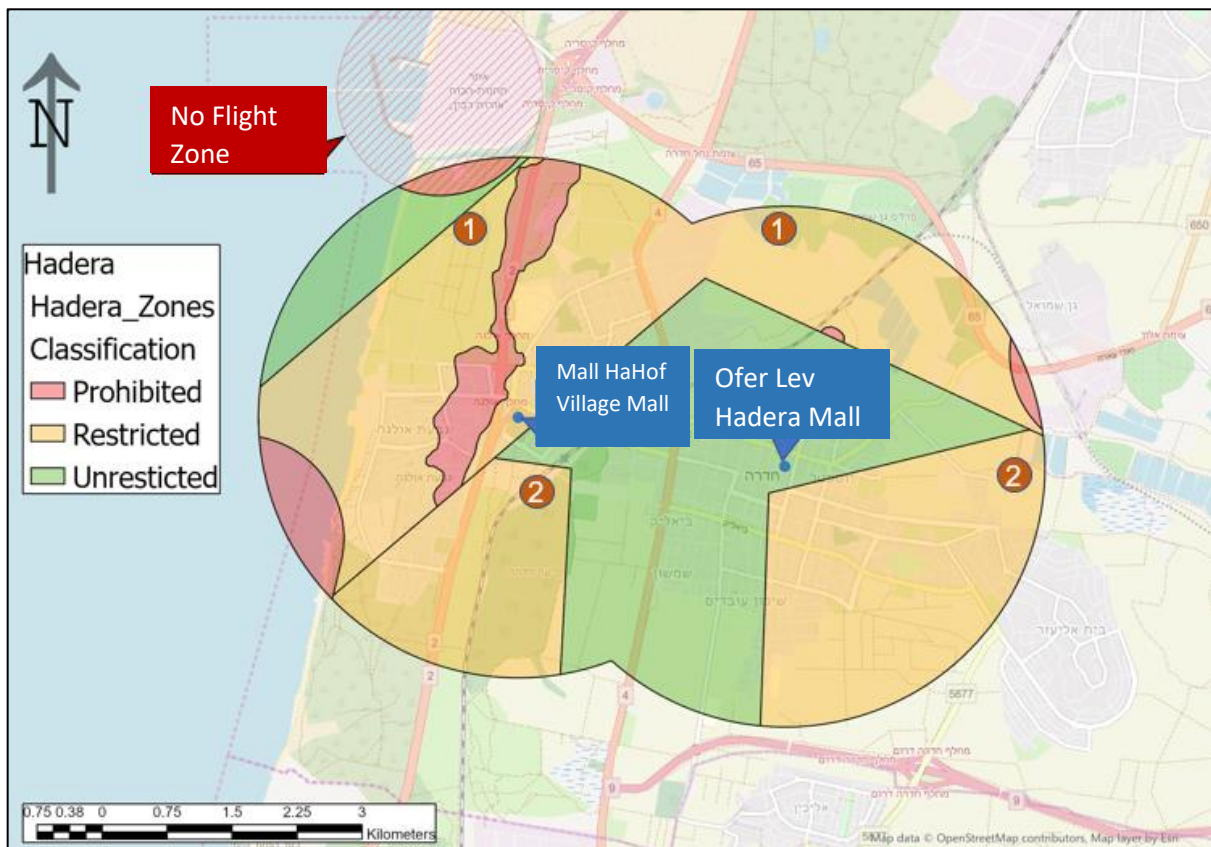


Figure 18 - Flight zone classification in the Hadera airspace

The airspace volume in the Hadera airspace surrounding the “Ofar Lev Hadera” and the “Mall Hahof Village” Shopping Malls dispatch centers falls in the realm of the control zone of the 506 ATC unit (“Pluto” Control) of the Israeli Air Force. To the south of Route 65, and east of Route 2, is a sport aviation zone known as the “Southern Hasharon Bubble”, which although it falls under the control of “Pluto” ATC, but because of the low level flying in this airspace, it is without radio communications with the ATM unit. In addition, above the area above land



are the Training Zones 12 and 13 for light aviation, which is under the control of the Herzliya Aerodrome Tower. Flight in this zone is conducted at a minimum altitude of 500 FEET AGL. Division of utilization times in the various zones is under the responsibility of LLHZ tower, and control of the zone is conducted by “Pluto” ATC.

**Utilization in the Hadera airspace is conditional upon the establishment of an aerial closure that restricts the area of the Southern Hasharon Bubble and limits the minimum flight altitude in the Herzliya Training Zones to a minimum altitude of 1,000 FT. AMSL to enable UA operations in the desired area.**

In addition, crossing the desired operational zones, in its northern and western segments, are several low-altitude VFR routes that serve both helicopter traffic and sports aviation aircraft. The minimum altitude of the VFR routes range between 700 FT. AMSL to 400 FT. AMSL. The significance of the low altitude of these routes means that beneath VFR routes with a minimum altitude of 400 ft. UAS will be prohibited from operating.

The Hillel Yaffe Medical Center is in Hadera and often the location for medevac flights.

The airspace is divided according to the following classification zones:

### **Unrestricted Operations**

In the zones classified in green, it is possible to operate unrestricted up to an altitude of 120 METERS AGL.

### **Restricted Operations**

In zones classified orange it is possible to operate under certain stipulations. In the orange zones labeled Zone 1, there are VFR routes with a minimum altitude of 700 FT. AMSL. Therefore, the maximum flight altitude for UA operations conducted in the airspace volume under these zones is 200 ft./61 meters AMSL.

The orange zone labeled Zone 2 falls under the Training Zones of Herzliya, which serves General Aviation type aircraft. As previously mentioned, the condition for operation in the Hadera airspace is a restriction of the areas to a minimum altitude of 1,000 FT. AMSL, which enables UA operations up to an altitude of 500 ft./152 meters AMSL.

It should be noted that in any case operation in the orange zones is restricted to the minimum altitude of 40 meters AGL.

### **Prohibited Operations**

The eastern and western edges of the Hadera airspace contain VFR routes at an altitude of 400 FT. AMSL, which beneath this level prohibits UA operation. In addition, in the center of the airspace volume, along Route 2, there is a ridge that prohibits UA operation at a maximum altitude of 61 MASL, while maintaining a minimum altitude of 40 meters AGL.

In its northwestern portion of the area, there is an area that is a no-flight zone<sup>5</sup>, from ground level to an altitude of 2,000 FT. AMSL.

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<sup>5</sup>AIP Israel, Section ENR 5.1, Prohibited, Restricted and Danger Areas LLP07

#### **4.12.1. Conditions for operating in the airspace volume**

As previously noted, use in this zone is subject to the restrictions of the aerial infrastructures such as “The South Hasharon Bubble” and the Herzliya Training Zone. Prior to any activity in this airspace volume, coordinated publication is required of the restrictions noted by AIP Israel, in addition to telephone approval prior to the start of any activity from the controlling ATM unit in the area, i.e., “Pluto” ATC. In addition it is necessary to update the LLHZ Control Tower of the restrictions entering into force.

It should also be noted that the “Hillel Yaffe” Medical Center is situated within the Hadera airspace and often serves as a destination for medevac helicopters that land at the hospital’s heliport. During any helicopter medical evacuation to/from the above mentioned medical center, aerial activity in the airspace is required to cease, until removal of the said restriction by “Pluto” ATC.

Due to the complexity of the airspace, and its proximity to various control zones, it is necessary that aerial operators working in this airspace volume are readily available and capable of ceasing operation whenever necessary within seconds, in a manner that will not endanger any aircraft and/or any passerby on the ground.

#### **4.12.2. Required Contact Numbers**

4.12.2.1. ATC 506 (“Pluto”) - TBD

4.12.2.2. Herzliya Tower – 09-9719554, 09-9719559, Fax: 09-9719574

4.12.2.3. AIS Office – Telephone: 03-9756215/6, Fax: 03-9756219