

## 2 ACHIEVEMENTS

### 2 - 1 Final Products of the Study

Final products, which are itemized in the SW for the Study, were delivered to the Government of BiH. (Minutes of Meetings 1) Table 2 - 1 shows the products.

**Table 2 - 1 Output of the Study**

	No	Item	Quantity	Coverage/notes	Media	
Study Report	1)	Inception Report (English)	20 copies			
	2)	Interim Report (English)	20 copies			
	3)	Progress Report (English)	20 copies			
	4)	Draft Final Report				
		Main Report (English)	20 copies			
		Summary (English)	20 copies			
	5)	Final Report				
		Main Report (English)	20 copies			
		Summary (English)	20 copies			
		Minutes of Meetings (English)	20 copies			

	No	Item	Quantity	Coverage/notes	Media	
Study Results	1)	1:40,000 scale aerial photograph		Report, flight record, flight center coordinates, flight index maps		
		Negative films	1 set	1: 40,000, Whole country		
		Contact print photographs	2 sets	1: 40,000, Whole country		
		Scanned data	2 sets	whole country	HDD & tape	
		Records on Aerial Photography	2 sets	Film reports, Camera calibration certificates, Flight index, etc.		
	2)	Results of control point survey	2 sets	Principal 21 cities and the Eco - tourism Study Areas		
	3)	Results of aerial triangulation	2 sets	Principal 21 cities and the Eco - tourism Study Areas		
	4)	1: 25,000 scale topographic map				
		Symbolized data	2 sets	Principal 21 cities and the Eco - tourism Study Areas	HDD	
		Plate films for Printing	1 set (4 colors x 57 sheets)	Principal 21 cities and the Eco - tourism Study Areas		
		Printed maps	100 copies (100 x 57 sheets)	Principal 21 cities and the Eco - tourism Study Areas		
	5)	GIS data				
		Topographic data	10 sets	whole country	DVD, HDD	
		DTM	2 sets	whole country	HDD	
	6)	Scanned data of the existing topographic maps	2 sets	whole country	HDD	
	7)	1:2,500 scale topographic maps	1 sets	four locations in the Eco - tourism Study Areas	HDD	
		1:5,000 scale topographic maps	1 sets	two locations in the Eco - tourism Study Areas	HDD	
	8)	1:25,000 scale ortho - photo	1 set (20 sheets)	Eco - tourism Study Areas	HDD	

## 2 - 2 Aerial Photographs

Aerial photographs for the Study covered the whole country of Bosnia and Herzegovina. Panchromatic film was used. The photographic scale was about 1/40,000. The total number of photographs was 2,702. The aircraft, RTC A690, was mobilized in on July 2, 2003. Leica RC 20 was the camera system used. It has high resolution, forward image motion compensation, gyro - stabilized mount, automatic exposure control, data annotation on each photograph. The shutter speed is from 1/100 to 1/1,000 second. Functioning with a GPS mounted on aircraft, it continuously records images on a roll of film.

With the latest equipment, 23 flights were performed and the aircraft was demobilized on August 12, 2003.



Photo 2 - 1 Aircraft RTC A690

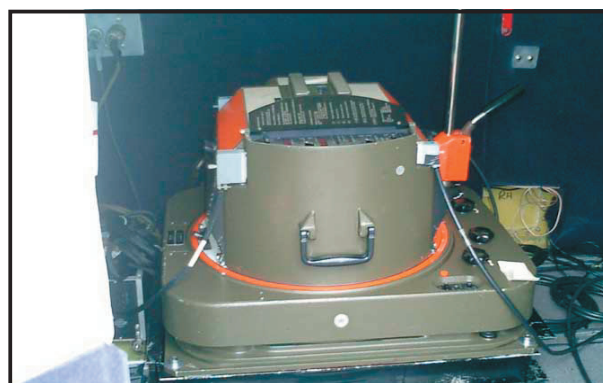


Photo 2 - 2 Leica RC 20

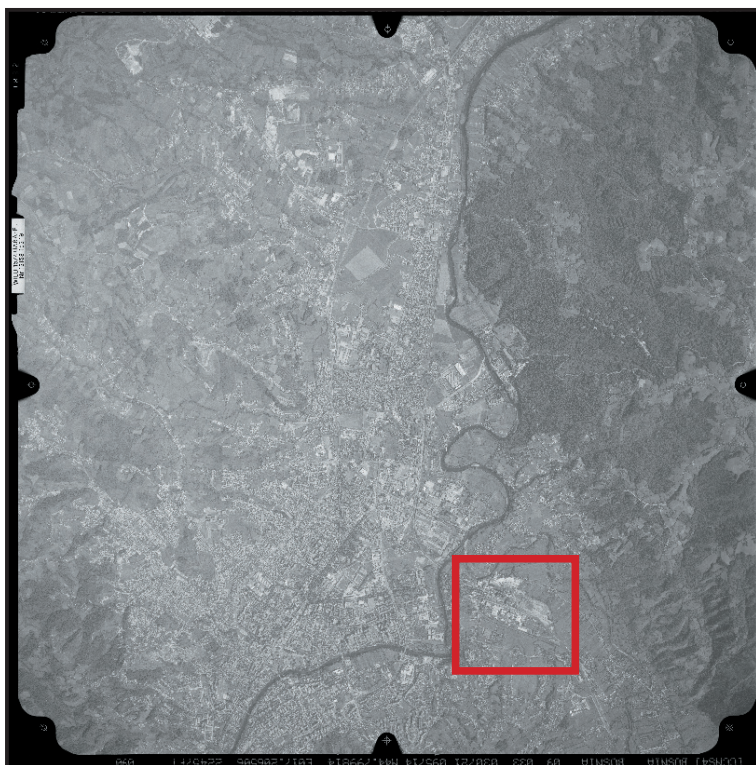
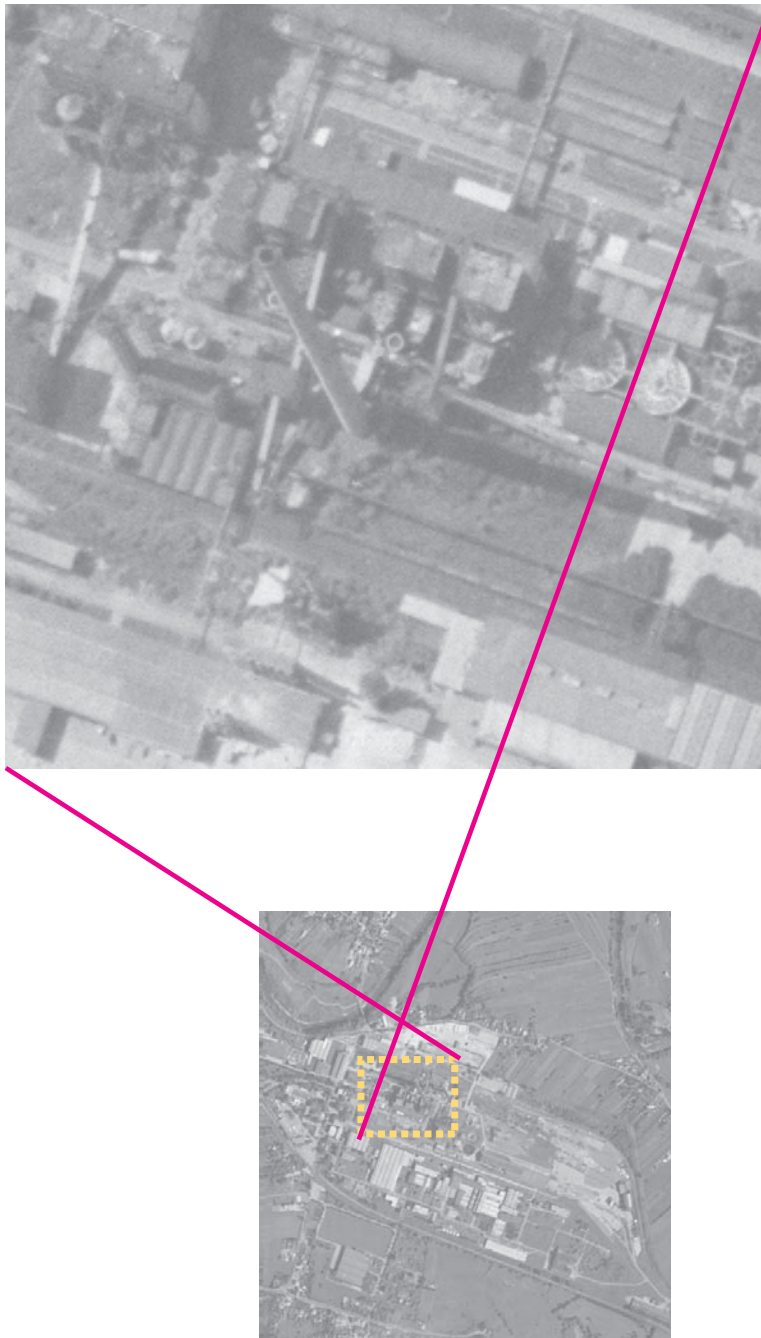


Figure 2 - 1 Aerial Photograph (Banja Luka)

An aerial photo provides us with reliable information necessary for topographic mapping. Viewing a pair of photos overlapping each other, a photo - interpreter reads various features that exist on the ground in stereoscopic image (3 - D).

Here is a sample photo. The original size is 27cm x 27cm. All the photos taken at a scale of 1:40,000 were scanned at a resolution of 20 micrometers. So one pixel size on the real ground is 80cm x 80cm. It is high enough for a trained interpreter to identify automobiles and even persons. This aerial photo (left) includes Banja Luka. The darker



**Figure 2 - 2 Aerial Photograph Interpretation**

part in the right side of the photo shows forests with dense trees. Farmlands with light colored striped pattern are identified in every part of the photo. The dark winding line from the bottom to the top is Vrba River, flowing from the south to the north. The narrow water surface looks black and dark colored trees sparsely flank the river. Several bridges are seen crossing the river. On the western side of the river, the central part of Banja Luka City is located, where many buildings with shadows, a park with dark colored trees and a stadium can be seen. On the eastern side of the river, an industrial district is read. In the enlarged photo (top), a smokestack with its long shadow is identified.

All these features would be more easily identified in 3 - D view.



## 2 - 3 New Topographic Maps (1:25,000) for the Principal 21 Cities and the Eco - tourism Study Areas

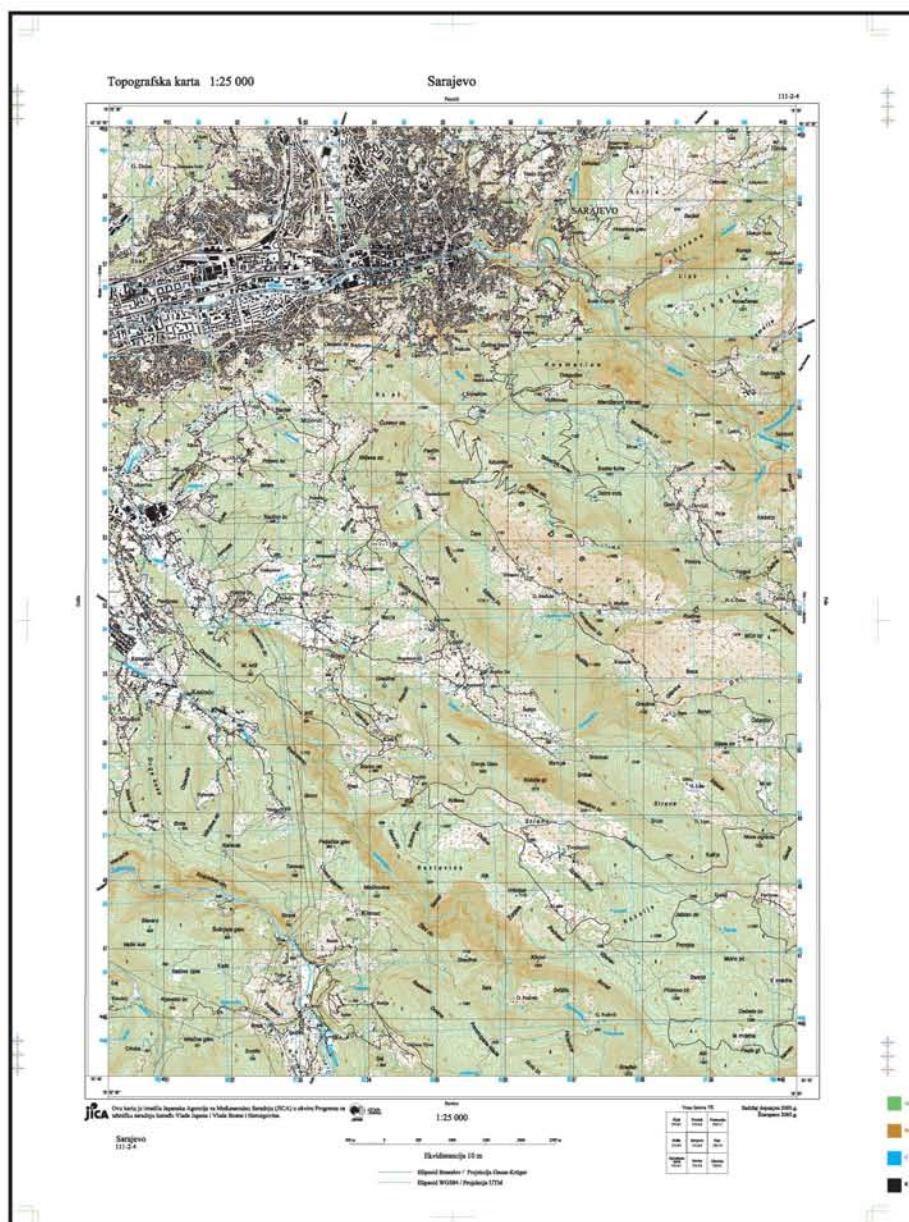


Figure 2 - 3 Topographic Map (Sarajevo)

The printed new topographic maps are similar to the old maps of the 1970s in size, color and general expression, but the information is quite new. The sheet codes are the same as the old ones. The map sheet name such as "Sarajevo" follows those of the old maps with a few exceptions. For user's convenience, an index box of the adjoining sheet names is included in the bottom space. In addition to the black gridlines of TM projection, UTM gridlines are shown in blue. The legend for map symbols is not shown in marginal space following the old model. In this new map "Sarajevo", the greater part of the sheet is occupied by mountains with dense



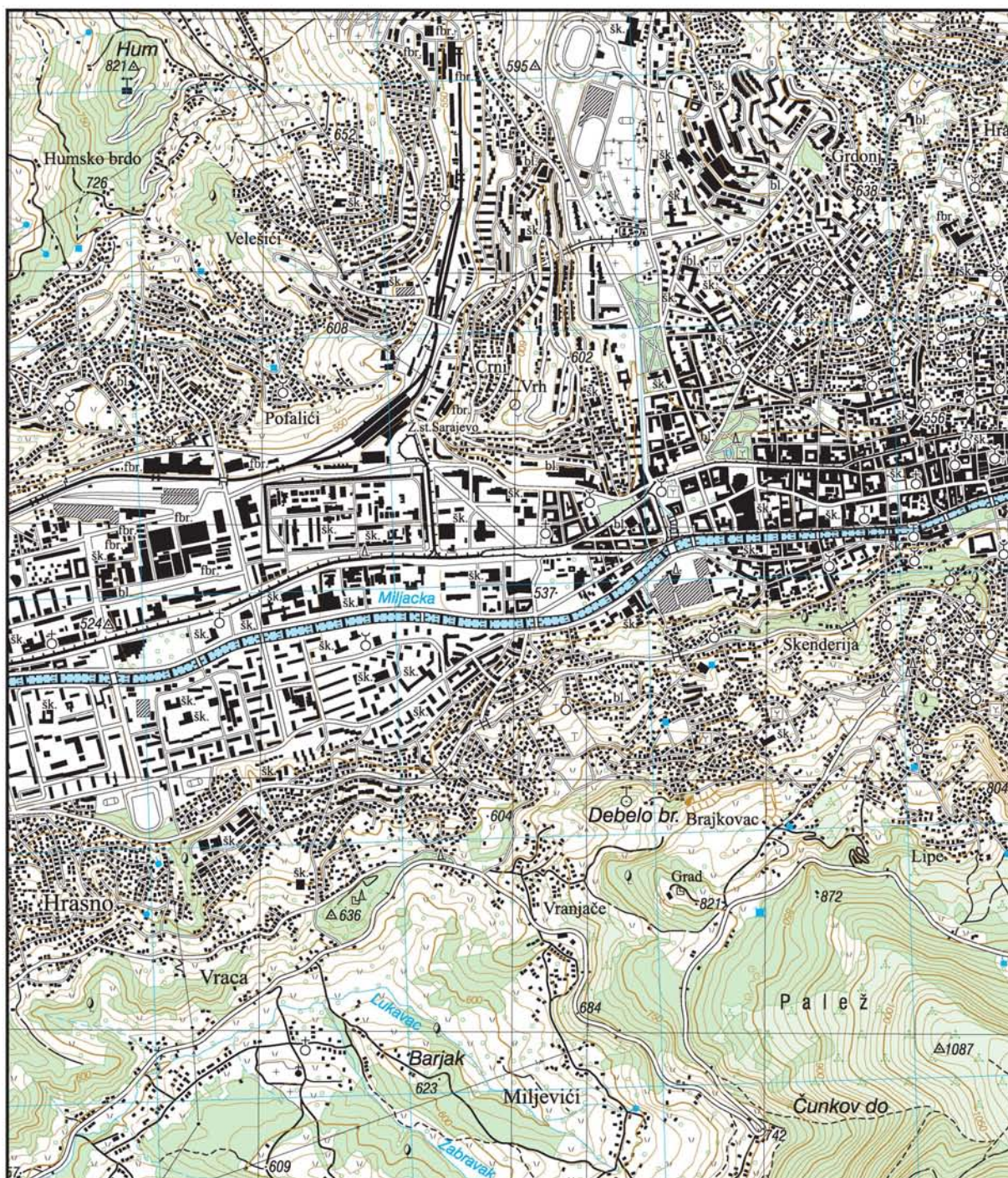


Figure 2 - 4 Topographic Map, Actual Scale (Sarajevo)

contour lines of 10 meter intervals in brown. Green shows forests and light green shows bushes with sparse trees. Miljacka River flows from the east to the west dividing the city. Parallel with the river, the tram runs on the main street, whose symbol used to be omitted in the old map. Small houses are shown by minute black rectangles and big buildings are in true shape at the map scale. Big buildings in shaded pattern show hangars, some big halls and sport facilities, etc. On the top of the map, the Kosevo Stadium, Olympic Hall and Speed Skating Stadium are shown.



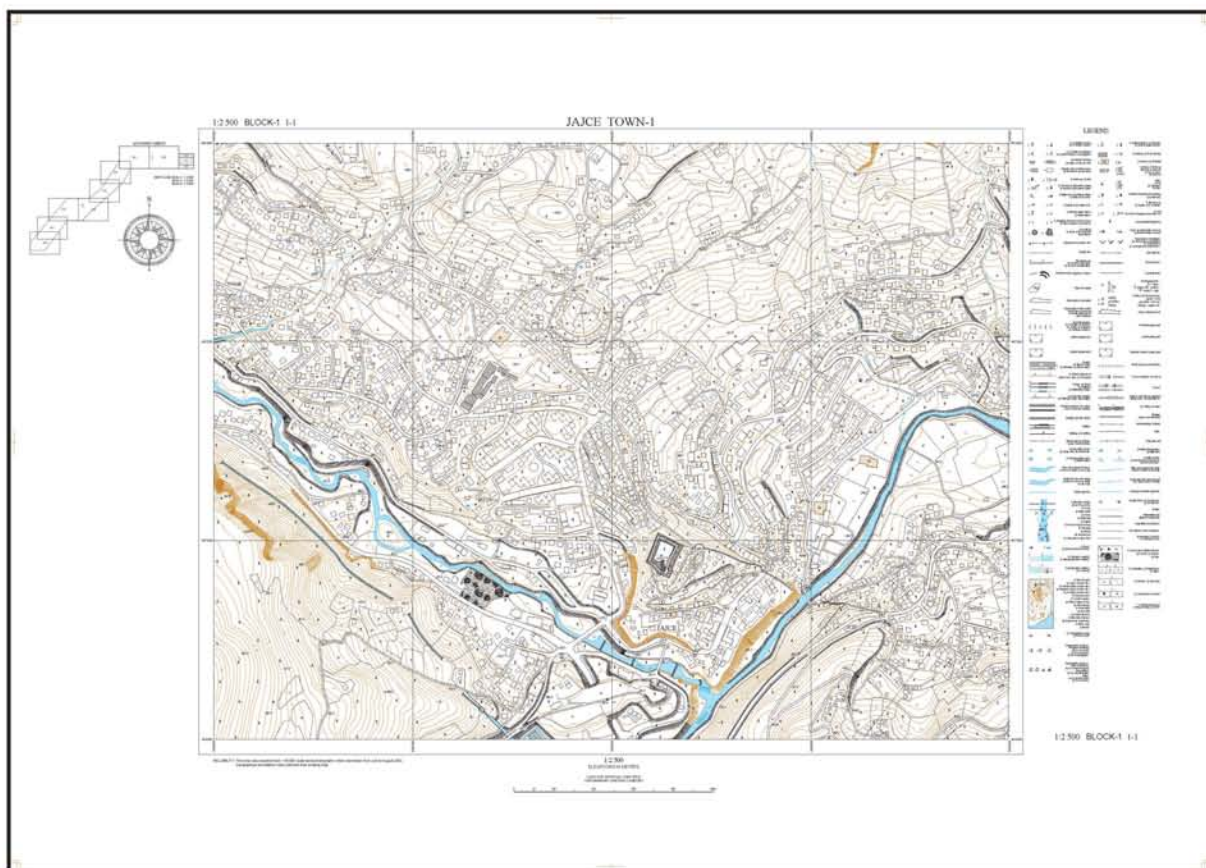


Figure 2 - 5 1:2,500 Scale Topographic Map in Eco - tourism Study Area (reduced scale)

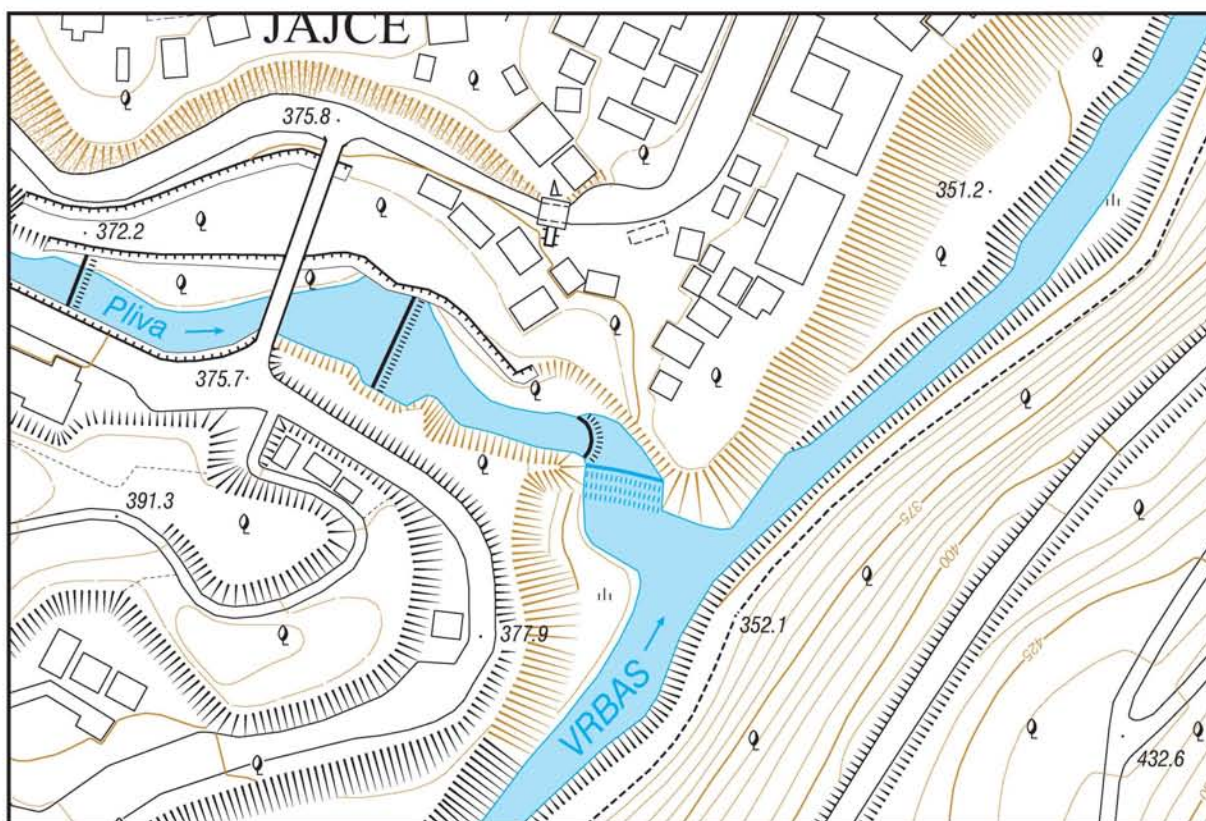


Figure 2 - 6 1:2,500 Scale Topographic Map in Eco - tourism Area (original scale)

A 1:2,500 topographic map for the eco - tourism study will enable future site and facility planning.



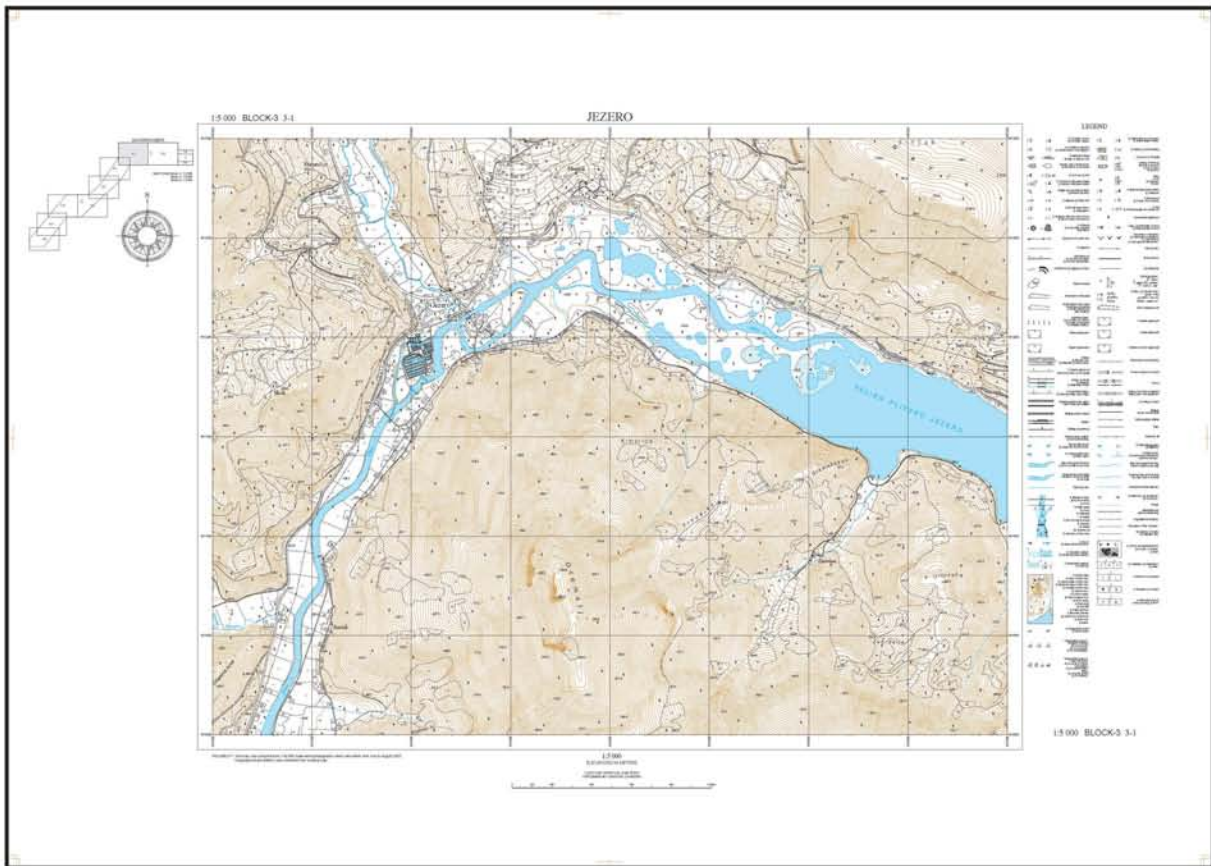


Figure 2 - 7 1:5,000 Scale Topographic Map in Eco - tourism Study Area (reduced scale)

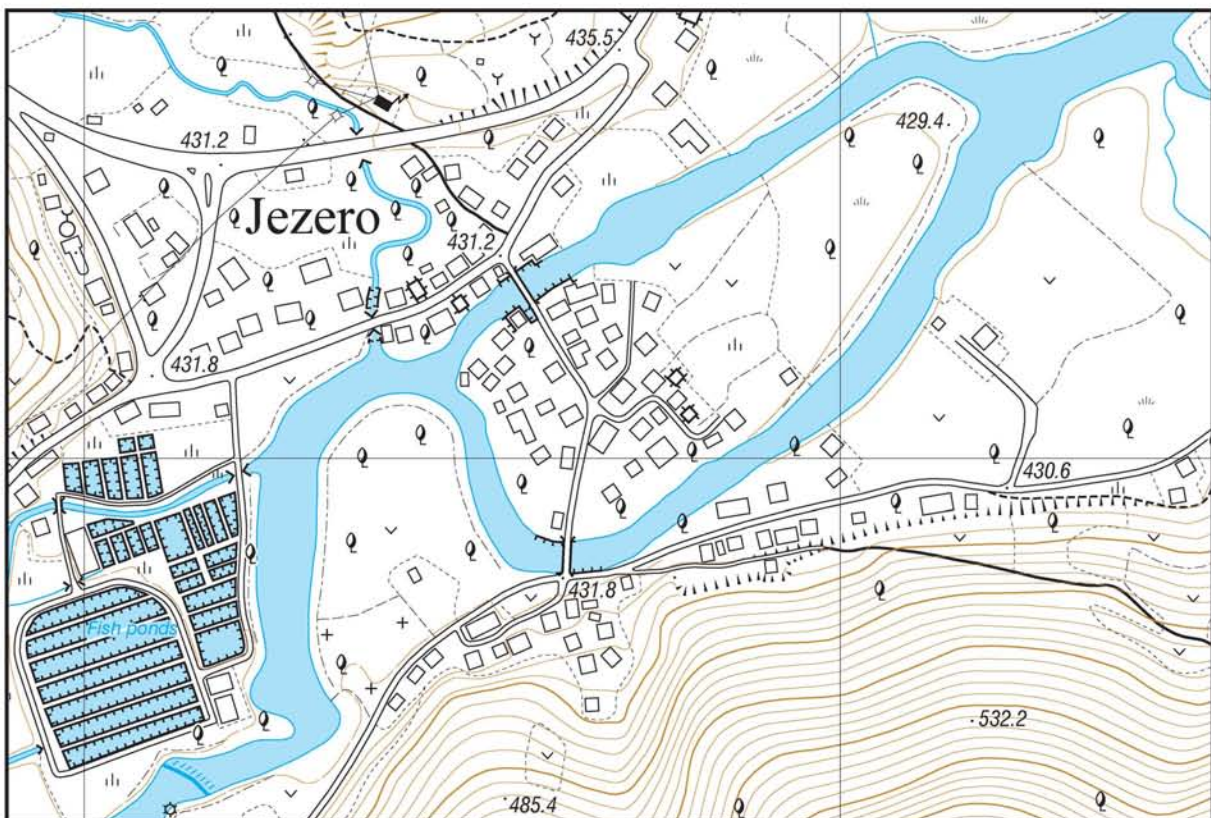


Figure 2 - 8 1:5,000 Scale Topographic Map in Eco - tourism Area (original scale)

1/5,000 topographic maps are suited for district level planning. They are prepared for future community or district planning to wellcome visitors and investors to the eco - tourism areas.