

**REPORT ON THE JOINT UNESCO - ICOMOS MISSION TO THE ARCHAEOLOGICAL  
SITE OF COPAN, HONDURAS  
18 – 24 FEBRUARY 2003**

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**REACTIVE MONITORING MISSION FOR THE ARCHAEOLOGICAL  
SITE OF COPAN, HONDURAS  
STUDY OF THE IMPACT OF THE AIRPORT**



**February 2003**

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## **1. BACKGROUND TO THE MISSION**

### **1.1. Inscription History**

In 1979, the Government of Honduras submitted the nomination of the «Maya site of Copan» for inscription on the World Heritage List. As a justification for the inscription, the following text was included in the nomination dossier:

*According to the great mayanist, the late Sylvanus G. Morley, Copan sculpture reached such a high grade of perfection that was only surpassed by that of Piedras Negras, Palenque and Yaxchilan. Indeed the sculpture has such exquisite finished details and harmonies with so many and massive complexes that there can be no doubt of the creative genius of these people. As part of the sculpture we can also recall thousands of hieroglyphic inscriptions which represent furthermore the high degree of astronomical and mathematical knowledge. If not for subsequent developments, during its apogee Copan did exert a strong influence over several sites of the southeastern frontier of the Maya world. Besides the slow destruction of the main centre by the river cut and by micro flora and the slow destruction of the outlying centres through agricultural activities, the site has been fairly preserved and respectfully restored.*

The ICOMOS evaluation gives some indications of the elements that make the site be of *outstanding universal value*:

*The inclusion of Copan on the World Heritage List is justified on the basis that the site corresponds to criterion 4 in that its temples, plazas, terraces, etc comprise a type of architectural complex among the most characteristic for the Maya civilization. Moreover, the lengthy hieroglyphic inscription of the Hieroglyphic Stairway Plaza is of considerable historic significance thus corresponding to criterion 6.*

## **1.2 Justification for the mission**

The joint UNESCO - ICOMOS mission was undertaken as per the request of the Authorities of Honduras; the UNESCO World Heritage Centre and ICOMOS respectively identified the members of the mission. The mission was intended to assist the authorities of Honduras in studying the impact of the existing airstrip and the potential sites for building an airport closer to the World Heritage site so as to provide an objective analysis to mediate the conflictive situations and positions that exist in this regard.

## **2. COMPILED BACKGROUND INFORMATION**

### **2.1 Archaeological Site of Copan**

#### ***2.1.1. Location***

Copan is located at the western part of the Republic of Honduras, in the Copan Department and the Municipality of Copan Ruinas. It is located along the Valley of Copan, at 10° 50´-latitude north and 89° 10´-longitude west. The municipality of Copan Ruinas limits to the west with the Municipalities of Santa Rita, Cabañas and El Paraiso, south with the Department of Ocotepeque and west with the Republic of Guatemala. The Department of Copan encompasses an area of 3,242 km<sup>2</sup> of the Honduran territory and it is characterized by its mountainous landscape and different microclimates according to the altitude and vegetation of the area. It has been calculated, based on archaeological surveys, that the area of the archaeological monument encompasses around 250 ha.

#### ***2.1.2 Description of the site***

The urban nucleus of Copan consists of the Principal Group that was the political, civil and religious centre, and a series of residential zones that surround it. The Principal Group comprises the Great Plaza and the Acropolis that in turn can be subdivided into smaller architectural units with a basic plan of a rectangular patio limited by pyramidal platforms with structures on top. There are seven stelae and eleven altars located at the Great Plaza, which emphasize the character of a large open space for ritual use, while the Acropolis is a more private area, with restricted access and reduced spaces and the main precinct of political and religious power. The archaeological park today also includes residential zones that are connected to the Principal Group by causeways: El Bosque, located to the southwest, and Las Sepulturas, located to the northeast. Another residential zone, El Cementerio, can be found south of the Acropolis. The name was given because of the large number of burials and tombs discovered there. Although the Principal Group is one of the largest in the Maya Area, it contains only a few of the more than 4500 ruined structures or mounds that have been located in the Copan valley to date. Additionally, the surface of the site is filled with thousands of fragments of architectural sculpture, which originally formed decorative mosaic designs on the facades of the temples and other structures.

### ***2.1.3 Significance of the site***

Copan represents one of the most spectacular achievements of the Classic Maya Period because of the number, elaboration and magnitude of its architectural and sculptural monuments, including stelae and altars. It also houses the longest inscribed text in the Maya region, the Hieroglyphic Stairway. The construction of the Great Plaza and the Acropolis reflect a prodigious amount of effort because of the size of its levelled and originally paved expanse of three hectares and the latter because of the enormous volume of its elevated mass, which rises some 30 meters from the ground. The stelae and altars at the Plaza form one of the most beautiful sculpture ensembles in the region, which might have served as a scenario for important social rituals and events. In both the design and execution the Maya bequeathed a unique example of their creative genius and advanced civilization at Copan. Also Copan exerted a strong influence over several sites of the southeastern frontier of the Maya World.

### ***2.1.4 Site zoning***

It has been calculated that Copan and its sphere of influence expanded for 250 ha. The area currently under management by the Honduran Institute of Anthropology and History (IHAH) encompasses the Principal Group, the residential areas of Las Sepulturas, El Bosque and El Cementerio, approximately an area of 45 ha. The IHAH has acquired, through purchase and donations, an additional 60 ha, including the archaeological area of La Castellona nearby Rio Amarillo.

Three zones have been established in the management plan with different levels of protection and allowed uses according to the significance of the remains found and the state of conservation. Area I is strictly reserved for archaeological and conservation purposes with possibility of visitation and does not allow any new constructions nor extend existing ones. Area II is also for archaeological research and visitation but with very limited development allowed. Area III is considered a buffer zone where development and construction of infrastructure can be carried out under strict regulations and limitations imposed by IHAH.

### ***2.1.5 Legal status of the site***

The Republic of Honduras declared Copan a National Monument in 1982. The legislation passed by the government covers the entire Copan River Valley and its tributaries for the purpose of protecting both the principal centres and all of the prehispanic city and tributary communities that formed a single socio-political unit.

### ***2.1.6 Management and administration of the site***

The institution in charge of administering the National Monument of Copan is the Honduran Institute of Anthropology and History that has assumed since 1952 the responsibility of preserving both the natural and cultural resources at the site. A management plan was produced in 1984 and has recently been

revised to conform to the current needs and state of the Archaeological Park. Wildlife Conservation Society has produced the new plan in coordination with IHAH and several organizations such as Asociación Copan. The latest draft includes the following programs for the conservation of the site:

- Cultural resources management: includes archaeological research, restoration of archaeological remains, protection and stabilization, management of collections and archives and ethnographic studies.
- Natural resources management: includes inventory and monitoring of species, design and implementation of a management plan for flora and fauna and management of external areas of the park.
- Public use program: includes community issues and monitoring of activities and uses of the site.
- Operational program: includes administration, public relations, security, construction and maintenance of infrastructure, land acquisition and monitoring of the plan's implementation.

### ***2.1.7 Access to the site***

Access to the department of Copan is both by land and air. Land access is through the main west highway of the country that leads to San Pedro Sula, Santa Rosa de Copan and La Entrada, which converts to highway CA11 at the city of La Entrada. There are also approximately 408 km of roads in different conditions at the Department of Copan however access to other towns and villages, specifically in the rural area, is mostly through unpaved roads. Currently most visitors come from Guatemala, through Santa Rosa de Copan or El Florido.

In regards to air transport, visitors mostly arrive to the San Pedro Sula International airport, which has connections with Miami, Houston, New Orleans and Cancun, as well as with San Jose Costa Rica, Guatemala, San Salvador and Panama. There are at least two tourism operators with capacities to transport large groups in buses to the site with a 3 hours road trip. Additionally, other services can be hired for transportation such as public buses, rental cars and taxis.

At the Guatemalan side there is a small airstrip, called Los Tablones (in the jurisdiction of San Jose) where small aircraft can land. Visitors are then transported to the site through the recently paved road of El Florido.

### ***2.1.8 Tourism issues and projections***

Visitation to the archaeological site of Copan had consistently increased through the 1990s with a significant decrease after Hurricane Mitch. The months with more visitors are March, April, July and August while from October to February there are fewer visitors.

Visitor statistics are as follows:

- 207,480 visitors visit Copan annually.
- Region of origin: 36% North America, 50% Central America, 9% Europe

- Age: 48.6% (1946- 1964), 24.4% (1965-1976), 12% (- 1946).
- Civil status: 56.4% Married, 36.7% Single
- Education: 63% higher education
- Average income: 17% above US\$ 70,000
- Travellers alone: 65%
- Average stay 1.6 days. It is worth noting that this figured has decreased over the past years from 4 days to 1.6.

#### Visitors to Honduras

	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Total	263,300	306,600	321,100	428,100	688,400	672,044	761,240
Tourists	254,900	302,800	317,800	370,800	470,727	517,953	531,491
Cruises	8,400	3,800	3,300	57,300	154,325	53,833	115,598

Regarding tourist facilities, statistics are as follows:

- 31 Hotels
- 400 rooms
- 27 centres for food and drinks
- 4 Tourism agencies or tour operators
- 20 Craft shops
- 2 Interurban transportations
- 5 recreational centres
- 4 Museums and galleries.

#### *Forecasts for tourism increase*

	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Total	879,883	1,018,044	1,179,053	1,366,818
Tourists	627,159	740,048	873,257	1,030,443
Cruises	135,000	155,250	170,775	187,853

- Since September 11 2001 there is a reported increase of 18% in tourism in Honduras. These figures has lead authorities to believe that a 20% annual growth is feasible considering there are projections for an 8% growth of the tourism industry in Central America with the large investments supported by the Interamerican Development Bank and the World Bank.
- It is foreseen that an increase of 3.5% in air passengers will occur during the years 2002-2005.



## 2.2 Existing airport and potential sites

### 2.1.1 Location

The existing airport is called "La Estanzuela". It is located at the SW and in the near vicinity of the small city of Copan Ruinas. The possible Sites to operate an airport are described in the Annex 4 of report produced by APESA-BCEOM-Instituto Interamericano de Turismo (enclosed with the report).

They are:

- Llano Grande: 4 km NE of Copan Ruinas
- Rio Amarillo: along the CA11 road, 17 km E of Copan Ruinas
- La Entrada: near the road leading to San Pedro Sula, 70 km from Copan Ruinas.

### 2.1.2 Master plans

Today, the existing airport of La Estanzuela includes:

- A runway 868 by 25 m, oriented 03/21 (NNE/SSW), constructed with selected ground material without any associated strip.
- An Apron 50 by 100 m, adjacent to the western edge of the runway with the same surface.
- A drainage network for rainwater being currently constructed.
- A road access of poor quality.
- An overall surface of approximately 30 ha.
- There are no other installations.

The master plan envisaged for the other sites is based upon:

- A coated runway 1500 by 25 m, with an associated strip 150 m wide, the length of which will allow a safety distance of 50 m at each end of the runway. The general orientation should be NE/SW according to the prevailing winds. The basic plane would have 50 seats (ATR 42 for instance).
- A taxiway 15 m wide, with 2 lateral shoulders 5 m wide between the runway and the apron.
- An apron of 8500 m<sup>2</sup> allowing the parking of at least 3 basic planes and several smaller planes.
- A terminal building with an area of 1300 m<sup>2</sup>, including police, security and immigration and customs controls.
- Visual aids: day marking, low intensity lightning and PAPI (slope indicators for pilots at landing).
- A meteorological station.
- A control tower.
- An emergency power plant of 200 KW approximately.
- Garage and associated workshop.
- A fire brigade.
- Networks for rainwater drainage with fuel separator.

- Networks for waste waters.
- Networks for drinking waters
- Networks for electricity supply.
- Network for telephone and telecommand.
- A general fence
- A road access

The overall area of such airport would cover a minimum of 128 ha to 145 ha maximum, depending on the ground configuration and topography (rivers, housing).

### ***2.1.3 Procedure***

Planes would reach the airport associated to Copan Ruinas under VFR conditions i.e. with good conditions of visibility. This is due to the vicinity of mountains that does not allow any safe procedures under IFR conditions (approaches with ILS or MLS). However, **La Entrada site**, seems to be able to be operated under IFR conditions.

### ***2.1.4 Aeronautical clearances***

According to the aforementioned APESA / BCEOM / Instituto Interamericano de Turismo report, each site has been examined considering the characteristics of three different hypothesis:

- Runway 1500 m long and classified by ICAO as 2B.
- Runway 1200 m long and classified by ICAO as 2B.
- Runway 1500 m long and classified by ICAO as 3B.

The results are as follows:

- For La Estanzuela site none of the three hypotheses give satisfactory results due to the number of obstacles.
- For Llano Grande, as for La Estanzuela site, none the three hypotheses give satisfactory results due to the presence of mountains.
- For the Rio Amarillo site, a 1500 m long runway, with ICAO classification 2B could be acceptable only with a curved path to the north thus considering landing facing south and take off facing north. The application of ICAO classification 3B requirements is not satisfactory due to the presence of obstacles inside the clearance areas.
- For La Entrada site, a 1500 m long runway could fully comply with requirements of ICAO classifications 2B and 3B.

### **2.1.5 Traffic forecasts**

From an overall tourism flow of 531,491 visitors in 2002 for Honduras it is assumed that the air traffic demand regarding Copan Ruinas and the archaeological site is:

- Today: 50,000 passengers
- Within 10 years: 100,000 passengers
- Within 20 years: 200,000 passengers

## **2.3 Environment of the site**

### **2.3.1 Meteorological conditions**

The predominant meteorological conditions for the site have been compiled from the meteorological station located at the archaeological site and from data provided by the station of Santa Rosa, approximately 32 km. away.

- Prevailing winds have a NE/SW direction, between 40 and 65°. Recorded intensities are below 2 knots. The maximum speed detected over the past 10 years has been 8.7 knots and the lowest has been 2.7.
- There are two clearly defined seasons: a dry season from November to April and a rainy season from May to October. Annual average rainfall is 1,000 mm.
- Daily temperatures have little variations, with an annual average of 18°C, with high ranges between 27.7 and 33 °C.
- There is no statistical information on visibility conditions but apparently there is a morning haze from November to the middle of January that persists until 9 am.

### **2.3.2 Human settlements**

The most important municipalities in the Department of Copan are Santa Rosa de Copan, Florida, Copan Ruinas, La Entrada and Santa Rita.

- The municipality of Copan has approximately 31,000 inhabitants. 19% are concentrated in the urban areas and 81% in the rural areas. 51% of the inhabitants are male and 49% are female; women migrate to urban centres for work while men stay for the agriculture.
- The town of Copan Ruinas has approximately 30,703 inhabitants, with an average annual growth of 4%. The town's statistics are as follows:
  - 60% of the population is under 30.
  - Although 65% is within the productive age range only 32% is involved in a productive activity.
  - Rate of malnutrition is 55.1%
  - Rate of illiteracy is 49.2%
  - Population without potable water is 16.3%

### ***2.3.3 Other archaeological sites***

The Archaeological Park of Copan and the adjacent Las Sepulturas are the best known of the archaeological remains in the valley. However, archaeological surveys and research have estimated that there are over 4,500 structures or mounds as well as large surface deposits located in the valley of Copan. Richness of archaeological remains is difficult to assess as long as investigations continue in the area. There are still numerous areas that have yet to be investigated. In general, prehispanic remains can be found in the area which extends from the Guatemalan border to the Valley of Sula, being the areas around Santa Rita, La Florida Valley, Rio Amarillo and Quimistan some of the richest ones in archaeological vestiges.

### ***2.3.4 Natural resources***

There are no systematic studies to date that have inventoried the fauna and flora species or documented their state of conservation at the area nor are any specific areas declared as Natural Protected Areas. The local office for Protected Areas in Honduras is actively promoting the creation of reserves considering the area is a critical part of the Mesoamerican Biological Corridor.

A large portion of the valley of Copan has a predominantly agricultural and cattle grazing use and have been impacted by human activities for many years. However, on the borders of the Rio Copan and in certain areas on the mountains foothills there are still forests that present a low impact from human activity, with diversified vegetation characteristic of highlands with dry weather. At the highest part of the mountains, transitional forests can still be found as well as their associated fauna, which includes ocelots, deer, mammals, reptiles and numerous bird species. There have been studies that illustrate the traditional use that still exists today for certain plant species and the significance of preserving the genetic bank for species endemic to the area.

### ***2.3.5 Other airports***

As aforementioned, the closest international airport to Copan is "Ramon Villeda Bermudez", in San Pedro Sula, approximately 3 hours away by road. There is also a private airstrip, Los Tablones, on the Guatemalan Republic that is operated by Richard Callaway.

### ***2.3.6 Road network***

The main access road is through the west Highway that converts to CA11 at the city of La Entrada. Another road comes from Guatemala, crossing the border at El Florido location. At the Department of Copan there are approximately 408 km of roads in different conditions. It is foreseen that the existing road network would be improved and increased through the implementation of plans for territorial development closely related to the improvement of tourism infrastructure and the presentation of additional archaeological sites and historic centres.

### ***2.3.7 Proximity to the Guatemalan border***

The border with Guatemala is located 9.5 km away. Border controls are casual and present no significant obstacles for visitors. It is also proposed that a card is developed to further facilitate transit of visitors throughout the Maya area.

### ***2.3.8 Projections for the medium and long term***

Numerous investments from the private and public sectors are foreseen for the Department of Copan to increase economic growth and diminish poverty in the area. Investments are mainly geared towards sustainable tourism development using the archaeological park as the starting point for several destinations to increase the tourism offer in Honduras and thus strengthen local economies and social development.

#### *Revenues from Tourism (in US millions)*

<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
115.0	145.6	167.6	195.0	259.8	274.6	341.5

#### *Projections (in US millions)*

<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
403.1	475.6	571.3	662.3

#### *Employment*

	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Direct	17,099	17,005	21,098	22,060	26,255	30,449	34,207
Indirect	26,930	28,570	30,515	32,228	34,858	39,765	43,006
Total	44,029	47,575	51,613	54,228	61,113	70,214	77,213

#### *Projections*

	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Direct	38,429	43,172	48,500	54,486
Indirect	46,511	50,301	54,401	58,834
Total	84,940	93,473	102,901	113,320

### **3. COEXISTENCE OF THE ARCHAEOLOGICAL SITE OF COPAN AND ITS AIRPORT**

#### **3.1 Stakeholders positions**

##### ***3.1.1 Archaeological site***

The Ministry of Culture, Arts and Sports designated a Technical Archaeological Commission to evaluate the proposed site for the airstrip at La Estanzuela. In their report they indicated that there were no major archaeological obstacles (in their criteria, remains have been impacted already both by natural causes and by agricultural activities) to undertake infrastructure works and approve the project considering that the location corresponds to Zone III of the management plan (where infrastructure can be built and rescue archaeology is undertaken should remains be found). However, personnel from IHAH has also produced three evaluations at the site and place a different level of significance on the existing archaeological remains which could be indirectly affected by operating the airstrip. Their objection to the airstrip at La Estanzuela also stems from considering that the character of Copan could be compromised and, most importantly, the fact that in case of an emergency the only clear area in the vicinity for aircraft to land would be the archaeological site.

##### ***3.1.2 Civil aviation***

The Civil Aviation Entity in Honduras has undertaken several evaluations at La Estanzuela site. They have recommended specific aircraft to land there and the limitations for aircraft operation particularly in regards to safety because of the existing aeronautical limitations and conditions. They have also designed an approach and takeoff route so that no airplanes would fly directly over the site if they were to use the airstrip. Their reports include also the requirements for the airstrip such as the beacon, meteorological station, infrastructure networks (water, electricity, etc.), wind cones, and controllers, amongst others. In spite of all the limitations and restrictions, it is considered that the airstrip at La Estanzuela could be operational once requirements were complied with. However, they do indicate in their reports that in case of an emergency, the only clear space where aircraft could land would be at the Main Plaza in the Archaeological site of Copan.

##### ***3.1.3 Natural environment***

Representatives from the Ministry of the Environment had no clear position on the airstrip at La Estanzuela given that they were not aware of its existence. They do consider however that any major infrastructure works at Copan would produce a significant impact on resources that are yet to be inventoried and evaluated. Potential plans to designate natural reserves could be compromised if no comprehensive environmental assessment studies are carried out prior to these works.

### **3.1.4 Tourism**

The Ministry of Tourism has evidently a vested interest in the airstrip at La Estanzuela and the potential airport at Rio Amarillo. In their view, these infrastructure works are critical for tourism projections and economic benefits to the region. The increase in revenues from tourism, and subsequent economic development for the Copan Department, is also a priority on the national level as indicated in their reports. The tourism entity has also played an important role with the private sector, leading and promoting their investment in specific projects. La Estanzuela is an example of such initiative, where three private landowners collaborated in building the airstrip, at an approximate cost of US\$ 200,000.00

## **3.2 Constraints generated by the airport over the environment**

There are three main issues to be considered in terms of environmental impact by an airport.

### **3.2.1 Noise**

Noise has become a factor with the operation of aircraft powered by turbines. The level of impact is directly related to the power of engines and the number of aircraft movements. In the present case, the reference aircraft is an ATR42 turbo propelled equipped with low powered turbines. The average daily movements would be between 2 and 4.

Nevertheless, and in spite of the engines and traffic, there is still sensible impact by noise to the populations and protected areas with fauna and flora over flown at low altitudes (less than 1000 ft).

### **3.2.2 Air blowouts**

This becomes a constraint for the over flights at very low altitude (less than 300 ft) by aircrafts with large wingspans and heavy weight (such as jumbo jets). It is also the case for areas located under the runway axis and near the thresholds.

### **3.2.3 Air pollution**

The components generated by fuel oil and kerosene in the atmosphere are generated by various sources:

- Road transport:
  - Carbon monoxide (CO)
  - Nitrogen dioxide (NO, NO<sub>2</sub>, NO<sub>x</sub>)
  - Ozone (O<sub>3</sub>) coming from the photochemical transformation of nitrogen oxide with high insulation.
  - Suspended particles
  - Fuel or kerosene not burnt.
- Power plants for Sulphur dioxide (SO<sub>2</sub>)
- Aircraft when they are running slow on the runway or taxiway.

Such kinds of pollution are sensible near great commercial airports. They cannot be detected near small airports with light aircrafts.

### 3.3 Objective risks

The following are some of the objective risks that are considered both for the operation or building of an airport.

- Pollution: needs to be monitored to provide precise data.
- Noise: sensible impact to local populations and visitors to the area.
- Topography of the locations: they are statistically dangerous limitations because of the mountainous surroundings.
- Setting of the airstrip and landing and takeoff conditions: visual appreciation, wind, visibility, changing temperature and humidity conditions as well as potential flooding of sites.
- Proximity and location of unexplored archaeological remains.
- Proximity and location of natural resources and fauna with limited human impact.
- Proximity of communities and social use of the land.

## 4. CONCLUSIONS AND RECOMMENDATIONS

- Even if there is no airport built in the future, a restricted flying zone needs to be established over the area of the Archaeological Park of Copan.
- Low altitude flights need to be forbidden also over this area. If the situation should occur, park personnel should note the number of the aircraft so that penalties are imposed.

### LA ESTANZUELA

- The minimum requirements and standards stated by ICAO for an airport class 2B consider that the runway must be associated to a coaxial slip of 150 m width. Parking for planes can be built at the edge of this slip. Installations have to comply with lateral clearances starting from the ground at the edge of the strip with a slope of 1/7 (14.7%). It also requires that at least day markings be built as well as other equipment, such as a wind cone, be installed. If these conditions are not met, then the airport **does not comply with ICAO standards and cannot operate commercial aircraft.**
- Given the existing topographic and terrain conditions at La Estanzuela, the presence of the Copan River, the existence of archaeological remains, the presence of a road and human settlements **there is no possibility that the site can comply with ICAO requirements.**
- The possibility of considering the site as a STOLport (short takeoff and landing) leads to payload limitations and pilot selections. **Such restrictions cannot open the site to regular air traffic.**



**The site could be considered for vertical takeoff only (helicopters). However, as with STOL aircraft, they produce considerable noise pollution, which would affect the character of the site and the adjacent town.**

- Furthermore, the statistical possibilities of an accident occurring are very high at the site because of its conditions. If no accident has occurred to date it has been largely related to the good weather conditions and the limited amount of aircrafts that have landed there.
- If the pilot of the aircraft should miss the landing strip there will be significant problems in getting back into the proposed approach route.
- The site cannot receive navigational aid and with poor visibility conditions, the chance of an accident increases.
- If a beacon NDB (non directional beacon) were installed it would still only signal where the strip is located, within a 5 km radius, but would not provide any information on the topography.
- Risks would be increased for inexperienced pilots attempting to land there.
- It is concluded that **the owners, under their sole responsibility, can only operate the Estanzuela site. Civil Aviation should not be responsible for the site because it will not conform to ICAO safety standards and requirements.**
- **Planes cannot be larger than 4 to 6 passengers. LET type aircraft suggested could statistically have an accident if it were to land at the strip.**
- **Furthermore, it is strongly suggested that the safety of potential passengers is considered first and foremost. Because the existing runway cannot be guaranteed it should not be actively promoted, for safety considerations, as a tourism option. The impact on visitor trends needs to be considered if an accident were to occur and the consequences on the promotion and visitation to the site.**
- The "temporary" character of the runway is a misleading notion considering that even if an alternate airport were to be built the owners would still promote the active use of their airstrip.
- The north end of the airstrip is located approximately 500 m away from the periphery of Copan Ruinas. This situation presents risks to the population in case of an accident and causes noise pollution during aircraft operation.

#### **RIO AMARILLO SITE**

- There are important issues that need to be addressed prior to considering building an airport at the site. These include the following:
- A systematic archaeological survey needs to be undertaken prior to any works at the site. Existing archaeological surveys have only been undertaken for de 3.5km and 300 m width area that the landing strip would encompass.

- Because of the location, the runway could not be extended beyond 1500 m so this would limit the potential growth and use of the airport.
- The problems related to the topography and the obstacles they pose would still be there, thus increasing the statistical probabilities of accidents.
- The feasibility of tearing down the natural elevations needs to be thoroughly assessed, particularly because of the fact that there are unexplored archaeological remains nearby.
- The presence of significant archaeological remains would also pose a constraint on the building of infrastructure and networks to operate an airport.
- The closeness of the road CA11 also needs to be considered, as well as the presence of human settlements and activities nearby the proposed location.
- The end of the valley is essentially a cattle area with no agricultural activity. The potential location of the airstrip is currently in a light depression of terrain that presently holds water, though it is not flooded. The presence of water in this area will require the construction of embankments.
- **It is recommended that the project to investigate and present the archaeological remains at Rio Amarillo, as well as building a visitor centre, is carried out so that other significant areas related to Copan can be visited.**

#### LA ENTRADA SITE

- **La Entrada site should be considered as a potential site for an airport. It should not be excluded because of the distance to the Archaeological Site and the town.**
- From the studies produced to date, it is concluded that La Entrada provides the most secure site for a commercial airport according to Annex 14 of ICAO. It also has conditions for future expansion and has no archaeological remains.
- Its location at a critical cross point would have the potential of servicing extended areas, such as Santa Barbara and Santa Rosa de Copan, thus increasing the projected revenue from an airport. Given that it would serve larger purposes than tourism alone, this means an economical weight for the region and a stronger justification for large investments in the region.
- The distance (70 km) to Copan is not so important if it is considered that it takes 1-2 hours by road to visit other World Heritage sites in the region, such as Tikal, Joya de Cerén and Chichén Itzá, and it is a regular travelling distance for visitors in the Mundo Maya area from main points of entry.
- The security issues mentioned for the site at La Entrada (robberies) should be addressed not only because of the general safety for the local populations but also in any case because tourists choose to travel by road even if there is an airport.
- Existing archaeological remains have been identified as types I and II, which would imply only archaeological rescues prior to the construction of infrastructure.

## **OTHER ISSUES AT THE ARCHAEOLOGICAL PARK OF COPAN**

- Road access by trucks and heavy traffic should be restricted at the CA 11 road. This problem has just recently arisen since the road that connects Honduras to Guatemala through El Florido location has been paved. The constant traffic causes significant noise and particle pollution as well as vibrations that could potentially impact the site because of its location. Similarly, since it was not designed for heavy traffic use it has started to present damage that poses a danger to visitors to Copan. It should be mentioned also that constant heavy traffic affects the character of the archaeological site and its surroundings and poses safety issues for visitors who walk from the site to the town. Road communications for commercial traffic between Honduras and Guatemala could continue using the road at Santa Rosa de Copan and would be significantly optimised once the coastal highway that connects to Puerto Cortes is finished.
- The roof of the new sculpture museum that houses significant stone carving reliefs, altars and stelae from Copan needs to be evaluated so that a proposal is made to address its precarious state of conservation and structural stability. Several deformations can currently be evidenced on the metal beams, in spite of efforts to brace it, and vertical cracks are located on the walls related to tensions produced by the metal roof structure. Given the importance of materials housed at the museum it is critical that actions are taken to prevent potential damage related to the metal roof.
- Existing tunnels exposed by archaeological research need to be comprehensively evaluated so that a decision is made in terms of backfilling some of them. Visitation to some of the tunnels opened for the public needs to be under constant monitoring and limited to 3-4 persons at the time by the site's custodians so that damage to exposed original materials is prevented.
- Additional infrastructure works for expansion of the gas station located at the perimeter of the site needs to be monitored and halted if archaeological remains are exposed.
- Carrying capacity for the site needs to be evaluated. ICOMOS Honduras has already reported that on a given day during the high season up to 700 students visit the site (as part of the school curriculum) in addition to tourists. This factor could prove detrimental to the site if capacity is exceeded or if there are no comprehensive measures to attend the visitation demands.

## 5. ANNEXES

### I WORKING PROGRAMME FOR THE MISSION

#### Day 1 (19/02/03)

##### Meetings at the Ministry of Culture:

- Definition of mission objectives and information needs by mission members.
- Discussion of government priorities for development and role of tourism.
- Discussion of institutional policies towards the construction of infrastructure at Copan.
- Discussion of plans and projections for the area.

##### *Attendees:*

- Mireya Batres, Minister of Culture, Arts and Sports
- Mario Hernan Mejia , Director Technical Unit, Ministry of Culture, Arts and Sports

##### Meeting with Civil Aviation

- Evaluation by Civil Aviation in Honduras and conditions of airstrip at La Estanzuela: security, landing and takeoff conditions, aeronautical clearances, and proposals for type of aircraft to land at the location.
- Evaluation of needs for operating the airstrip.
- Discussion on potential airlines and routes to operate in the area.

##### *Attendees:*

- César Augusto Vásquez, General Director Civil Aviation
- Mireya Batres, Minister of Culture, Arts and Sports
- Mario Hernan Mejia , Director Technical Unit, Ministry of Culture, Arts and Sports

##### Meeting with Ministry of Environment Representatives

- Discussion of conditions of natural resources at the Copan area.
- Review of research, conservation and restoration activities at the Valley of Copan.
- Evaluation of needs for better management of natural resources: inventories, community training for sustainable use of resources, environmental impact studies for proposed tourism development, inter institutional collaboration.

##### *Attendees:*

- Sixto Aguilar, Director of Biodiversity, Ministry of Environment
- Javier Zepeda, Ministry of Environment
- Ericka Villagran, Ministry of Environment

- Mario Hernan Mejia , Director Technical Unit, Ministry of Culture, Arts and Sports

### **Meeting with Tourism Representatives**

- Discussion on national policies and role of tourism for social and economical development.
- Evaluation of existing projects for tourism infrastructure.
- Discussion on expectations and interests for development in the area and diversification of tourism offers; management plans for the area.
- Discussion of participatory processes for the definition of projects within the framework of Mundo Maya initiative.
- Potential and existing funding sources for projects: Interamerican Development Bank and World Bank.

#### *Attendees:*

- Eva Carolina Gómez, Subsecretary of the Ministry of Tourism
- Dennis Javier Chacon, General Secretary, Honduran Institute of Tourism
- Mireya Batres, Minister of Culture, Arts and Sports
- Mario Hernan Mejia , Director Technical Unit, Ministry of Culture, Arts and Sports

### **Day 2 (20/02/03)**

Travel from Tegucigalpa to Copan Ruinas

PM

Meeting with Roberto Galiano, Head of Cabinet, Ministry of Tourism

- Discussion of existing projects for tourism infrastructure.
- Definition of working activities at site.

### **Day 3 (21/ 02/03)**

#### **AM Site evaluation: La Estanzuela and Rio Amarillo**

- Evaluation of airstrip at La Estanzuela: conditions, existence of archaeological remains, aeronautical clearances, current use and management by owners.
- Evaluation of location of potential airport at Rio Amarillo: conditions, aeronautical clearances, and existence of archaeological remains, current land use and management by owners.

#### *Attendees:*

- Sr. Edgardo Cueva, landowner La Estanzuela Site
- Roberto Galiano, Head of Cabinet, Ministry of Tourism
- Ricardo Agurcia, Archaeologist, Director Asociación Copan
- Oscar Cruz, Regional Representative, IHAH

- Mario Hernan Mejia , Director Technical Unit, Ministry of Culture, Arts and Sports

### **PM Visit to the Archaeological Site of Copan**

- Discussion on conservation issues at the site: stone reliefs, shelters, reburial of stucco floors, etc.
- Discussion on archaeological research tunnels: conditions and review of proposals for visitation.

#### *Attendees:*

- Roberto Galiano, Head of Cabinet, Ministry of Tourism
- Oscar Cruz, Regional Representative, IHAH
- Mario Hernan Mejia , Director Technical Unit, Ministry of Culture, Arts and Sports

### **Day 4 (22/ 02/03)**

#### **Visit to the Museum of the Sculpture**

#### **Tunnels at the Archaeological Site**

- Evaluation of conditions at the museum (roof).
- Visit to additional tunnels for evaluation of state of conservation of stucco masks and presence of earthen architecture remains.

#### *Attendees:*

- Roberto Galiano, Head of Cabinet, Ministry of Tourism
- Oscar Cruz, Regional Representative, IHAH
- Mario Hernan Mejia , Director Technical Unit, Ministry of Culture, Arts and Sports

Travel from Copan Ruinas to Tegucigalpa

### **Day 5 (23/ 02/03)**

Mission report: discussion on conclusions and recommendations by team members.

### **Day 6 (24/ 02/03)**

#### **Meetings at the Ministry of Culture:**

- Preliminary discussion on findings and request for additional information.

#### *Attendees:*

- Mireya Batres, Minister of Culture, Arts and Sports
- Mario Hernan Mejia , Director Technical Unit, Ministry of Culture, Arts and Sports

**Lunch meeting with ICOMOS Honduras president (only Carolina Castellanos, P. Dedieu had already left for travel back)**

- Discussion on concerns for Copan: infrastructure projects, carrying capacity, conservation conditions, and museum conditions.
- Discussion of role of ICOMOS Honduras and need for closer collaboration with IHAH and Ministry of Culture.

*Attendees:*

- Gloria Lara, President ICOMOS Honduras
- Mario Hernan Mejia , Director Technical Unit, Ministry of Culture, Arts and Sports
- Carmen Julia Fajardo, Director Research, IHAH

## **II MISSION TEAM**

UNESCO        Pierre Dedieu  
ICOMOS        Carolina Castellanos

## **III LIST OF REVISED DOCUMENTATION**

Apesa, BCEOM (Société Française d´ Ingénierie), Instituto Interamericano de Turismo, *Primer Taller de Consulta Programa de desarrollo sostenible BID – Mundo Maya*, unpublished report, Guatemala, January 2002

Apesa, BCEOM (Société Française d´ Ingénierie), Instituto Interamericano de Turismo, *Anexo 4. Componente de Infraestructura Turística, Subcomponente aeropuerto, Programa de desarrollo sostenible BID – Mundo Maya*, unpublished report, Guatemala, January 2002

Fash William L. and Ricardo Agurcia Fasquelle, *History Carved in stone. A guide to the archaeological park of the ruins of Copan*. Asociacion Copan. Instituto Hondureño de Antropología e Historia, 3 ed, Copan Ruinas, 1998

Instituto Hondureño de Turismo, *Copan en cifras*, unpublished report, January 2003

*Propuesta estratégica para la operación de una pista aérea en el departamento de Copan*, Secretaria de Obras Publicas, Transporte y Vivienda, Dirección General de Aeronáutica Civil, Comayaguela, 2002

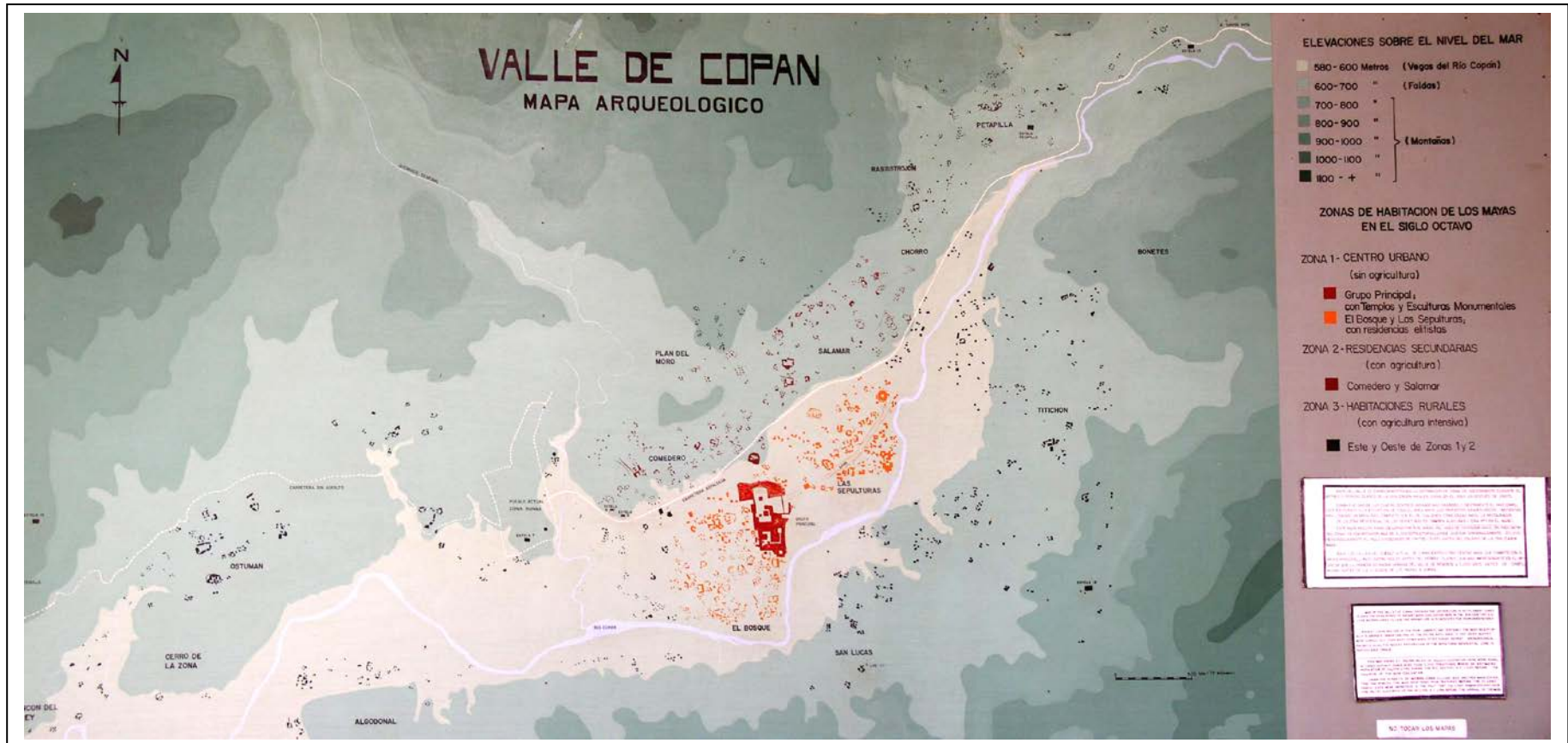
IHAH, *Mapa de afectaciones en Copan*, unpublished report, Tegucigalpa, 2003

Wildlife Conservation Society, *Proyecto de Actualización del Plan de Manejo del Monumento Nacional Ruinas de Copan*, *Borrador avanzado*, unpublished document, April 2001

IHAH, *¿Que es PICPAC?*, unpublished paper, II Reunión de Expertos en Conservación para el Parque Arqueológica de Copan, 2001



## IV DIGITAL IMAGES



MAP FROM THE VISITORS CENTRE SHOWING ARCHAEOLOGICAL SITES IN THE COPAN VALLEY



**LA ESTANZUELA. NORTHEAST VIEW OF THE AIRSTRIP. CLEARED LAND ON THE LEFT IS FOR INFRASTRUCTURE CONSTRUCTION**



**LA ESTANZUELA. NORTH VIEW OF EXISTING AIRSTRIP. NOTICE TOPOGRAPHY AND NATURAL OBSTACLES FOR AIRCRAFT.**





**LA ESTANZUELA. SOUTH VIEW OF THE AIRSTRIP. CLEARED LAND ON THE RIGHT IS WHERE AIRCRAFT IS CURRENTLY BEING PARKED.**



**ACCESS ROAD TO AIRSTRIP AND NEARBY HUMAN SETTLEMENTS**



**WEST VIEW OF LA ESTANZUELA SITE. EL FLORIDO ROAD CAN BE SEEN IN THE BACKGROUND.**



**CURRENT WORKS AT LA ESTANZUELA FOR DRAINAGE SYSTEM.**



**LA ESTANZUELA. AREA FOR AIRCRAFT PARKING AND VISITOR RECEPTION.**





**RIO AMARILLO. POTENTIAL LOCATION OF AIRSTRIP.**



**RIO AMARILLO. APPROACH ROUTE FOR LANDING.**



**RIO AMARILLO. PROPOSED LOCATION FOR AIRSTRIP AND AIRPORT  
INFRASTRUCTURE**



**RIO AMARILLO. EXISTING ARCHAEOLOGICAL MOUNDS (ON THE LEFT)  
AND CURRENT HUMAN SETTLEMENTS.**



**RIO AMARILLO. GENERAL OVERVIEW OF CURRENT CONDITIONS AT LOCATION.**



**RIO AMARILLO. GENERAL OVERVIEW OF CURRENT CONDITIONS AT LOCATION.**





**RIO AMARILLO. EXISTING LIMITATIONS FOR AIRSTRIP AND AIRCRAFT OPERATION.**



**RIO AMARILLO. BOUNDARIES FOR THE PROPOSED AIRPORT.**



**ARCHAEOLOGICAL SITE OF COPAN. GENERAL OVERVIEW OF PRINCIPAL GROUP.**



**COPAN RUINAS TOWN. GENERAL OVERVIEW OF MAIN PLAZA.**





**SCULPTURE MUSEUM. ROOF CONDITIONS.**



**SCULPTURE MUSEUM. ROOF CONDITIONS.**



**SCULPTURE MUSEUM. ROOF CONDITIONS.**