

Summary.

From the study of the available information, in a first approximation, we can point out the following.

It is essential to establish a formal relationship with legal scope between the **Vecinos de Akumal Norte AC Association** and **the Municipal Government**.

The purpose is to ensure that the Association is recognized as a valid interlocutor of Akumal Norte before the authorities.

The Association will have to obtain the necessary consensus with the owners so that its agreements have the backing that, in due course, the authority will demand.

In this organized exercise of analysis, it is clear that there are more issues to be solved internally than those to be addressed with the Municipality, as shown in the table.

Key Actor: The Municipal Government					
Topic	Priority	Diagnosis	Agreement Expectation		Comments
			Municipality	Owners	
Catastro updating	Highest	<ul style="list-style-type: none"> An integrated catastro blueprint does not exist. The west limit is not defined In the original land subdivision, plots do not exist in the mangrove side. Stage I of the fraccionamiento is not registered. Currently, we do not have the actual number of plots. 	Agreement to work collaboratively for the catastro regularization in a maximum of 6 months	Go to catastro bringing their surveys to be integrated to the general map.	This is the most important task with the Municipality. It is likely that irregularities will appear that will have to be clarified by the owners. The work is urgent.
Public security	High	<p>There is a National Guard presence, patrolling by the municipal police and Army patrols.</p> <p>Their presence is inhibitory but does not obey a joint work plan and program to ensure the best results in the long term.</p>	To follow and support agreements reached with federal law enforcement agencies.	Training in crime prevention mechanisms and in ways to obtain assistance from law enforcement agencies.	Public security is a highly coordinated work in which the passive subjects (neighbors, tourists, workers) must adopt preventive behaviors to inhibit criminal acts.
Urban Development	Medium	Akumal Norte will continue to grow, because there is an important dynamic for the real estate and tourism sector and consequently there will be new constructions and higher loads for roads and services.	To conduct a joint study of growth scenarios and the infrastructure and service needs that will be generated.	To provide any information they have on the subject.	This is a sensitive issue that can lead to authoritarian intervention and sanctions.

Key Actor: Owners of Akumal Norte.

Topic	Priority	Diagnosis	Agreement Expectation		Comments
			Municipality	Owners	
Sanitary sewer system.	Highest	<p>There is a very noticeable growth, which will surely continue, but there is no sewer system or wastewater treatment.</p> <p>This has been a priority for at least 17 years.</p> <p>There is a technical project, but the economic and financial consensus has not been reached.</p>	To act as a manager before the responsible authorities.	To propose a model agreement that is convenient for the parties.	<p>The project costs approx. 46 million pesos but includes the entire coastal area of Akumal.</p> <p>In this context, it is feasible to find the cost per equivalent hotel room.</p>
Electricity and public lighting	Medium	<ul style="list-style-type: none"> The electrical network is exposed to short circuits due to lack of maintenance. The rubbing of the branches against the conductors produces voltage fluctuations that damage equipment such as air conditioners. Businesses are paying the Public Lighting Right (DAP for its acronym in Spanish), which has already been declared unconstitutional and must be reclaimed. It is urgent to redesign the public lighting system to make it efficient and adequate from the urban viewpoint. 	To ensure adequate management because these are resources budgeted by the Municipality. Perhaps to avoid confrontation and change the public lighting system connected to the public network	To approve an integral exterior lighting project that includes exterior lighting of buildings, street lighting and ambient lighting.	<p>The amount paid for DAP will undoubtedly allow for a much more efficient and decorative lighting project for the entire development.</p>
Urban Image	Medium	<p>As a complement to the street lighting, it is necessary to work on an integral urban image project focused on the roadway and the vegetation strip that borders the mangrove swamp. Currently it presents an irregular image and in some cases of abandonment.</p>	Knowledge of the project to avoid risks of environmental damage.	Support with resources for the project and adopt conservation and correspondent maintenance measures	<p>Actually, the public space includes only the road and its boundaries with the walls of buildings and vegetation on the mangrove side. Currently there is a predominance of weeds and abandonment.</p>

Key Actor: Owners of Akumal Norte.

Topic	Priority	Diagnosis	Agreement Expectation		Comments
			Municipality	Owners	
Solid and Hazardous Waste	Medium	There is no comprehensive plan for the management and final disposal of solid and hazardous waste. Most of the properties separate the garbage, but all of it goes to the municipal truck and finally to an open dump.	To follow their organic waste collection program	Design a comprehensive plan for the management and final disposal of solid and hazardous waste, in such a way as to ensure the correct recycling and/or confinement of waste.	More than a legal urgency, it is a matter of environmental responsibility that serves to help in environmental protection, but also to obtain international certificates of environmental responsibility.

Current condition of the Development known as Akumal Norte, in relation to its process of consolidation

This exercise addresses:

- The legal component of the beginning of the development and its evolution over time.
- Catastro and registry problems to provide legal certainty.
- The detailed problems of public services, functionality and relations with the authorities.
- Feasible actions are identified and work mechanisms are recommended that can be useful to find the best solutions.

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I.- General Information: Asociación de vecinos de Akumal AC

The **Association Vecinos de Akumal Norte AC** is a Civil Society Organization constituted in accordance with Mexican law and whose Social Purpose, among others, is

To promote coordination actions among neighbors, property owners and tourist-residential developments, permanent residents and usufructuaries of commercial businesses that operate in the geography of North Akumal, with the purpose of:

- a. To establish rules of conduct and participation to maintain a harmonious coexistence.***
- b. To conduct an orderly interaction with the authorities of the three orders of government and especially with the City Hall of Tulum, Q. Roo, to pay attention in a timely manner to the adequate provision of public services and in general the matters associated with sustainable urban development.***
- c. To propose actions for urban improvement and environmental protection of its urban polygon, as well as to intervene in the face of events that could damage the proper development of the human settlement.***

Since its creation, in **(Date of creation, legal instrument and bylaws)** it has been able to consolidate its position as an interlocutor before government authorities, having signed several agreements for the benefit of development, such as:

- **The regularization of the drinking water supply and individualized contracting before CAPA in 2012.**
- **The installation of the "Barrier Gate" with security cameras.**
- **Garbage collection through pre-established schedules **(when was the agreement?)**.**
- **The installation of a police booth at _____ and permanent patrols by the National Guard **(or whatever has been agreed upon)**.**
- **Others**

In the last ten years, tourist activity in the region has increased significantly and Akumal Norte, as a small but attractive coastal development, has experienced a process of saturation of visitors on its only roadway and consequently, increased generation of solid and liquid waste and other aspects associated with the increase in human activity.

The neighbors of Akumal Norte express well-founded concerns about public security, road safety, environmental impact, urban image and, in general, the risk of degradation of the urban and environmental quality of the development.

For this reason, they have initiated a comprehensive evaluation of the current situation and the short- and medium-term prospects of the development.

It will also take all the necessary steps to establish a joint working group with the municipal authorities to:

- 1. To identify and resolve immediately, the issues of the daily functionality of the development.***
- 2. To propose the necessary urban planning actions to complement the infrastructure of services.***
- 3. To design the objective image of Akumal Norte under the current Sustainable Urban Territorial Development instruments.***

4. To legally establish, the mechanisms of coordination between the Neighbors of Akumal Norte AC and the Municipal Authority, to assure the social and environmental sustainability of the development denominated Akumal Norte, in the Municipality of Tulum.

This document contains a report on the current situation and a proposal of agreements to be submitted to the Municipal Authorities.

II.- Background: Origin and Evolution of Akumal Norte.

The polygon known as "Akumal Norte" is part of a **Residential, Tourist and Hotel Development**, authorized to **Promotora Akumal Caribe SA**, by means of a permit published in the Official Gazette of the State Government on January 20, 1975, 47 years ago.

The content of the permit clearly indicates that:

1. Promotora Akumal Caribe SA, would carry out the subdivision of land of its property of approximately 54.36 hectares, in front of the coasts of Quintana Roo, between the Yal Kú Cove and the Aventuras property.
2. It specifies that the land is known as "Akumal", "Akumal North" and "Akumal South" (First Consideration of the Permit).
3. That the Fraccionamiento, would be developed in 9 stages and that for each stage the plans and specifications were approved (Note: In diverse rescued plans, it is appreciated that the stages were named by consecutive letters of the alphabet from A to I).
4. That the internal works of supply of public services such as lighting, drinking water intakes and pavements, are the responsibility of the developer (Clause III of the permit).
5. That once the Federation (at that time) had completed the headworks for the supply of drinking water and electric power, the developer would deliver to the State Government (now to the Municipality) the works specified in the approved plans in a staggered process. Two years for the first stage and one additional year for each of the subsequent stages up to stage nine (letter I) (Clause V, paragraphs a and b of the Permit).
6. That Promotora Akumal Caribe SA granted in donation to the state government, a total of **117,513.08 m²** of land for streets, accesses, squares, market, school, day care center and government office (Clause VI of the Permit).

III.- Consequences: Catastro-Registry Uncertainty of the Development

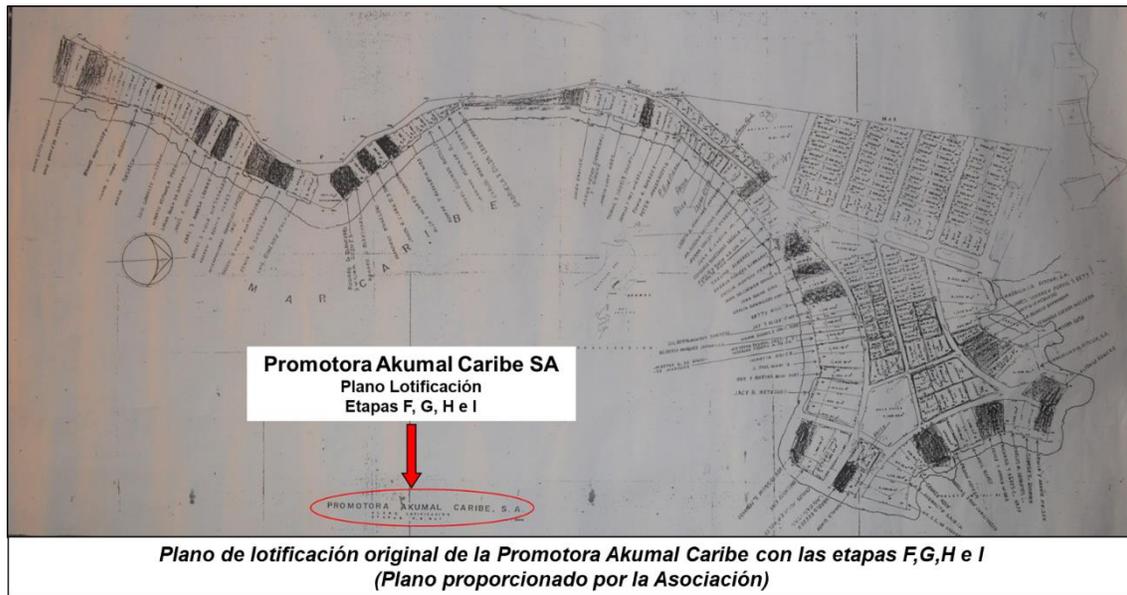
It must be considered that the state of Quintana Roo was created on October 8, 1974 and that the permit was granted in January 1975 (3 months later) the state was immersed in the legal processes to promulgate its Political Constitution (January 12, 1975) and to call elections to elect the first Constitutional Governor of the State, who took office on April 5, 1975.

Until the end of the 90's of the last century, the coastal area of Tulum was an "unpopulated" region where the beaches of Chemuyil, Akumal and the cove of Xel Ha existed, and the beginning of a mega nautical development called Puerto Aventuras was added.

Contrary to the development of Cancun and at that time, when Playa del Carmen began to grow with Playa Car, in this area, the presence of tourism was of specialization (diving) and in North Akumal of residents who bought their second home properties from the Promotora.

In any case, currently, in addition to the parking lots, there are constructions on the west side that do not appear to be included in the original plan, since there is no indication of any lot size on the west side.

In any scenario, the most relevant action must be the accurate registration of the total polygon, as well as updating and registering the legally existing lotification.



IV.- Current conditions of Infrastructure and services.

Main road.

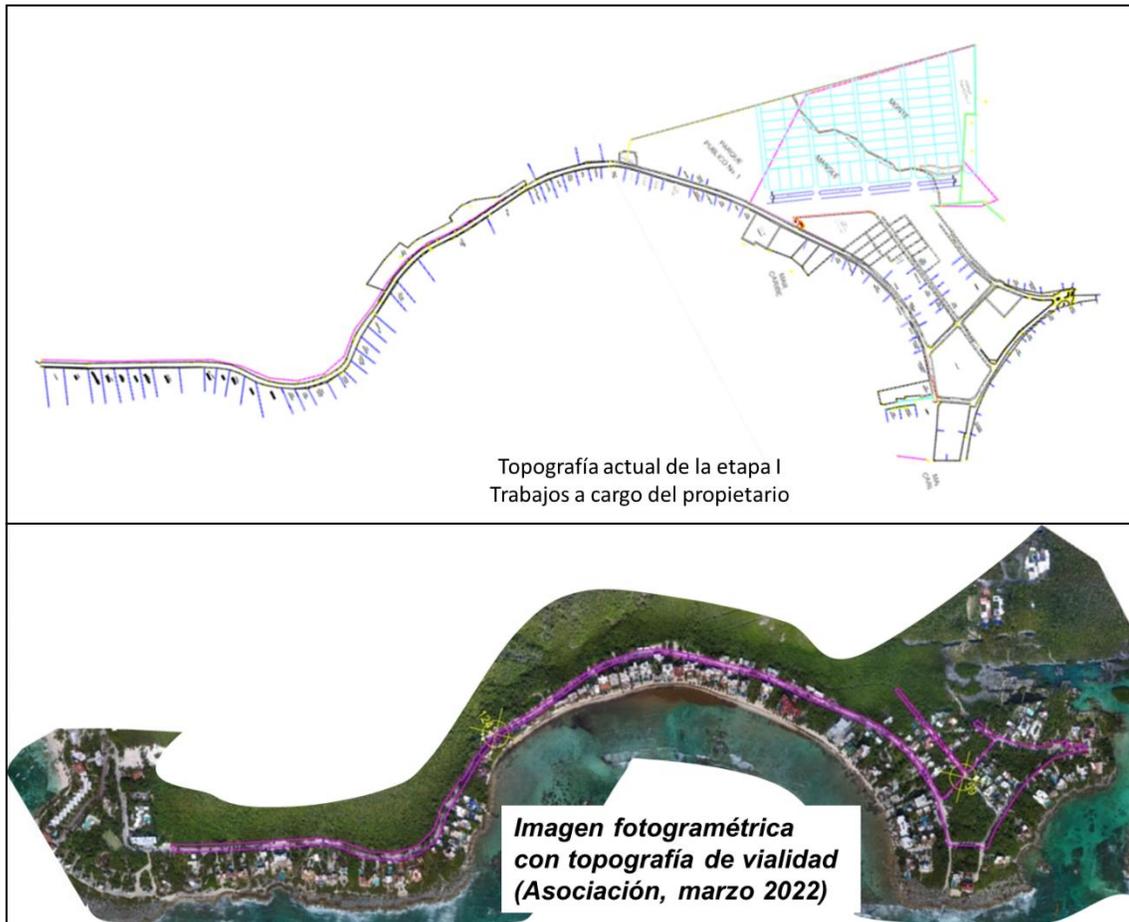
The original plans show (without technical or legal certainty) that a strip marks the western boundary of the properties in stages F and part of G and that the limit of the development is located on the border of this strip with the mangrove.

This strip also houses the main road and has space for a service berm (electricity, public lighting, drinking water, sanitary sewage, solid waste stations, among others).

The road connects to a wide boulevard, which divides stage H from stage I (currently undeveloped) and continues as the main road in stage H.

The Association commissioned a specialized topography firm to carry out a detailed survey of the road and the owner of stage I, conducted an exercise of integration of stage I to the already developed F, G and H, resulting in the updated version of the original project of **Promotora Akumal Caribe SA.**

Additionally, to have an actual substrate of reference to see in detail what exists on the ground, in the month of March 2022, high precision photogrammetric images were ordered, using a stabilized drone flight at 125 meters high. The points of the topography of the road conducted in 2021 by the Association were taken as a reference for scale correction.



The evidence shows that the road has different widths along its development; that there are no shoulders or sidewalks; and that it will be necessary to define some rules for traffic and rules to increase the safety of pedestrians and cyclists, such as improving the western walkway and perhaps building a bike lane.



Lado poniente, (Manglar): Andador angosto, discontinuo y con obstáculos.
Lado oriente (costa): Sin andador o con secciones inadecuadas.

The constructive design of the road with cobblestones ensures good drainage and there are no muddy areas. However, it is always advisable to review and, if necessary, improve the storm sewage system.

The boundary and adjoining certification work will allow to clearly establish the available strip of land and, if necessary, the options for using that land to improve mobility within the development, as well as to propose a more suitable urban image project.

Electric energy.

Electricity is supplied by the CFE.

The owners have an individualized contract and there is a good relationship with this Mexican state-owned company for Akumal's needs.

However, the cables are overhead and the poles are practically on the road.

Many of the poles are frankly leaning and the lines are invaded by tree branches in the right-of-way.

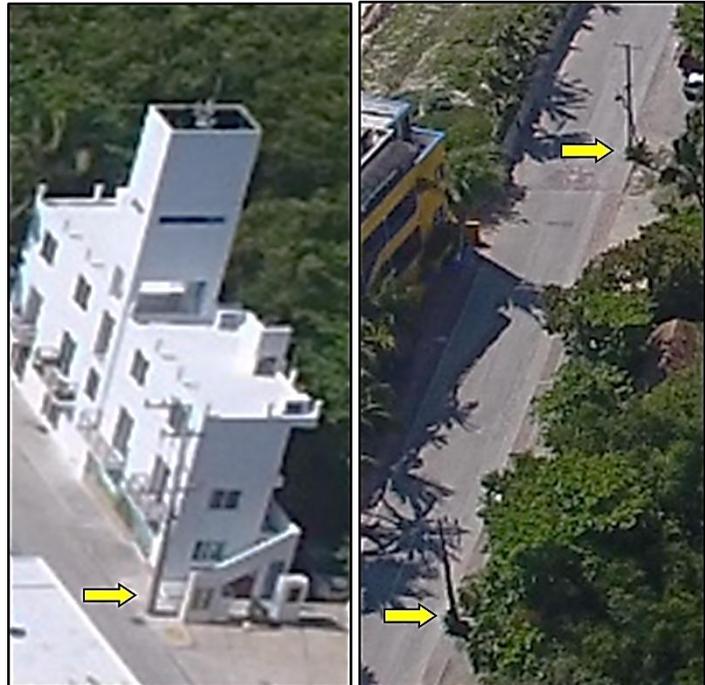
This situation carries a substantial risk of intermittent "grounding", especially on stormy weather days, and generating voltage variations that damage electrical equipment with electronic controls such as air conditioner motherboards.

In addition, as mobility has increased in North Akumal, the electrical network is exposed to the risk of road accidents and, evidently, also to the hurricanes that hit the region every year.

It will be necessary to re-evaluate the installations in terms of current regulations, especially for the control of voltage fluctuations due to wiring contact with tree branches.

This activity can be requested to the CFE, which provides maintenance to its installations.

On the other hand, it should be considered that for tourist developments, the construction of underground distribution networks is recommended.



Tendido eléctrico aéreo con postes expuestos a daños por accidentes y por fenómenos hidrometeorológicos.



El contacto de las ramas con los cables produce "bajones" de voltaje que dañan equipos electrónicos como los controles de aires acondicionados.



Postes inclinados

Public Lighting

Street lighting must be reconsidered in a comprehensive manner.

It is evident that a development such as Akumal Norte must have a network of exterior (public) lighting that, in addition to providing safety to those who travel at night on the road, must be complementary to the exterior lighting of the buildings and, furthermore, must contribute to the urban image of the development.

Akumal Norte currently has a series of solar LED streetlights, which show evident signs of deterioration, both in the poles and in the luminaires.

Although the solar technology "sends an ecological message" to visitors, the fact is that it is not evident as a positioning mechanism, because it is not perceived as part of an urban concept and its current state may be a sign of abandonment.

An additional issue is that all the tourist-hotel developments operating in the area are intensive users of electricity and consequently, their bills are high, mainly because of the air conditioning.

It is urgent to carry out a technical and economic evaluation on the convenience of using the CFE's own electrical supply network for public lighting, given that by agreement with the Municipalities, this instance (CFE) bills each user the concept of **Public Lighting Right** (DAP for its acronym in Spanish), equivalent to 5% of the energy consumption bill, which means an important amount of resources that currently do not generate any benefit to Akumal Norte.

This concept has already been declared unconstitutional by the Supreme Court of Justice of the Nation (Action of unconstitutionality 18/2018), so it is possible to promote a legal procedure to claim the refund of the amounts paid or, if necessary, **to install a public lighting network whose consumption is equivalent to the tax charges for the DAP and that includes the exterior lighting of the premises, public lighting and ambient lighting.**

Outdoor lighting technology ensures that, in principle, consumption will be lower than the amount paid for the DAP, but a technical study would bring clarity and dimension to the issue.



Tipo de luminarias y estado de corrosión que se observa en la mayoría de los postes. Es evidente que no cumple con las necesidades de imagen ecológica de Akumal Norte y tampoco con la función sustancial de la iluminación pública.

PUBLIC LIGHTING, SERVICE FEES. LOCAL LAWS OR CODES THAT ESTABLISH AS A REFERENCE FOR COLLECTION THE AMOUNT PAID FOR THE CONSUMPTION OF ELECTRIC ENERGY ARE UNCONSTITUTIONAL BECAUSE THEY INVADE THE SPHERE OF ATTRIBUTIONS OF THE FEDERATION.

In accordance with the provisions of Article 73, section XXIX, paragraph 5, subsection a), of the Constitution, it is the power of the Congress of the Union to establish taxes on the consumption of electricity; now, when local codes and laws provide that the fees for public lighting services are calculated based on the amount paid for electricity consumption, in reality a tax on such consumption is established and not a fee provided by local law. In effect, there must be a logical relationship between the object of a tax and its base, a principle that is broken in cases such as these, since there is no relationship between what is consumed in terms of electric energy and the amount to be paid for the public lighting service, and it must be concluded that actually it is a tax established by the local legislatures on the consumption of electric fluid, with which they invade the sphere of exclusive powers of the Federation and contravene the General Constitution of the Republic.

Drinking Water

In 2012, the Association maintained technical work with CAPA to regularize the drinking water supply system that depended on a concessioned operation.

In December of that year, the supply contracts were formalized and CAPA is responsible for the drinking water supply.

There is an adequate relationship with CAPA and in the event of non-payment, each individual user resolves its relations with the commercial area.

Wastewater treatment.

The Fraccionamiento Akumal does not have a sanitary sewer system or a wastewater treatment plant.

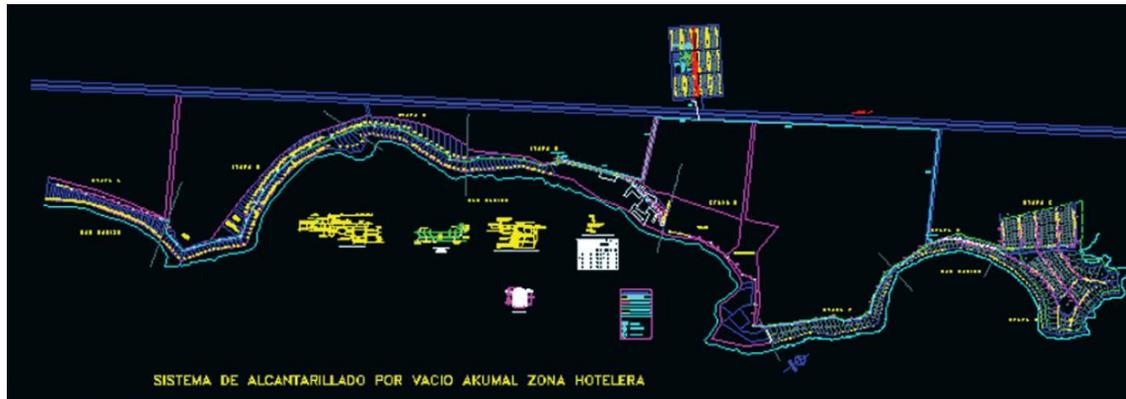
The executive projects for the construction of the sewer networks were carried out by CAPA since 2005.

For this project, CAPA chose the technology called "High Vacuum Drainage", which allows sewage to be evacuated by suction to a pumping tank and from there, it would be sent to the Akumal Pueblo WWTP, which required an investment to increase its capacity.

The amount of the investment in that year was approximately 25 million pesos (About 2.3 M USD at a parity of that year of 10.60 pesos/Dollar) Currently it would be about 46 million pesos (Current parity of 20.00 pesos/Dollar).

It will be important to contact CAPA to update the budget and establish a mechanism for the execution of the work. In general, agreements with joint investment are usually more

effective than waiting for institutional programming. In addition, the service contracting fees may be higher than the contributions to the construction work.



Proyecto de drenaje sanitario al alto vacío. CAPA 2005.

Nota: el proyecto incluye la etapa I del fraccionamiento.

Currently, there is no clarity on how wastewater is handled and disposed of in Akumal Norte; each individual solves their own problem and there are no records on the subject.

It is evident that any anaerobic system does not meet sanitation standards and that any voluntary or involuntary discharge into the environment, in this area of fractured surface rocks and shallow aquifer, goes directly to the sea.

As noted at the beginning of this report, tourism activity has increased and the number of equivalent hotel rooms has increased.

Currently, with 952 equivalent hotel rooms and a capacity of 52 properties with the potential for an additional 442 equivalent rooms, 1,394 equivalent hotel rooms would be operating at saturation, which would result in a discharge of about 8 liters per second of sewage at an average flow rate.

Seventeen years have passed since the project was drawn up and the way to execute the work has not been resolved.

As in other issues, it is a matter of concerted action.

Hazardous Waste Management: Corrosive, Reactive, Explosive, Toxic and Biological Infectious Substances (CRETIB).

The **General Law for the Prevention and Integral Management of Waste (LGPGIR)**, establishes the obligation of individuals who generate "Hazardous Waste" to register with SEMARNAT or, in the case of microgenerators of waste, with local authorities.

The document "**Regulation of Hazardous Waste in Mexico**" published by SEMARNAT in 2011, contains the necessary information for the design of hazardous waste management plans for micro-producers of hazardous waste, as would be the case of the tourist hotel complexes in Akumal Norte.

The authority itself states: **"...even when a waste is not classified as hazardous according to the corresponding legislation, its management must be safe and environmentally adequate, as well as in accordance with criteria and guidelines that avoid or minimize its adverse effects on human health and other biota organisms, as well as the deterioration of the environment (air, water, soil)".**

It is therefore advisable to propose and conduct a voluntary evaluation in order to obtain a prior report before entering into a dialogue with the authorities.

There are at least 6 types of hazardous waste that could be produced in Akumal and that could eventually be the cause of audit procedures by the environmental authorities of the three levels of government or even PROFEPA.

Waste and products identified in the Law as hazardous for purposes of establishing management plans.

Article 31.- The following hazardous wastes and used, expired, withdrawn from commerce or discarded products that are classified as such in the corresponding official Mexican standard shall be subject to a management plan:

- I. **Used lubricating oils;**
- II. **Used organic solvents;**
- III. **Mercury or nickel-cadmium based electric batteries;**
- IV. **Fluorescent and mercury vapor lamps;**
- V. **Additives containing mercury, cadmium or lead;**
- VI. **Pesticides and their containers containing remnants;**

 CORROSIVOS	 REACTIVOS	 EXPLOSIVOS	 TÓXICOS	 INFLAMABLES	 BIOLÓGICO INFECCIOSO
C	R	E	T	I	B

Artículo 5 de LGPGIR, fracción XXXII

<ul style="list-style-type: none">Establecimiento industrial, comercial o de servicios que genere una cantidad de < 400 kilogramos de residuos peligrosos al año o su equivalente en otra unidad de medida;	<ul style="list-style-type: none">Persona física o moral que genere una cantidad ≥ 400 kilogramos y menor a 10 toneladas en peso bruto total de residuos al año o su equivalente en otra unidad de medida;	<ul style="list-style-type: none">Persona física o moral que genere una cantidad igual o superior a 10 toneladas en peso bruto total de residuos al año o su equivalente en otra unidad de medida;
Microgenerador Micro Generadores < 400 Kg./año 	Pequeño Generador Pequeños Generadores >400 Kg./año - <10 Ton/año 	Gran Generador Grandes Generadores ≥ 10 Ton/año 

Artículo 5 de LGPGIR, fracciones XII, XIX, XX

Solid Waste.

As with the management of hazardous waste, the management and disposal of solid waste has ample room for improvement and therefore demonstrate North Akumal's environmental commitment.

While it is true that most of the properties have a solid waste storage site with 2 or more containers, it is also true that it is the municipal garbage truck that picks up the contents of the deposits.

Consequently, everything that would have been achieved by "waste sorting" using containers, is discarded by dumping it in bulk in the public service truck.

The final result is an acceptably clean image of the public areas of North Akumal, but with the certainty that in very few cases, the principle of environmental responsibility is fulfilled, due to the knowledge that the solid waste is mixed in the municipal truck and dumped in open dump sites.



En general existe evidencia de que los residuos sólidos (basura) son depositados en contenedores. Se aprecia falta de homogeneidad, tanto en el tipo de contenedores, como en el grado de separación de la basura. (Fotos 2206-2022)



Estación receptora de residuos sólidos clasificados (Fotos 2206-2022)

The interviews showed that some owners have correctly certified solid waste management processes, including the final destination in recycling plants.

This should be the generalized case for the entire development.

V. Urban Development

Urban Image.

The Akumal Norte development is perceived as an exclusive residential and hotel complex.



Its jungle-like and clean image combines the natural environment with the care of the common areas.

However, it is clear that a more detailed analysis shows a lack of architectural homogeneity and poor ornamentation in the

common areas. It is notorious that it has grown without having considered an urban image master plan.

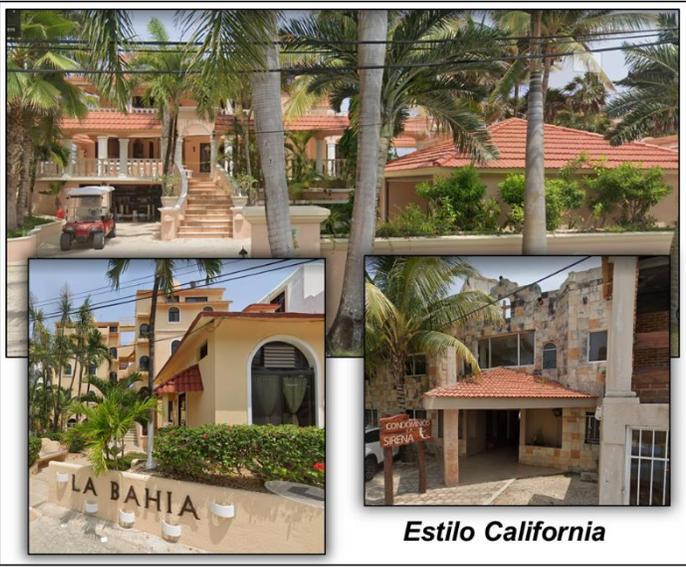
Diverse architectural styles cohabit, such as palapas, modern, Californian and Caribbean, complemented by small rustic constructions of handcraft stores and restaurants.

The diversity of architectural styles does not affect the sense of comfort in the development, but substantive improvements could be made.

Considering that there is a single road, the ornamentation and lighting of the road can make a big difference, especially on the side of the buildings, where currently for unknown reasons, most of the properties are butted up against the road without any margin for sidewalks.

As for the vegetation, the native flora is maintained in good health, such as coconut trees, "sea grapes" and mostly chit palm.

The west side is dominated by weeds and mangroves.





Estilo modernista

In some cases small spaces are left for parking, but this is not the rule for developments. Most of them have small parking spaces on the west side (the mangrove).

In conclusion, the urban image is focused on the main road, regardless of the architectural characteristics of the buildings.

Vegetation, perhaps some furniture and very importantly, lighting, can make the difference, in the sense of making an

evening walk along the road a sensational experience or simply guaranteeing an excellent image along the entire route at night.

While it is true that there is a great ambiance quality from the road to the east (buildings, landscaping, lighting, decoration, etc.) it is evident that there are specific actions of clearing and cleaning the mangrove side, actions that in themselves are regulated by law.

Regardless of whether these actions may or may not be complying with the environmental permits of the real estate complexes, there is an atmosphere of carelessness or even irregularity that can damage the image of Akumal Norte.



Actividades de limpieza o uso de los terrenos al poniente de la vialidad principal. Además de la imagen urbana de descuido, es claro que la poda en esas zonas es regulada.

Another aspect that contributes to an image of neglect on the west side of the road is that rustic parking lots have been installed and there are light structures at various points, but in large spaces, weeds have been allowed to grow.

It is important to **not confuse WEEDS with the natural environment**. Weeds are opportunistic plants that grow on land that has been cleared.

A systematic exercise should be conducted to eliminate weeds and decorate with native vegetation but introducing professional landscaping work.



Malezas del lado del manglar. Por definición hierbas malas que deben ser removidas y sustituidas por vegetación local y diseño arquitectónico con iluminación de ambiente.

As a complementary action, **a mechanism must be established to ensure that all garbage is removed from the mangrove side**. Currently, cut vegetation, plastics and sometimes garbage that should never be present can be observed in the activity zones towards the interior of the mangrove.

A properly structured plan to remove garbage from the mangrove side, but more importantly, activities **to prevent garbage accumulation** need to be implemented.



Basura del lado del manglar

Consolidation of Akumal Norte.

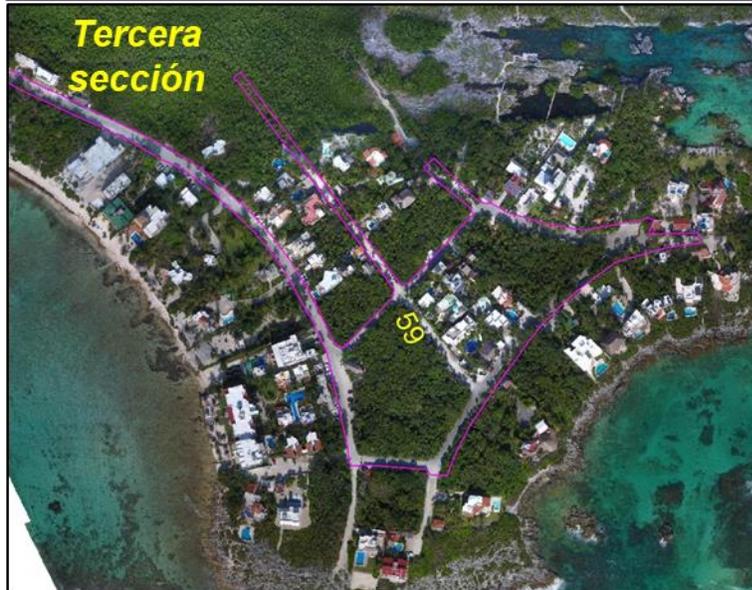
Based on the real estate inventory conducted by the Association in May 2022, there are a total of 164 identified lots, it is possible that there are unknown subdivisions or lots on the west side of the road, which were not counted and we will have to wait for the registry update to determine the exact number.

According to the aforementioned inventory, **112 lots** (68.3%) have buildings and another **52 lots** (31.7%) are still undeveloped, so there is a great potential for real estate development.

From the observation of the densification process since the publication of the PDU-Akumal 2007 (Graphic report of 2903-2022) it can be stated that the settlement can be divided into three clearly identifiable sections:

- The first section, from the security "pluma" to the beginning of the Media Luna bay, is mainly made up of residences.
- The second section is the Media Luna Tourist Real Estate Development.

- The third section is the land mass to the north of the Media Luna bay, which borders the Yal kú cove. This section also has mainly residences and some buildings have recently appeared in the coastal zone.



Imágenes fotogramétricas 1203-2022

It can be clearly seen in the images that in the first and third sections there is a low density of buildings, and in general they correspond to single-family housing of high architectural standard.

In the second section, development is intensive, with condominium buildings and hotel rooms.

It is in this section where land occupation is seen on the west side of the road, notoriously within the mangrove swamp, with various types of equipment and even buildings.

An additional aspect to consider when trying to dimension possible urban development scenarios corresponds to the real estate market.

For some years now, in Q. Roo, the real estate market has been the leading economic activity in the region.

Cancun shows signs of urban exhaustion, due to oversupply and insecurity in the urban area, but it is repositioning in high-end segments, in exclusive developments such as Puerto Cancun.

Playa del Carmen is experiencing a great moment for the real estate

market, but the main international real estate developers are located in along the Cancun-Tulum corridor: Maya Koba, Bahia Principe, Puerto Aventuras and now Tulum, has become the best positioned site for the supply of apartments.

Contrary to predictions, the post-pandemic stage has benefited the real estate market at an international level and places like Q. Roo, which are already well positioned, are experiencing a boom in supply and demand.

Akumal Norte, naturally, is also part of this dynamic. In a meeting with representatives of the Association's Committee on March 12, 2022, they stated that they were experiencing intense real estate sales and purchases.

As a result, it is highly likely that Akumal Norte will receive investment and new owners will obtain construction permits for:

- **Demolishing an existing construction to build a new building or condominium complex.**
- **Building hotel complexes and restaurants.**
- **Building apartments for second homes.**
- **Building commercial properties (as it is already happening on the mangrove side).**

As pointed out in the section on urban image, it is clear that a significant densification, as predicted, will increase the urban load in vehicles, solid and water waste, residents and visitors, for a main road with no capacity to sustain such growth.

Although it is the exclusive power of the municipal authority to grant building permits, it is also true that the Law of Human Settlements, Land Planning and Urban Development of the State of Q. Roo provides in Article 121, the possibility of signing agreements with the social and private sectors.

Article 121. In order to implement the land and territorial reserves policy referred to in this Title, the State Government, through the Secretariat, shall enter into coordination agreements with the entities and agencies of the Federal Government and of the Municipalities and, as the case may be, coordination agreements with the social and private sectors, which shall specify:

- V. The mechanisms to articulate the use of land and territorial reserves or, as the case may be, the territorial regularization of urban land, with the provision of infrastructure, public space, equipment and urban services;
- VI. The measures that propitiate the priority use of vacant and underutilized areas and properties within the Population Centers that have infrastructure, equipment and urban services;
- VII. The commitments for the modernization of procedures and administrative proceedings in matters of urban development, catastro and Public Registry, as well as for the production and titling of housing;

Therefore, a study of growth scenarios will have to be conducted and in each case the necessary adaptations for the proper functioning of the human settlement will have to be identified.

It is clear that the limits for the development will be set by the sustainability capacities of the main road and eventually the equipment that can be built in the buffer strip on the mangrove side (not yet defined).

There are several issues that will have to be addressed and it will be important for the ***Vecinos de Akumal Norte*** Association to reflect on the search for creative and feasible solutions to preserve the essence of its subdivision, because as it has been repeatedly pointed out, **the association cannot intend to become the instance that approves or disapproves Municipal Urban Development actions.**

Some very precise cases:

In any scenario, the solution of the sanitary sewerage system with sufficient capacity is urgent. Regardless of the technical design, the financial model will have to be carefully designed.

First, because hydraulic slack must be ensured from the estimated flow rate of 8 liters per second of wastewater production, considering the growth of undeveloped land, based on the current density. Designing for 12 liters per second (50% more flow) only impacts the cost of the project by an additional 20%.

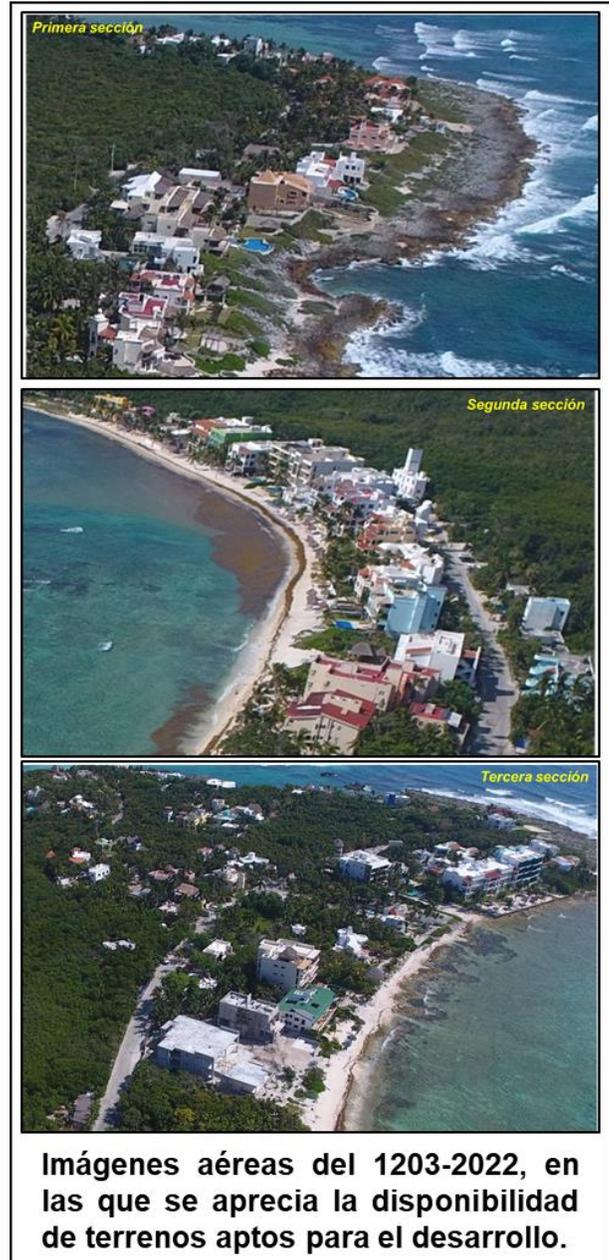
This guarantees coverage for any property or service that may be incorporated in the future, but a clear formula should exist to calculate the costs assumed by a developer who wants to connect to the system in the future, considering the constant value for the work done now and eventually, the corresponding financial costs.

Another very clear issue for analysis and solution proposals is the control of traffic, which will be a mandatory condition for sustainable development, because the main roadway is already saturated. Pedestrian and bicycle use will have to be encouraged.

An example of a possible solution to traffic could be a joint project with investors or a co-investment among the owners themselves, to install vertical parking in Akumal town or at the crossroads, so that those who are not permanent residents, leave their vehicles there. Using a transport similar to the "metrobus" or an urban tourist train that runs on a schedule from the main station to the cove of Yalkú, visitors can arrive and leave their hotels or vacation rentals.

The entrance of supply vehicles would be regulated at night and emergency vehicles such as firefighters or ambulances would have free passage.

Such an exercise could be attractive from now on.



Likewise, a modern public transportation terminal can be a detonator of economic activity, because together with the parking lot, convenience stores, restaurants, handicraft stores, etc., can be installed in its vicinity. This would stimulate economic activity that in the first instance, is seen as incompatible with the concept of development of Akumal Norte.

There are other examples that must be analyzed to find the best solution to preserving Akumal Norte as a highly exclusive destination and avoid deterioration or loss of value of the properties due to the development trends and the expansion of informal commerce or even delinquency.

VI. Public security

The inclusion of a section on public security in this document has the sole purpose of reaffirming the need to obtain specialized advice on the subject.

It is a fact that tourist activity, in general, has a parallelism with the interest of criminal groups to participate in the most profitable forms of this activity.

From collecting dues and extortion, to other forms such as drug dealing, organization of clandestine festivals, prostitution, etc.

As Akumal Norte consolidates as a mass tourism destination, the greater the interest and presence of these groups and the greater the risk of violence due to differences or confrontations.

For this reason, the security plan must include a high level of training for the owners to strengthen their internal security measures, as well as coordination with the security forces of the three levels of government, to ensure police presence and mechanisms for rapid response capacity in case of emergencies.

As this is a highly specialized subject, improvisation must be eliminated and therefore, the convenience of hiring the services of an expert firm must be evaluated. These services might help to develop a unified vision for the entire development and a proposal for coordinated actions with the authorities.

VII. Summary.

From the study of the available information, in a first approximation, we can point out the following.

It is essential to establish a formal relationship with legal scope between the **Vecinos de Akumal Norte AC Association** and **the Municipal Government**.

The purpose is to ensure that the Association is recognized as a valid interlocutor of Akumal Norte before the authorities.

The Association will have to obtain the necessary consensus with the owners so that its agreements have the backing that, in due course, the authority will demand.

In this organized exercise of analysis, it is clear that there are more issues to be solved internally than those to be addressed with the Municipality, as shown in the table.

Key Actor: The Municipal Government					
Topic	Priority	Diagnosis	Agreement Expectation		Comments
			Municipality	Owners	
Catastro updating	Highest	<ul style="list-style-type: none"> An integrated catastro map does not exist. The west limit is not defined In the original land subdivision, plots do not exist in the mangrove side. Stage I of the fraccionamiento is not registered. Currently, we do not have the actual number of plots. 	Agreement to work collaboratively for the catastro regularization in a maximum of 6 months	Go to catastro bringing their surveys to be integrated to the general map.	This is the most important task with the Municipality. It is likely that irregularities will appear that will have to be clarified by the owners. The work is urgent.
Public security	High	<p>There is a National Guard presence, patrolling by the municipal police and Army patrols.</p> <p>Their presence is inhibitory but does not obey a joint work plan and program to ensure the best results in the long term.</p>	To follow and support agreements reached with federal law enforcement agencies.	Training in crime prevention mechanisms and in ways to obtain assistance from law enforcement agencies.	Public security is a highly coordinated work in which the passive subjects (neighbors, tourists, workers) must adopt preventive behaviors to inhibit criminal acts.
Urban Development	Medium	Akumal Norte will continue to grow, because there is an important dynamic for the real estate and tourism sector and consequently there will be new constructions and higher loads for roads and services.	To conduct a joint study of growth scenarios and the infrastructure and service needs that will be generated.	To provide any information they have on the subject.	This is a sensitive issue that can lead to authoritarian intervention and sanctions.

Key Actor: Owners of Akumal Norte.

Topic	Priority	Diagnosis	Agreement Expectation		Comments
			Municipality	Owners	
Sanitary sewer system.	Highest	<p>There is a very noticeable growth, which will surely continue, but there is no sewer system or wastewater treatment.</p> <p>This has been a priority for at least 17 years.</p> <p>There is a technical project, but the economic and financial consensus has not been reached.</p>	To act as a manager before the responsible authorities.	To propose a model agreement that is convenient for the parties.	<p>The project costs approx. 46 million pesos but includes the entire coastal area of Akumal.</p> <p>In this context, it is feasible to find the cost per equivalent hotel room.</p>
Electricity and public lighting	Medium	<ul style="list-style-type: none"> The electrical network is exposed to short circuits due to lack of maintenance. The rubbing of the branches against the conductors produces voltage fluctuations that damage equipment such as air conditioners. Businesses are paying the Public Lighting Right (DAP for its acronym in Spanish), which has already been declared unconstitutional and must be reclaimed. It is urgent to redesign the public lighting system to make it efficient and adequate from the urban viewpoint. 	To ensure adequate management because these are resources budgeted by the Municipality. Perhaps to avoid confrontation and change the public lighting system connected to the public network	To approve an integral exterior lighting project that includes exterior lighting of buildings, street lighting and ambient lighting.	<p>The amount paid for DAP will undoubtedly allow for a much more efficient and decorative lighting project for the entire development.</p>
Urban Image	Medium	<p>As a complement to the street lighting, it is necessary to work on an integral urban image project focused on the roadway and the vegetation strip that borders the mangrove swamp. Currently it presents an irregular image and in some cases of abandonment.</p>	Knowledge of the project to avoid risks of environmental damage.	Support with resources for the project and adopt conservation and correspondent maintenance measures	<p>Actually, the public space includes only the road and its boundaries with the walls of buildings and vegetation on the mangrove side. Currently there is a predominance of weeds and abandonment.</p>

Key Actor: Owners of Akumal Norte.

Topic	Priority	Diagnosis	Agreement Expectation		Comments
			Municipality	Owners	
Solid and Hazardous Waste	Medium	There is no comprehensive plan for the management and final disposal of solid and hazardous waste. Most of the properties separate the garbage, but all of it goes to the municipal truck and finally to an open dump.	To follow their organic waste collection program	Design a comprehensive plan for the management and final disposal of solid and hazardous waste, in such a way as to ensure the correct recycling and/or confinement of waste.	More than a legal urgency, it is a matter of environmental responsibility that serves to help in environmental protection, but also to obtain international certificates of environmental responsibility.