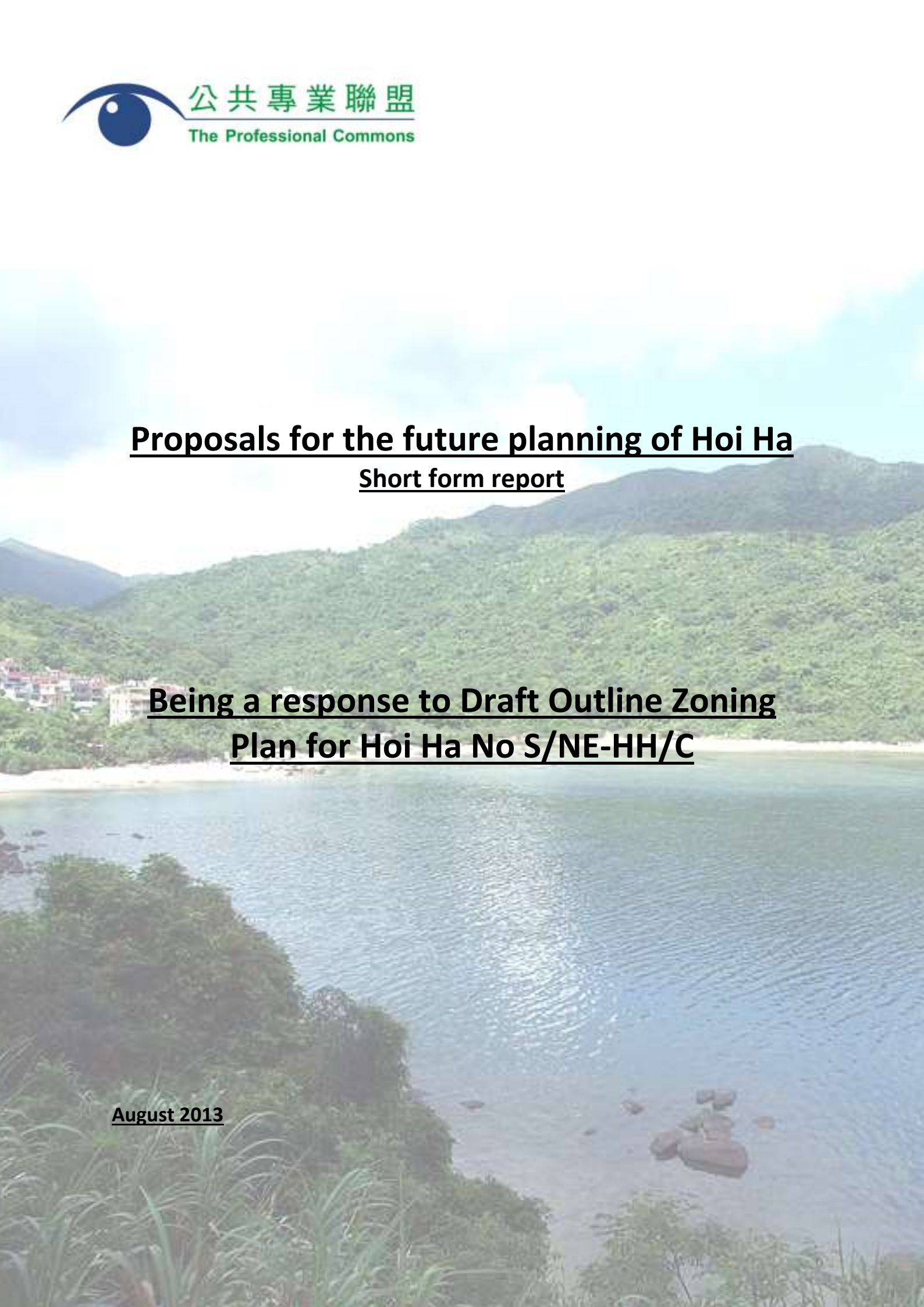
公共專業聯盟
The Professional Commons

Proposals for the future planning of Hoi Ha

Short form report

Being a response to Draft Outline Zoning Plan for Hoi Ha No S/NE-HH/C



August 2013

The Professional Commons: Our Mission

We are committed to improving the quality of public governance and empowering the community in the policy-making process. We shall accomplish this by harnessing the soft power of responsible professionalism. This is our mission statement:

- To achieve equal & universal suffrage;
- To monitor Government through professional analysis;
- To engage with the community in developing public policies;
- To express professional views in the pursuit of public interest; and
- To uphold core values of professional independence, freedom and integrity.

1st edition – August 2013
2nd edition – October 2013

Printed and published by The Professional Commons
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Executive Summary

On 28 June 2013, The Planning Department (PlanD) published its Draft Outline Zoning Plan (OZP) for Hoi Ha. A second draft was released on 13 September 2013. Unfortunately many of the statements made in the Draft OZPs do not match with the data collected by The Professional Commons members and colleagues during their studies of the area dating back nearly twenty years, and especially with the results of an intense two year study that has just been completed as part of a report on the integration of Country Park enclaves. This booklet is a short form version of a far longer and detailed report submitted to PLanD in response to the Draft OZP. A copy of this full report is available on request from Professional Commons, as shown below.

Our recommendations can be summarised as:

- All areas of the Development Permission Area (the status of the enclave before an OZP is gazetted), except that zoned for the village and its expansion, be designated as Country Park:

- That the current village and any possible village expansion area be subject to further planning restrictions relating to environmental impact when applications for improvement and development are made, both being part of a Comprehensive Development Area (CDA);

- That villager owned land in the centre of the village be swapped for land in any expanded village area so that co-ordinated and properly planned improvement of village facilities can be made, as part of this coordinated effort.

The Professional Commons supports the proposal, backed by many other policy and environmental groups in Hong Kong, that all enclaves be integrated in the Country Parks as soon as possible, whilst allowing for legitimate expansion of the village areas where agreed, whilst following strict environmental safeguards and proper planning, most suitably as CDAs. The Draft OZP as published by PlanD keeps the enclave and divides it into a number of separate planning zones, with little or no coordination between them. It also allows developers, who own, or control, the majority of the available land, to build many houses, especially on the most ecologically sensitive land. This is unacceptable.

The Professional Commons

Background

The Professional Commons has been working for some time on a report on the integration of village enclaves that are within the Country Parks. Whilst this report was being prepared, on 28 June 2013, The Planning Department (PlanD) published its Draft Outline Zoning Plan (OZP) for Hoi Ha, one of the enclaves in Sai Kung West Country Park that was chosen as one of the two case studies for the Professional Commons report – to be published at a later date.

Hoi Ha was originally chosen as one of the case studies as it is one of the more dynamic Country Park village enclaves, as well as being one of the few villages with both a strong indigenous villager presence, thriving eco-tourism/ecological education enterprises, as well as being the stopping point for visitors to Hoi Ha Wan Marine Park and its surrounding areas. It also has a number of well-established small businesses and the potential for improvement.

However, much of the data presented by PlanD in the Draft OZP does not match with the data collected by Professional Commons members and volunteers during their study of the area. Consequently some of the proposals made at the end of this submission are very different from those made in the Draft OZP. However, we are confident that the science behind our proposals is more accurate and robust that that used by the PlanD to justify their proposals to Town Planning Board (TPB).

When considering the future of Country Park enclaves we need to refer to the following:

- The question of conservation and/or preservation.
- How to allow the evolutionary growth of village enclaves without destroying the surrounding protected areas or the aesthetics of the village itself.
- How to cater for the increasing number of local and overseas tourists that are visiting the village enclaves and their environs.
- Deciding what should be allowed and not allowed in terms of improvement and village development.
- How to speed up the integration of the enclaves in to the Country Parks without over-riding the existing consultation procedures.

Figure 1 shows the Draft Outline Zoning Plan for Hoi Ha as proposed by PlanD in their report to Town Planning Board No S/NE-HH/C. We consider this to be a flawed plan, mainly because the science that supports it is not correct. There are many factual errors in the draft report. In our full submission to PlanD we do not address these errors individually, but present what we believe to be a correct and holistic assessment of the area so that an alternative OZP can be drawn up, one that fully recognises the uniqueness of the area and its important and sensitive ecological nature, as well as meeting the needs of both the local community and the wider Hong Kong community that not only funds the maintenance of the area to the tune of many millions of dollars each year, but also to sustainably enjoy its natural amenities.

As an example, two of the errors in the draft OZP from the land usage map are highlighted in Figure 2 below. We have overlaid this map with recent scaled aerial photos of the same area. It can be seen that what PlanD describe as mangrove in the north-east corner of the village is in fact river, and that what they describe as Fung Shui Woodland is at least 1/3 cleared land – abandoned farmland. Many other errors have been pointed out in other submitted responses to the draft OZP and we will not go into these.

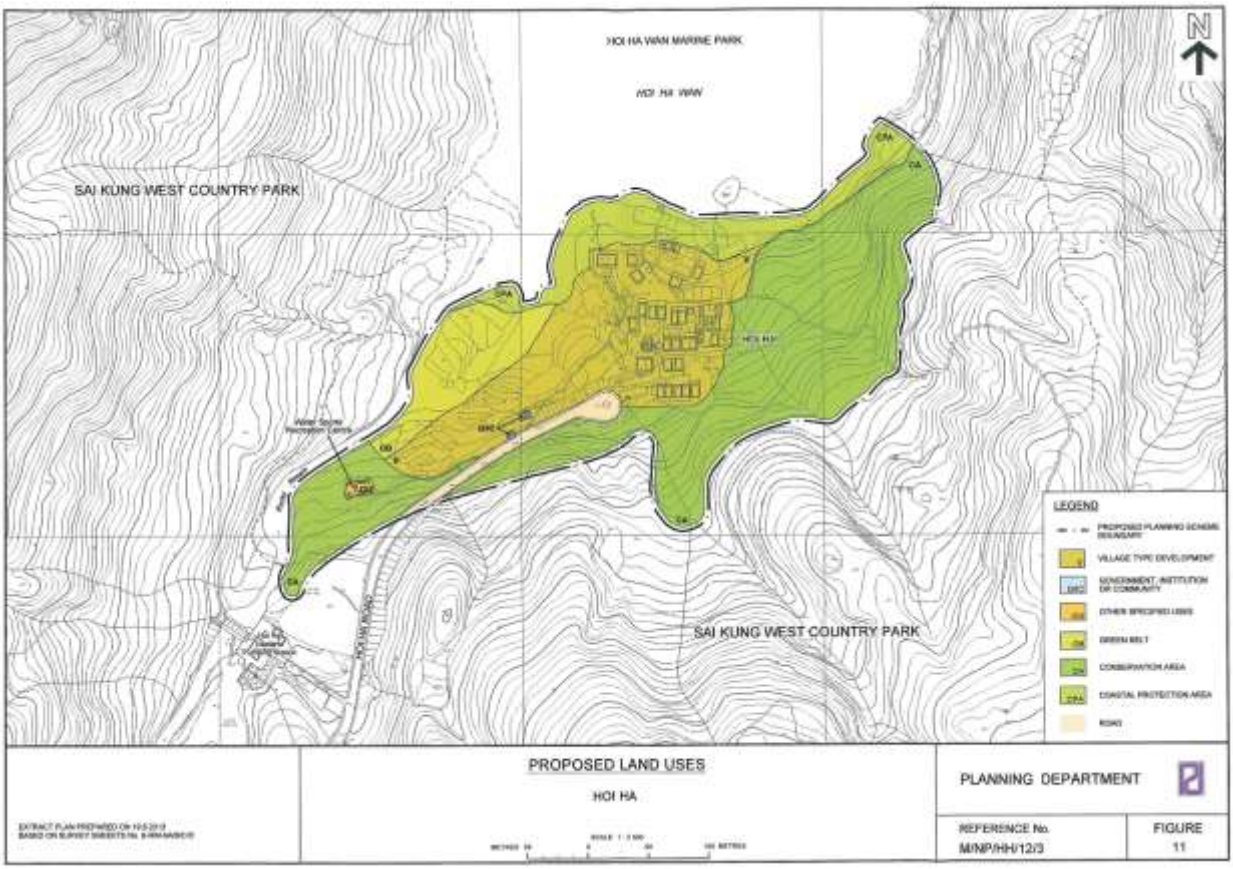

Figure 1. The draft Outline Zoning Plan map for Hoi Ha

Each Country Park enclave is unique and they all need individual assessment before their integration can take place. For example, Tai Long Wan is an area of outstanding beauty - so the key consideration is the conservation of the landscape. Hoi Ha Wan is a marine area of high conservation value. It stands to reason (and can be shown scientifically) that the terrestrial area bordering it is also of high ecological value. This is especially true for the Pak Sha O River valley interface to the Hoi Ha Marine Park. For a gazetting as a Country Park an area needs to have either a high landscaping or ecological value or both. The Pak Sha O River connection to the Hoi Ha Marine Park illustrates a connectivity that also needs to be considered. A development in the Pak Sha O village, would also impact the Hoi Ha Marine Park. The same is also true for the nearby village of Nam Shan Tung.

Any boundaries need to be carefully considered with regards to fixed assignments in an ever changing ecological area. Shorelines change, sometimes quickly, after a single severe weather event, sometimes slowly over time. Rivers change their banks over time. Rivers also deposit silt at their entrances, in the case of Hoi Ha, this is at the beach lagoon.

The recent changes in education in Hong Kong now include Liberal Studies. Part of the syllabus has to include nature, conservation, ecology etc. This adds significant value to the argument regarding the need for Country Parks in Hong Kong. The added value of a field trip over a class lecture is common knowledge. There is a real need for infrastructure improvement in the Country Parks to provide for a new increasing local trend - mainstream education.

A final overall consideration is the reason why the Country Parks were established in the first place. These areas were set aside to establish and maintain areas of high ecological and landscaping values but mainly to protect these areas from future development. The basic argument was to allow local

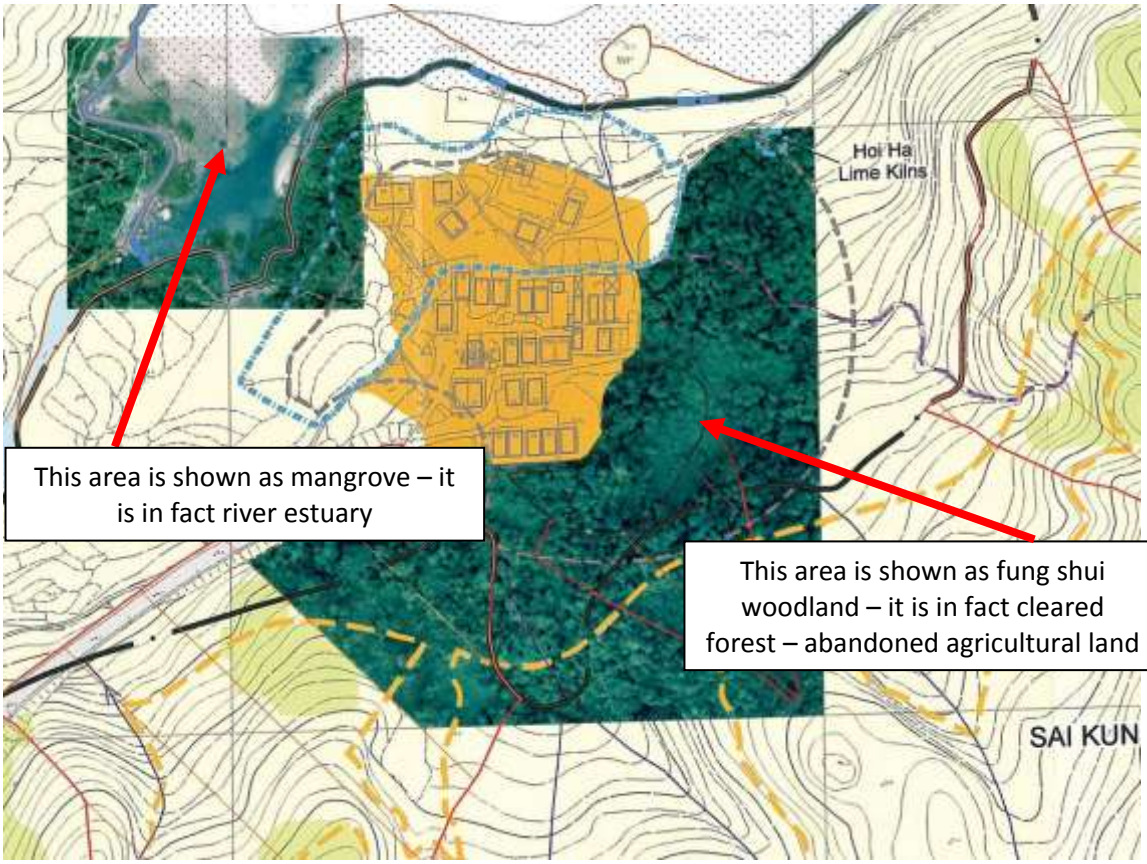

Figure 2 Overlay of aerial photos on to the Planning Department Land Usage map showing two major errors.

people, the basic right of enjoying and experiencing nature and natural places. With the increasing leisure time available to local people it is not surprising to know that there is a growing number of visitors to the country parks in Hong Kong. It is important that this healthy trend continues and is further encouraged.

An overview of the Hoi Ha area

Much has been published about the history of Hoi Ha, the Marine Park and its environs. We will not repeat it here. This will only be a short overview to give context to the data that follows.

Hoi Ha village was established around 150 years ago. It was settled by two Hakka clans – the Tongs and the Yungs. The villagers are represented by two *tze tongs*. Until the development of the new towns and emigration to the UK in the 1960s much of the local population was engaged in farming and fishing. From the mid 1960s onwards they village effectively became depopulated by the indigenous villagers, although some remained, and some returned after retiring from their work overseas. Many of the existing houses in the village built under the Government's Small House Policy (SHP) are rented to non-indigenous residents, although a number of indigenous families run small businesses in the area.

The northern most part of the village has some ruined buildings, part of the original village. This area close to the beach has been designated a Site of Archaeological Interest, together with the lime kilns to the north east of the area.

Hoi Ha is at the northern end of the Sai Kung West Country Park. It is strategically located at the estuary of the small Pak Sha O River and Hoi Ha Wan. Its location and the unspoiled surroundings have made it a tourist destination as well as the jumping off point for hikers, campers and

divers/water sports. Since the establishment of the Hoi Ha Wan Marine Park, and then the WWF Marine Education Centre, the village has become a centre for environmental and marine education, with many school and university parties visiting the area each day.

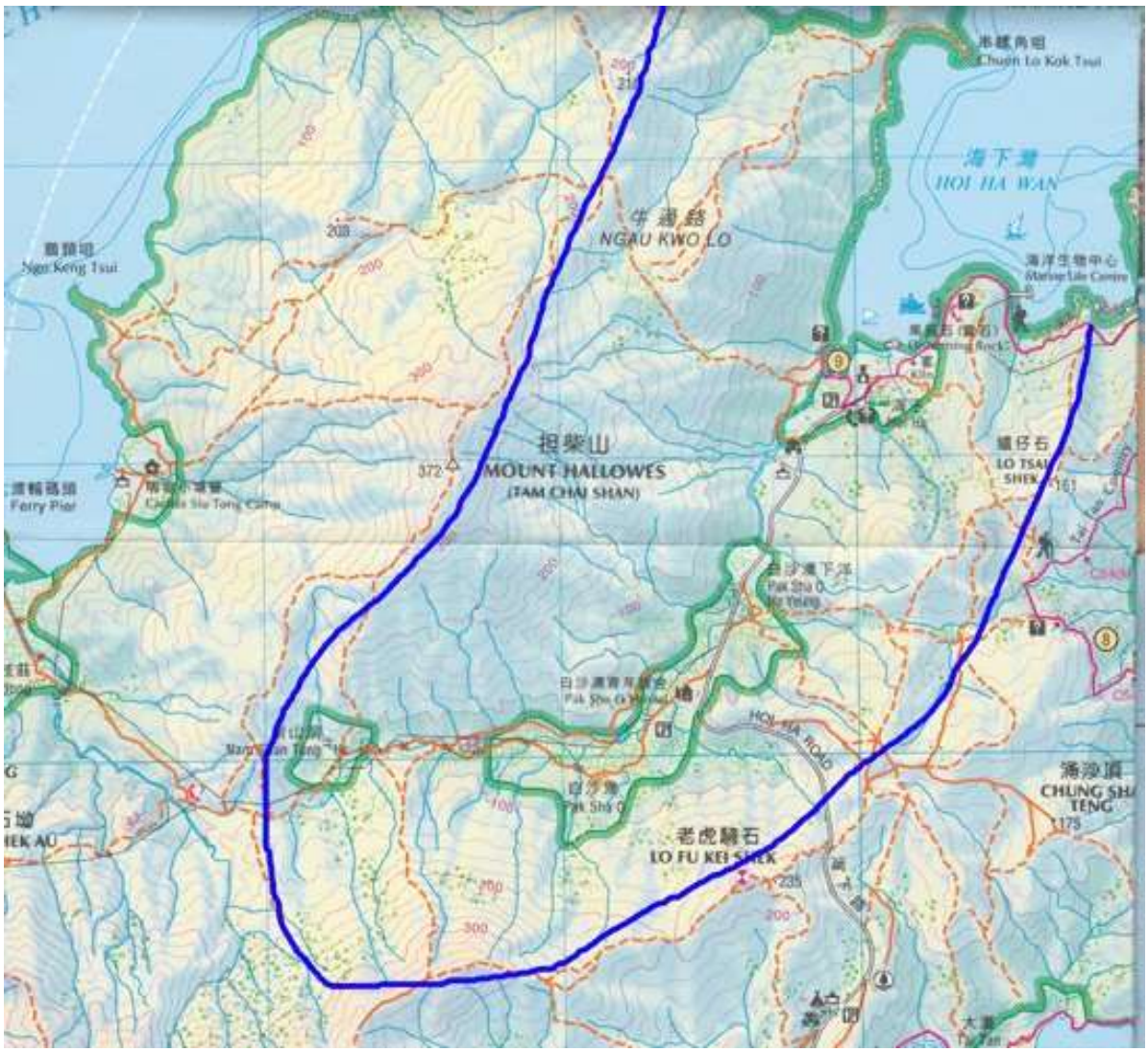

Figure 3 The Pak Sha O Valley

Hoi Ha is at the head of the Pak Sha O Valley. This valley is essentially a self-contained ecosystem that feeds into the Marine Park. The valley and the Marine Park should, ecologically, be considered as one whole area when planning, development or improvement is considered. Hoi Ha Village cannot be considered in isolation from its surroundings, and neither can its two adjacent villages of Pak Sha O and Nam Shan Tung, also both Country Park Enclaves – the former now under Development Permission Area (DPA) protection, the latter still unprotected from development and ecological disturbance. We consider that the three enclaves should be considered holistically, and fear that any criteria used to zone Hoi Ha will predicate what is zoned for Pak Sha O and Nam Shan Tung. The extent of the Pak Sha O River Valley system is shown in Fig 3 below. It can be seen clearly that all the watershed rivers and stream feed directly into the Marine Park.

Recent research has shown that fresh water springs in the Marine Park itself are fed by the water table supplied from wetlands in Pak Sha O. As will be shown in this report, recent re-instatement of abandoned agricultural land in Pak Sha O is already having an effect on the water quality entering the Marine Park.

Existing Village Businesses

Hoi Ha is a relatively flourishing small village, at least compared to most of the other villages in the Sai Kung Country Park. Whereas the others are basically dormitory villages for non-indigenous villagers (NIVs), Hoi Ha has a number of small enterprises centred on its residents, both indigenous (IV) and non-indigenous. Coupled with its popularity and beautiful surroundings, Hoi Ha should be a poster child for ecological and environmental based education and science.

The major business in the village is a small general store cum restaurant run by two IVs. This is the only such business now left in the village. This is down from a total of three restaurants in the past, although some IVs wish to complement the existing restaurant with another. As can be seen from the tourist loading of the village in peak times (see below) there is enough potential business to accommodate another food outlet. Unfortunately some antagonism from a few NIVs in the village has stopped this initiative.

There is a small boat/kayak rental business also run by a resident IV from temporary structures near the boat ramp in the middle of the village. This business is very popular with visitors all through the year.

Many residents use their houses for either telecommuting and/or office/workshops, many also focused on ecologically based activities. For example, one uses a ground floor flat to provide facilities for its diving activities and research work, and another for its Hoi Ha based outward bound type activities as well as temporary accommodation for its staff. Other businesses include NIVs running dog kennels, carpet cleaning business, engineering consultancy and some other small businesses.

Of course, the major business in the village is the rental of housing to NIVs. Of the 30 houses providing 40 dwellings, only five are occupied by their IV owners. Available Land Department records show three of the houses and one land lot are owned by NIVs. Thirteen houses and/or lots are owned by companies. In this Hoi Ha is like other Country Park villages. However it being a base for so many enterprises is quite unusual.

There are also a number of voluntary Christian based groups using facilities within the village. The main one occupies a small holiday camp within the DPA higher up Hoi Ha Road from the village, but they do store much of their boating equipment on one of the two beaches within the DPA.

Finally, The World Wide Fund for nature, WWF, is based just outside the village in the WWF HSBC Jockey Club Marine education Centre. All this entrepreneurship must be considered when making any planning proposals.

Land Use Classification and Usage

Landscaping and aesthetics are an important consideration. PlanD has adopted a hybrid standard for this purpose, merging the applicable categories from several systems currently in use around the world. It is very important that any detailed landscaping data be collected and presented in the adopted format for clarity and to ensure that the area can fit into the standard established models that already exist in Hong Kong. It is also important that the actual existing land usage also be determined and shown separately.
The Hoi Ha DPA and surrounding area contains Local Level Classifications from all three Regional Level Classification categories. Figure 4 lists the category classifications applicable to the Hoi Ha and the surrounding areas.

REGIONAL LEVEL	SUB-REGIONAL LEVEL	DISTRICT LEVEL	LOCAL LEVEL
Countryside - R	Lowland Countryside - Rl	Lowland Planes Rl(p)	Plains and isolated hills - Rl(p)1
			Coastal plain farmland - Rl(p)2
			Coastal plain farmland with other uses - Rl(p)3
			Disused coastal plain farmland - Rl(p)4
		Lowland Valleys Rl(a)	Lowland valley farmland - Rl(a)1
			Lowland valley farmland with other uses - Rl(a)2
			Scrub-covered lowland valley sides - Rl(a)3
			Wooded lowland valley sides - Rl(a)4
			Lowland valley floor farmland - Rl(a)5
			Lowland valley floor farmland with other uses - Rl(a)6
Development - D	Rural Fringe Landscapes - Dg	Residential Rural Fringe Landscapes - D(r)	Scattered Developments and countryside Dg(r)1
		Village Landscapes - Dg(v)	Consolidated Village - Dg(v)1
			Expanded village - Dg(v)2
			Historic villages and environs Dg(v)3
Coasts - C	Natural and semi-natural coastlines - C(n)	Inter-tidal Coastlines - Cn(t)	Mangrove - Cn(t)3
		Natural shorelines - Cn(s)	Rocky shoreline - Cn(s)2
			Beach - Cn(s)3

Figure 4. Landscaping classifications applicable to the Hoi Ha DPA and environs.

Figure 5 is the result of applying these standard classifications for landscaping to the Hoi Ha area at a higher resolution. The data was collected from site visits and the most recent 2012 aerial photograph of the area.

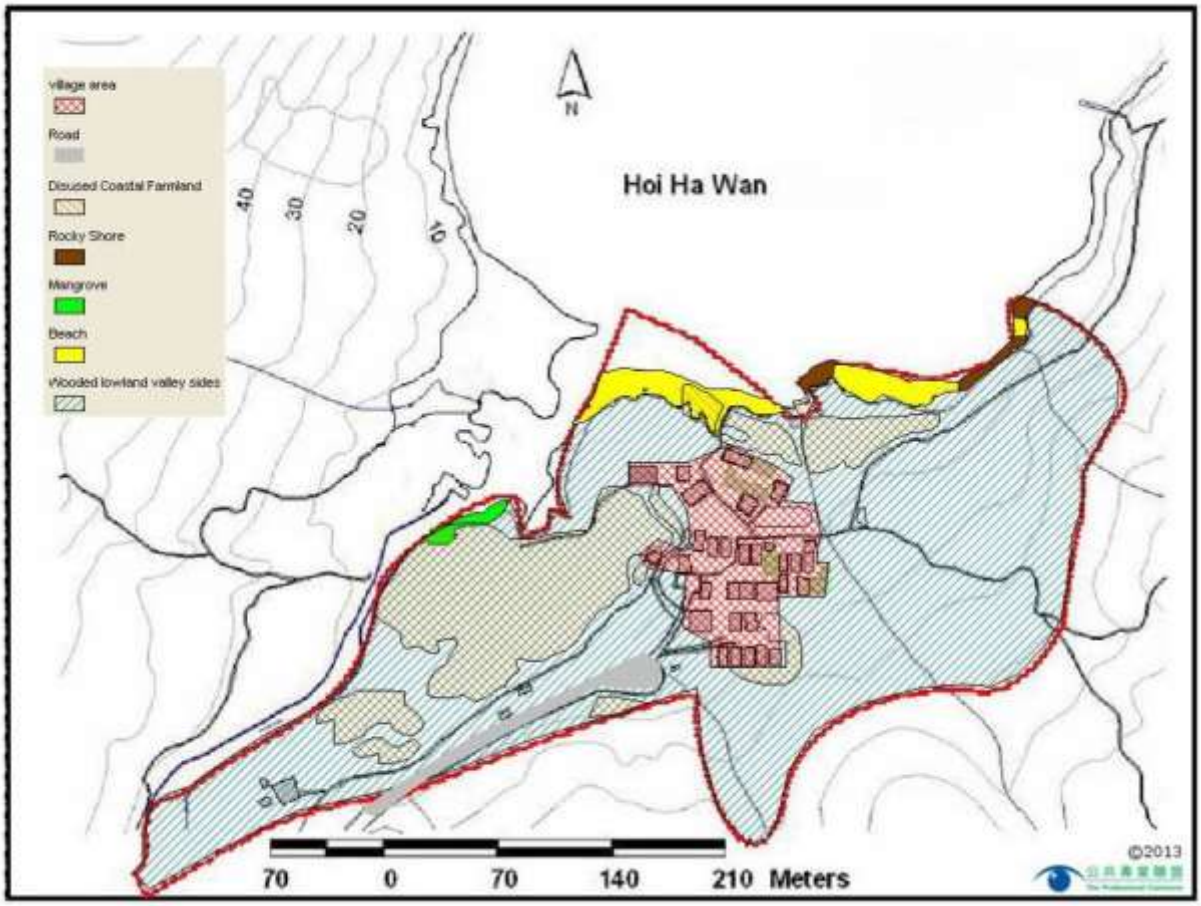

Figure 5 The Landscape Character Map of the Hoi Ha area based upon Standard Categories

There is a distinction between the landscape data and the land use data, particularly with regards to the village area. This land has zoned uses, like dwellings, roads and footpaths. Other land uses include car parks, orchards, gardens, storage of boats, tables for the restaurant, outdoor showers, outdoor changing rooms, temporary structures, etc. Some of the buildings have specific uses as well. Typically these are used for refuse collection, public toilets, outdoor activities, etc. Some structures are vacant. This data is very useful when deciding upon future land use for specific areas.

Details of the key fixed existing land use are shown in Figure 5 above.

Land ownership

One of the major problems identified is a conflict of interests between those who want to develop an area (usually indigenous residents) with those who want to preserve it (usually non-indigenous residents). Other complications involve the large scale developers trying to take advantage of the increasing number of people wanting to live away from the city. There are also groups who want the area further developed for recreation and education and require proper facilities to do this.

A survey of the Land Registry for the central part of the DPA shows clearly the interests of outside developers in the village. We estimate that 95% of the non Government land outside the current V area is either owned outright, or have Agreement to Sell encumbrances, by five major developers. These are Vantix Ltd., Group Wise Investment Development Ltd., Eastern Island Land Development Co. Ltd., Xinhua Bookshop Xiang Jiang Group Ltd., Sino Joint Ltd., and Ever Luck Development Ltd. The majority of this land is currently abandoned agricultural land and can be cleared for reinstatement at any time by the owners. This is happening in Pak Sha O now. As we will show below, in Hoi Ha much of this abandoned farmland is ecologically highly sensitive. It is imperative that this area be monitored for any attempt to do this.

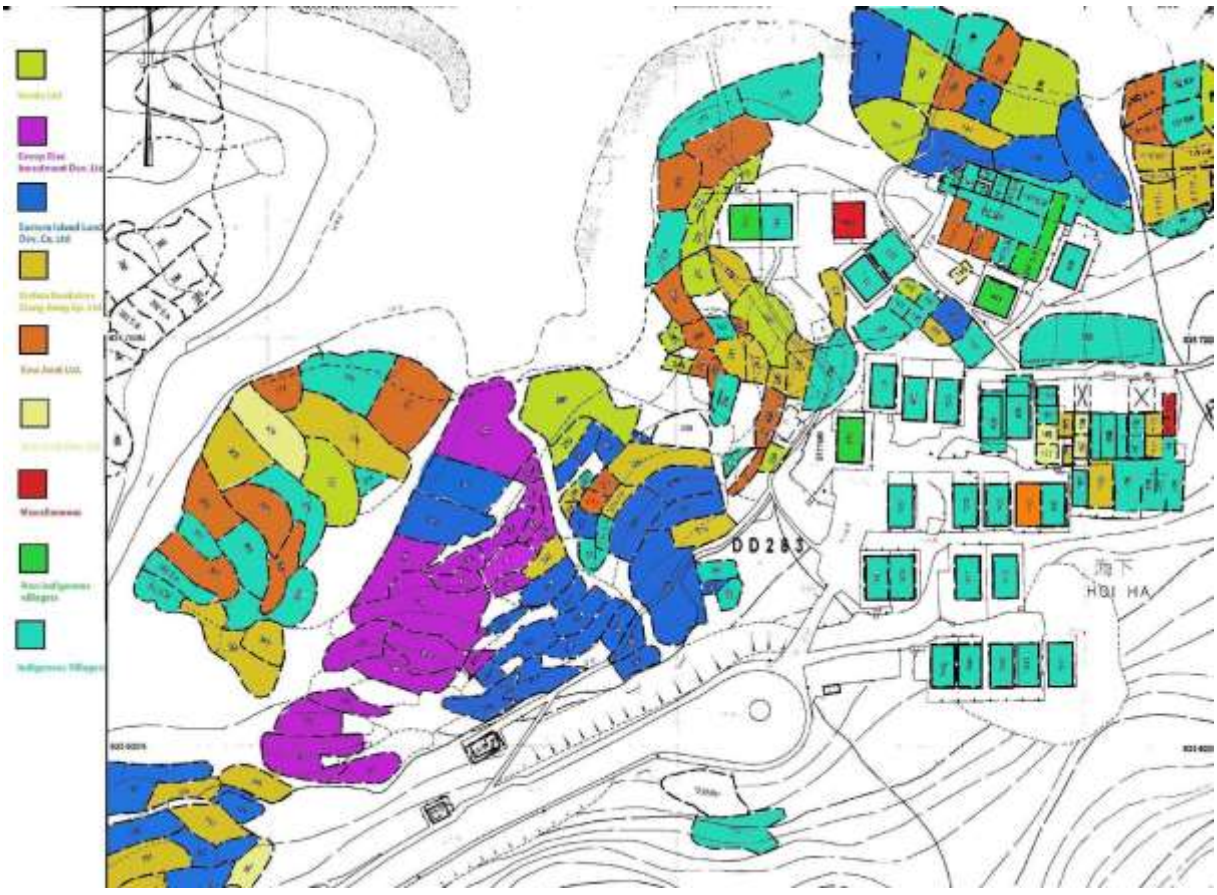

Figure 6 Lot ownership for centre of Hoi Ha

A similar search through Companies House register of companies shows that at least three of these developers share either the same registered offices or have directors in common. We suspect that

all five are connected behind the scenes, especially as lots have been, and continue to be, traded between them.

Some indication of the increasing value of the land can be seen from the rapid increase in price for a group of lots recently traded by developers amongst themselves. Sold by IVs in 2008 for around $600,000, they sold for around $1,800,000 in 2010, then $7,800,000 in 2012.

With more than 300 lots in the DPA it is difficult to understand who owns what. Figure 7 is a graphical representation of the lot ownership in the main part of the area. Similar patterns can be seen in the lot ownership outside of the area shown. In this map lots which are either wholly owned, or partly controlled via encumbrances, are coloured the same.

Comparing the Figure 6 with Figure 5 shows that some of the developer owned or controlled lots are currently beach or under water. However, as shown below, sand accreted from the Pak Sha O River, means that much of the land that is currently underwater, will be totally uncovered sometime in the not too distant future. This will shift the high tide mark further out into the Marine Park area affording this "new" unprotected area no protection from any ecological harmful activities. It is clear that some protection must be given to this area to stop any future development from being carried out there.

We should also consider that much of the land zoned as either Green Belt or Coastal Protection Area in the Draft OZP is in fact owned or controlled by developers and is abandoned agricultural land. Reinstatement of this for agriculture is a permitted activity under the relevant ordinances. Thus, there is no adequate protection for these areas in the draft OZP.

Ecology

The ecology at Hoi Ha is multifaceted; there are wooded areas, mangrove, coastal forest, estuarine, marine, orchard, farmland, grassland, and beach areas within the DPA or immediately outside it. All of the areas outside the DPA are in the Sai Kung Country Park or the Hoi Ha Wan Marine Park are protected. This report concerns the woodland areas within the DPA zone and the surrounding Sai Kung Country Park area. The land use within the area is shown in Figure 7. For the DPA the area breakdown, in terms of square metre is shown in Figure 8

Area Type	Area (m^2)	Ratio (%)
Forest	61,081	71.9%
Beach	2,131	2.5%
Mangrove	286	0.3%
Coastal Forest	7,046	8.3%
Swamp	713	0.8%
Degraded Forest	870	1.0%
Village	9,191	10.8%
Road	938	1.1%
Fung Shui Woodland	2,706	3.2%
	84,962	100.0%

Figure 7 The size and ratios of the areas within the DPA for Hoi Ha

One important factor regarding the wooded and forested areas of Hoi Ha is the lack of large mature trees. Long before the Second World War, the village had a thriving lime manufacturing facility that burned coral in four kilns. Almost all of the trees in the DPA and areas surrounding the village were burnt in these kilns to cater for this industry. Furthermore extensive parts of the Pak Sha O river valley, within the DPA, were cleared for agriculture. These activities raise questions concerning the

existence of any real primary woodland in any part of the DPA. Aerial photographs of Hoi Ha taken in 1961 show very little wooded area in and around the village. From these early photographs even the survival of the Fung Shui Woodland is questionable. Field work carried out in that area did not locate any large mature trees in the area reported to be the Fung Shui Woodland of Hoi Ha. The low diversity, small reported size (3177m^2) and even smaller surveyed size (2706m^2) suggest that more work needs to be done to confirm the details and state of this area.

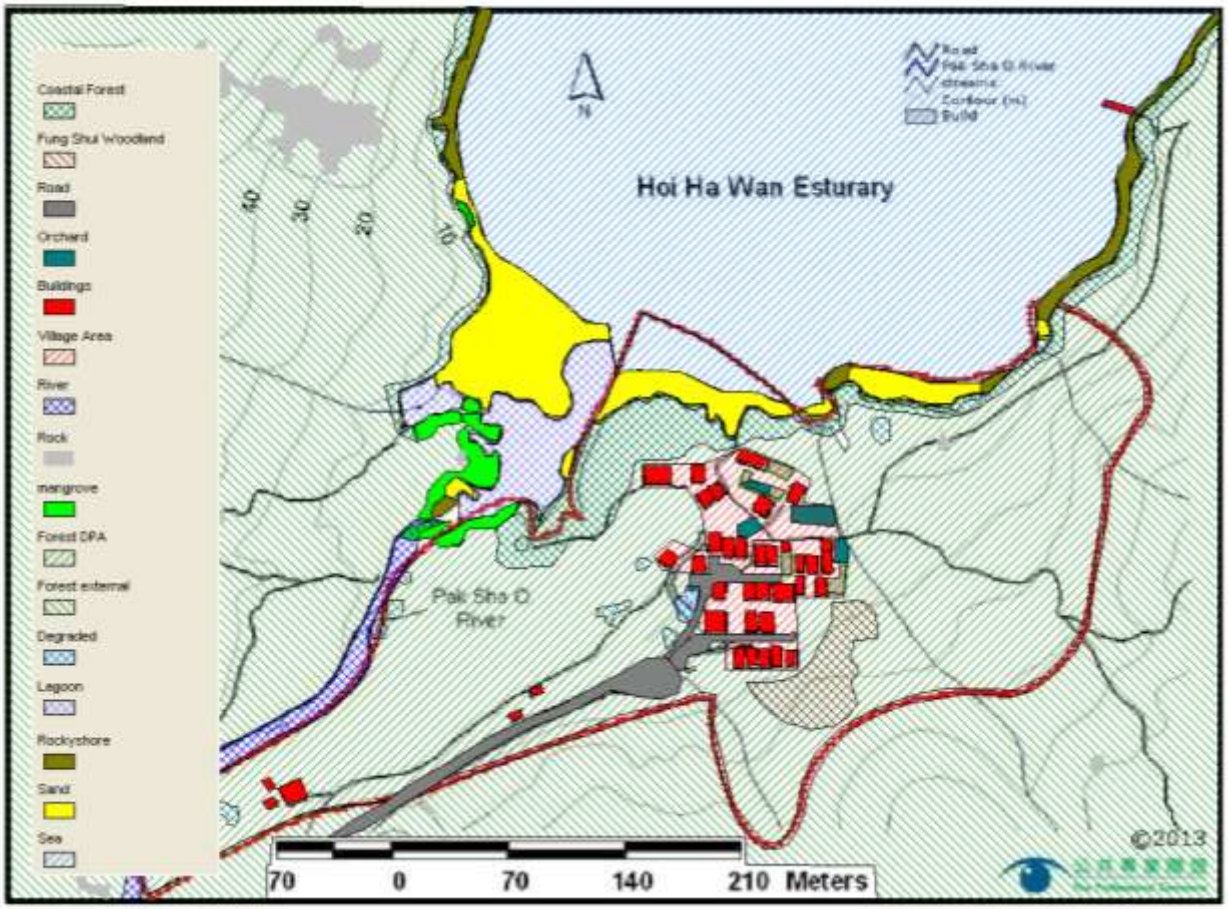

Figure 8. The land use in and around the area

8.1 Wooded Area

8.1.1 Overview

There is substantial re-growth of the forest into the areas that were once cleared for agriculture. It is difficult to distinguish many of these cleared areas given the more than 40 years recovery time. Whilst past records show extensive clearing was carried out within the valley area in the DPA, early aerial photographs clearly show patches of forest that were never cleared. Anyhow, the recovery was natural.

In order to determine the quality of the wooded areas within the DPA, standard forest canopy surveys were carried out within the boundary of the DPA and the results were compared with equivalent surveys carried in nearby country park areas.

During the forest surveys carried out for this report, it was noted that, as with the surrounding country park area, there is a need to carry out some reforestation work in within the DPA. We identified areas of the coastal forest along the foreshore in front of the village, the Fung Shui

Woodland and several degraded areas around the swamp. It is important that suitable species and tree density be maintained.

Irrespective of the origin or the age of the forest within the DPA, the area is equivalent to the surrounding forest in canopy parameters. This has implications with regards to carbon absorption, aesthetics and general quality. The area's species makeup is complicated, with dominant species decided by macro conditions occurring in the forest floor. We recorded 96 species of common Hong Kong plants and trees in the DPA.

Of the protected species recorded within both areas, mainly *Aquilaria sinensis, Gnetum luofuense, Neottopteris nidus, Pavetta hongkongensis* and *Sargentodoxa cuneata* were present. These are listed under IUCN, mainland Chinese or local Hong Kong endangered species protection lists. However, all of the protected species recorded were not along the coast and away from the beach area or rocky shore.

In the wildlife surveys carried out in this report, there was an obvious lack of animals recorded around the immediate village area. Key identified reasons include the lack of food and suitable forest habitat. It is possible to mitigate this and make areas more attractive for specific suitable species to re-occupy these areas. For this to happen, for the forest to be properly protected and any forest improvement to be successful, the forest community must be identified and described correctly.

Mangrove Community

There has been a lot of controversy regarding the extent of the mangrove community at Hoi Ha. It is very important that all forest areas are correctly described and delineated in order to consider protect and restore them properly. Different forest types have different flora and fauna associated with them. To protect an area of coastal forest/beach forest as a mangrove area is not correct and would not allow proper consideration for the fauna that would and could exist there. Consequently we will take a closer look at the scientific definitions as well as the results of a number of surveys carried out along the coastal area.

The definition of a mangrove area is clear and is quoted below verbatim below the expert authority Dr. Peter J. Hogarth in his 2012 book *The biology of Mangroves and Sea grasses*:

"Mangroves are defined as woody trees and shrubs which flourish in mangrove habitats (or mangals), which is almost, but not quite, a tautology. True, or exclusive, mangroves are those which occur only in such habitats or only rarely elsewhere. There is in addition a loosely defined group of species often described as mangrove associates, or non-exclusive mangrove species. These comprise a large number of species typically occurring on the landward margin of the mangal, and often in non-mangal habitats such as rainforest, salt marsh, or lowland fresh water swamps."(Page 2).

"Typical mangrove habitats are periodically inundated by the tides. Mangrove trees therefore grow in soil that is more or less permanently waterlogged, and in water whose salinity fluctuates and, with evaporation may be even higher than that of the open sea." (Page 8).

Mangal areas also have associated plant and animal species associated with it. This can also be used to confirm an area. Again from Dr Peter Hogarth's book:

"A mangrove community is more than just an assemblage of trees physiologically adapted to living in brackish water. Living in, on or around the mangrove trees is a heterogeneous community of

organisms, which depend on them for attachment, shelter or nutrients. The mangrove trees may suffer or benefit from their presence. They may be permanent residents or occupy a mangal temporary, either seasonally or for part of their life cycles." (page 71).

The mangrove area in Hoi Ha is contained within and surrounded by coastal forest that contains tree species typically associated with mangroves like *Hibiscus tiliaceus,* but the forest area is not intertidal, nor is it periodically flooded with salt water and so also contains species that are not associated with mangrove communities as well like *Ficus microcarpa.* Further along the beach at the rocky outcrop that divides the beach, there have been efforts by a local environmental group to change this environs' ecology by planting *Kandelia obovata* mangroves in front of the coastal forest assemblage. This was to make a typical mangrove ecosystem with a back mangrove area out of the existing coastal forest. This type of activity should be discouraged.

The main mangrove area at Hoi Ha Wan is located in the intertidal mud and sand around the back of a lagoon formed as a result of the Pak Sha O river crossing the beach. This mangrove community consists of five species, *Aegiceras corniculatum, Avicenna marina, Bruguiera gymmorrhiza, Excoecaria agallocha* and *Kandelia obovata.* It is non-zonal and does not have the usually associated back mangrove area. Detailed analysis of the surveys carried out for this project are available in the full version of this report.

Four other mangrove areas have been identified within the bay, but these are smaller, e.g. Lan Lo Au. All of the mangrove areas in Hoi Ha fall within the Marine Park Boundary and are thus protected under the Marine Park Ordinance.

Coastal Forest

The total Coastal Forest Area also known as Beach Forest (under IUCN guidelines), within the DPA constitutes about 8.3% of the total; this is very typical of coastal areas in Hong Kong. It comprises two main assemblages, one associated with rocky shores and another associated with sandy beaches. There were no protected species recorded in a survey of the shoreline extending into and away from Hoi Ha village. The coastal forest community at Hoi Ha is not intertidal and only experiences salt water ingress during severe weather conditions. Large areas do experience periodic flooding by fresh water runoff during heavy rainfall or from the Pak Sha O river overflow.

One tree species is missing from the sandy beach, the she-oak pine *Casuarina equisetifolia*. Most nearby beaches have this species as part of their coastal forest assemblage. It is likely the wood from any such species was used by the village for building in the past. The Coastal Forest assemblage on the west side of the village is quite developed with a significant canopy. Other areas are severely degraded and in need of restoration.

We can definitely state that based on the science outlined above, and covered in detail in the full report, that the coastal strip along the beach north of the village is not a mangrove area but is clearly beach/coastal forest.

Fung Shui Woodland

In Hong Kong, a Fung Shui Woodland is an area of forest that was preserved by village settlers for reasons of Fung Shui and good prosperity. These woodlands are located at the back of the villages, are mature, consist of a dense and tall canopy structure with dense undergrowth. These areas are made up of native shade tolerant old trees and vines. Fruit trees and other useful plants were also planted along the edge to maximize the benefits of these areas. Today, these forests are still seen

behind some villages. Hoi Ha is reported as one such village. The Fung Shui Woodland at Hoi Ha Wan is quoted as being 3,177m^2 in size in the 2002 AFCD survey. Fieldwork carried out as part of this report recorded an area of only 2706m^2 of wooded area within the boundary shown as Fung Shui Woodland. This corresponded to recent aerial photograph images of the area. The main characteristic of this forest, dense and tall canopy structure, is also lacking. This suggests that this area of woodland may not have survived the fire wood demands of the lime industry, or it has been degraded in some way over time. The area of Fung Shui Woodland takes up 3.2% of the DPA.

Environmental Protection Department records show it has a species richness of only 13 (EPD 2006). Given the size of the area, such species diversity indicates that this area is the same as the surrounding areas of flora. Out of the 116 Fung Shui Woodlands remaining in Hong Kong, the Hoi Ha Fung Shui Woodland is not rated very highly. Especially when compared with the Fung Shui Woodland at Nam Fung Road, which has a species richness of 156 with an area of 38,346m^2. In reality, the Fung Shui Woodland at Hoi Ha is not a protected area, nor does it contain any protected or endangered flora. However, it should be noted that some seedlings have been planted in the area supposed to be Fung Shui Woodland. We can only guess for what reason.

Swamp Areas

Several small areas within the DPA are waterlogged for most of year. These are all fed from small streams with the largest being supplied water from a small flood plain tributary of the Pak Sha O river. The total area comprises approximately 2.6%, but this increases during times of heavy rain. It is common to see birds, other animals and insects around the edges of these areas during daytime especially the Asian Porcupine (*Hystrix branchyura*), and the common Reeves' Turtle (*Chinemys reevesii*). These areas also provide suitable habitat for species of dragon flies and butterflies to congregate.

Area Flora

Figure 9 shows a summary of the different plant species recorded within the DPA.

Area Type	Area (m^2)	Plant Species
Forest	61081	149
Beach	2131	7
Mangrove	286	5
Coastal Forest	7046	83
Swamp	713	43
Degraded Forest	870	47
Village	9191	31
Road	938	0
Fung Shui Woodland	2706	86

Figure 9 The number of flora species recorded in the different areas of Hoi Ha

It is important to note that the classifications of primary and secondary forests is not totally applicable to the wooded areas within the DPA. Areas within the farmland area, on the perimeter and edges of the farming plots, were never cleared and therefore still are primary forest. To apply a blanket category of "Secondary Woodland" for this area is, therefore, not correct. Since the farming stopped, most of the once cleared land has naturally re-seeded back to natural forest. This process started fifty years ago. There are many very mature trees in this area. The farmland was originally cleared because of its high productivity value as well as its proximity to the village and water. The fact that it was determined as high productivity places it in a category above normal woodland. The land in the river valley is part of a small but effective flood plain. Hence the lack of indigenous built

residences in the past. Flood plains are the most productive botanical areas in the world. This makes there areas very suitable habitats for animals. The botanical productivity equates to a good reliable source of food and water. The animal distribution sighting records for Hoi Ha clearly show this.

Based on this science, there is nothing special or particular about this area that would not make it suitable for a Country Park Assignment. This is particularly the case given that protected animal species regularly visit the area for food and possibly water. Any human disturbance allowed to occur here would directly impact endangered species.

The Marine Park

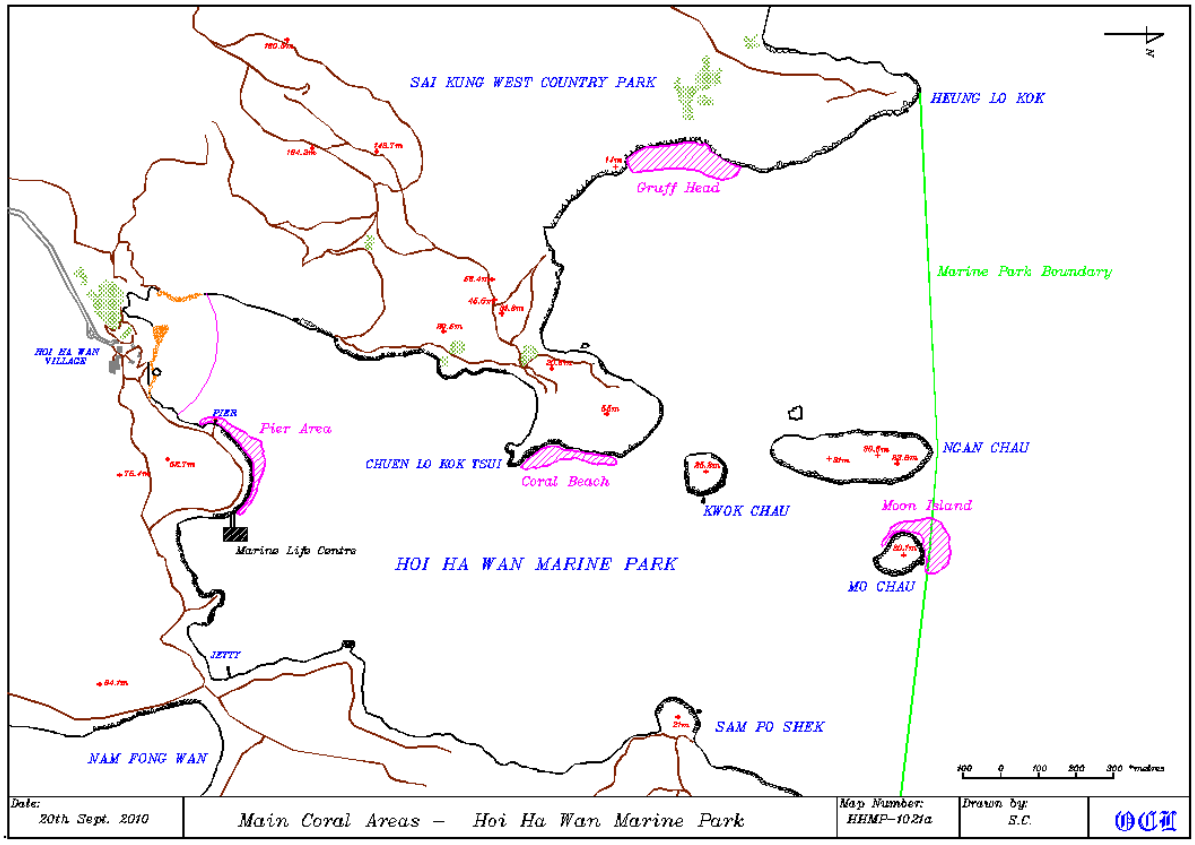

Figure 10. Map showing the location of the four main coral areas of Hoi Ha Wan

The Hoi Ha Wan Marine Park is a sheltered bay comprising 260Ha of sea surface area. It is formally known as Site of Special Scientific Interest (SSSI) No. 48 and Marine Park No. 2. Physically, it is located in the Northwest of the Sai Kung Country Park. The bay contains ecologically significant incipient coral areas scattered around its periphery as well as several undersea areas populated with *Antipathes* spp. There are also several small non-zoned mangrove areas and a small lagoon kept in place by a dynamic beach and a series of sand bars and spits directly in front of a small village. Figure 10 shows the location of the four main coral areas of Hoi Ha Wan. These are Pier Area, Coral Beach, Moon Island and Gruff Head.

The World Wide Fund for Nature runs and maintains an Education Centre in a small bay on the western side of the park. This centre is primarily used for primary and secondary school education with students receiving marine conservation and awareness education. On average 7,000 students attend this facility each year. It is currently running at maximum student capacity, with a waiting list of schools trying to visit the centre.

The Marine Park area receives impact from the bordering Hoi Ha Village primarily in the form of rubbish and water pollution. The main areas impacted are the beach, coastal and marine area immediately out from the village. We are considering the Marine Park in some detail as any zoning planned for the village area will have a high degree of impact.

Coral Health

The general health of a coral area is a very good indicator of the level of impact in that area. A total of 64 coral species are represented within the park, out of a possible 84 locally recorded species. The hard coral areas in the Hoi Ha Wan Marine Park are classified as "B" class areas. The Coral Beach area has the highest recorded density of coral cover in Hong Kong making this area a local ecologically important area. A total of 64 coral species are represented within the park, out of a possible 84 locally recorded species.

Of the four coral areas within the Marine Park, the Pier coral area, by virtue of its proximity, is the most likely to be impacted by the Hoi Ha Village. Since 2009, the coral health at the Pier area has been less than the average for all areas. Furthermore the ratio of unbleached coral at the Pier area has been less than the average since 2007. The low value in 2005 was due to an abnormal hypoxic event that impacted the whole of Mirs Bay.

All of these coral areas are frequently visited by divers and snorkelers, raising the issue of visitor damage. This in turn relates to acceptable number of people in an area. Almost one third of the visitors to Hoi Ha Village visit the marine park. The average anthropologenic damage to the four main coral areas at Hoi Ha Wan are given in Figure 11.

Area	2010	2011	2012
Pier Area	2.10%	2.00%	2.10%
Gruff Head	2.30%	2.40%	2.20%
Moon Island	2.10%	2.10%	2.00%
Coral Beach	5.10%	4.85%	5.00%

Figure 11. Measured Anthropologenic coral damage in the 4 main coral areas of Hoi Ha Wan.

These figures are consistent with figures measured in other protected areas in Thailand and Malaysia, some receiving far fewer visitors than the coral areas at Hoi Ha Wan. The higher value at Coral Beach is due to the fragile nature of the dominant species, *Pavona decussata,* at that location, the average yearly coral growth rate over the past eight years has been measured to exceed, match or double these damage figures.

Fish Populations

The reef fish populations within the Marine Park have been increasing over the past two years. The number of reef fish recorded has almost doubled year on year. It is expected that the population of reef fish will increase further given that there has been a ban on inshore trawling and the number of valid commercial fishing permits for the Hoi Ha Marine Park decreases further. The reef fish populations within the bay indicate general trends about the general ecology of the bay.

Water Quality

The water quality in the Hoi Ha Wan Marine Park is moderate, compared to other areas of Hong Kong. Currently water quality parameters are measured by AFCD on a quarterly basis at three locations. There are several important indicators of pollution by human habitation. One of these is

the amount of faecal coliform measured in the water column on the surface and just above the seabed. A faecal coliform gradient from the village to the outer regions of the Marine Park would indicate a strong impact of sewage originating from the village area. During measured peaks and recently this has been the case with regards to the Annual Bottom Faecal Coliform. However it is likely that this issue may also involve pollution in the Pak Sha O River as well.

For Hoi Ha Wan, the Water Quality Objectives set the levels of *E. coli* at a maximum level of 180 per 100mL calculated as the mean for all samples collected from March to October inclusive. This is set by the Water Pollution Control Ordinance (WPCO). From the measured results, the amount was below set limits for most of the time.

The amount of chloropyll-a in the water column is an indirect indicator of the plant nutrients in the water. An excess of chlorophyll-a indicates an algal bloom that may reduce water clarity and deplete dissolved oxygen levels. The locations of the measurements taken are the same as those measured for Faecal Coliform. For the values obtained from Hoi Ha, the innermost station at Coral Beach is shown to be higher than the values measured in other areas further away from Hoi Ha village. It is likely that this indicates a possible pollution source from the village. Typically this pollution originates from agriculture activity and the recent farming activities at Pak Sha O are implicated as a possible source.

Identified Pollution Sources

One of the direct impacts on any Marine Protected Area, such as the Hoi Ha Wan Marine Park, is the water pollution entering the area. For Hoi Ha Wan two key potential sources of water pollution have been identified:

- Water pollution from the village (grey, runoff and sewage).
- Water pollution entering Hoi Ha Wan from the Pak Sha O River (total dissolved solids, grey water, sewage).

The influence of the Tolo Channel and the outer marine areas can be separated by considering the concentration gradient of the substance being measured to see the directional flow. There are other sources of anthropologenic pollution but these can be considered as being associated with the *E. coli* being measured. Figures 12 indicates a gradient extending out from Coral Beach. Since the nearest settlement to this is Hoi Ha then it is logical to assume that the source is either from the village, the Pak Sha O River or both.

Regarding the *E. coli* data for the beach at Hoi Ha, points C, D and E have the most likely source from the village. The dips are probably due to drops in leakage after septic tank clearing, ground water flushing, or times when residents leave the area for holidays overseas.

International standards put the safe beach levels of *E. coli* at 400 per 100mL of water. Hong Kong Water Quality Standards allocates a maximum average of 180 per 100mL, for multiple testing. The measurements taken at Hoi Ha are single measurements, so it is best to apply international standards for analysis. This is currently exceeded at points C, D & E. The source of the *E. coli* at G isfrom the river valley and maybe up as far as Pak Sha O, and is just under the 400 limit. An inspection of Pak Sha O revealed several septic tanks within 10m of the river. The building near the existing BBQ area, and the BBQ areas themselves may also be a source of this pollution. But neither has been checked for confirmation of this.

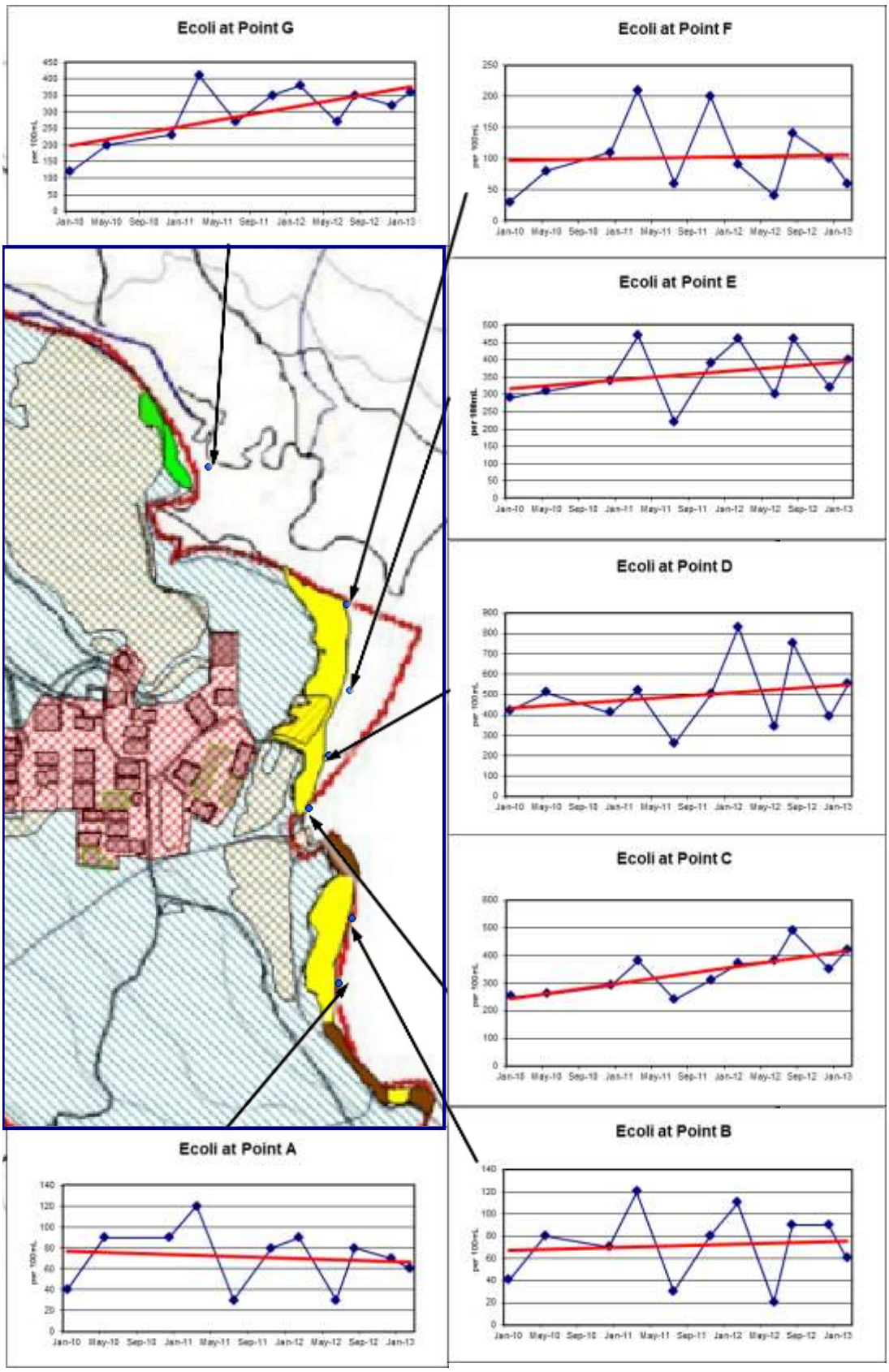

Figure 12. The levels of *E. coli* measured at low tide from ground water seepage at the beach

Village houses are designed with wastewater systems that require both water conservation and

maintenance to work properly. The systems rely on an anaerobic process (hypoxic) meaning faecal matter and waste water needs to remain inside the unit until bacteria can process it before discharge through an overflow pipe. Household disinfectants like chlorine bleach should not be mixed with any waste water entering a septic tank as this also kills off the bacteria within the tank, effectively rendering the process ineffective for a period of time. Bacteria friendly sterilizes should be used instead. Observations at Hoi Ha suggest that chlorine bleach is being used for household disinfecting.

However, the biggest problem is the seemingly infinite source of available water now available to households. In the past, the limited supply of village water meant that washing machine, and shower use was somewhat restricted. That changed when the Water Supplies Department connected to the houses at Hoi Ha. Now the volume of waste water requiring processing from houses has exceeded the design capacity of the tanks in many cases. The extra water from water from dishwashers, increased daily washing machine loads, even a Jacuzzi means that the septic tank systems overflow more frequently before properly processing the waste water.

With an increase in houses planned for the area, either by developers or by village expansion, there will be a time when a central sewage system will be practical. Until then there needs to be some sort of revamp using bacterial additives or aerobic conversions for sewage processing to minimize the *E. coli* recorded at the beaches. It is possible that self control regarding the use of water may be sufficient to stop the increasing trends.

The Beach

Hoi Ha Wan is a protected bay, opening in a northerly direction into Mirs Bay. The opening faces the coast of Mainland China, some 12km away. The beach at Hoi-Ha is a mobile estuarine beach, typical of other estuarine beaches in Hong Kong. The majority of the movement is a resultant of fluvial flow, wave action and typhoons have much less of an impact on the beach. The two islands, Moon Island (Mo Chau) and Flat Island (Ngan Chau) protect the entrance of the bay; they refract waves entering the bay, dissipating most of the wave energy. Tide-Pole Point and the Hoi Ha Pier also protect the main beach from wave energy.

The waves that do enter the bay are reflected from the eastern rocky shore towards the west. This sets up a weak long-shore current flow across the beach, subjecting it to low energy constructional waves, moving material in an east-west direction and the influence of the stream cutting through the sand spit causing fluvial deposition. These two forces sustained and maintained the beach at Hoi Ha in a very mobile fashion. The result of this is the accumulation of sand on the western section of the beach the sand on the western side of the bay the eastern side accumulation is form the sand sediment washed down from the Pak Sha O River. Water data from the river indicate that in 2011 the beach accreted at least 7 cubic metres of sand in 2012 the amount was estimated at 11 cubic metres. Aerial photographs of the beach indicate an increase in the water flow from the river from 1954 – now. They cannot however, be used to estimate the size and sand movement at the beach mainly because the profile of the sand areas cannot be determined from an aerial photograph. In addition, non-consistent tide and visibility data mean that, only the general shape of the beach is successive years can be determined from this data.

There has been a lot of scientific controversy regarding the stabilization role the mangroves and Coastal Forest play in this and some other areas as well. It is known that mangrove and coastal forests reduce water flow energy behind them during periods of high wave action. However such periods are very short at Hoi Ha and the wave action is not that significant. Waves of 9m were recorded at Nine Pins during the passage of Typhoon Vicente in 2012. The corresponding height at

Hoi Ha was only 2.1m for just over 2 hours. Typhoon Vicente was a statistically once in ten year occurrence. It is therefore doubtful that beach is being shaped by the flora present. The lack of back mangroves also indicate that the normal stabilization via successive flora processes is not occurring along the beach at Hoi Ha. This means that there are other factors controlling the beach structure. Research suggests that the river plays a far more important role in providing a constant source of sand for beach accretion and the river flow changing the shape of the beach. This means that the flow rate of the river is a critical factor in determining the shape of the beach. It can be observed from past aerial photographs that the beach underwent two significant shape changes in recent time. One was the building of the road in and the dredging of the bay the 1980s. It has been accepted that the change caused by the road was due to the increase in water flow caused by the change in surface hydrology brought about by the drainage of the road. This corresponded to an increase in the rate of water flowing from the river during periods of heavy rain.

The result of this is that the hydrology of the river valley is crucial in maintaining the beach. Any changes in the river valley will change the flow rate of the river. If the change is significant, then the lagoon will wash out, the beach will decrease in size, the mangrove community will thin and the ecology of the area will change. It is also highly likely that the current coastal forest area will decrease in size.

Figure 13 A photo of the beach area and an aerial photograph showing the accretion material washed down by the Pak Sha O River. (Google Earth 2012)

Tides

Hoi Ha Wan is impacted by normal Hong Kong mixed tides. These are sometimes called micro-tides and are mainly semi-diurnal. This means that there are two high and two low tides a day, with two maximum high and minimum low tide heights each month. The nearest Hong Kong Observatory tide gauge is located 4km east at Kau Lo Wan, in the adjacent Long Harbour area. Tide data is collected every 10 minutes. Long Harbour is a semi-protected bay.

The WWF Hoi Ha Wan Marine Life Centre has a Teledyne OPM tide gauge fitted with all data streamed to the internet as part of the DataBuoy Project. Data is collected every 5 minutes. Typical tide data collected is shown in Figure 14. There is a slight time lag in terms of maximum times and heights when compared to more exposed areas of Hong Kong. This is to be expected. Yearly tide gauge summary data for 2012 is shown in Figure 15 below.

Storm Surges

A storm surge is defined as the increase above the calculated tide in a given area. These phenomena

are always associated with a storm, typically a typhoon. During 2012, Typhoon Vicente created the largest storm surge recorded in Hong Kong in 10 years. The tide gauge measured the maximum deviation from the calculated tide height as 1.197m. Figure 16 shows a graph of the predicted tide height compared with the measured height. This was slightly less than the levels measured in other areas of Hong Kong.

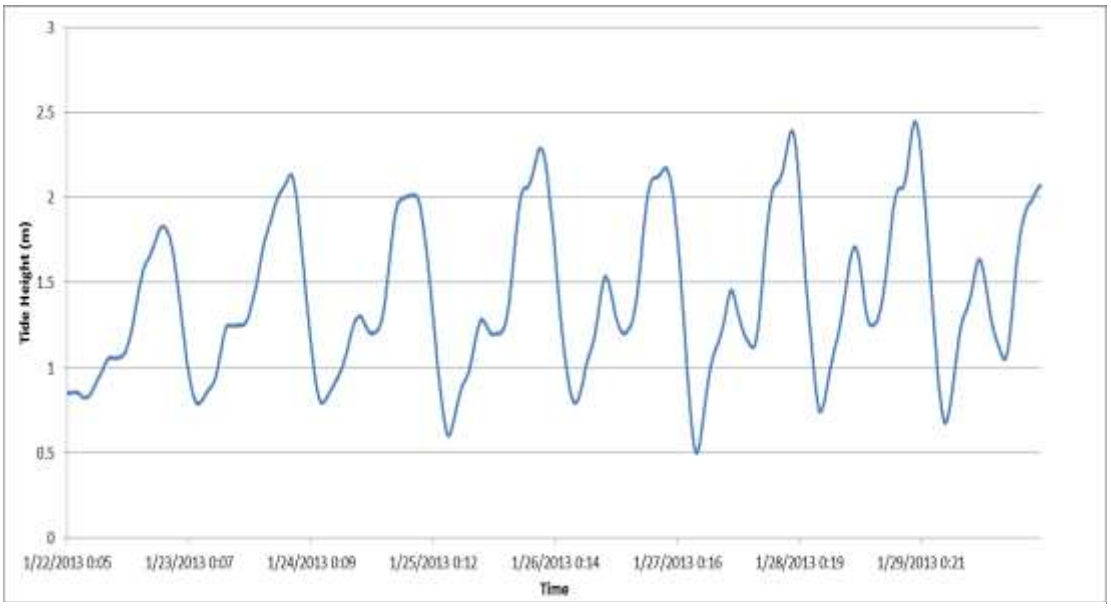

Figure 14 Typical tide data for Hoi Ha Wan (22nd ~ 29th January 2013).

Annual Tide data for HHW (2012)

Tide figures (m)	
Max	2.512
Min	0.211
Average	1.323

Figure 15 Tide gauge data for Hoi Ha Wan - 2012.

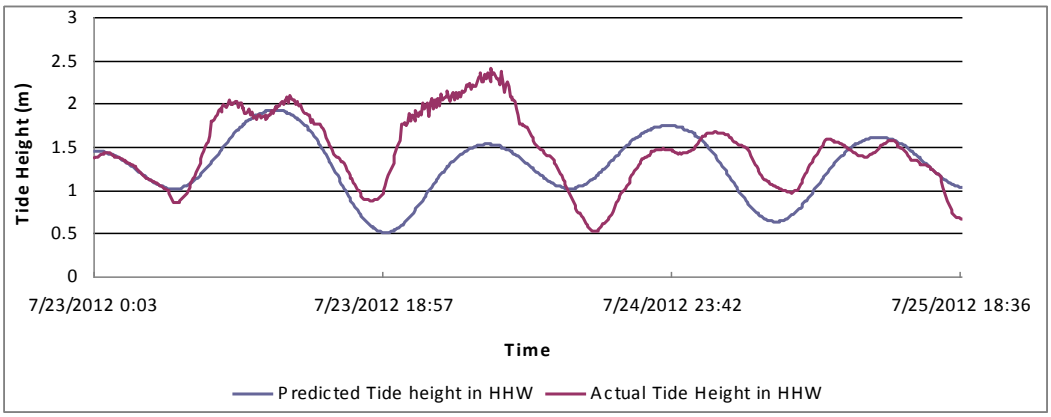

Figure 16 Typhoon Vicente Storm Surge Data for Hoi Ha Wan - 2012.

The storm surge data for Hoi Ha suggests that the area receives less impact than many other areas of Hong Kong. This is probably due to the sheltered nature of the bay. The storm surge condition can be exacerbated by high waves. Again the sheltered position of Hoi Ha suggests that the impacts would be far less than other areas like Big Wave Bay for example.

Pak Sha O River

The Pak Sha O River has a significant impact on the Hoi Ha Wan Marine Park. It is a source of fresh water, sand and pollution. It also is the major architect of the beach on the western side of the village. The hydrology of this system is a balance of forces between the stability of the beach and the energy of the water during and after periods of heavy rains. *E. coli* measured twice every year. Five measurements were recorded and the average determined from the results, shown in Figure 17. This was deemed as being the minimum data needed to pick up a gradual change. The trend line shows an increase from January 2011 of just over 35%. This would seem to indicate that recent agricultural activity around Pak Sha O is having an adverse effect.

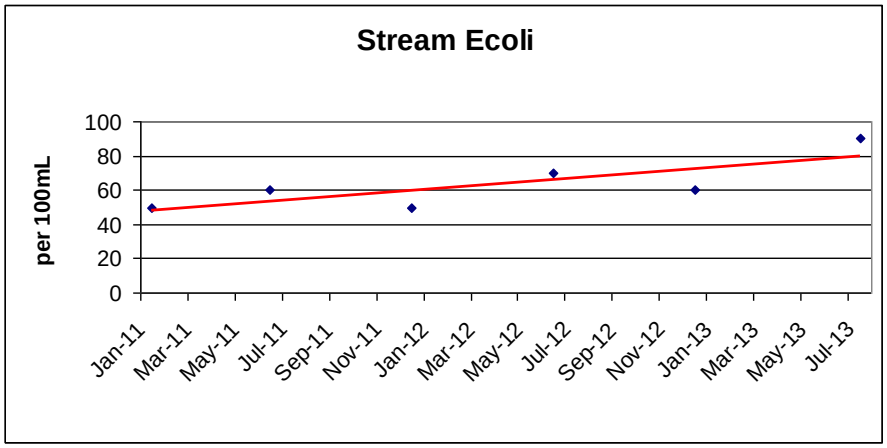

Figure 17 The Ecoli results for the Pak Sha O River at the Hoi Ha Estuary

Animal Encroachment

Animals do not recognize boundaries and always utilize areas as they require. For this reason any area proposed as possible receivers for village houses need to consider sites of frequent visitation as well as animal corridors. From 2010 and 2013 a total of 182 camera surveys of two months each were conducted in areas that had shown some evidence of animal visitation. This consisted of scat, ground scratching or food remains. Twenty Doppler Radar movement activated cameras were ever in the field at the same time, and all were fitted with lights for night time recording as well. The units were configured to detect movement within 5m of the units and all units were aimed at the ground with a 10 second recording period and a 5 minute hysteresis set.

The data was divided into 5 categories. The data is shown in Figure 18, with a breakdown to species level in Figure 19. All mammals, with the exception of the wild boar (*Sus scrofa*) are protected species in Hong Kong.

Category	Records	Percent (%)
Mammals	265	12.6%
Rodents	694	33.0%
Snakes	8	0.4%
Birds	718	34.1%
Misc	419	19.9%
Total :	**2104**	**100.0%**

Figure 18 Total results of the camera survey.

This data represents visitation data rather than population data. It is highly likely that repeat records were taken of the same animal. Birds made up the majority of the records. These animals were

foraging in front of the cameras. Protected mammal data were separated from the records. A total of 265 records were extracted. A total of 12 species of mammal were recorded. The majority of the sightings were *Macaca mulatta* with these animals frequently seen foraging around the rubbish bins in the area.

Species	Sightings	Percent (%)
Melogale moschata	33	12.5%
Hystrix brachyura	58	21.9%
Crocidura attenuata	12	4.5%
Niviventer fulvescens	39	14.7%
Macaca mulatta	79	29.8%
Viverricula indica	15	5.7%
Sus scrofa	12	4.5%
Muntiacus muntjak	2	0.8%
Herpestes javanicus	4	1.5%
Prionailurus bengalensis	1	0.4%
Paguma larvata	9	3.4%
Herpestes urva	1	0.4%
Total :	**265**	**100.0%**

Figure 19 Breakdown of the Mammals recorded by the Camera Survey.

The sightings were concentrated around water sources. Previously, before the back row of houses were constructed, animals were frequently seen around areas near the Fung Shui Woodland. The water sources in this area are either filled in to stop mosquito breeding or changes in the hydrology in this area have removed the water. This in turn has led to a shift in the location of animals to the valley of the Pak Sha O river. It is now common to see foraging marks and scat of mammals in the valley area..

There are also reliable sightings in the area of other protected species that our cameras did not pick up, including the Chinese Pangolin (*Manis pentadactyla*).

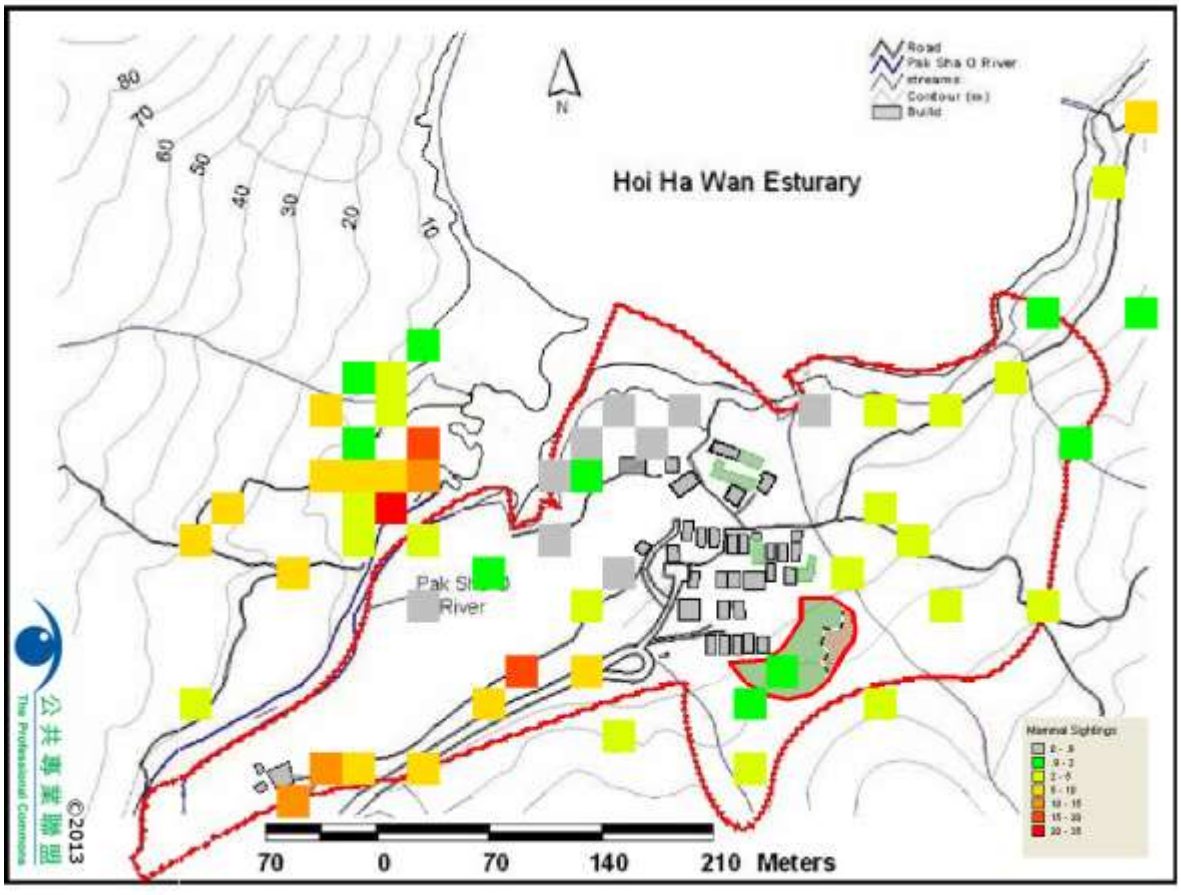

Figure 20. Photo records of animals taken over a two month period at Hoi Ha Wan

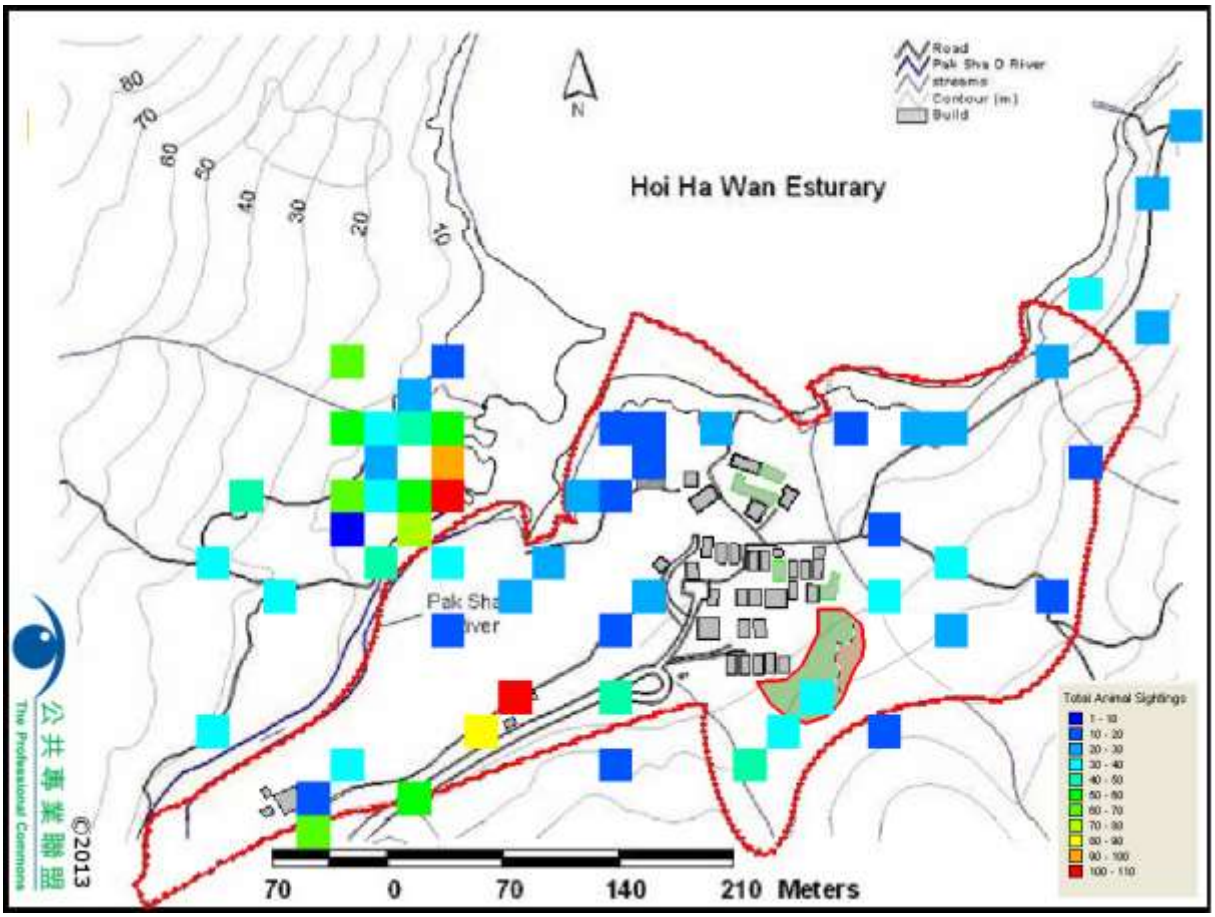

Figure 21 Photo records of protected mammals taken over a two month period at Hoi Ha Wan

Hoi Ha Visitor Loadings

Hoi Ha is a tourist area; visitors are attracted to the village for numerous reasons. Figure 22 shows a general breakdown based upon statistics collected from 580 people over a week period in July 2012.

AFCD Statistics estimated that approximately 90,000 people visited Hoi Ha in 2012. This figure is based upon many factors and is an indication only. Some of the visitors do not actually enter Hoi Ha Village and have destinations that include the BBQ and camping areas along the Hoi Ha Road, or are visiting Pak Sha O. Others were residents seeking temporary permits for access to the Hoi Ha Road.

Destination	Ratio (%)
Hoi Ha Wan Marine Park	32.0%
Wan Chai Camping Ground	43.0%
Hiking in the area	18.0%
Misc	7.0%
Total :	100.0%

Figure 22 Visitor intended destination for Hoi Ha Village. (n=980).

There has been considerable concern about acceptable visitor loading for the village. Visitor data has been collected by Doppler Occupancy Meters over a period of 24 months. Ten units were installed for 12 months, with the remaining 10 units installed for multiple periods of 2 months. A total of 91 key facility and resource locations were investigated. Data was divided into two main groups, public holidays (including weekends) and weekdays. Each of these categories was further sub-divided into categories based upon weather. In all cases the period of data used was between

8:00am to 6:00pm. This is the period when the bulk of the visitations occurred. Figure 23 summarises the data collected.

Area Condition	60min Maximum Average	Daily Average
Holiday Fine Weather	0.481	0.101
Holiday Overcast (>6 Octets)	0.291	0.053
Holiday Wet	0.21	0.036
Holiday temp <20C	0.121	0.012
Totals	0.141	0.051
Weekday Fine Weather	0.266	0.005
Weekday Overcast (>6 Octets)	0.053	0.003
Holiday Wet	0.038	0.005
Weekday temp <20C	0.006	0.001
Totals	0.091	0.004

Figure 23 Visitor Usage of Infrastructure and Facilities for Hoi Ha Village between 8:00am to 6:00pm.

There are several ways of interpreting this data. The most holistic is perhaps the old notion of Carrying Capacity, and the more applicable to Hoi Ha is the Visitor Impact Assessment. Using the IUCN specification of an acceptable maximum total average area facility loading not exceeding 0.85 as the sustainable and enjoyable limit, it is clear that most of the Hoi Ha Village areas and facilities are currently underutilized. There are also no exceedances of any of the natural resources in the area. This can be determined by the beach peak usage (~22%) the yearly damage to the nearby coral area, measured as 5%. This figure is less than the growth rate of the coral in the area. Needless to say, there are some hot spots with regards to facilities that may be improved with by adding to, or increasing access to, these resources

The distribution of this fine weather infrastructure and facility loading over the points investigated are in Figure 24 (Holiday Period) and Figure 25 (Weekday). The facility usage values can be determined from the results and from Figures 24 and 25. The facilities that can be improved are listed below:

- The toilet facility
- The minibus facility
- The area notice board facility
- The AFCD Centre facility
- The single restaurant facility

It should also be mentioned that when considering the ecological loading of an area, due consideration should also be given to any ecologically sensitive receivers. Hoi Ha Wan was set up to protect the coral and mangrove communities within the bay. Currently the damage, impact and pollution levels associated with visitors to the area do not show exceedances in either area or even an increasing trend as would be expected if the area was overloaded.

In terms of the old carrying capacity figures and notion, the visitors to the area, during the peak times (weekends/holidays with good weather) could increase by about 20% at peak times before maximum limits would be reached. During weekdays, this figure increases to 40% more loading. This report does not suggest that this area be further exploited; however, it is worthwhile to show that the area is currently being underutilized. Needless to say an EIA on the current visitation and its impact on the area would be necessary to determining more detailed information.

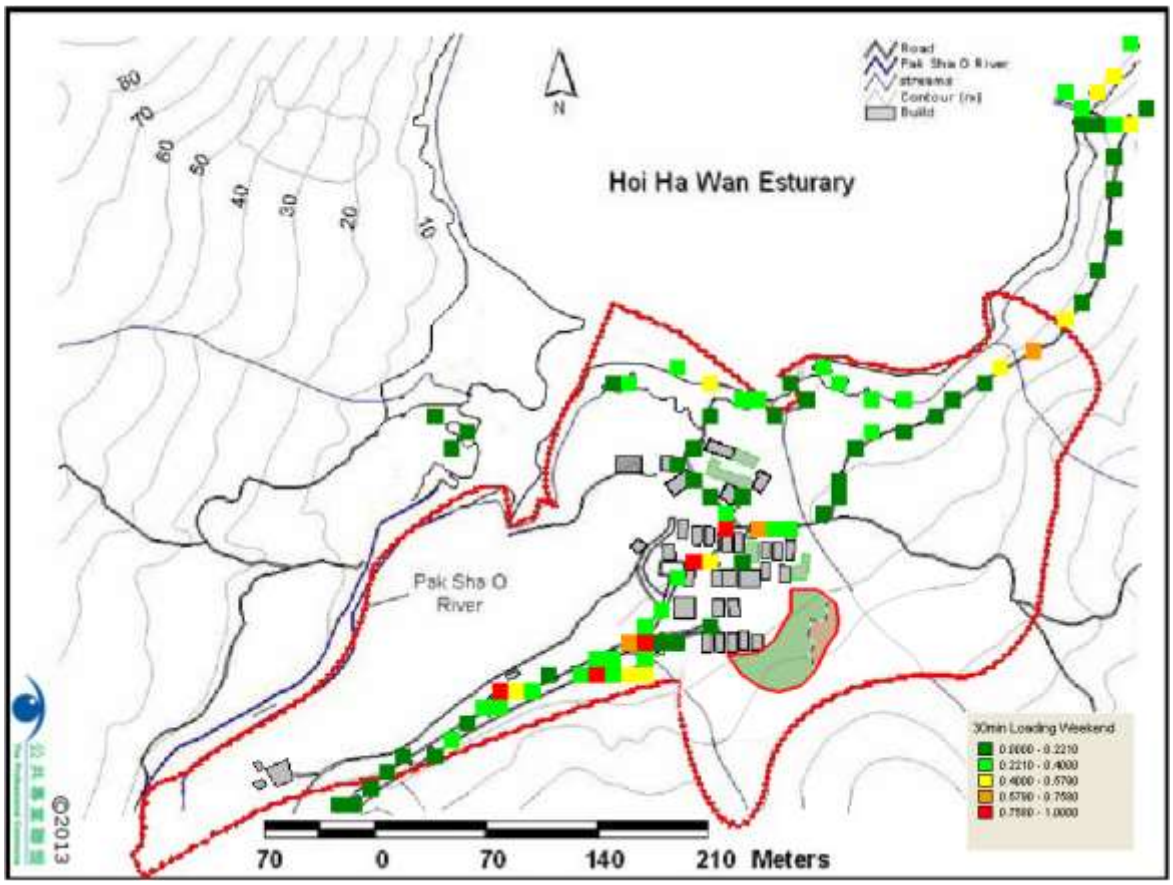

Figure 24 60 Minute Infrastructure and Facility Loading, Fine Holiday, for Hoi Ha Village.

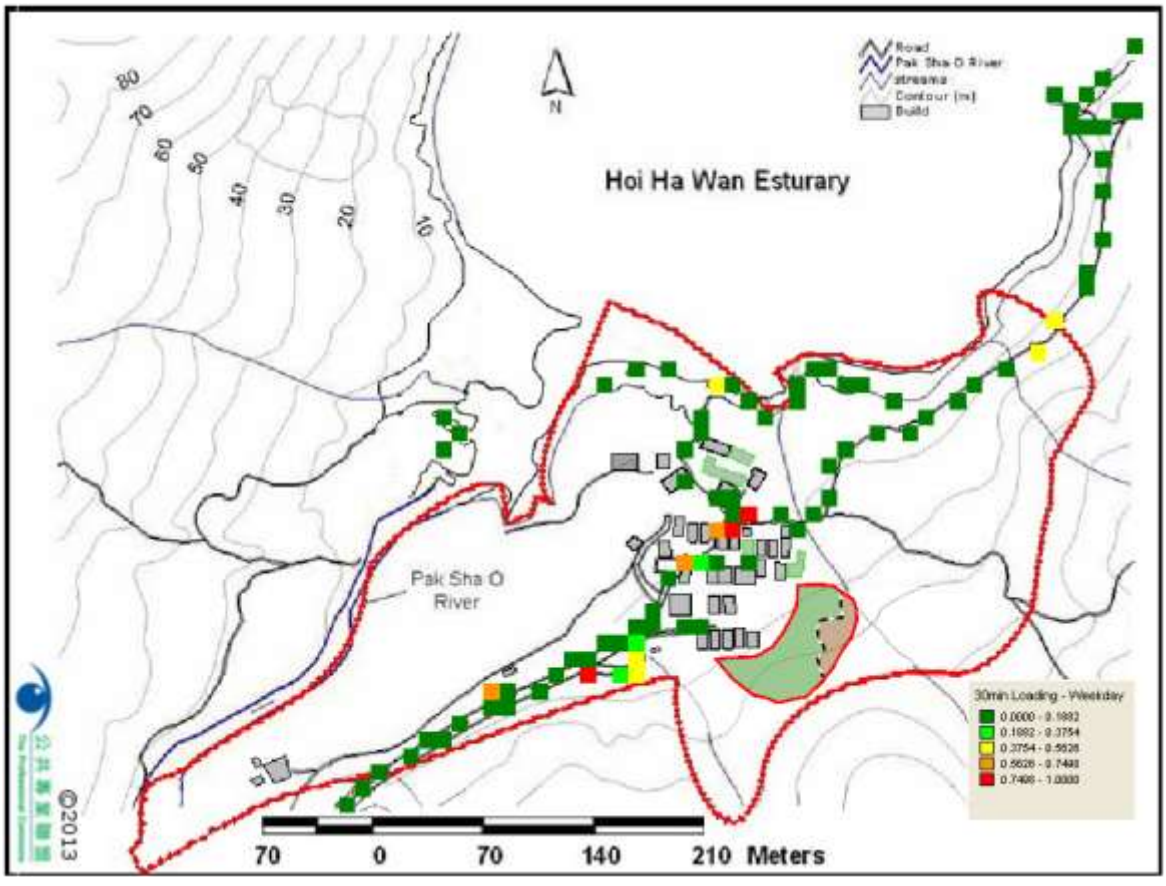

Figure 25. 60 Minute Infrastructure and Facility Loading, Fine Weekday, for Hoi Ha Village.

Proposal considerations

A key consideration with the future planning and allocation of areas within the DPA is the intended use. There must be a balance established between the preservation, conservation and advance of the village and environs. Hong Kong does not have a lot of areas like Hoi Ha Village so maximum sustainable use needs to be the prime directive of any such recommendation. It is also very important that all aspects of the village and the village needs be considered. This not only includes the landscaping, the aesthetics, but also the livelihood of the residents who rely on the area for income. As well as these considerations, whatever is proposed will have to be a compromise, a balance between the three major issues that must be balanced for a practical and workable result. It therefore must be based upon fact, science, follow local standards and be able to be justified in a court of law.

Property development for profit must be prevented. Any building must be restricted to necessary village expansion by the local resident population only. For the IV residents, this should be by the rigorous application of the Small House Policy (SHP) whilst it is still in force for bona fide villagers only. We support the abolition of the SHP at the earliest opportunity. There is no area available in the least sensitive areas for development of IV resident owned land; and some land will be needed to assist the improvements in the village if the concept of land swaps is agreed, as detailed below.

Given the data presented, the key deciding factors are the protection of the sensitive habitats in the area and the protection of the marine park. This protection needs to be complete and not subject to the issues that shifting coastlines and whole ecosystems present. It is pointless marking lines on paper without considering ecosystems, macro-ecosystems and habitats. Wildlife corridors are also a key consideration.

Given that reports already submitted clearly show the areas that need protection from an ecological perspective, the landscaping value of the area is basically ensured, since any expansion of the village will be small, given that only the future needs of the village need to be accommodated. Discussions with the IV representatives indicate that it is expected that an area that will accommodate an absolute maximum of 30 additional houses needs to be reserved for this purpose. (The figure of around 90 quoted in the draft OZP report is clearly a fiction and based upon outdated population data from the 1970s). This will satisfy the needs of SHP applications until 2047 when it is generally accepted that the SHP will expire, or will be lower if the policy is abolished before then. This puts a cap on the number of successful applications that can ever be accommodated.

Another key issue is the need to cater for the visitors to this village. Given the increasing leisure time of Hong Kong people, areas like Hoi Ha will become more important. At this time there is an increasing trend towards the area being suitable for education and recreation. Both of these activities can be instilled into this area in a form that is both sustainable and eco-friendly. If this is to be promoted then some support infrastructure needs to be confirmed and expanded as necessary. From the area carrying capacity figures measured so far, the area is currently underutilized as a whole, with some facility bottlenecks that need to be addressed. It should be fairly obvious that the village livelihood issues that exist need to be directed towards sustainable activities. This means that the local residents who are currently deriving their income from the area, need to be given incentive and encouragement to either remain or become environmentally sustainable.

Land usage

Referring to Figure 6, the land ownership map above, it is clear that any improvements to the village are made more difficult by the fractured ownership of the land. For example, the village currently

has many young children, but there are no facilities for play, other than the car parks or the beach. The owners of one of the larger lots in the centre of the village has, for example, offered the land as a playground/village open area. However this is near impossible to put into practice owing to the fragmented ownership of the land adjacent to it. Similarly, development and improvement of the ruined buildings in the centre of the village is also made more difficult by the fragmented ownership.

We therefore propose that there be a limited land swap, if possible, so that the government resumes the land in the centre of the village so that it can be used for improved facilities. The IV owners would then be given some government land in the possible expanded V zone area to the south east. The ruined buildings could then be rebuilt in their original style, for example, and used as an Information Centre for the village and the area, maybe even housing an AFCD Wardens Post. Proper shower facilities and toilets could also be accommodated (as long as they are not the usual LSD block houses). However, no co-ordinated improvements in the village can even be contemplated whilst so many different owners have so many different vested interests.

We also support the building of the AFCD Education Centre on part of the under-used barbecue area along the Hoi Ha Road.

Furthermore we also need to consider road access to the village, and the control of cars, buses, minivans etc. At the moment this is also under fragmented jurisdiction, as some of Hoi Ha Road is in Country Park, and thus under AFCD control, and the rest is in the enclave and under Police control. This needs to be regularised so that proper planning and control of access, parking and permits is achieved. Zoning the entire road issues and parking within the Country Park will allow resident AFCD wardens to monitor the area.

Access to the village

One benefit of zoning the area to the south west of the village as Country Park is that negotiating with the owners of the land for alternative footpath access to the village becomes possible. Currently, the original pedestrian access to the village, as shown on all Lands Department maps, is blocked as it traverses privately owned land. When this was owned by the IV residents there was no problem, but since it was sold to outside developers no access has been allowed and the footpath finishes halfway from the road to the village. It is clear for Figures 24 and 25 that access to the village needs improvement.

Outline Zoning Plan Proposal

The proposed OZP shown in Figure 26 delineates an area of lower ecological value, relative to the rest of the area. This area would allow for any potential village expansion in the south-east area of the DPA. This area includes the remnant Fung Shui Woodland area, an area that needs to be preserved, and is partially wooded. The notion that it is all primary woodland is not correct. The whole of the wooded area around the village was cut down for use in making lime. This activity only stopped after the Japanese Invasion of Hong Kong. So great was the demand for wood, it is recorded that the indigenous villagers (Yungs) had to rent more forested hillside land from the Tongs in order to keep the production going.

The area fringes, but does not totally occupy on an occasionally used wildlife corridor that extends from the pier along the southern section of the village. This corridor would have to remain. Note that protected species were recorded along the southern edge of the DPA boundary. To allow the village to expand along the Pak Sha O river valley would be ecologically disastrous to the fauna in the area. A small, but significant population of protected animal species use this area for foraging and

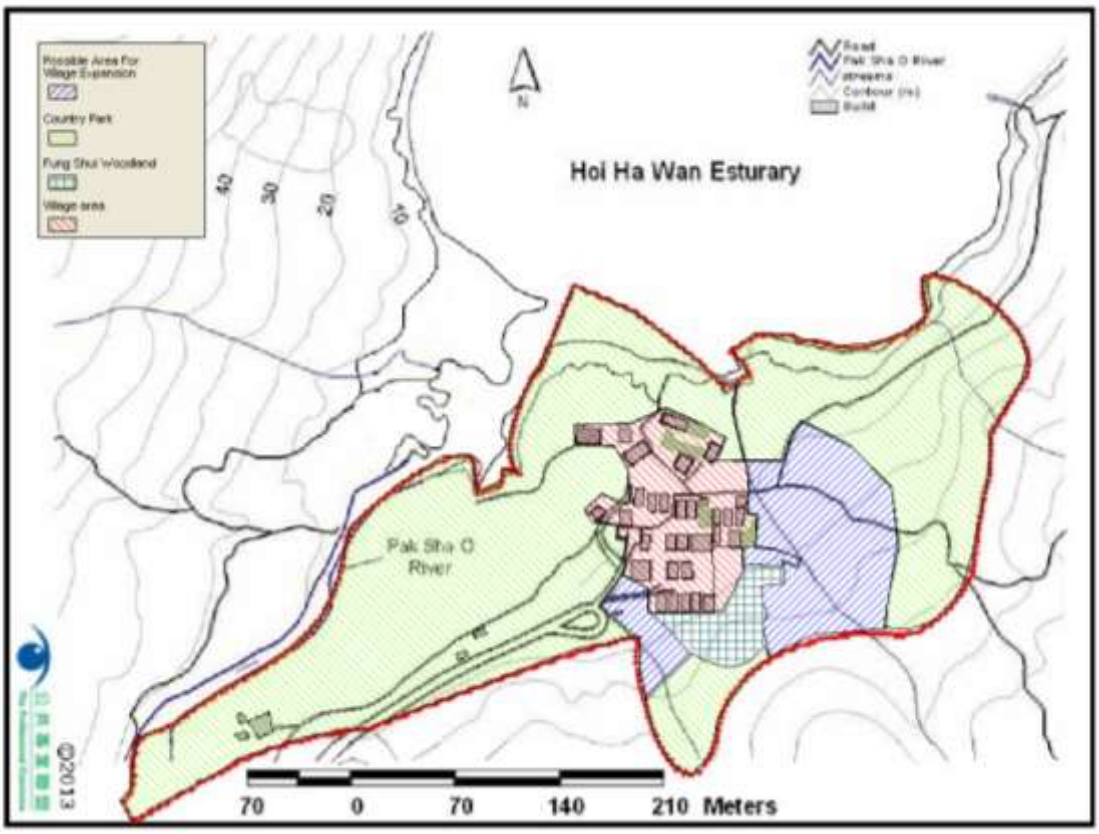

Figure 26 Proposed zoning map for Hoi Ha. The area shown in blue represents the total least sensitive area that could ever be allocated for village use. This report suggests that the actual amount allocated be determined by the Authority after careful scrutiny of the bona fide needs.

are frequent visitors to this area. It is highly likely that the reliable supply of fresh water and the very diverse ecology of the area provides for the needs of these animals.

Data suggests that this is the termination of a wildlife corridor so plays a significant role in the life cycle of the animals present in the Pak Sha O River valley area. Note that some of the habitats in the Pak Sha O river valley, and inside the DPA are unique to the area. The flood plain and the permanent marsh area are clear examples of this. The mangrove area on the eastern side of the estuary is not common with the mangrove community on the opposite side of the river. This is in terms of species make-up and structure. Furthermore, the soil substratum in these areas is also very different, with the eastern side comprising of mud and the western area comprising of sand.

The river provides a convenient vehicle for silt and pollution to travel to the Hoi Ha Marine Park. The hydrology of this low lying area would allow for a very short soil hydrological barrier between anthropogenic pollution sources and the river leading straight to the Marine Park. The proposed village expansion area on the southern side of the DPA would present a much greater hydrological barrier to similar sources of pollution provided due consideration was given to the possibility of polluting streams in the area.

Finally, the change in surface run-off rate during periods of heavy rainfall would change the hydrology of the river. Research has shown that the paved road connecting Hoi Ha Village to the Pak Tam Chung Road impacted the river flow rate and thus changed the shape of the estuary. Currently the mangrove community within the Pak Sha O River estuary relies on the lagoon to control the salinity, water outflow rate and for protection from wave action. An increase in maximum flow rate

may remove the lagoon structure and thus cause a severe impact to this community and the shape of the beach.

Proposal Rational

There are several key environmental factors regarding the OZP that need to be considered with regards to increasing the number of houses in the area. The key objective here is the conservation of the village, its surrounding areas to give the best possible chance for a modernized traditional village atmosphere to have a chance and to be encouraged at Hoi Ha Village. The alternative is a passage towards a dead and abandoned village like we see scattered throughout the New Territories. Any planning considerations for the village areas should look at the existing village area and the proposed extension as a unitary whole, i.e. any CDA should encompass the whole V area.

The key factors for the proposed OZP:

1. The protection of a major ecologically sensitive area; the section of the Pak Sha O River valley that falls within the DPA boundary, is a primary concern. Science recorded the highest levels of sightings and species diversity of protected animals within the river valley as compared the other areas within the DPA. Furthermore, the data suggested that the wildlife corridor terminates at the opposite estuary. This indicates that an easy animal passage to what seems to be a termination point of a major wildlife corridor needs to be a basic consideration of the protection of this area. The data suggests that the animals are trying to get to and from the river estuary and lagoon.

2. Placing any development along any perennial river or stream, in this case the Pak Sha O River, is just providing a vehicle for sediment, and anthropologenic generated pollution to be carried downstream. In this case it is to the very close Hoi Ha Marine Park. This is not just the case during and construction works, but also during the human occupancy.

3. Future houses should be placed as far away from any year-active pollution transporting vehicles as possible, like a river. Furthermore, it is important that waste water, after processing, is discharged into the ground away from areas that flood and in areas where gravity will encourage this water downwards into a further natural processing process. This allows surface water, like in small intermittent streams to flow over the top of this on the surface. This effectively separates the two, minimizing overall impact. The key factor here is to ensure that adequate waste water treatment is provided for each household, given that an increased water supply means more water can potentially be used by each household.

4. From a simplified landscaping prospective there is a small village, Hoi Ha Village, nestled into the side of a hillside at the head of a bay, with a river to one side and a beach in front of it. All of this combined to form a natural ambience that makes the village, beach and surrounding area photogenic. This proposal strives to continue that character by keeping any possible expansion of the village small and still in the picture.

5. There are some scattered endangered plant species recorded in the DPA. Some are seedlings. An effort should be made to protect these or relocate these to a more suitable location.

6. The area suggested for village expansion, if expansion is agreed by the Authority, contains an intermittent flowing stream as well as some protected species and established trees. The area was sized to cater for this and to allow for sufficient infrastructure to be installed into the area for any successful housing applications. The concept here is to avoid the indiscriminate cramming of houses into an area and opt for a more planned approach to the village area. Overseas data

indicates that clusters of five houses are an appropriate size for minimization of land needed for domestic infrastructure needs. This emphasises the need for a CDA designation for the whole Village area.

7. The possible village expansion area was also sized to cater for limited land swap for IV resident land that is located in key areas within the village area proper. Hoi Ha Village needs to have some village common areas established. There is also some restoration of the crumbling masses of falling down rubble that were once proud traditional village houses. These need to be rebuilt to serve as village facilities, including a possible Marine Park Warden's sub-post.

8. The area and possibly the exact position of the Fung Shui Woodland is undetermined. It is shown in different places and as different sizes on several of the maps from different authorities. Previous deforestation, mainly as a result of the lime industry, impacted all of the forested areas around the village. The low recorded species richness (13), suggests that this forest is a much degraded forest area as well. Early aerial photographs of the village confirm extensive deforestation with only small clumps of trees at the back of the village. It is highly likely that the Fung Shui Woodland of Hoi Ha was mostly cut down. It is expected that it will become a restoration project for the village and/or eco-tourist visitors, once the real boundary and extent is determined. This will not impact the novelty of such an area however, since it was common for villagers, in the past, to plant trees in this area to sustain this special area of woodland.

9. Currently, part of the main road is in the village area. Inclusion into the Country Park will allow Country and Marine Park Warden's to police this area in terms of traffic and pedestrian control. Currently the area is designated as being in Tai Po so falls under the jurisdiction of the Police, and Tai Po district Office, giving the AFCD Wardens no actual authority over this area.

Suggested procedure for achieving the proposed zoning

There is a legal and political process involved in carrying out the recommended zoning. There are several considerations to this process that need to be considered.

1. The Town Planning Board (TPB) cannot zone Country Park into an area. They can only make a strong recommendation that this be done. The TPB can zone the Village Zone (V-zone) and the Comprehensive Development Area (CDA) as recommended by this report.

2. It is the responsibility of the Agriculture, Fisheries and Conservation Department (AFCD) to do the applications for gazettment and present these for further government approval.

3. There is some concern regarding the protection of the area whilst this process is occurring. It is possible that the TPB and the AFCD to issue a stay on all building/improvement activities until this is done. This was the case at Tai Long Wan, and to some extent it worked. The success of such hold of work, depends upon public support for the conservation of the area.

4. There is also the problematic issue of an incomplete OZP if the recommendation of proposing all of the unassigned area, within the OZP, to CP is not deemed as a proper land use. This should only be a technicality, however since actually there was a recommended zoning.

Suggested future development of Hoi Ha

Any planning recommendation needs to cater for future use. This report recommends that the area of Hoi Ha and Hoi Ha Wan only be allowed to be exploited in a sustainable way for either recreation,

educational, nature-tourism or eco-tourism resource. The current bus loads of local, mainland and overseas tourists should be discouraged, mainly because the area is not set up to cater for them, nor does it have anything to offer them in terms of value for money.

However in order to cater for a future sustainable use future, some key infrastructure is required. These are listed below:

For Recreation:

1. The old boat ramp needs attention and stabilization.
2. The village footpaths need to be made more wheelchair friendly.
3. Another mooring buoy needs to be added to the single one in front of the second beach.
4. A proper toilet block and changing area needs to built near the main beach at Hoi Ha.
5. A pathway to the second BBQ site needs to be opened up in front of the existing water works pumping station at Hoi Ha.

For Education:

1. The long overdue AFCD Education Facility needs to be finalized and construction begun immediately.
2. A proper reserve for the Asian porcupine needs to be established near the AFCD Centre.
3. A proper set of Educational nature trails needs to be set up to support this facility.

For Nature-Tourism:

1. A planned set of nature trails need suitable for this need.
2. Training should be provided so that local residents can be informed about the area and they should be encouraged to

For Eco-tourism:

1. A series of proper eco based projects need to be established in this area. These should be supported by the government and run by the local villagers and other green NGOs. Typically such activities as bird watching, rubbish collection, re-forestation of damaged areas, etc.

For village infrastructure:

1. An alternative footpath access to the village.
2. Additional fire hydrants need to be added to this village.
3. A proper waste water system should be designed and installed for this village.
4. A more village suitable public transport schedule for the minibus to the village.
5. The parking situation at the village, especially during times of peak visitation should be resolved by using half of the road for parallel parking.

References

A comprehensive list of references is available in the full version of the report, available online at www.procommons.org.hk

Acknowledgements

The authors would like to thank the following for their help in compiling this report:

Oceanway Corp.
Pearl Technologies
City University of Hong Kong
Hong Kong University
Chinese University of Hong Kong
The Natural History Museum, London
Agricultural, Fisheries and Conservation Department
Lands Department
Environmental Protection Department

And especially to the interns and hundreds of university and school students who gave up their time to carry out the surveys and process the data.

Finally to the residents of, and visitors to, Hoi Ha who have endured many hours of questioning about their hopes for the future of the enclave.