



Ramsar Information Sheet

Malaysia

Kota Kinabalu Wetland



Designation date	22 October 2016
Site number	2290
Coordinates	05°59'06"N 116°05'13"E
Area	24,20 ha

Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

1 - Summary

Summary

Kota Kinabalu Wetland is a mangrove swamp located in the heart of Kota Kinabalu City, Malaysia. Despite its relatively small area of 24 hectares, the Site supports a range of unique wetland related biodiversity including more than 30 mangrove species including mangrove associates plants, 90 species of resident and migratory birds and 5 reptiles. Amongst these are the critically endangered mangrove *Bruguiera hainesii* as well as the vulnerable Chinese egret *Egretta eulophotes* and the Lesser Adjutant *Leptoptilos javanicus*. The Site is also an important spawning and nursery ground for 21 species of fish as well as for crustacean, molluscs, horseshoe crabs and jellyfish. The Site acts as a green lung and buffer zone for the city. Due to easy accessibility, it has high potential value for tourism, education and recreation. In addition, the Site plays roles as nutrient retention and groundwater replenishment. Furthermore, the Site is of cultural heritage significance being the last remaining patch of mangrove forest which is a representative of what used to be found along the entire coastline of Kota Kinabalu City before urbanization.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Compiler 1

Name	Omar Abdul Kadir
Institution/agency	Sabah Wetlands Conservation Society
Postal address	c/o Kota Kinabalu Wetlands, off Jalan Bukit Bendera Upper, Likas, 88400 KOTA KINABALU, SABAH, MALAYSIA
E-mail	swcs@sabahwetlands.org
Phone	+60-88-246955
Fax	+60-88-247955

2.1.2 - Period of collection of data and information used to compile the RIS

From year	2011
To year	2016

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Kota Kinabalu Wetland
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2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Former maps	0
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Boundaries description (optional)

The boundaries of the Ramsar Site follow the legally-gazetted boundaries of an existing protected area, namely, land reserved as a bird sanctuary at Kota Kinabalu District (Survey Plan No. 01200807). This Site was previously known as Kota Kinabalu City Bird Sanctuary. The North, South and West boundaries of the Site are restricted by adjacent boundaries of alienated privately-owned lands in its immediate vicinity and the East boundary is restricted by a canal which crosses over the site and a State Government-owned sport complex.

2.2.2 - General location

a) In which large administrative region does the site lie?	The Site is located at the West Coast of the State of Sabah, in the eastern part of Malaysia (in the Northern Region of Borneo). It is within the administrative district of the City of Kota Kinabalu. The Central Business District lies 2 km southwest.
b) What is the nearest town or population centre?	City of Kota Kinabalu

2.2.3 - For wetlands on national boundaries only

- a) Does the wetland extend onto the territory of one or more other countries? Yes No
- b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes No

2.2.4 - Area of the Site

Official area, in hectares (ha):	24.2
Area, in hectares (ha) as calculated from GIS boundaries	23.79

2.2.5 - Biogeography

Biogeographic regions

RIS for Site no. 2290, Kota Kinabalu Wetland, Malaysia

Regionalisation scheme(s)	Biogeographic region
Udvardy's Biogeographical Provinces	Indo-Malayan Realm 4.25.13 (Borneo)
Marine Ecoregions of the World (MEOW)	Southern Asia; Indo-Malayan

[Other biogeographic regionalisation scheme](#)

Udvardy, M.D.F. (1975). A classification of the biogeographical provinces of the world. IUCN Occasional Paper No. 18. Morges, Switzerland: IUCN.

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

<no data available>

Criterion 2 : Rare species and threatened ecological communities

Criterion 3 : Biological diversity

Justification

The Site supports more than 10 species of mangrove trees and a large diversity of animals including more than 90 species of resident and migratory birds (71 species are resident birds, 25 species are migratory birds, and 6 species consist of both resident and migratory birds), 5 reptilian species like monitor lizards and mangrove skinks, 21 piscine species including mudskippers, archerfish, catfishes and halfbeak, 18 crustacean species such as mud lobsters and fiddler crabs, 13 molluscs species comprise of the class bivalves and gastropods, 43 species of insects such as firefly and cicada and one specie of Cnidaria.

Criterion 8 : Fish spawning grounds, etc.

Justification

The Site is an important spawning and nursery ground for fish, prawn and crab. There are 21 species of fish, 18 species of crustacean, 13 species of molluscs, 2 species of horseshoe crabs and one specie of jellyfish (Cnidaria). Horseshoe crabs (*Carcinoscorpius rotundicauda* and *Tachypleus tridentatus*) are spotted in pairs especially in the months of April, May and June of the year for spawning and juveniles are seen in September.

3.2 - Plant species whose presence relates to the international importance of the site

Scientific name	Common name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
<i>Bruguiera hainesii</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	CR	<input type="checkbox"/>		

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Common name	Species qualifies under criterion			Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence ¹⁾	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7								
Birds																	
CHORDATA / AVES	<i>Egretta eulophotes</i>	Chinese Egret	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Protected under Sabah Wildlife Enactment 1997	Migratory Bird
CHORDATA / AVES	<i>Leptoptilos javanicus</i>	Lesser Adjutant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>	Protected under Sabah Wildlife Enactment 1997	Resident Bird

1) Percentage of the total biogeographic population at the site

3.4 - Ecological communities whose presence relates to the international importance of the site

<no data available>

4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

The site consists of natural vegetation on tidal swamp with three distinct vegetation zoning from the main water body to the adjacent areas. The first zone is the sturdy mangrove pioneers, which are the *Avicennia marina* and *Avicennia alba* predominantly covering the riverine margins of the mangrove. The second zone is the main mangrove zone which comprises of trees of the Rhizophoraceae family including the *Rhizophora apiculata* (dominant), *Rhizophora mucronata*, *Brugueira* spp. *Lumnitzera* spp. and *Sonneratia alba*. The third vegetation zone is the transitional zone (wetlands-terrestrial) which mainly covered by the mangrove associate plants. Aside from mangrove trees, at least a tenth of the area is covered with mangrove ferns (*Acrostichum aureum* and *Acrostichum speciosum*) which support the Purple Heron (*Ardea purpurea*) population as their nesting site. The site is one of the three recorded breeding sites for the Purple Heron in Sabah, which the other two are in Padas Damit and Binsulok (Phillipps et. al., 2009). The Purple Heron is a protected bird species under the Sabah Wildlife Conservation Enactment, 1997.

4.2 - What wetland type(s) are in the site?

Marine or coastal wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
I: Intertidal forested wetlands		1		

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Scientific name	Common name	Position in range / endemism / other
<i>Avicennia marina</i>		South Asia including Borneo, Australasia and Micronesia
<i>Avicennia marina marina</i>		Bangladesh, India, Indonesia, Malaysia, Brunei, Myanmar, Philippines, Singapore, Sri Lanka, Thailand, Viet Nam, and southern Papua New Guinea.
<i>Sonneratia alba</i>		East Africa, Seychelles and Madagascar, India, Sri Lanka, South-East Asia to Tropical Australia

4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	%occurrence	Position in range / endemism/other
CHORDATA/AVES	<i>Ardea cinerea</i>	Grey Heron				
CHORDATA/AVES	<i>Ardea purpurea</i>	Purple Heron				
CHORDATA/AVES	<i>Butorides striata</i>					Tropics worldwide
CHORDATA/AVES	<i>Egretta garzetta</i>	Little Egret				Africa, Eurasia and Australasia, less common in Borneo and Philippines
CHORDATA/AVES	<i>Egretta intermedia</i>	Intermediate Egret; Plumed Egret				Africa, oriental region, Australasia; partly migratory, resident in parts of Indochina, Myanmar and southwest China
CHORDATA/AVES	<i>Haliastur indus</i>	Brahminy Kite				Protected under Sabah Wildlife Conservation Enactment (1997)
CHORDATA/AVES	<i>Nycticorax nycticorax</i>	Black-crowned Night Heron; Black-crowned Night-Heron				

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
A: Tropical humid climate	Am: Tropical monsoonal (Short dry season; heavy monsoonal rains in other months)

The climate of the Site is strongly tropical with high temperature and humidity. The mean annual total rainfall is 3,675.6 mm (peak rainfall in October). The mean annual number of rainy days is 183. The mean daily maximum temperature is 32.3°C, while mean daily temperature is 23.9 °C. There are two prevailing monsoons namely Northeast Monsoon (November to March) and Southwest Monsoon (May to September). Northeast Monsoon has cooler temperature and less rainfall, while Southwest Monsoon which has warmer temperature and more rainfall. There are also two successive inter-monsoons from April to May and from September to October. April is the hottest month, though the annual temperature variation is small.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- Entire river basin
- Upper part of river basin
- Middle part of river basin
- Lower part of river basin
- More than one river basin
- Not in river basin
- Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

Kota Kinabalu Wetland and its catchments are located in the urban area. Freshwater enters the mangrove forest in Kota Kinabalu Wetland from three directions; from the west via a short concrete drain, from the south via a canal which runs approximately 1km to the boundary of Kota Kinabalu Wetland; and from the east via a canal originating from a manmade pond of approximately 500 m to the boundary of Kota Kinabalu Wetland. Runoffs from Kota Kinabalu Wetland flow further downstream northward to Likas Bay and finally to South China Sea via a 500m-canal from north boundary of Kota Kinabalu Wetland.

4.4.3 - Soil

- Mineral
- Organic
- No available information

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes No

Please provide further information on the soil (optional)

The dominant soil is Weston Association, derived from fine textured sulphidic alluvium, subject to regular inundation by saline tidal water. No study has been conducted to ascertain the hydrological values of the Site. However, potential hydrological values are expected to include: groundwater recharge, flood control and sediment trapping. It also purifies the water which includes pollutants from the surrounding area before the water reaches the sea.

4.4.4 - Water regime

Water permanence

Presence?
Usually seasonal, ephemeral or intermittent water present

Source of water that maintains character of the site

Presence?	Predominant water source
Water inputs from groundwater	<input type="checkbox"/>
Marine water	<input type="checkbox"/>
Water inputs from rainfall	<input type="checkbox"/>
Water inputs from surface water	<input type="checkbox"/>

Water destination

Presence?
Marine
Feeds groundwater

Stability of water regime

Presence?
Water levels fluctuating (including tidal)

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology.

No study has been conducted to ascertain the hydrological values of the Site. However, potential hydrological values are expected to include: groundwater recharge, flood control and sediment trapping. It also purifies the water which includes pollutants from the surrounding area before the water reaches the sea.

4.4.5 - Sediment regime

- Significant erosion of sediments occurs on the site
- Significant accretion or deposition of sediments occurs on the site
- Significant transportation of sediments occurs on or through the site

Sediment regime is highly variable, either seasonally or inter-annually

Sediment regime unknown

(EOD) Water turbidity and colour	17.2 - 78.10 NTU (higher turbidity maybe the result of urban runoff)
(EOD) Water temperature	30.0 – 30.9 °C (based on water quality monitoring carried out regularly at KK Wetland)

4.4.6 - Water pH

Acid (pH<5.5)

Circumneutral (pH: 5.5-7.4)

Alkaline (pH>7.4)

Unknown

Please provide further information on pH (optional):

pH from 8.4 – 8.5

4.4.7 - Water salinity

Fresh (<0.5 g/l)

Mixohaline (brackish)/Mixosaline (0.5-30 g/l)

Euhaline/Eusaline (30-40 g/l)

Hyperhaline/Hypersaline (>40 g/l)

Unknown

Please provide further information on salinity (optional):

The salinity ranges from 0.6 – 2.8 ppt

(EOD) Dissolved gases in water	Dissolved oxygen generally low at 0.6 – 5.8 mg/L.
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4.4.8 - Dissolved or suspended nutrients in water

Eutrophic

Mesotrophic

Oligotrophic

Dystrophic

Unknown

(EOD) Water conductivity	Water conductivity is low at 10.2 – 43.2 µS/cm
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4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself: i) broadly similar ii) significantly different

Surrounding area has greater urbanisation or development

Surrounding area has higher human population density

Surrounding area has more intensive agricultural use

Surrounding area has significantly different land cover or habitat types

Please describe other ways in which the surrounding area is different:

Due to continuous mangrove restoration effort, most of the area in Kota Kinabalu Wetland is covered with lush mangrove trees with abundance of aquatic organisms. Immediate boundary of the Site consists of mostly individual residential area. Bayshore Condominium and Federal House are located north of the site, Likas Square to the northeast, Taman Likas Jaya to the east and Taman Prestij to the south. Sports and recreational centre comprises of Golf Driving Range, Aquatic Centre and Likas Stadium is located in the immediate east of the site. A single carriageway of Upper Hill Road and Jalan Asrama is located north of the site.

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Wetland non-food products	Other	Low

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Erosion protection	Soil, sediment and nutrient retention	Low
Pollution control and detoxification	Water purification/waste treatment or dilution	Medium
Climate regulation	Regulation of greenhouse gases, temperature, precipitation and other climactic processes	Medium
Hazard reduction	Flood control, flood storage	Medium

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	High
Spiritual and inspirational	Cultural heritage (historical and archaeological)	High
Scientific and educational	Educational activities and opportunities	High
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	High

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part	High
Soil formation	Sediment retention	Medium
Soil formation	Accumulation of organic matter	Medium
Nutrient cycling	Carbon storage/sequestration	High
Pollination	Support for pollinators	Medium

Within the site:

Outside the site:

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes No Unknown

4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland

Description if applicable

Kota Kinabalu Wetland through its environmental education programmes spreads environmental awareness by continuously educate local people about the importance of wetlands conservation and the traditional wise uses of mangrove such as charcoal production, foods, dyes, medicines and timber (eg. for piling in most saltwater constructions). The site acts as a centre to disseminate such information, knowledge, skill and experience to the local people and provides opportunities for research and studies for higher education level.

ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples

Description if applicable

Intense development in Kota Kinabalu city causes huge destructions of natural wetlands environment along the coastline of Kota Kinabalu. The protected wetlands area of Kota Kinabalu Wetlands became a vital refuge for the wildlife. The drainage system built connecting the residential areas to the sea area pass through the conservation area. The drainage became a vital connection between the seawater and the water body in the site itself. Conservation activity in the site includes introducing new species of mangrove tree i.e. the endangered species *Bruguiera hainesii*.

iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland

4.6 - Ecological processes

<no data available>

5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
Provincial/region/state government	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Public land (unspecified)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Local authority, municipality, (sub)district, etc.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public ownership	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Religious body/organization	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Foundation/non-governmental organization/trust	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Commercial (company)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Other

Category	Within the Ramsar Site	In the surrounding area
Unspecified mixed ownership	<input type="checkbox"/>	<input checked="" type="checkbox"/>
No information available	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Provide further information on the land tenure / ownership regime (optional):

The land within the Site is owned by the State Government of Sabah, which the administrative authority falls under Sabah Wildlife Department as the area is gazetted as Bird Sanctuary in 1996. In order to oversee and co-ordinate development, planning and management of the site when it was gazetted as Bird Sanctuary, the Likas Wetland Sanctuary Management Committee (LWSMC) was formed under the former Chief Minister back then in 1996. LWSMC was a unique partnership of Government agencies including the Sabah Wildlife Department, the NGOs, private and community. WWF-Malaysia was appointed as the Secretariat for the LWSMC. Later in 2006, Sabah Wetlands Conservation Society (SWCS), a local Non-Government Organization was set up to take over and strengthen the management of the site and to establish a legitimate and accountable entity. Sabah Wildlife Department sits in SWCS as an Ex-Officio member. In the surrounding area, approximately 60% of the lands are owned by individuals.

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:

Kota Kinabalu Wetland

Provide the name and title of the person or people with responsibility for the wetland:

Datuk Haji Zainie Abdul Aucasa

Postal address: Sabah Wetlands Conservation Society
c/o Kota Kinabalu Wetlands
off Jalan Bukit Bendera Upper, Likas
88400 Kota Kinabalu, Sabah
Malaysia
Tel: +60 - 88 - 246955
Fax: +60 - 88 - 247955

E-mail address: swcs@sabahwetlands.org

5.2 - Ecological character threats and responses (Management)

5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Housing and urban areas	Medium impact	High impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Unspecified development	Medium impact	High impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Commercial and industrial areas	Low impact	Medium impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Drainage	Low impact	Low impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Non specified	unknown impact	unknown impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Energy production and mining

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Unspecified	unknown impact	unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Transportation and service corridors

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Unspecified	unknown impact	unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Fishing and harvesting aquatic resources	Medium impact	High impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Unspecified/others	unknown impact	unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Vegetation clearance/ land conversion	Low impact	Low impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Unspecified	unknown impact	unknown impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Household sewage, urban waste water	Medium impact	High impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Garbage and solid waste	Medium impact	High impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Geological events

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Unspecified	unknown impact	unknown impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Storms and flooding	Low impact	Low impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Please describe any other threats (optional):

Pollution caused by rubbish and oils thrown to the river by people living around Kota Kinabalu Wetlands, including illegal residents is still affecting adversely to the fauna and flora in the site. Mangrove swamp in Kota Kinabalu Wetland receives its seawater source from only one canal at the north boundary. The imbalance input of both seawater and freshwater can be deleterious to the mangrove ecosystem. The increased development for human settlements and shoplots in the vicinity has raised the anthropogenic threats to the mangrove swamp in Kota Kinabalu Wetland including water pollution with high faecal coliforms and oil waste, poaching for clams collections, sedimentation and rubbish. Currently, there is construction activity for developing new housing area near to the southeast boundary of Kota Kinabalu Wetland including the drainage dredging so as the runoff is directed to the canal that enters Kota Kinabalu Wetland from south.

As most of the lands in the vicinity of Kota Kinabalu Wetland are issued with land titles, the owners have legal right to develop their areas. Coincidentally, mangrove forest in Kota Kinabalu Wetland will face increasing pressures including water, air and noise pollutions, sedimentation, encroachment and rubbish to a level it can sustain which eventually destructed the ecological functions it poses. The increased water pollution can cause high mortality rate of organisms especially the mangrove-dependent species. During the construction of the development projects, there will be basic worker quarters which usually do not have appropriate waste management and sanitary facilities. The pollutions from the quarters as well as from the construction activities are anticipated. In addition, several proposed developments in the surrounding area are designed to be high concrete buildings, especially glassy-designated buildings which increases possibility of the migrating birds being thrown off their flight paths as light is reflected from glass windows of tall buildings in themselves are perilous to birds in flight.

5.2.2 - Legal conservation status

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Kota Kinabalu City Bird Sanctuary	http://www.sabahtourism.com/destination/kota-kinabalu-wetlands	whole
Other non-statutory designation	Cultural Heritage Site (Conservation)	http://www.sabahwetlands.org/society/about-us/our-history	whole

5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve
- Ib Wilderness Area: protected area managed mainly for wilderness protection
- II National Park: protected area managed mainly for ecosystem protection and recreation
- III Natural Monument: protected area managed mainly for conservation of specific natural features
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
- V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
- VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Implemented

Habitat

Measures	Status
Habitat manipulation/enhancement	Implemented
Improvement of water quality	Proposed

Species

Measures	Status
Threatened/rare species management programmes	Partially implemented

Human Activities

Measures	Status
Communication, education, and participation and awareness activities	Implemented
Regulation/management of recreational activities	Implemented
Harvest controls/poaching enforcement	Proposed
Research	Implemented

Other:

The Site is of cultural heritage significance being the last remaining patch of mangrove forest which is representative of what used to be found along the entire coastline of Kota Kinabalu City before urbanization (the site was also gazetted in 1999 for conservation under the Sabah Cultural Heritage (Conservation) Enactment 1997) (Ref. G.N.849-1999)."

5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes No

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

The site provides wetland educational and recreational programmes for students and the general public. The facilities provided for this purposes are a single-storey building with administration office, library and audio-visual room, information brochures, facilities for school visits such as binocular and bird-watching guided-book, deep into the mangrove swamp with boardwalk, huts, outdoor classroom, bird-hide and observatory tower.

The centre promotes various packages of environmental education programmes (EEP) for both local and foreign visitors of family, students and teacher trainees, capacity building for the local school teachers and leadership training for primary and secondary school students, besides doing outreach to schools and public for talks and exhibition. The exhibition centre with the themes of water cycle, Ramsar wetlands, fauna and flora in mangroves was open to the public in 2000.

URL of site-related webpage (if relevant):

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No, the site has already been restored

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water quality	Implemented
Plant species	Implemented
Birds	Implemented
Animal species (please specify)	Implemented

Sabah Wetlands Conservation Society (SWCS) is conducting water quality monitoring and mangrove thinning to monitor the health of the mangrove area in Kota Kinabalu Wetland. Water quality monitoring is carried out quarterly with the collaboration between SWCS and a state's government agency. With the water monitoring equipment sponsored by a corporate recently, SWCS targets to conduct the practices more often with own capacity.

SWCS receives many researchers from both local and international universities. Currently, there are students conducting researches on fireflies, mangrove ecosystem, nutritional values of mangroves and the accuracy of GPS in the mangrove forest of Kota Kinabalu Wetland.

SWCS also accepted groups of students for internship annually, with an average of 8 intern per year for the past 10 years. The students, mostly coming from local universities are assigned to conduct their own individual scientific study in Kota Kinabalu Wetland such as monitoring on the migratory birds and monitoring on the health of nursery in Kota Kinabalu Wetland.

SWCS has a laboratory equipped with basic facilities. There are also some scientific experiment instruments and apparatus such as microscope, beaker and test tube.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

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- Lo, M.W. (2009). Comparison Study of Mangrove Species Diversity Between Kota Kinabalu Wetland Centre and Alamesra Mangrove Forest. Universiti Malaysia Sabah, Kota Kinabalu.
- Malaysian Wetland Working Group (1987). Malaysian Wetland Directory Volume 3 Sabah. Department of Wildlife and National Parks, Kuala Lumpur.
- Moller, H.S. (Undated). Bird Observations at Likas Wetlands. Kota Kinabalu City Bird Sanctuary, Kota Kinabalu.
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6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<1 file(s) uploaded>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<no file available>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<no file available>

vi. other published literature

<5 file(s) uploaded>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Mangrove Forest (*Sabah Wetlands Conservation Society, 28-12-2015*)



Main building compound (*Sabah Wetlands Conservation Society, 29-06-2016*)

6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation