

Nature Society Singapore (NSS)'s Position on HDB's Tengah Forest Plan

Summary

The HDB's plan for a 'Forest Town' at Tengah is laudable in the setting aside of a 5km-long and 100m-wide green corridor called the 'Tengah Nature Way' (TNW) --- for wildlife dispersal between the Western Catchment and the Central Nature Reserve (Bukit Timah & Central Catchment). The plan to green and soften up the one and large Canal in the area running north into the Kranji Reservoir extends admirably what has been accomplished at the Kallang River in Bishan Park. But disappointingly, HDB's vision of a forest town involves only about 7 % or slightly more of the original forest being set aside for the conservation of biodiversity. Given the impressive records from NParks' survey of wildlife in the area, NSS' position is that this will be tragic for the rich wildlife currently inhabiting the area. In terms of ecological sustainability, there is lacking a robust plan for the 'Forest Town'. Here, NSS proposes that there should be two core forest areas set aside at both ends of the TNW as havens for the remaining wildlife in the area after the completion of the housing development --- both of which can also function as resting and calming stop-overs for those wildlife on long-range dispersal. NSS also indicates here the directional thrust on both the western and the eastern end of TNW for an effective connectivity between the Western Catchment and the Central Nature Reserve --- as well as a green waterway connectivity from the Canal to the marshland of the Kranji Marshes Park to the north.

Introduction

(Refer to **Map 1** for the location of the Tengah Forest Town development area.)

The HDB plan for the Tengah area covers an extensive secondary forest that have sprouted and matured after the phasing out of farming within the zone. The vision of the 'Forest Town' for the zone is elaborated in HDB's website as follows:

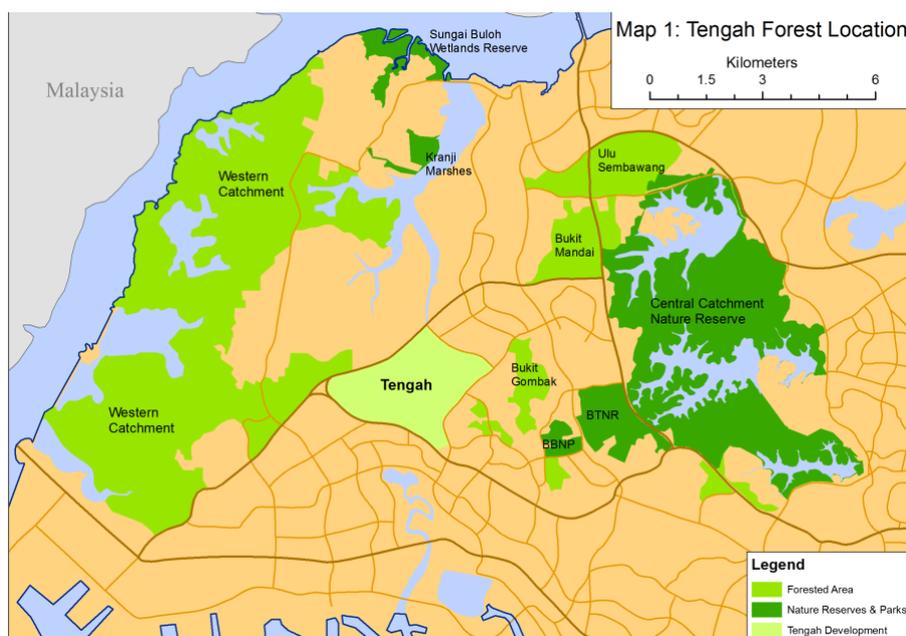
"Tengah will see several 'firsts' in its development. It will be the first 'forest town' that is planned to be integrated with the area's surrounding greenery and biodiversity. One major attraction will be the creation of an approximately 100m wide and 5km long forest corridor, a collaboration with National Parks Board which will form part of the larger network of greenery that connects the Western Water Catchment Area and the Central Catchment Nature Reserve. This forest corridor will be planted with rainforest tree species to transform it into a rich forest habitat. Amenities such as hiking trails would be incorporated in the corridor for the community to get close to nature and enjoy the rainforest." (HDB, 8 Sep 2016: 'Unveiling the Master Plan for Tengah: At Home with Nature'.)

This is a tremendous step forward in HDB’s planning design, especially with the proposed 5km long forest/wildlife corridor with a breadth of 100m, called officially the ‘Tengah Nature Way’ (TNW). The ‘Forest Town’, about 700 hectares in area, is about the size of Bishan town. Only 50 hectares of the ‘Forest Town’ will be allocated for the wildlife and this only in the form of the wildlife corridor called the TNW. However, given the richness of the wildlife documented in the HDB area, we believe more area should be set aside for the protection of natural habitat and its wildlife.

The purpose of this Nature Society Singapore (NSS)’s feedback is to provide NSS’ recommendations as to how best to actualize this laudable vision of the ‘Forest Town’ into an ecologically-oriented reality that will enable the long-term survival of existing wildlife and for benefit of the residents and people of Singapore. This is in line with the HDB’s admirable objective to embed “the community close to nature and enjoy the rainforest”.

This feedback is based on HDB ‘s **Tengah Phase 1: Monitoring Brief** with the appended inventory of the biodiversity survey results (dated September 2017). Additional wildlife information based on NSS’ past records, but not included in the HDB’s 2017 biodiversity inventory, will be taken into account. The results of HDB’s survey is very impressive for this secondary forest that is located far away from both the Western Catchment and the Central Nature Reserve (Bukit Timah and Central Catchment).

NSS is aware of the forest that is already being cleared for the Phase 1 development, which comes to 55 hectares lying at the southern portion of the HDB development area --- constituting about 8% of the total area (700 hectares). Given the already implemented rescue operation of the wildlife within the Phase 1 patch, we also presuppose that whatever wildlife that are inhabiting the Phase 1 patch has been shepherded (we hope successfully) into the rest of the remaining uncleared area of the HDB development zone.



Summary of the Wildlife

A) The Birdlife

The birdlife is very rich with at the least a total of 117 species, both migratory & resident. This total is based on the 90 species recorded in the HDB's inventory (2017) with an addition of 27 species from NSS' Tengah past records which are not listed in the HDB's list. (Refer to **Appendix 1** for the NSS' additions). This combined total (117 species) comes to 30% of Singapore's total bird species recorded (392, NSS 2015). This is very impressive --- for an area outside the Central Nature Reserve. Out of this total, there are 40 forest-affiliated species, resident and migratory, which comes to 34 % of the total bird species recorded here. Of the 40 forest-affiliated species, 33 are non-introduced residents, which comes to 83 % of the total for such category recorded here. (Refer to **Appendix 2** for all the forest-affiliated bird species given in the combined HDB/NSS' inventory).

Globally Threatened Species: Four (4) of the total species recorded are globally threatened, that is, listed in the **IUCN Red List**. And these are:

(NT = Near-threatened; EN = Endangered; F = Forest))

- 1) Grey-headed Fish Eagle --- NT(F)
- 2) Blue-rumped Parrot ----- NT(F)
- 3) Straw-headed Bulbul ----- EN (F)
- 4) Long-tailed Parakeet. ----- NT(F)

Protection of their forest habitat on Singapore's part would be a big contribution on a global scale to the long-term survival all these four species. Three (3) of these four (4) are also listed in the **Singapore Red Data Book (SRDB, 2008)**.

Straw-headed Bulbul: Of special importance for the global conservation effort is the case of the Straw-headed Bulbul. Across much of its distribution range, i.e. Southeast Asia, the Straw-headed Bulbul has been relentlessly trapped and sold in the bird markets of Java, Kalimantan, Sumatra and Peninsular Malaysia. It is now extinct in Thailand and parts of Indonesia, including the whole island of Java, while also in decline in Malaysia. A recent study by the Bird Group "estimated that the population of the Straw-headed Bulbul for the whole of Singapore to be at least 202 individuals ... distributed over multiple forest patches", making Singapore a major global stronghold for the species (Yong *et al* 2018). As signatory to the **UN Convention on Biodiversity**, it is incumbent upon Singapore to do its utmost **to not only hold the fort but also to promote its long-term global survival through local habitat conservation**.

Nationally Threatened Species: Sixteen (16) species are listed in the **SRDB**, and they constitute 29 % of the total listed (56 species) in the **SRDB**. These species are:

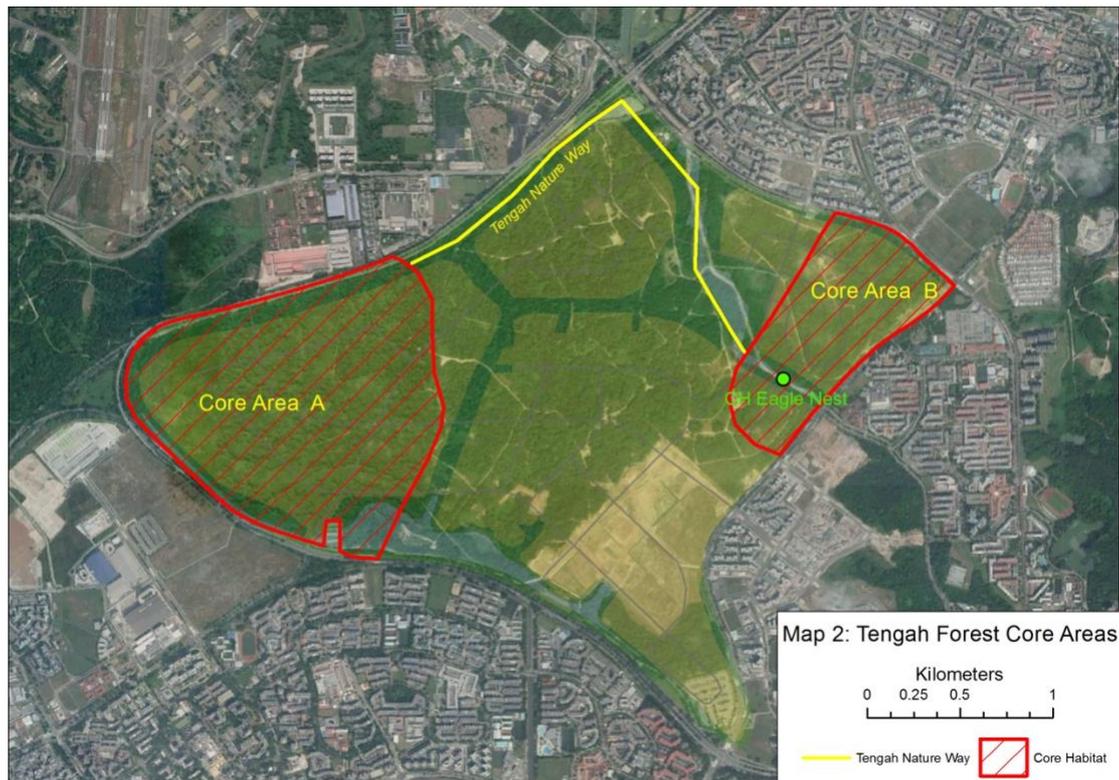
(VU = Vulnerable; EN = Endangered; CR = Critically Endangered; F= Forest)

- 1) Grey Heron ----- VU
- 2) Purple Heron ----- EN --- (from NSS' records)
- 3) Grey-headed Fish Eagle ----- CR (F)
- 4) Changeable Hawk-eagle ----- EN(F)
- 5) Red Jungle Fowl ----- EN (F)
- 6) Red-wattled Lapwing ----- EN
- 7) Red-legged Crake -----VU
- 8) Blue-rumped Parrot -----CR (F)
- 9) Blue-crowned Hanging Parrot -----EN (F)
- 10) Violet Cuckoo -----EN (F)
- 11) Buffy Fish Owl -----CR (F)
- 12) Glossy Swiftlet----- CR
- 13) Blue-eared Kingfisher ----- CR (F)
- 14) Straw-headed Bulbul ----- EN (F)
- 15) Oriental Magpie Robin ----- EN
- 16) White-rumped Shama ----- CR (F) --- from NSS' records)

Out of the 16 listed in the **SRDB** above, there are 10 forest-affiliated, while another 10 in the combined HDB-NSS' inventory are 'Uncommon' species such as the Emerald Dove, Banded Bay Cuckoo, Plaintive Cuckoo, Rufous Woodpecker, Hill Myna, Abbot's Babbler (Refer to **Appendix 2** for the complete list).

Nesting Nationally-endangered Eagle: It is to be noted that NSS has a record of a nesting site of the Changeable Hawk-eagle, which is listed in the **SRDB** as 'Endangered'. The nesting site is still in use (see **Map 2** attached for an approximate location). This raptor species has been subjected to nesting-site destruction over the years by development all over Singapore --- for examples, i) at the forest in Clean-tech Park (at junction of Jalan Bahar & PIE), ii) at the forest at the junction of Sungei Pandan & Sungei Ulu Pandan (for a bus terminal), iii) at the forest along Woodland Road (for a foreign workers' hostel). It is urgent that the nesting site of this nationally endangered species be protected for a meaningful effort to design and create a 'Forest Town'.

From just the birdlife records, such as the Grey-rumped Parrot, Orange-bellied Flowerpecker, White-rumped Shama, etc., it must be said that the secondary forest at Tengah has become matured enough to have attracted forest-affiliated species that are usually restricted to the Central Nature Reserve. In this light, given that there are also many nationally threatened and as well as uncommon forest-affiliated species, it must also be said that the Tengah Forest is a very important habitat for forest-affiliated wildlife in Singapore.



B) Other Taxa

Mammals: Of note for other taxa in the HDB's inventory are 2 uncommon mammal species --- Javan Pipistrelle and Greater Bamboo Bat.

Sunda Pangolin: There is also an NParks' record of a Sunda Pangolin (March 2017), a species listed as '**Critically Endangered**' in the **IUCN Red List** -- - as well as a couple of unconfirmed reports of the species from nature lovers. There is also a record at the Pavilion Park housing estate (2012) at the southern periphery of the HDB planning area (personal comm., Steven Chong, a resident there). The fact that the animal is found lost in the housing estate reveals that this globally endangered species is very much extant in the Singapore's remaining countryside and forest patches outside the Central Nature Reserve --- this one being most probably displaced from its natural habitat due to development disturbances and seeking a new home-ground. Together with the four globally threatened bird species (especially the Straw-headed Bulbul) mentioned above, the presence also of the globally endangered Sunda Pangolin renders the Tengah Forest an area of high importance for conservation attention.

Butterflies: 44 butterfly species are recorded in the HDB's inventory --- out of which 7 species are either regarded as 'scarce' or uncommon. 2 of these are listed in the **SRDB** and these are:

- 1) *Metallica Caerulean Jamides electo* --- NE (presumed Nationally Extinct; now re-discovery)
- 2) *Ancyra Blue Catopyrops ancyr*a --- VU (Vulnerable)

What is most exciting is the resident population of Yellow Flat butterfly, a forest species that is rare in Singapore. The species was discovered only in 2012 --- at the edge of the Western Catchment. Tengah Forest is one of the only two known localities of this butterfly species in Singapore.

Also of note in the HDB's inventory is the uncommon reptile --- the Green Crested Lizard.

NSS' Areas of Concern with the HDB's Forest Town Plan with NSS' Remedial Proposals

Based on the information and records given in the NParks' survey, we have the following concerns:

A) The Tengah Nature Way (TNW)

i) Main Purpose of the Corridor

Refer to **Map 2** for the HDB-NParks' planned route of TNW.

The HDB-NParks' plan is to have this green corridor as a wildlife dispersal route from the Western Catchment to Central Nature Reserve --- and vice versa. This is an extremely bold plan but given the current landscape situation on both the western and eastern flank of Tengah Forest, we are skeptical of the effectiveness of this plan for wildlife connectivity in terms of the stepping stones of natural habitat available --- **unless remedial measures are taken to establish or recreate the stepping stones that have been lost.**

ii) Problems with the TNW Connectivity

a) **The Western Flank:** On the western flank, connectivity is possible and promising as there are still for the time being undeveloped patches of wooded areas north-west of the Kranji Expressway and across Jalan Bahar to the Western Catchment. But given the development in that area (Bulim Industrial Park, the Clean-Tech Park, the Civil Defence Academy) and now the plan for the extension of the Tengah military airport to coral in the Lim Chu Kang Road and adjacent farmlands, things are not so sanguine for a smooth connectivity.

b) **The Eastern Flank:** On the eastern (or south-eastern) flank, the situation for connectivity is pretty awful! The nearest stepping stone towards the Bukit Timah Nature Reserve (BTNR, part of the forested Central Nature Reserve) is the Bukit Gombak Forest (within the MINDEF zone) which to a large extent is still intact but the nearest link to this Forest is the former large forest to the east of Brickland Road, which unfortunately had already been completely cleared for future development. **What is left of possible connectivity is to the south following the MRT line across Bukit Batok Road but veering towards Bukit**

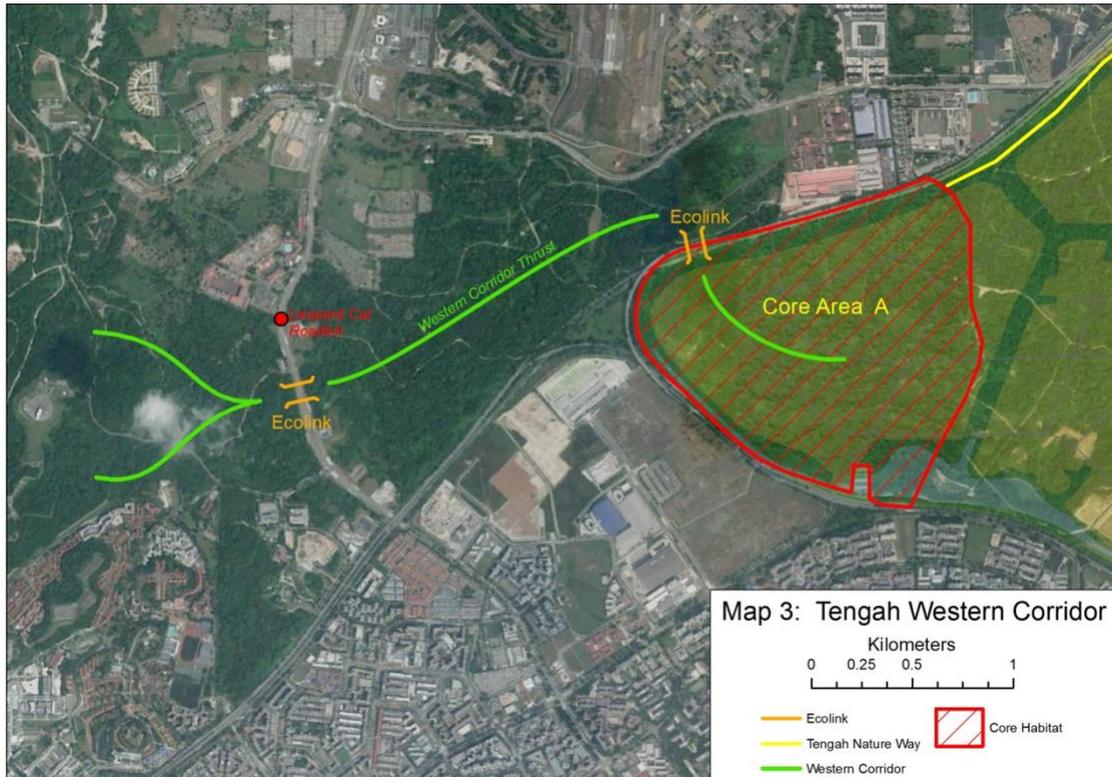
Gombak along the open belt of manicured grassland, which was until recently a remnant patch of woodland south-west of the Pavilion Park housing estate. The connectivity via Bukit Batok Hillside Park along Bukit Batok West Avenue 2 is of limited value because first almost half of it to the north-west has been cleared and further, beyond the Civil Service Club, the thrust to Bukit Batok Nature Park (BBNP) is hampered badly by a mass of buildings.

c) Now when the housing plans are all completed, what we will have for this lengthy green corridor is the actuality of it being sandwiched closely by a busy, noisy expressway on the northern flank and a gigantic HDB housing estate on the southern flank. The 100m width or depth, we are afraid, will not be enough to mitigate these sources of disturbances from both flanks --- especially for the forest-affiliated wildlife.

iii) Proposals for Rectifying the Gaps in TNW Connectivity

We propose that for the planned TNW to function as an effective corridor for wildlife dispersal between the Western Catchment and the Central Nature Reserve --- and vice versa --- the following conservation measures for connectivity should be implemented:

a) **The Western Sector:** Refer to **Map 3**. To the western sector of the TNW and across north-west from the junction of the KJE and the PIE, that is the Tengah Flyover, a green corridor with the width of the planned TNW, or even greater, must also be allowed across the undeveloped greenery. And across Jalan Bahar, the forest between Nanyang Technological University and the Civil Defence Academy and all the way along Lorong Danau into the core of the Western Catchment, should be left untouched. The Western Catchment is a Nature Area in the **Singapore Green Plan**, where nationally and/or globally endangered species such as the Sunda Pangolin, the Leopard Cat, the Straw-headed Bulbul, etc., are also present. There is a need here 1) to create an eco-link across the KJE to cater to a wider variety of wildlife (from birds to ground-moving animals) ---- and also 2) to create another one across Jalan Bahar. These eco-links are urgent as more and more developments are cutting into the remaining green areas in this sector leading to the increase in traffic along roads. In 2007, a Leopard Cat road-kill occurred at Jalan Bahar near the Civil Defence Academy (personal comm.. Prof. R. Bachmann of NTU), revealing that such rare wildlife are moving around in the countryside even traversing major roads.



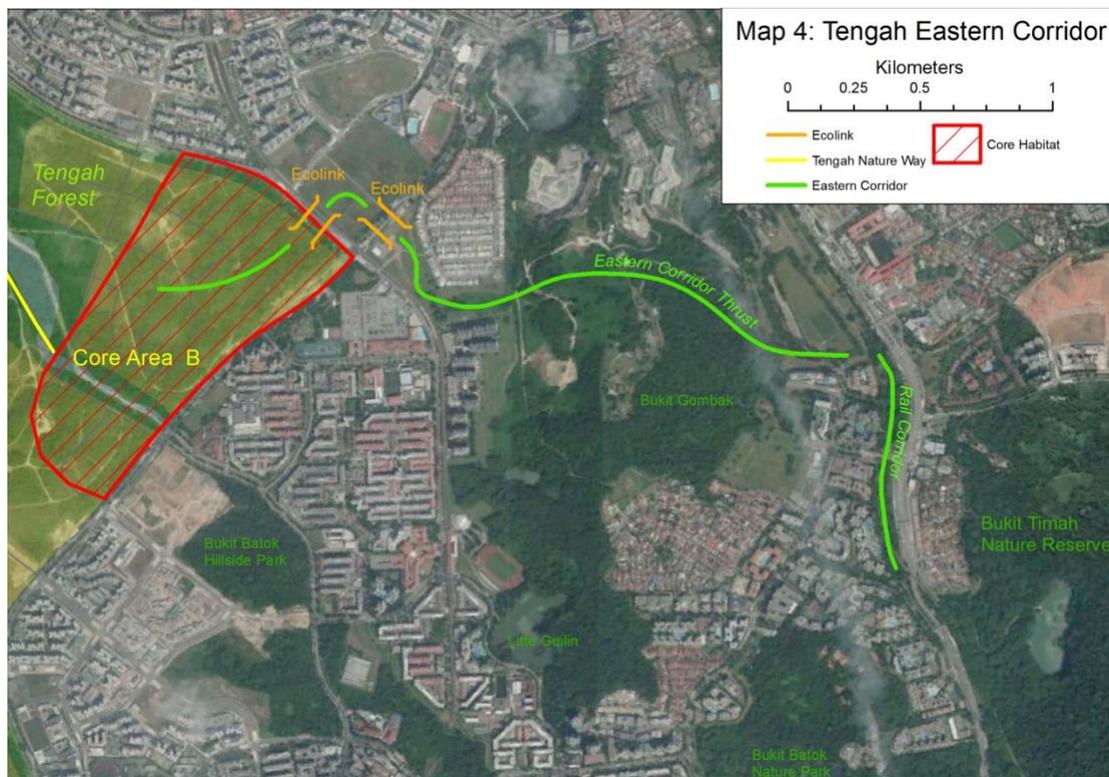
b) **The Eastern Sector:** Refer to **Map 4**. The eastern sector is more problematic given that many of the existing forest patches were cleared or degraded by housing and other concrete developments. The most promising route for wildlife movement through to the Central Nature Reserve is through Bukit Gombak and from there along the Rail Corridor to BTNR and the Dairy Farm Nature Park (DFNP) --- as well as southwards to the Bukit Batok Town Park (BBTP), also known as the Singapore 'Kweilin'. The connectivity to BTNR through Bukit Gombak is facilitated by the open character of the landscape along and across the Upper Bukit Timah Road, where southwards from Choa Chu Kang Road the built-up area consists mostly of low-rise housing. Also, primarily, the existing patches of forest within the MINDEF territory as well as the presence of the Rail Corridor with its belt of trees fringing its border is an extra plus to this route.

To prime this route for a fruitful wildlife connectivity to the BTNR, we hereby propose that (refer to **Map 4**):

- i) **To the east, across Brickland Road** where the forest patch had already been cleared, it is urgent that a forest patch of about 3 hectares be created at the corner of Brickland Road and Bukit Batok Road as a sort of a stepping stone or landing ground for the wildlife on the move either from Tengah Forest or from Bukit Gombak --- before moving further across the existing roads. There is a necessity to construct an eco-link across Brickland Road as well as across Bukit Batok Road to prevent roadkill. Both eco-links can be in the form of small bridges like that of a pedestrian bridge.

- ii) In addition, the **connectivity to Bukit Gombak across Bukit Batok Road** --- and vice-versa --- should be promoted by re-generating the cleared woodland over the belt of grassland and shrubs between the Pavilion Park housing estate on the one side and the new HDB blocks and the MRT line on the other.
- iii) Of course, there is also a need to create eco-holes along strategic points at the MINDEF boundary fences as well as strategic eco-links across existing canals/big drains inside and outside the MINDEF territory for effective connectivity from Bukit Gombak to the Rail Corridor --- and vice versa.
- iv) To enhance the **connectivity to BTNR along the Rail Corridor**, we also propose that the Pang Sua canal running to the front of MINDEF boundary fence facing the Rail Corridor be made green and natural from Choa Chu Road to Hill View Avenue like the one that was created at Upper Kallang River in Bishan Park.
- v) Also, a new bridge across Hill View Road, where there is now gap due to the dismantling of the old one, should be constructed

c) **The Northern Sector:** It is also proposed that there should be wildlife connectivity along the Canal northwards to the Kranji Reservoir and the Kranji Marshes Park through the greening and softening of the canal along the front of the Warren Golf Course that is connected to that at Tengah. This connectivity will help to lure marshland and aquatic/semi-aquatic wildlife from the Kranji Reservoir to the Tengah Canal, promoting its wildlife biodiversity and attraction.



B) Need for Core Forest Wildlife Habitat(s) apart from the TNW Wildlife Corridor

i) Problem with HDB's Plan for the TNW to function also as a Forest Habitat

a) The wildlife is now being shepherded during the current Phase 1 of the development to the remaining forest and eventually when all the phases are being completed, to the 5km-long green corridor running along the southern flank of the Kranji Expressway and the existing Canal at the Brickland Road sector.

b) This 5km-long green corridor with a 100m width is a great and positive change in the mindset of the HDB planners, but it is of utmost concern that this squeezing of the wildlife into this drastically curtailed habitat will entail disastrous ecological consequences in terms of the carrying capacity of the remaining habitat for many if not all species of Tengah Forest's wildlife.

c) Also, from **the landscape ecology perspective**, the belt, although long, is too elongated and lacking in interior space, which is especially critical for the well-being of forest-affiliated species (e.g. Blue-rumped Parrot, Emerald Dove, Orange-bellied Flowerpecker). Given that you allow 50 metres for the standard buffer for a forest habitat on all flanks, there will in fact not be any interior space at all. The disturbances from neighbouring areas will be tremendous --- with the noisy Kranji Expressway on the northern flank, and on the southern flank, the disturbances coming from a dense high-rise housing estate. Even with a 100m breadth of forest from the Expressway, the vehicular noise is not softened down at all. It is extremely loud.

d) The total forested area at Tengah planning area comes roughly to about 600-plus hectares, excluding the already cleared forest in the Phase 1 development. Given that after the completion of the development only roughly 10% of the original forest or slightly less, constituted by the TNW, will be left intact, this will entail that about 90 % or slightly more of the original forest will be wiped out. Given the established **species-area relationship** in ecology, the rule of thumb will be that 50 % of the species inhabiting the habitat, predominantly a forested area, will be wiped out (Primack, 1998, p. 168). Looking at just the forest-affiliated resident bird species, for example, what will occur by this tenet will be that half of them will be wiped out, that is 17 out of the 34 resident species. Those species that are usually affiliated to the denser forest such as the Emerald Dove, Banded Woodpecker, Blue-rumped Parrot, Orange-bellied Flowerpecker, etc., will be the first to go. Given that the forest habitat here has become almost a habitat island, isolated from the surrounding forested areas by highways and built developments, and given that the shape of the final remaining forest will be uncongenial as a forest habitat, (it being greatly subjected to neighbouring disturbances due its elongated shape lacking in interior space), the situation will be tragic for the forest wildlife here. In the long

term, it is doubtful that even half of the forest-affiliated species predicted above (i.e. 17 species) will remain.

e) We understand that HDB will be doing a great deal of planting within the cleared areas along new roads and canals, horticultural gardens and patches of green lungs but the new vegetation will not be a substitute for what have been wiped out --- the forest habitat. Moreover, these plantings will take a long time to mature and bloom to become in any way useful for the forest wildlife, which in the meantime will have to find a way out of this gloomy situation or be wiped out completely.

f) Although the rescue operation (no doubt having good intentions) can always be furthered by ultimately trapping the remaining wildlife and re-locating them elsewhere outside Tengah Forest, this move is rather unsound in view of future developments to similar unprotected areas. This strategy amounts to shoveling the unwanted wildlife into a smaller arena as development rolls on into the future, resulting in overcrowding and stretching the carrying capacity of existing/remaining natural habitats (whether protected or unprotected) to bursting points. **In this regard, we urge strongly that the eco-links/bridges that should be created as the essential part of the TNW be set up first --- prior to the further clearing of the forest after Phase 1. This will at least allow the wildlife to disperse to whatever available green refuges outside the Tengah development zone. Otherwise, the problem of wildlife roadkills will be re-enacted as in the tourism development at the Mandai Lake Road recently.**

g) **Most importantly, we strongly urge that some core areas be designated and left untouched for the future survival of the wildlife within the Tengah Forest itself --- so that some if not all of the forest-affiliated species recorded there will still have a home for their long-term survival.**

ii) Proposals for Core Areas as Habitat for Forest-affiliated Wildlife

We propose that there be two core areas within the Tengah planning area to provide refuges for existing forest-affiliated wildlife --- one patch on the western end and the other patch at the eastern (or south-eastern) end (see **Tengah Forest Map 1**). Although at opposite ends of the existing forested area, there are linked by the TNW, which should be kept as planned for wildlife connectivity on the wider east-west landscape as well as, in our proposal here, providing also an interior connectivity for the two proposed core areas.

a) Core Area A: Kranji-Jurong Core Area (refer to Map 2)

This is the larger core area, about **150 hectares**, located at the corner of the KJE and PIE with the pivot at the Tengah Flyover. The forest within the area is relatively dense. In addition, you have the only river that is uncanalised as well

as several natural streams flowing through the forest, that are good for aquatic and semi-aquatic wildlife (such as kingfishers, dragonflies, etc.)

Apart from harbouring the existing wildlife that manages to escape from the development area, it will also function as a sort of beach-head for species coming in from the Western Catchment --- of course, this should be facilitated with an eco-link into this core area. The core area here will serve as a safe zone for them to rest and calm down after the long journey from the Western Catchment before they are confident to go further to seek new habitat. They may settle down here permanently, enriching the forest biodiversity. This of course also applies to wildlife dispersal going the opposite way.

b) Core Area B: Brickland Core Area (refr to Map 2)

This is about **70 hectares** and is located at the south-eastern part of the planning area bordering Brickland and Bukit Batok Road and stretching across the southern end of the Canal. There is an active nesting site of the Changeable Hawk-eagle located on the forest patch on the south-western side of the Canal --- as is mentioned above.

Also, it will serve as a stepping stone or launching-off point for wildlife that wants to move further east to Bukit Gombak and BTNR or BBTP --- and vice versa. Having a core area here will give all species the chance to rest and calm down before venturing further into the relatively inhospitable landscape beyond --- compared to just allowing them a narrow strip along the existing Canal for the purpose of their long-distance dispersal.

Apart from serving as havens for the remaining forest wildlife that manages to get through the drastic curtailment of the Tengah Forest, both core areas proposed would be useful for wildlife dispersal along the TNW from either direction.

Closing Remarks

We recognize that our proposals will take away a significant quota of planned residential units from the Tengah area, but Tengah Forest is the largest patch of unprotected secondary forest left in Singapore outside the MINDEF land in the Western Catchment. It is home to a significant diversity of forest wildlife while it also forms a huge stepping-stone for connectivity between the Western Catchment and the Central Nature Reserve (BTNR & CCNR). Given also the mounting intensification of global warming currently going on all over the world, we hereby urge that for the creation of an ecologically robust 'Forest Town', the existing forest component of the planning area should amount to a significant extent than what is given in the current HDB plan. At the most only 10 % of the original forest is retained in the HDB plan, entailing a drastic loss to the variety of wildlife that are found in this forest. This is certainly not in harmony with Singapore's thrust for eco-sustainability as a ratifier (in 1995) of the **UN Convention on Biodiversity**. As new areas are opening up for development in a

couple of decades, such as the re-location of the Paya Lebar military airport (800 hectares), we urge that such brown-field areas be used instead for whatever shortfall in HDB development here for the sake of a ecologically viable 'Forest Town' at Tengah.

Dates: Submitted to HDB & NParks in August 2018
Minor revisions in September 2018

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Appendix 1

Bird Species in NSS' Tengah Forest Checklist but not recorded in NParks' List

C = Common; U = Uncommon; R = Rare

RB = Resident Breeder ; M = Migratory; ACC = Accidental

(F) = Forest-affiliated Species

Bold = Listed in the Singapore Red Data Book (SRDB 2008)

1. King Quail *Excalfactoria chinensis* ----- U/RB
2. Yellow Bittern *Ixobrychus sinensis* ----- C/RB & M
3. Eastern Cattle Egret *Bubulcus coromandus* ----- C/RB & M
- 4. Purple Heron *Ardea purpurea* ----- U/RB**
5. Little Egret *Egretta garzetta* ----- C/M
6. Black-winged Kite *Elanus caeruleus* ----- U/RB
7. Black Baza *Aviceda leuphotes* ----- C/M (F)
8. Black Kite *Milvus migrans* ----- R/M
9. Japanese Sparrowhawk *Accipiter gularis* ----- C/M
10. Common Buzzard *Buteo buteo* ----- U/M
11. Barred Buttonquail *Turnix suscitator* ----- U/RB
12. Common Snipe *Gallinago gallinago* ----- C/M
13. Common Sandpiper *Actitis hypoleucos* ----- C/M
14. Chestnut-winged Cuckoo *Clamator coromandus* ----- U/M (F)
15. Little Bronze Cuckoo *Chrysococcyx minutillus* ----- C/RB
16. Rusty-breasted Cuckoo *Cacomantis sepulcralis* ----- U/RB
17. Common Kingfisher *Alcedo atthis* ----- C/M
18. Blue-tailed Bee-eater (*Merops philippinus*) ----- C/M
19. Ashy Minivet *Pericrocotus divaricatus* ----- C/M (F)
20. Brown Shrike *Lanius cristatus* ----- C/M
21. Abbot's Babbler (*Malacocincla abbotti*) ----- U/RB (F)
22. Daurian Starling *Agropsar sturninus* ----- C/M
- 23. White-rumped Shama *Copsychus malabaricus* ----- U/RB (F)**
24. Artic Warbler *Phylloscopus borealis* ----- C/M
25. Zitting Cisticola *Cisticola juncidis* ----- C/RB
26. Chestnut Munia *Lonchura atricapilla* ----- U/RB
27. White Wagtail *Motacilla alba* ----- U/M

Appendix 2

Forest-affiliated Bird Species

A) Resident

Listed in Singapore Red Data Book (SRDB)

1. Grey-headed Fish Eagle (also in **IUCN Red List**)
2. Changeable Hawk-eagle
3. Red Junglefowl
4. Blue-rumped Parrot (also in the **IUCN Red List**)
5. Blue-crowned Hanging Parrot
6. Violet Cuckoo
7. Buffy Fish Owl
8. Blue-eared Kingfisher
9. Straw-headed Bulbul (also in the **IUCN Red List**)
10. White-rumped Shama (from NSS' records)
11. Abbott's Babbler (from NSS' records)

Uncommon Species

12. Emerald Dove
13. Banded Bay Cuckoo
14. Plaintive Cuckoo
15. Greater Coucal
16. Oriental Dollarbird
17. Rufous Woodpecker
18. Laced Woodpecker
19. Common Hill Myna
20. Rufous-tailed Tailorbird
21. Southern Jungle/Large-billed Crow

Common Species

22. Pink-necked Green Pigeon
23. Long-tailed Parakeet (also in the **IUCN Red List**)
24. Orange-bellied Flowerpecker
25. Collared Scops Owl
26. Large-tailed Nightjar
27. Blue-throated Bee-eater
28. Banded Woodpecker
29. Common Flameback
30. Olive-winged Bulbul
31. Greater Racket-tailed Drongo
32. Pin-striped Tit-babbler
33. Dark-necked Tailorbird

B) Introduced

34. Lineated Barbet
35. White-crested Laughingthrush

C) Migratory

36. Chestnut-winged Cuckoo (from NSS' records)
37. Ashy Minivet (from NSS' records)
38. Black Baza (from NSS' records)
39. Oriental Honey Buzzard
40. Tiger Shrike