

## Wildlife shepherding and pre-felling fauna inspection

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This technical note serves to complement the BIA guidelines on construction impacts and mitigation measures.

### 1. Wildlife shepherding and pre-felling inspection

During site preparation, passive wildlife shepherding and tree-felling inspection should also be done before and during site clearance.

#### Vegetation clearance and wildlife concerns

Vegetation clearance reduces habitat availability for wildlife, driving wildlife into urbanised environments, and may cause potential direct fauna fatality and human-wildlife conflict if fauna is not relocated or guided out of sites before vegetation clearance commences. Where vegetation clearance cannot be avoided, mitigation measures should be taken to reduce impact to wildlife. This includes avoiding clearance during sensitive periods such as bird breeding seasons in December to July, doing pre-felling checks, passive shepherding via directional clearance to guide wildlife out of site prior to work commencement and ensuring there is no re-entry during construction period.

Sensitive receptors include animals that are unable to leave the site, such as nesting birds, roosting bats or animals that are trapped and unable to navigate the changing landscape. Less mobile species, especially ground dwelling animals, are more susceptible to injury by construction equipment. Animals may also hide instead of flee.

#### Wildlife shepherding guidelines

Vegetation clearance should be phased for larger sites and conducted outwards to inwards, from the most disturbed area (usually the side nearest to roads or existing developments) towards the least disturbed area, allowing for retreat of wildlife into the adjacent undeveloped habitat (City of Ottawa, 2014). As much as possible, clearance should also take place from high to low ground (Chemsain Konsultant Sdn.Bhd, 2004). An unobstructed escape route should be designed to channel wildlife out of the development site without accidentally trapping them in isolated habitat patches or within man-made structures such as drains and canals.

Incorrect directional clearance can lead to wildlife displacement into urban environments and landscapes. This can potentially lead to public safety risks where human-wildlife conflicts can occur. Examples include human-wildlife vehicular collision that results in wildlife fatality and human injuries, and direct human-wildlife attacks.

Clearance of the development site can be broken up into zones, where each zone is isolated from the next either by natural barriers that prevents animal movement or permanent hoarding structures. Within each zone, phased directional clearance for subzones of area no larger than 100,000 m<sup>2</sup> can be conducted at any one time. Subzones should always be cleared sequentially and inwardly towards undisturbed habitat (Figure 1). Opaque temporary hoarding without gaps should be

installed for each subzone that is being worked on, leaving the side furthest from the disturbed area open for fauna to exit the site. In areas with wild boar concerns as advised by NParks, the perimeter of the development site should be fully hoarded up with hoarding 300 mm into the ground before work commences (if there are other hoarding designs proposed, and these designs are expected to deviate or will deviate from the abovementioned requirements, you must inform NParks before carrying out the hoarding works), and wildlife exits (Figure 2) installed at every 30 m interval along the forested edge.

Figure 1. Illustration of zones, sub-zones, clearance direction and exit placement

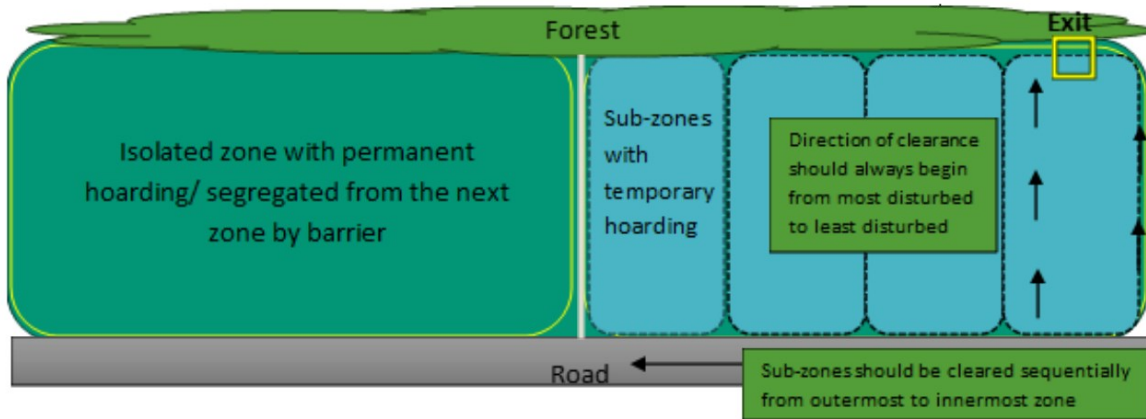
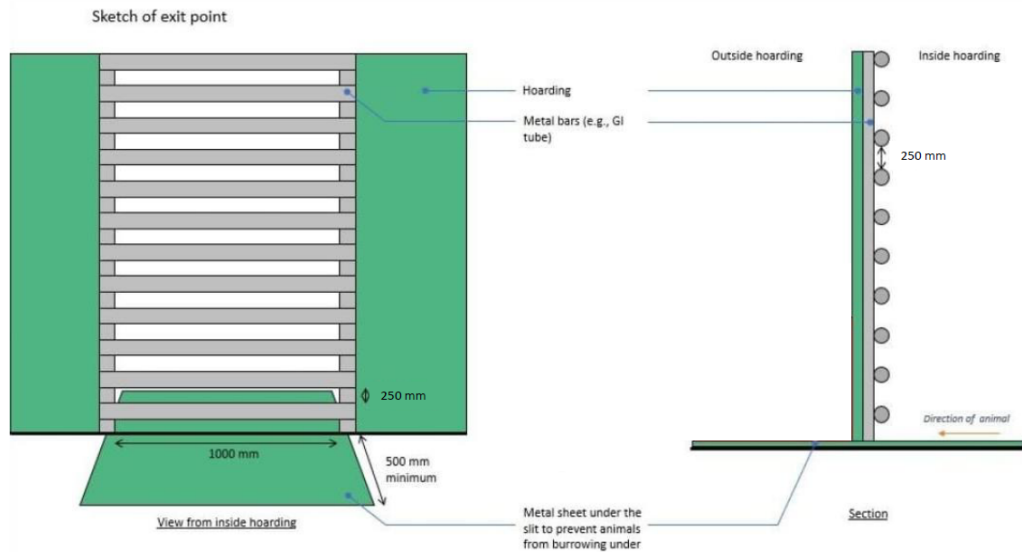


Figure 2. Examples of wildlife exit design for installation on full permanent hoarding. Figure credit: Camphora

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Sketch of one-way wildlife exit



Clearance is broken up into two stages, 1) understorey clearance of shrubs and trees not exceeding 1 m girth, followed by 2) tree felling, with a minimum three-day fallow period between the two. If an excavator is used for undergrowth clearance, a worker should be stationed in front of the excavator to moderate the speed of the machinery. The worker should also observe for fauna or holts and burrows that may be in the excavator's path and signal to the excavator operator to stop work if required. Clearance should only continue after animals have been ushered out of site. Following this, sites should be left fallow minimally for 3 days and pre-felling checks (Table 1) are to be done before removal of trees on site. The site should then be completely hoarded up with no gaps to prevent re-entry, and permanent fencing is to be installed at perimeter if not already done so. This process is to be repeated for all subzones of the work site. Any waterbody or potential shelter such as culverts at site should be fenced off temporarily and horticultural waste should be removed on the same day to avoid drawing wildlife back into the clearance zone (City of Ottawa, 2014).

Table 1. Illustration of clearance stages

Day 1	Day 2	Day 3	Day 4	Day 5
Last day of understorey clearance	Fallow Day 1–3 Pre-felling check may take place any time after understorey clearance and before tree felling			Tree felling may proceed

Within the EMMP, a detailed wildlife shepherding plan complete with shepherding schedule should be provided with direction and zones of shepherding clearly marked out on a map. Regular EMMP inspection should ensure that suggested mitigation and management measures detailed in the report are met. Whenever a construction site is flanked by adjacent forested areas, wildlife crossing through the site should be considered.

### Pre-felling fauna inspections

Pre-felling inspections are checks put in place to ensure that all less-mobile animals trapped on trees are safely evacuated from site before tree felling. This includes observing for active bird nests with nesting activities in the canopy, hollows in tree trunks, bat roosts, as well as less mobile animals resting in vegetation that are susceptible to injury arising from vegetation clearance works (e.g. Sunda Pangolin). If animals are found to be trapped within the site and cannot be guided out safely, an approved wildlife management company (a registry is available at [www.nparks.gov.sg/avs/animals/animal-related-businesses/animal-management-companies/public-registry-of-certified-animal-management-specialists](http://www.nparks.gov.sg/avs/animals/animal-related-businesses/animal-management-companies/public-registry-of-certified-animal-management-specialists)) must be engaged to rescue the trapped wildlife. If an active nest was found, it should be monitored by an ecologist who will ensure that the nest has been vacated before clearance. Inspections are to be done not more than seven days before site clearance. If the seven-day period has lapsed, pre-felling inspection will need to be done again before tree felling can proceed.

## References

City of Ottawa. (2014). *City of Ottawa Protocol for Wildlife Protection during Construction*. Retrieved 26 Jan, 2023, from [http://greenspace-alliance.ca/wp-content/uploads/2015/01/ConstructionProtocol\\_draftNov21-14\\_EN-red.pdf](http://greenspace-alliance.ca/wp-content/uploads/2015/01/ConstructionProtocol_draftNov21-14_EN-red.pdf)

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