

**ADDENDUM TO THE EIA REPORT**

The Site Investigation Environmental Impact Assessment (SI EIA) Report [ref: 0256660\_005] for the Cross Island Line (CRL) was gazetted on the 05 February 2016 and disclosed on the LTA's website on 19 February 2016. Comments have been received from a variety of different stakeholders. These comments have provided important input to the impact assessment process including providing suggestions for additional mitigation measures to ensure the impacts of the SI works associated with Alignment Option 1 are as low as reasonably practicable (ALARP). This Addendum Report recognises there are potentially higher site specific impacts and impacts on animals that may be less mobile and/or more sensitive.

**Summary of EIA Mitigation Measures for Alignment Option 1**

The EIA Report includes a large number of mitigation measures that are collated and summarized in the EMMPs for Alignments 1 and 2. In relation to Alignment 1, LTA has adopted what are considered very stringent and significant mitigation measures with NParks' and Nature Groups' inputs, without detracting from the ability to obtain adequate geological data. These mitigation measures included but are not limited to the following:

- (a) Reducing the number of 10cm diameter boreholes from 72 to 16 within CCNR.
- (b) Positioning of boreholes along existing trails and clearings, away from ecologically sensitive areas instead of directly above the tunnel alignment.
- (c) Modifying the drilling equipment to prevent spillage of slurry and fuel, as well as to reduce noise level.
- (d) Using tracked vehicles in order to reduce ground compaction in the transportation of water and waste material. Waste material will be removed from the site daily to minimise the chance of pollution.
- (e) Employing alternative measures such as Mackintosh Probes, Horizontal Directional Coring (HDC) and non-intrusive geophysical surveys to compensate for the reduction of boreholes.
- (f) Reducing the number of Mackintosh probes from 9 to 3 sites, which will be conducted from existing bridges to avoid directly stepping into streams.
- (g) Locating the HDC worksites outside the forested area of the CCNR.
- (h) Reducing light and noise pollution arising from HDC operations by throttling down equipment when not in use, using acoustic enclosures and erecting temporary shelter over the work sites.
- (i) Reducing the width of the geophysical survey corridor from 150m to 100m.
- (j) Conducting the geophysical surveys on unmarked trails within the forest and avoiding sensitive locations such as primary rainforests, streams and swampy areas.

- (k) Supervision of geophysical surveys by NParks officers competent in forest ecology to ensure that the surveyors will not trample on plants on the forest floor, and to minimise the impact on fauna.
- (l) Synchronising borehole operations and geophysical surveys so that they are carried out together within the same sector in phases, so as to allow animals to move away from activity zones.
- (m) Restricting all SI activities to daylight hours, so as not to affect nocturnal animals.
- (n) Suspending SI works during rain to limit occurrence of soil erosion.

If these stringent and significant mitigation measures are strictly adhered to, it is possible to achieve a “small to medium” residual magnitude of impact on average. Most of the works will incur a “small” magnitude of impact but there might be site-specific instances or where sensitive fauna is found, where the impact is higher (refer to map attached). In view of the high sensitivity of the receptor, unless further mitigated, this means that the residual significance of impact could be moderate to major (depending on location). To address these higher potential impacts, the following additional mitigation measures have been proposed following feedback from the public, Nature Groups and NParks during the public consultation period.

#### **Additional Mitigation Measures for Alignment Option 1**

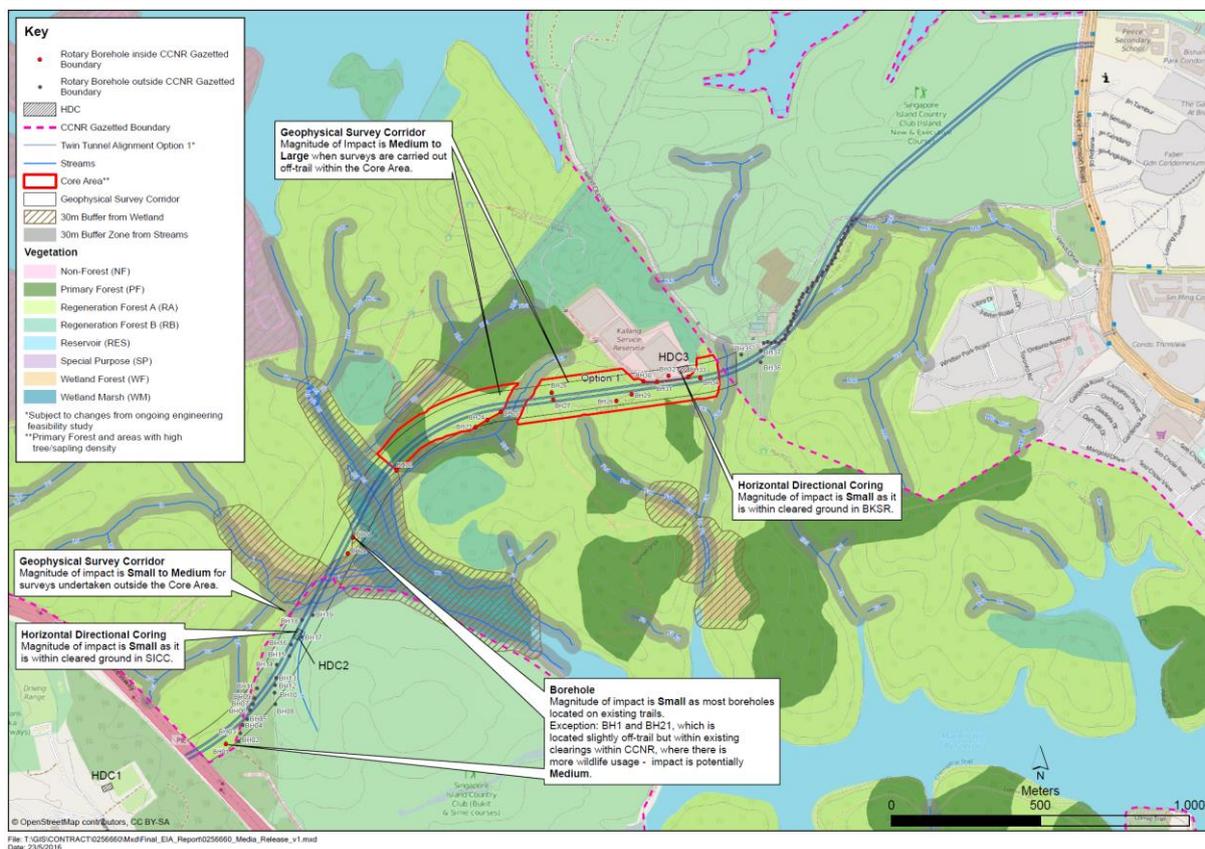
The additional mitigation measures are:

- (a) NParks officers to map out specific access routes that the geophysical surveyors can use in off-trail areas in the forest. This will be restricted to existing unmarked trails in the forest.
- (b) Schedule the geophysical survey to include at least one to two rest days in between surveys, over the period of borehole operations within the same sector, to allow respite for less mobile and sensitive fauna (refer to map attached).
- (c) Involve nature groups as observers for the SI works to reinforce the compliance of the mitigation measures.
- (d) Engage a certified arborist to assess and propose methods to avoid damage to the trees due to borehole operations.
- (e) Modify the drilling rig further by installing a silencer at the end of the drill engine exhaust to reduce noise. The exhaust pipe will also not be extended to the top of the drilling rig to avoid affecting fauna at the upper canopy levels.
- (f) Require the appointed SI contractor to conduct trial runs of the borehole operations and geophysical survey off-site prior to actual works in the Nature Reserve. This provides the opportunity to further enhance operations to minimise impacts, while allowing contractors to familiarise themselves with the stringent requirements of working within the Nature Reserve.

- (g) Allow a longer period of time before resuming SI works after heavy rain to reduce soil erosion into streams and to protect the integrity of the top soil structure. NParks officers to give consent before resumption of work.
- (h) Work with PUB to access boreholes through Bukit Kalang Service Reservoir compound. This will reduce vehicular movement along Terentang trail where it is narrow and undulating, so as to minimise the risk of spillage to the surrounding areas which are ecologically sensitive.
- (i) NParks officers to issue immediate stop-work orders, should there be any breach or deviation from the agreed mitigation measures or when pollution is detected.
- (j) Dispensed the use of the Mackintosh Probes which will remove all works from streams.

These additional measures will further mitigate the impacts arising from instances where SI works have been planned to be conducted in streams, off-trail in forests, and where the works may impact fauna that are less mobile (e.g. leaf-litter fauna, soil invertebrates, larvae, caecilians, crickets, small mammals, herpetofauna etc) and that may be sensitive (e.g. slow loris, barking deer, babblers, pangolins, nesting birds, mousedeer etc). All mitigation measures, including the additional mitigation measures, will be strictly adhered to in full for the site investigation works, failing which, NParks will issue stop work orders.

### ***Site-specific instances where the impact is potentially higher before additional mitigation***



### ***Phasing of work for geophysical surveys & boreholes***

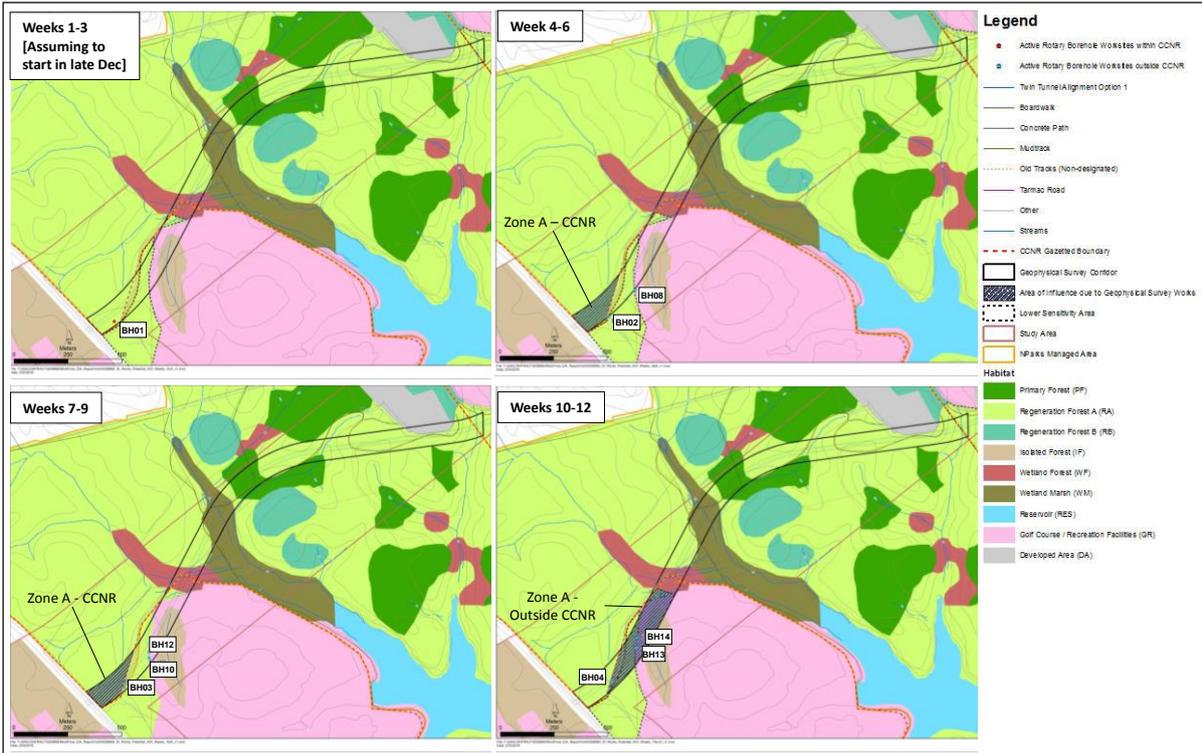


Figure 1a Phasing of Geophysical Surveys and Rotary Borehole Works

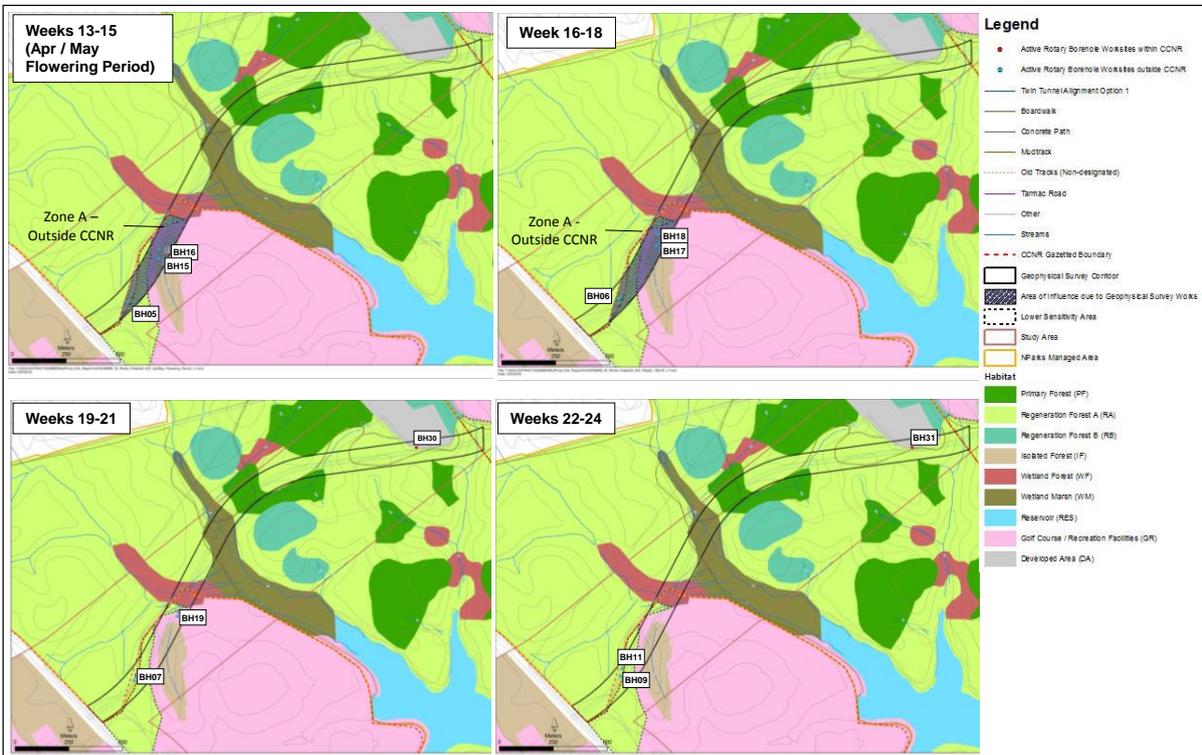


Figure 1b Phasing of Geophysical Surveys and Rotary Borehole Works



Figure 1c Phasing of Geophysical Surveys and Rotary Borehole Works

