Kwan On Construction Co. Ltd.
均安建築有限公司

Detailed Landscape Mitigation Plan

Location	: Razor Hill, Clear Water Bay Road
Section of Works	: Section 4a & 4b
Study Area No.	: 11NE-B/SA3
Catchment No.	: 11NE-B/DF5, DF5a & OH3

Content

Appendix

Background

Refer to item 2.4 of Part C in Environmental Permit No. EP-559/2018, a Detailed Landscape Mitigation Plan showing the details of protective measures for existing plants, trees and root systems during construction shall be submitted.

The Detailed Landscape Mitigation Plan shall also indicate with the aid of figures, re-vegetation by native shrubs, and locations of re-vegetation of the existing disturbed ground including other suitable areas within the works area. The Permit Holder shall implement all measures recommended in the approved Detailed Landscape Mitigation Plan during construction.

Ecology

For temporary vegetation loss due to vegetation clearance for soil nailing activities and provision of working space. Hydroseeding with shrub planting in soil nailing areas and shrub planting in front of flexible barrier shall be applied as compensatory measure.

For permanent vegetation loss due to construction of permanent structures. Compensatory re-vegetation of the existing disturbed ground within the works area shall be provided as far as practicable. Opportunities shall also be sought for the compensatory re-vegetation on the existing disturbed area outside the works area.

During installation of soil nails (including drilling works). Anchors and standing posts of flexible barriers: as well as construction of maintenance access / staircases. A clearance from trees by tree protection zones will be maintained as far as possible. Especially those structural roots generally larger than 20mm in diameter. In order to minimize the impacts to existing trees. So that not more than one-third of its root system would be affected. Tree protection zone (TPZ) for common tree species would be set either at least 1.5m from tree trunk or at half diameter of dripline. Whichever is the greater. For existing trees with diameter at breast height (DBH) 1.3m or above. Full dripline for the downhill side would be maintained. TPZ would also be adjusted on site to include any observed anchor roots within dripline envelope.

For any existing trees located close to the proposed works. Those tree trunks should be wrapped in hessian (as a form of protective wrapping) in accordance with GEO publication no. 1/2011 to avoid mechanical damage to the tree trunks. Hessian should be provided by the contractor prior to the commencement of site clearance. Demolition and construction of the hazard mitigation works (HMW). The contractor will also be required to comply with specifications on preservation and protection of trees in the general specification for civil engineering works (GS). Reference will also be made to development Bureau's technical circular (works) no. 4/2020 on tree preservation and guidelines on tree preservation during development.

Construction of steel maintenance access/ staircases to "bridge over" extensive tree roots on slope shall be adopted wherever necessary and practical.

For plant species of conservation importance. A minimum 1.5m setback from stems for mature individuals and 1m radius for seedlings. Ferns or herbs should be maintained to avoid potential impacts to the roots of the existing trees. A minimum 1m setback from crown

spread of the climbing species Gnetum luofuense should be applied. All individuals of Aquilaria sinensis, Pavetta hongkongensis, Cibotium barometz, Ania hongkongensis and Gnetum luofuense shall be retained in-situ.

Based on topographical survey. A detailed baseline tree survey in accordance with development Bureau's technical circular (works) no. 4/2020 on tree preservation and guidelines on tree preservation during development with provision of tree tags shall be conducted by qualified arborist to update the number. Locations and conditions of all existing trees within the works area prior to commencement of construction works.

A baseline survey shall be carried out by plant specialist to confirm and assess the conditions of all plant species of conservation importance within the works area prior to commencement of construction works. A final survey to re-assess their conditions shall be carried out upon completion of works.

All plant species of conservation importance within the works area shall be tagged and fenced off either in group or individually as protection zones to prevent from being damaged or disturbed during construction. Fence of orange nets with at least 1m height are recommended as protection fences to surround the protection zones/ exclusion zones to alert the construction workers/ site staff.

Same protection measures shall be implemented to protect any additional individuals of plant species of conservation importance identified during monthly monitoring/ site audit and likely to be affected by the works during construction phase.

An induction training should be provided to all site personnel (both supervisory staff and workers) in order to brief them on the importance of protecting plants of conservation importance within and adjacent to the works area.

Monitoring of every individual of the plant species of conservation importance and all existing trees within the works area should be performed on monthly basis to ensure their condition and healthiness. Such monthly monitoring works/ site audit shall be carried out by plant specialist during construction phase. The monthly monitoring reports shall include photographic records to present the updated conditions of the protected plant species and all existing trees within the works area. All the baseline survey reports (prepared prior to commencement of construction works) and the monitoring reports (prepared over the construction phase) shall be endorsed by an independent environmental checker (IEC) before submission to relevant Government department(s). A final monitoring report summarizing major findings of the baseline report and all the monthly monitoring reports to document the plant protection and monitoring works throughout construction phase shall be submitted.

For area affected by vegetation clearance for soil nailing activities and provision of working space. Hydroseeding and shrub planting shall be applied as compensatory measure to vegetation loss.

Tree pruning. If required. Shall be kept to a minimum. The extent of tree pruning will be determined on site by the project manager together with the qualified arborist. Tree pruning shall be complied with "general guidelines on tree pruning" promulgated by GLTMS of DEVB. Application shall be submitted to the relevant district lands office should tree pruning be required. The pruning works shall be carried out by qualified personnel and supervised by qualified personnel and supervised by qualified arborist on site. This is important to ensure

no trees' canopies will be over-pruned or adversely impacted due to malpractice of tree works. If any trees deteriorate after pruning and need to be removed due to safety reason during construction phase. Formal tree removal application with compensatory planting proposal(s) should be prepared in accordance with development Bureau's technical circular (works) no. 4/2020 on tree preservation and submitted to relevant authorities for approval before any tree removal on site. No plant species of conservation importance could be pruned or affected by this work.

The following good site practice shall be implemented during the construction phase for the proposed works to avoid and minimize the potential disturbance to the surrounding habitats:

- Temporary works area for stockpile and access routes to be selected shall be far away from the identified plant species of conservation importance and shall at existing disturbed land where possible to minimize disturbance to vegetation;
- Construction activities shall be restricted within the works area;
- Temporary works area shall be reinstated immediately after completion of the construction works;
- Disposal and treatment of waste shall be carried out timely and properly;
- Open fires shall be strictly prohibited to prevent any risk of hill fire;
- Fire-fighting equipment should be provided in the works area before the commencement of works; and
- Proper implementation of the above mitigation measures shall be supervised by the resident site personnel.

Landscape and visual

(A) CONSTRUCTION PHASE

All trees (with DBH >= 95mm) and plant species with conservation importance shall be retained.

There is flexibility to adjust the exact locations of the flexible barriers. Maintenance access/ staircases and installation of soil nails to avoid affecting existing trees. As detailed in ecology part.

Tree protection zone (TPZ) for common tree species would be set either at least 1.5m from tree trunk or at half diameter of dripline. Whichever is the greater. For existing trees with DBH 0.3m or above. Full dripline for the downhill side would be maintained.

All the identified plant species of conservation importance shall be enclosed within the protection zones/ exclusion zones which should include 1.5m setback from stems of mature individuals. And areas within 1m radius from the seedlings. Ferns or herbs to be preserved on site. A minimum 1m setback from crown spread of the climbing species Gnetum luofuense should be applied.

Construction of steel maintenance access/ staircases to "bridge over" extensive tree roots on slope shall be adopted wherever necessary and practical.

Temporary scaffolding. Working platforms shall be established during the construction work for work activities and mobilizing equipment to further reduce impacts on

existing trees.

One of the flexible barriers would align across the natural section of the ephemeral drainage line. Mitigation measures as mentioned under water quality part shall be applied:

- Temporary access for manual delivery of equipment and construction of flexible barrier shall be bridged over the ephemeral drainage line to maintain its drainage condition;
- Orange net shall be erected with a minimum clearance of 1.5m from both sides of the ephemeral drainage line to act as and construction zone; and
- Anchor locations shall be selected to avoid drilling at the ephemeral drainage line.

Hoarding of approximately 2.4m high shall be erected at the temporary storage area and along the works boundary where construction or working area may be visible from the tree layers along clear water bay road. Decorative panels in accordance with the standard of CEDD shall be applied on hoarding and subdued colour paint shall be applied on the surface of the temporary noise barriers as mitigation measures to reduce visual impact.

Planting of native seedling trees with the composition of species. Size and density as given in drawing no. GED 31089/08 at the tentative planting areas shown in drawing no. GED 31089/03 shall be carried out within the soil nailing areas under the following strategy:

- Perform baseline survey of initial condition of existing trees before commencement of mitigation works by qualified arborist;
- Remove any identified dead trees;
- Carry out planting of native seedling trees at gentle slope areas with subsequent maintenance before commencement of soil nailing works as compensatory measure;
- Conduct monitoring of existing trees condition by qualified arborist on a monthly basis; and
- Remove identified dead trees due to impact from soil nailing works. Native species that already exist in the works area and also available in the market shall be adopted as far as possible. Advice shall be made from the qualified arborist. The contractor shall implement planting and maintenance of the seedling trees.

(B) OPERATIONAL PHASE

Subdued colour paint shall be provided to the posts of flexible barriers.

Hydroseeding and shrub planting shall be applied to the soil nailing areas. Native species shall be used in the hydroseeding mix and the shrubs selection as far as possible.

Shrubs shall be provided in front of the flexible barriers for screening purpose. Native species shall be used in the shrubs selection as far as possible.

After completion of the HMW. The contractor shall look after the new planting works (include the condition and effectiveness of hydroseeding and shrub planting under para. 2 and 3 as well as the compensatory seedling trees within the soil nailing areas under para.9 of construction phase during the operational phase (i.e. the 12-month establishment/maintenance period). Before the handing over process to the maintenance parties.

Appendix A

Landscape Mitigation Plan

844000 E

844200 E

CLEAR WATER BAY ROAD

AIR HOUSE

EXISTING GRAVE

Works Area A

Works Area B

Works Area C

CONSERVATION AREA

Study Area No. 11NE-B/SA3

RAZOR HILL

822600 N

N

MC1 MC4

MC2 MC5 MO1

MC3

MC8

MC9

MO2

MO3

Proposed Landscape Mitigation Measures

Construction Phase

- MC1: Retain all trees and plant species of conservation importance
- MC2: Adjust alignment/location of design
- *MC3: Tree protection zones for common tree species
- MC4: Protection zones to plant species of conservation importance
- MC5: Bridging over extensive tree roots by steel maintenance access/staircase
- *MC6: Establish temporary scaffolding and working platforms to further reduce impacts to trees
- MC7a: Temporary access for manual delivery of equipment and bridge over ephemeral drainage line
- MC7b: Orange net with min. 1.5m clearance from ephemeral drainage line
- MC7c: Anchor locations should avoid drilling at ephemeral drainage line
- MC8: Hoarding with decorative panels at temporary storage area and works boundary (—— H ——)
- MC9: Planting with subsequent maintenance of native seedling trees before commencement of soil nailing works as compensatory measure (tentative planting area)

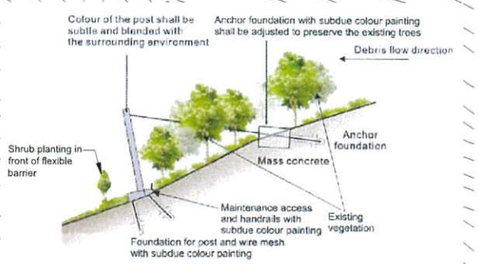
Operational Phase

- MO1: Subdued colour paint to posts of (●) flexible barrier
- MO2: Hydroseeding with shrub planting ( ) in soil nailing areas
- MO3: Shrub planting in front of flexible barrier ( ) for screening purpose
- *MO4: Look after landscape work under Establishment/Maintenance Period

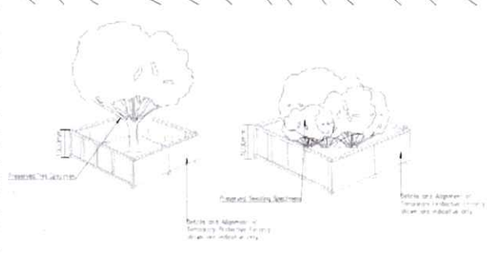
*MC3, MC6 and MO4 are generalized mitigation measures with no indicative location provided for clarity

Legend :

- Boundary of Study Area
- Conservation Area
- Existing Ephemeral Drainage Line
- Proposed Flexible Barrier
- Post of Flexible Barrier
- Works Area
- Hydroseeding With Shrub Planting
- —H— Hoarding With Decorative Panels
- Shrub Planting In Front Of Flexible Barrier



Landscape Treatment Works for Flexible Barrier



Temporary Protective Fencing for the Protected Species

Drawing Title

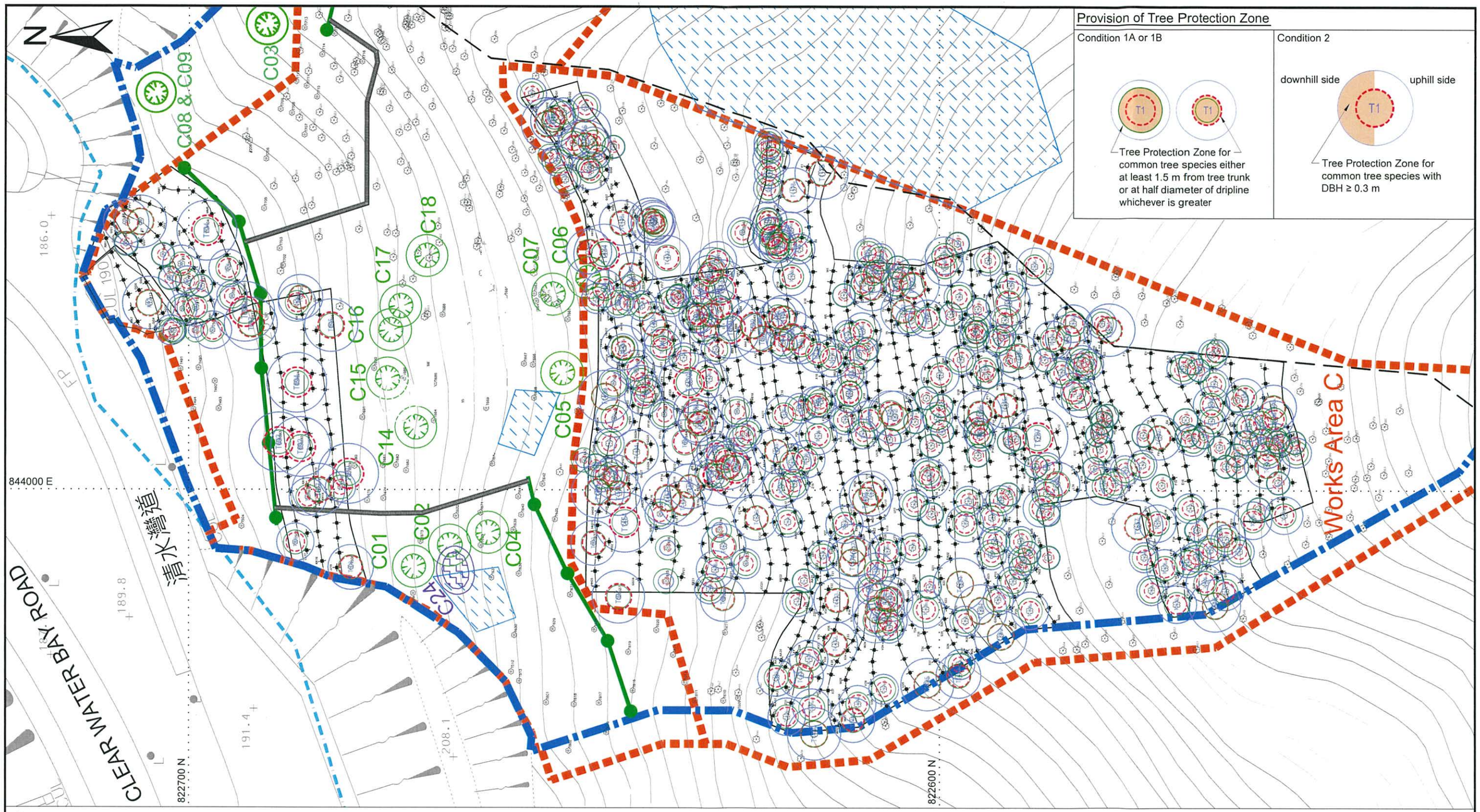
Natural Terrain Hazard Study for
Study Area 11NE-B/SA3 - Razor Hill, Clear Water Bay Road

Landscape Mitigation Plan

Scale : 1 : 1000

Appendix B

Proposed Soil Nail Arrangement with Tree Protection Zone



Provision of Tree Protection Zone

Condition 1A or 1B	Condition 2
Tree Protection Zone for common tree species either at least 1.5 m from tree trunk or at half diameter of dripline whichever is greater	Tree Protection Zone for common tree species with DBH ≥ 0.3 m

Legend :

- Boundary of Study Area
- Conservation Area
- Existing Ephemeral Drainage Line
- Existing Tree
- Tree Protection Zone based on Dripline
- 50% diameter of Dripline
- Tree Protection Zone based on 1.5 m from Tree Trunk
- Works Area
- Temporary Storage Area
- * Proposed Flexible Barrier with Concrete/Steel Maintenance Staircase with Handrailing
- * Proposed Soil Nail and Hydroseeding with Biodegradable Erosion Control Mat and Wire Mesh
- * Proposed Concrete/Steel Maintenance Staircase with Handrailing

Species of Conservation Importance Location

- Cibotium barometz
- Pavetta hongkongensis
- Aquilaria sinensis
- Ania hongkongensis
- Gnetum luofuense

Remark: 1) *Location of proposed works may be further adjusted during construction to suit the actual site condition and to avoid affecting existing trees.

Drawing Title

Natural Terrain Hazard Study for
Study Area 11NE-B/SA3 - Razor Hill, Clear Water Bay Road

Proposed soil nail arrangement

Scale : 1 : 500

Appendix C

Planting Schedule

PLANTING SCHEDULE (SHRUB MIX)

LEGEND	BOTANICAL NAME	CHINESE NAME	SIZE (mm)	SPACING (mm)	%MIX	QUANTITY
(A)	*Ardisia crenata*	朱砂根	350 (H) X 200 (S)	SEE PATTERN OF PLANTING MATRIX	25	170 NO.
(G)	*Gardenia jasminoides*	梔子	350 (H) X 200 (S)		25	170 NO.
(L)	*Litsea rotundifolia var. oblongifolia*	豺皮樟	350 (H) X 200 (S)		25	170 NO.
(P)	*Psychotria asiatica*	山大刀(九節)	350 (H) X 200 (S)		25	170 NO.

NOTE:

1. NATIVE SHRUB SPECIES SHALL BE PLANTED IN FRONT OF THE FLEXIBLE BARRIERS AND WITHIN ALL SOIL NAILING AREAS.
2. NATIVE SPECIES SHALL BE USED AS FAR AS POSSIBLE. THE COMPOSITION OF SHRUBS (IN ACCORDANCE WITH THE APPROVED PROJECT PROFILE / PARTICULAR SPECIFICATION) MAY BE ADJUSTED BASED ON THE AVAILABILITY OF NURSERY STOCK.
3. THE EXACT QUANTITIES OF THE PROPOSED PLANTS ARE CONFIRMED ON SITE BY THE SUPERVISOR.

COMPENSATORY TREE PLANTING SCHEDULE BEFORE COMMENCEMENT OF SOIL NAILING WORKS (NATIVE SEEDLING TREE MIX)

LEGEND	BOTANICAL NAME	CHINESE NAME	SIZE (mm)	SPACING (mm)	%MIX
(C)	*Cinnamomum camphora*	樟	400 (H) X 300 (S)	SEE PATTERN OF PLANTING MATRIX	20
(M)	*Mallotus paniculatus*	白楸	400 (H) X 300 (S)		20
(S)	*Schefflera heptaphylla*	鵝掌柴	400 (H) X 300 (S)		20
(G)	*Garcinia oblongifolia*	黃牙果	400 (H) X 300 (S)		20
(E)	*Elaeocarpus sylvestris*	山杜英	400 (H) X 300 (S)		20

NOTE:

1. COMPENSATORY NATIVE SEEDLING TREES SHALL BE PLANTED AT SLOPE PORTIONS NEAR THE SOIL NAILING AREAS (DRAWING NO. GED 3105A4/03) AS PER THE REQUIREMENT STATED IN THE PROJECT PROFILE. EXACT LOCATION SHALL BE DETERMINED ON SITE.
2. NATIVE SPECIES ALREADY EXIST ON SITE SHALL BE USED AS FAR AS POSSIBLE AND MAY BE ADJUSTED BASED ON THE AVAILABLE BY OF NURSERY STOCK.
3. THE EXACT QUANTITIES OF THE PROPOSED PLANTS ARE CONFIRMED ON SITE BY THE SUPERVISOR.

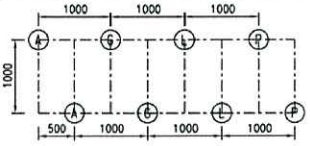
COMPOSITION OF GRASS MIX FOR HYDROSEEDING

HYDROSEEDING MIX	SPECIFICATION
BETWEEN APRIL AND AUGUST:	COMPOSITION (%) BY RATE (MIN. SEED MIX IN TOTAL OF 25 g/sq. METERS)
a. *Cynodon dactylon* (狗牙根)	a. 55%
b. *Paspium notatum* (百喜草)	b. 35%
c. *Chloris gayana* (非洲虎尾草)	c. 2.5%
d. *Eragrostis curvula* (彎葉畫眉草)	d. 2.5%
e. *Eremochloa ophiuroides* (假俭草)	e. 2.5%
f. *Cenchrus echinatus* (蒺藜草)	f. 2.5%
BETWEEN SEPTEMBER AND MARCH:	COMPOSITION (%) BY RATE (MIN. SEED MIX IN TOTAL OF 30 g/sq. METERS)
a. *Cynodon dactylon* (狗牙根)	a. 55%
b. *Paspium notatum* (百喜草)	b. 35%
c. *Lolium perenne* (黑麥草)	c. 15%

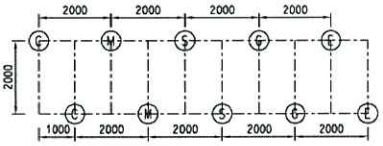
NOTE:

1. NATIVE SPECIES SHALL BE USED AS FAR AS POSSIBLE. THE COPOSITION OF HYDROSEEDING MIX (IN ACCORDANCE WITH THE APPROVED PROJECT PROFILE / PARTICULAR SPECIFICATION) MAY BE ADJUSTED BASED ON THE AVAILABILITY OF NURSERY STOCK.

PATTERN OF PLANTING MATRIX (SHRUB MIX)



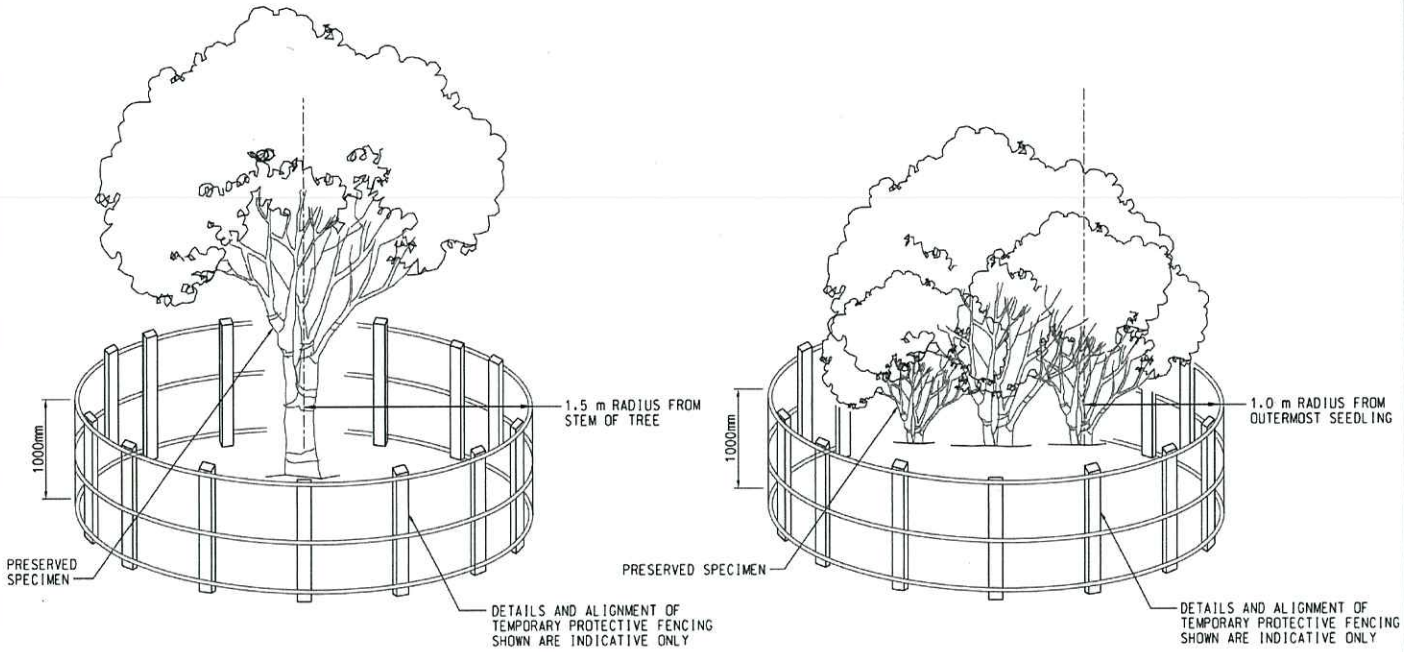
PATTERN OF COMPENSATORY TREE PLANTING SCHEDULE BEFORE COMMENCEMENT OF SOIL NAILING WORKS (NATIVE SEEDLING TREE MIX)



Planting Schedule

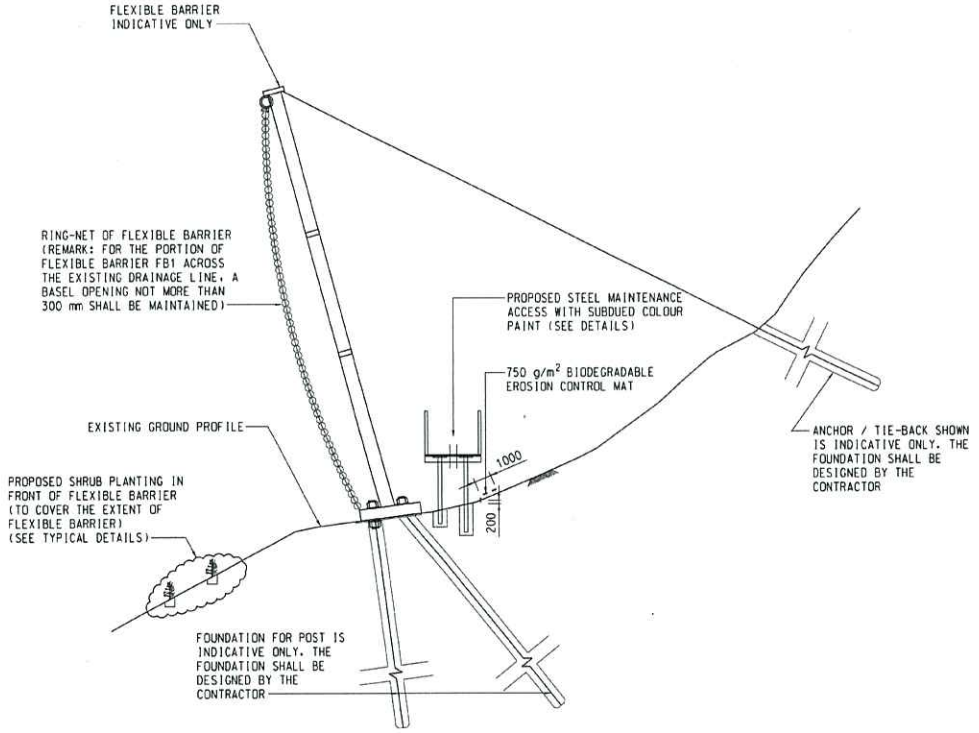
Appendix D

Tree Protection Fence and Shrub Planting in front of Flexible Barrier



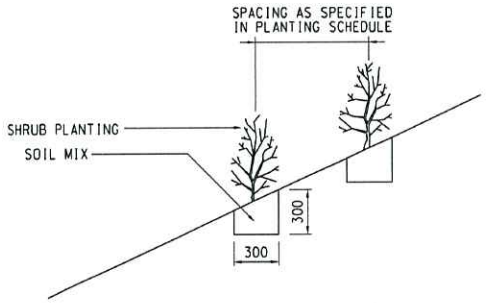
DETAILS OF TREE PROTECTION FENCE FOR PROTECTION OF SPECIES OF CONSERVATION IMPORTANCE

N.T.S.



TYPICAL SECTION OF FLEXIBLE BARRIER AND DETAILS OF MAINTENANCE ACCESS

N.T.S.



TYPICAL DETAILS FOR SHRUB PLANTING IN FRONT OF THE FLEXIBLE BARRIERS

N.T.S.

Tree Protection Fence and
Shrub Planting in front of Flexible barrier

Appendix E

Implementation Schedule of the Tentative Construction programme

Implementation Schedule of the Tentative Construction Programme of Proposed Hazard Mitigation Works at Section 4

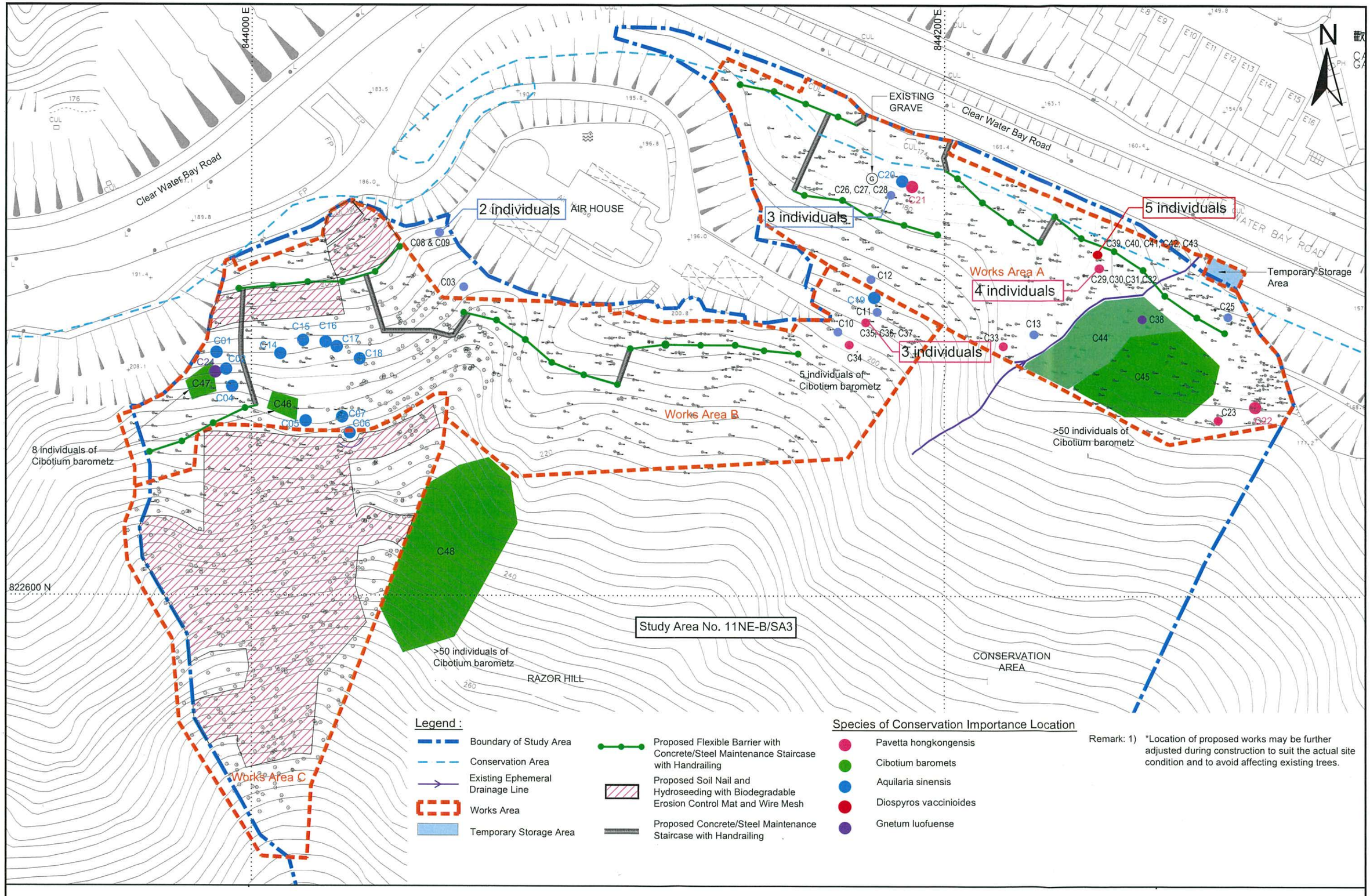
Item	Site Activities	Key mitigation measures #	Implementation party	Location	Schedule																															
					2020			2021												2022															2023	
					10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2		
1	Preparation works	a	Geotechnical subcontractor	Site works within works Area A, B & C																																
2	Identify Tree Preservation and Landscape protection works	b, c	Geotechnical subcontractor, Landscape subcontractor	Site works within works Area A, B & C																																
3	Existing tree preservation	l	Geotechnical subcontractor	Site works within works Area A, B & C																																
4	Site clearance	d	Geotechnical subcontractor	Site works within works Area A, B & C																																
5	Compensatory planting works prior to soil nailing works	e	Landscaping specialist	Highlighted planting areas as shown drawing no GED31089/03 in Works Area B																																
6	Soil nailing works	f, g	Geotechnical subcontractor, Landscape subcontractor	Soil nailing areas within works Area A																																
7	Construction of flexible barriers and provision of maintenance access/staircases	h, i	Geotechnical subcontractor	Site works within works Area B & C																																
8	Landscaping works	j	Landscaping specialist	Site works within works Area A, B & C																																
9	Establishment works	k	Landscaping specialist	Site works within works Area A, B & C																																

Key mitigation measures #

Item	Activates	Measures
a	Preparation before site clearance	Prior to site clearance, for existing trees located close to the proposed work, those tree trunks shall be wrapped by hessian (as a form of protective wrapping) to avoid mechanical damage to the tree trunks
b	Set out tree protection zone for conservation species	All trees (with DBH equal to n more than 95mm) and plant species with conservation importance shall be retained. All the identified plant species of conservation importance shall be enclosed within the protection zones/ exclusion zones which should include 1.5m setback from stems of mature individuals. And areas within 1m radius from the seedlings. Ferns or herbs to be preserved on site. A minimum 1m setback from crown spread of the climbing species Gnetum luofuense should be applied.
c	Monitoring tree preservation and tree protection	Appoint Landscape consultant/ specialist contractor on landscaping works to supervise and monitor the whole progress of works to ensure proper preservation and protection of existing trees has been implemented during works operations.
d	Site clearance	Only shaving of grass, brushes and other vegetation (i.e.. No uprooting) shall be carried out and have to kept to minimum as required for site clearance. Remove any dead trees. And no trees shall be felled without approval in writing by CEDD. No Haul Road shall be formed for the works.
e	Vegetation planting prior to soil nail works	Compensatory native seeding trees shall be planted at slope portions near the soil nailing areas (drawing no GED31089/03). Exact location shall be determined on site by the project designer. The composition, size and pattern of planting schedule (tree mix) shall be referred to Drawing 31089/08; native species would be used as far as possible.
f	Tree protection measures during construction of flexible barriers & Soil nailing works	1. All plant species of conservation importance within the works area shall be tagged and fenced off either in group or individually as protection zones to prevent from being damaged or disturbed during construction. Fence of orange nets with at least 1m height as protection fences to surround the protection zones/ exclusion to alert the construction workers.
g		2. The soil nail layout shall be adjusted on site to fulfill the requirements of tree protection zones.
h		3. One of the flexible barriers would align across the natural section of the ephemeral drainage line. Mitigation measures as mentioned under water quality part (drawing no. GED 31089/09) shall be applied: - Temporary access for manual delivery of equipment and construction of flexible barrier shall be bridged over the ephemeral drainage line to maintain its drainage condition ; - Orange net shall be erected with a minimum clearance of 1.5m from both sides of the ephemeral drainage line to act as and construction zone; and - Anchor locations shall be selected to avoid drilling at the ephemeral drainage line.
i	Provision of maintenance access/staircases	Construction of steel maintenance access/ staircases to "bridge over" extensive tree roots on slope shall be adopted wherever necessary and practical.
j	Vegetation planting in soul nailing areas and in front of flexible barriers after construction	Hydroseeding with shrub planting in soil nailing areas and shrub planting only in front of the flexible barriers and within all soil nails areas . The composition, size and pattern of planting schedule (shrub mix) and grass mix for hydroseeding shall be referred to Drawing 31089/08; native species would be used as far as possible
k	Establishment works for Landscaping works	After completion of the Hazard Mitigation Works (HMW), the contract shall look after the new plantings (including the condition and effectiveness or hydroseeding and shrub planting under items J as well as the compensatory seedling trees within the soil nailing areas under item f during operation phase (i.e. the 12-month establishment/ maintenance period), before the handling over process to the maintenance parties.
l	Temporary protection to existing tree	Protection shall be strong and appropriate for resisting the impacts of construction activities on the site. It shall be made of robust materials. Tree protection zone (TPZ) for common tree species would be set either at least 1.5m from tree trunk or at half diameter of dripline, whichever is the greater. For existing trees with DBH 1.3m or above, full dripline for the downhill side would be maintained.

Appendix F

Locations of Plant Species of Conservation Importance



Locations of Plant Species of Conservation Importance