

Challenge Theme	Low Carbon Solutions
Statement Number	05
Statement Owner	JTC
Launch Date	19 June 2024
Closing Date for Submission	18 October 2024

Title	Carbon Neutral Horticultural Processes		
Background	<p>JID will feature more than 15 ha of park spaces and will have an estate-wide green cover target of 40%.</p> <p>The horticultural processes include a range of activities such as soil preparation, tree planting, pruning and trimming, fertilization and soil management, pest & disease management, irrigation and watering and overall tree care.</p> <p>JTC is looking for solutions that can address any part of the horticultural process, including the use of carbon-negative soil amendments.</p>		
Challenges	Steep cost premium of carbon-neutral horticultural solutions and products. For carbon-negative soil amendments, deployment outside the laboratory has not been done before in Singapore.		
Desired Outcomes	<p>The envisioned solution shall:</p> <ol style="list-style-type: none"> 1. Ensure the solution is net carbon neutral over its lifecycle. Carbon negative solutions are preferred. 2. Minimize cost premium or reduce costs when compared to conventional processes as an alternative. 3. Maintain or improve plant health. 		
Requirements	<p>The solution should:</p> <ol style="list-style-type: none"> 1. Have no adverse impact on plant health. 2. Indicate if any Singapore Standards are applicable and shows how the solution complies with it. 3. No recurring maintenance efforts or costs (e.g. routine top-up of soil additive). 4. If carbon-negative: have its carbon sequestration intensity be certified by an accredited lab or recognized carbon removal body such as VERRA. 5. Cost premium of no more than 50% over conventional processes. 6. Include experimental methods to obtain the best scenario for implementation at JID. <p>For proposed solutions involving soil amendments:</p> <ol style="list-style-type: none"> 7. Measurements in terms of (1) plant height and plant girth and (2) foliar nutrient concentrations (N, P, K) should be performed. 8. Measurements in terms of soil total carbon, organic content, pH and electrical conductivity to verify the permanence of the sequestered carbon. 		
Possible Solutions	Biochar produced from horticultural waste.		
Development Timeframe	<i>[Sample Timeline for solution involving carbon-negative soil amendment]</i>		
	Step	Task	Start
			End

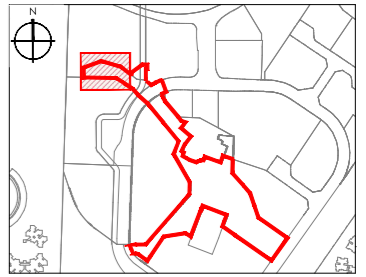
	1	Offsite mixing and delivery of carbon-negative soil amendment	T ₀	T ₀ + 2 month
	2	Application of soil mixes at trial site.	T ₀ + 2 months	T ₀ + 5 months
	3	Monitoring of trial parameters (e.g., plant girth, plant height, soil carbon content etc.)	T ₀ + 5 months	T ₀ + 17 months
	4	Evaluation of trial findings and optimal soil mix	T ₀ + 17 months	T ₀ + 18 months
Testbed/ Trial site (envisioned deployment site)	Jurong Eco-Garden, or Bulim Phase 2 Parks and Sky Corridor planters.			
Additional Info	<i>Please refer to Annexes for additional information.</i>			

Annex A – Propose test site at Jurong Eco Garden (Phase 1)

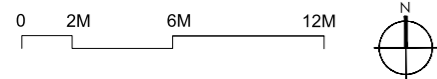
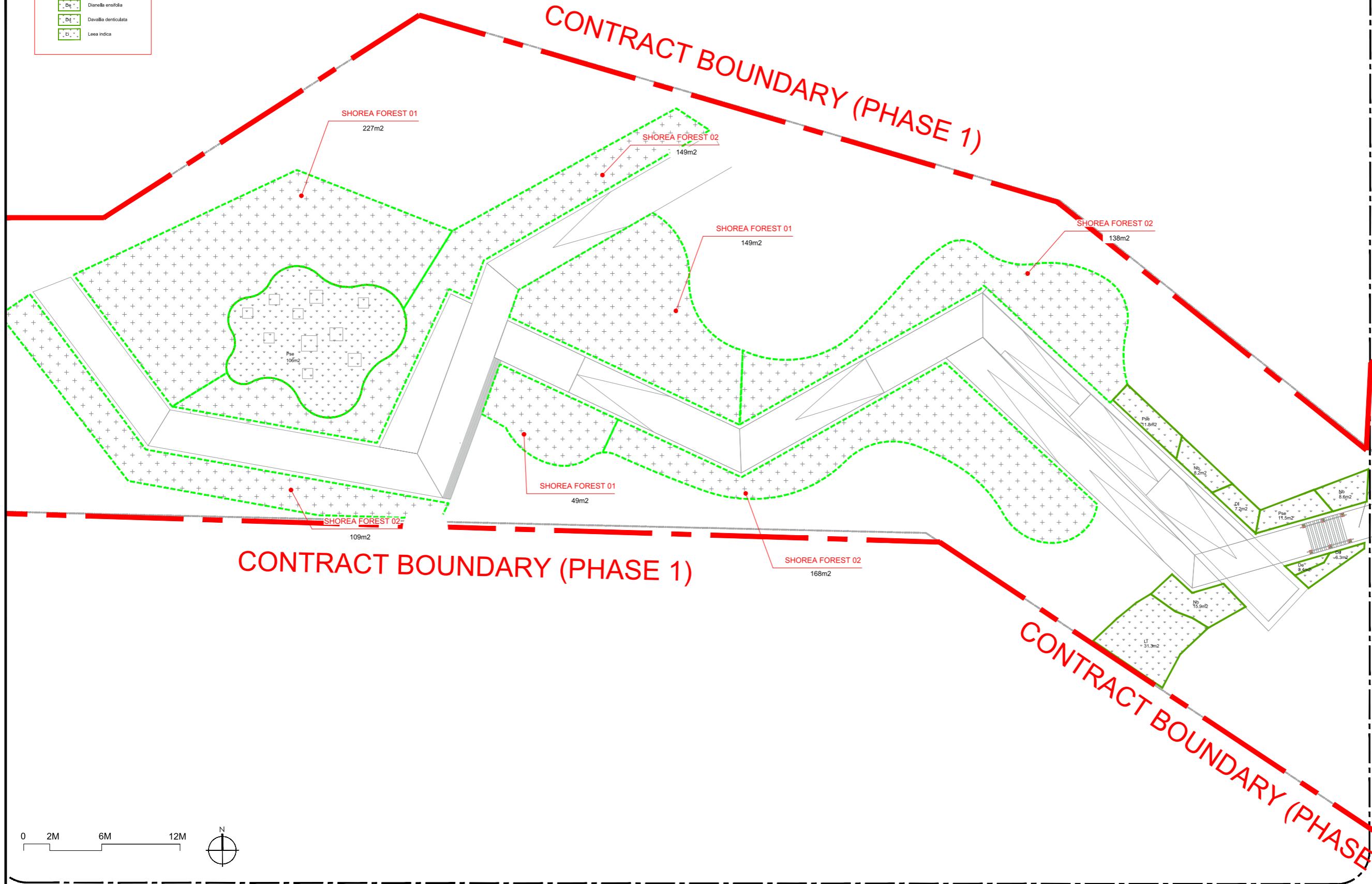


Annex B – Shrubs Planting Plan at proposed test site at Jurong Eco Garden (Phase 1)

LEGEND	SHRUBS
	Pieris semipinnata
	Nephrolepis biserrata
	Dicranopteris linearis
	Dianella ensifolia
	Davallia denticulata
	Leea indica



KEY PLAN



SHRUBS PLANTING ENLARGEMENT PLAN 1

SCALE: 1:150