

Annexure-2

BIDDERS SCOPE OF WORK FOR LANDSCAPE DEVELOPMENT

1. BROAD SCOPE OF WORK

- The DB contractor (hereinafter referred as contractor) is supposed to prepare landscape plan / scheme for entire project site, including softscape details, hardscape and related civil work details, fountain and waterbody details and irrigation plan for all trunk roads and green areas as indicated in Site Layout Plan for the project site; in consultation with the employer.
- The contractors are advised to refer the road cross sections and other relevant tender drawings for preparing of landscaping drawings/scheme.
- The contractor shall obtain the employer's formal approval for landscaping plan / scheme, and other details before procurement, ordering all materials, street furniture and light fixtures; and commencement of landscape development works.
- The contractor shall make sure that drainage of all landscaped areas is well integrated and synchronised with storm water drainage system for the project area.

2. SPACE PLANNING STRATEGY FOR LANDSCAPE

As shown in the overall master plan, following are the major types of the green spaces,

- a. Parks and playgrounds
- b. Pathways/ Passages
- c. Road medians and Roadside planting areas

a. Parks and Playgrounds:

- Parks have long been recognized as major contributors to the physical and aesthetic quality of urban neighbourhoods. These shall be designed with a landscape character that can accommodate large crowd at a single time.
- For landscape development of open spaces for proposed development, space character and user requirements shall be considered.
- Landscape theme of each green space will respond to the user type and altogether will form a homogeneous green network.
- Plant species chosen for these areas shall be indigenous and withstand the environmental conditions with resistance to diseases and insect pests (Refer list of plants attached). These plants have capacity to withstand environmental pollution and have low maintenance requirements.
- Other than plantation, hardscape finishes, water-bodies and garden furniture shall follow the theme of each type of open space.

b. Pathways/ Passages:

These areas are small pockets of green which shall act as breakout spaces for citizens from neighbouring plots. Pathways shall be wide enough and planted with various shade giving flower bearing trees and flowering shrubs. Mix of hardscape with soft planted areas shall help in making these areas accessible. Introducing landscape furniture such as seats, lighting etc.; shall encourage the use of space by citizens for recreational activities.

c. Road Medians and Road side planting areas:

Landscaping of Median shall comprise of;

- Plantation with indigenous species that can withstand environmental pollution and have low maintenance requirements.
- Typical theme of plantation that has hedge/ shrubbery at bottom and a central row of trees.
- Height of hedge/ shrubbery shall be maintained in a way to avoid disturbance by vehicle lights coming from opposite side of road.
- Trees planted in the medians shall be with longitudinal form and high branches so it will not hamper the cars, drivers or the pedestrians as well as will not block the vision.
- No plants with toxic nature or irritant secretions shall be planted at medians.

3. GENERAL NOTE

1. These general notes shall be read in conjunction with the general condition of the contracts as prepared by the landscape architect and notes as given on the drawings sheets.
2. The contractor shall visit the site and get familiarized with the plans.
3. The contractor shall repair damage to all existing facilities/utilities/structures caused by or due to work at their own expense.
4. If there is a conflict with layout in the field, contact the employer's authorized representative prior to commencement of installation work.
5. All work shall be performed in confirmation with all applicable local codes and prevalent statutory regulation.
6. The contractor shall perform all protection, demolition, removal and site preparation necessary for the proper execution of all work; with due consideration of safety aspects.
7. The contractor shall remove all debris and unsuitable material generated by contractor's operation from the site.
8. The contractor shall notify owner's authorized representative at least 3 days prior to all required field observations.
9. All external paving surfaces shall be cleaned without cement, asphalt and stain to ensure quality and finish.
10. All paving joints (5 mm) flush finish.
11. Use oversized paving unit with scored joints, minimum cut 100 mm.

4. MATERIAL, SAMPLES AND MOCK-UP INFORMATION

1. Samples of tile/brick/stone/timber/artificial turf or other specified landscape material shall be submitted to gain written approval from employer prior to application.
2. The contractor shall prepare mock-ups of the paving for review by employer.
3. The contractor shall prepare mock-ups for palter walls to review finish, edge condition at the paving and at the planting and all joint detailing for review by employer.
4. The contractor shall prepare mock-ups of the pavilion, timber deck, pool edge & water feature structure for review by employer.

5. GRADING

1. All landforms shall be formed as per the grading plan. All the slopes should have a consistent fall and drain to natural slope. Final grading to be inspected by the employer's authorised representative before planting.
2. The contractor must verify existing and proposed pathway elevation and submit to owners authorized representative at least 10 days prior to commencement of excavation or pavement sub grade.
3. All finish grades shall provide for natural runoff of water without low spots or pockets. Set flow lines accurately and provides a minimum 2% and maximum 5% gradient unless otherwise noted.

6. PLANTING NOTES

1. The contractor shall comply with size and spacing requirements indicated in Tree Planting Schedule and Shrubs and Ground Cover Schedule. Refer Tables 2.1 & 2.2.
2. The contractor shall propose the type and species for trees, plants, shrubs, ground cover in consultation with the employer, in order to achieve the employer's vision for development of world Class Township. Tables 2.1 & 2.2 may be referred to.
3. Final quantities for number of trees, plants, shrubs and ground cover shall be based on size and spacing requirement as specified in schedule (Tables 2.1 & 2.2).
4. The contractor shall submit plant photos or arrange nursery trips for approval and inspection by employer's authorised representative. The contractor shall use only approved plants. The approval shall be based on the following,
 - a. The species
 - b. The size, form and structure
 - c. The health condition and overall appearance
5. Individual plants within a grouping shall not vary in size by more than 5%.
6. All plants shall be in good health and good form. The health condition shall be based on the following
 - a. Pest free, damage free branching structure, bark and leaves
 - b. Free of wounds
 - c. No sign of pre-mature aging
 - d. Plants transplanted shall not be in storage for extended period of time in order to prevent desiccation of rootball and new buds
 - e. No damage
 - f. Ability to grow
7. The contractor shall inspect all plants for pests. During the maintenance period the contractor shall ensure that all plants are kept in good condition.
8. The contractor shall mark all tree location on site and obtain approval from employer's authorised representative prior to planting.
9. The spacing shall satisfy the growth requirement of the plants and be verified by the employer's authorised representative prior to planting
10. The contractor shall prepare detail for the tree pit, treatment and backfill; shall get it approved by employer's authorised representative prior to planting.
11. The contractor shall remove all stone, concrete and trash pieces from trees pits prior to planting.
12. The soil level of the tree pit shall match the adjacent soil level after back filling.
13. The contractor shall perform soil tests to accommodate the various growth habits of the plants. He shall analyze the test result and follow the recommendations given to ensure that the plants are in healthy condition.

14. The contractor shall maintain the original form of the plant when pruning. The contractor shall prune side branches to ensure the plant is growing in healthy condition.
15. All spacing shall be verified by the employer's authorised representative prior to planting
16. All plants material, trees, shrubs and ground covers shall be reviewed selected and approved by employer's authorised representative prior to installation/plantation.
17. For further details regarding landscape specifications, installation, operation-maintenance of landscape elements; and broader list of suitable plants/trees/shrubs, please refer "**A Handbook of Landscape – A Guide (2013)**" published by CPWD.
18. Table 2.1: TREE PLANTING SCHEDULE

Sl. No.	Botanical Name	Common Name	Specification at the time of Procurement & Installation					Remarks
			Total Height (m)	Spread (m)	Clear Trunk Height (m)	Diameter (mm)	Spacing (m)	
1	<i>Ailanthus Excelas</i>	Mahaneem	4	1.5	2	65	8-10	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
2	<i>Azadirachta Indica</i>	Neem	3.5	1	1.5	50	8-10	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
3	<i>Alstonia Scholaris</i>	Blackboard tree	3.5	1.5	2	50	6	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
4	<i>Bombax Ceiba</i>	Red Silk cotton tree	4	2	2	50	6	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
5	<i>Bauhinia Purpurea</i>	Orchid tree	2.5	1	1.5	40	4-5	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
6	<i>Chukrasia Tabularis</i>	Chikrassy	3	1	1.5	50	6	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
7	<i>Chorisia Speciosa</i>	Silk floss tree	3	1.5	1.5	50	5	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
8	<i>Delonix Regia</i>	Gulmohar	3	1.5	1.5	50	6	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
9	<i>Jacaranda Mimosifolia</i>	Neeli Gulmohar	3	1.5	1.5	50	8-10	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.

Sl. No.	Botanical Name	Common Name	Specification at the time of Procurement & Installation					Remarks
			Total Height (m)	Spread (m)	Clear Trunk Height (m)	Diameter (mm)	Spacing (m)	
10	<i>Lagerstroemia Speciosa</i>	Pride of India	2.5	1	1.5	40	6	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
11	<i>Melia Azedaracha</i>	Bakain	3	1.5	1.5	50	8	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
12	<i>Michelia Champaka</i>	Yello Champaka	3	1.5	1.5	50	8	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
13	<i>Millettia Peguensis</i>	Moulmein rosewood	3	1.5	1.5	50	8	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
14	<i>Neolamarckia Cadamba</i>	Kadam	4	2	2	50	6	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
15	<i>Peltophorum Pterocarpum</i>	Copper pod tree	3.0-3.5	1	1.5	50	6	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
16	<i>Plumeria Obtusa</i>	Frangipani	2.5	1.5	1	80	4-5	Multi stem plant with two or more main stems arising from or near ground level, with full and balanced canopy.
17	<i>Schleichera Oleosa</i>	Kusum	3.0-3.5	1	1.5	50	8	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
18	<i>Tabebuia Argentea</i>	Silver trumpet tree	2.5	1.0-1.5	1	40	6	Tree Shall have a single straight trunk and multi branches. Trees shall form a dense, even, spreading crown.
19	<i>Roystonea Regia</i>	Royal Palm	4	1			4-5	1 m height, brown stem measured from root collar to base of green leaf sheath, straight stem, min 8 leaves

19. According to the spacing requirements provided in above schedule, approximate numbers of trees/plants need to be installed along the roads and green areas within the project site are as follows:

- a. Along trunk roads – 6000 nos.
- b. Green areas as per the site layout plan – 3000 nos.

The above quantities are only indicative. Actual quantity will be worked out by the DB contractor.

TREE REFERENCE IMAGES



AILANTHUS EXCELSA



AZADIRACHTA INDICA



ALSTONIA SCHOLARIS



BOMBAX CEIBA



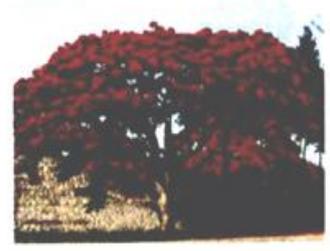
BAUHINIA PURPUREA



CHUKRASIA TABULARIS



CHORSIA SPECIOSA



DELONIX REGIA



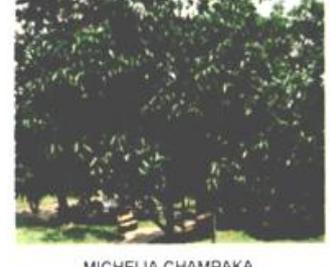
JACARANDA MIMOSIFOLIA



LAGERSTROEMIA SPECIOSA



MELIA AZEDARACH



MICHELIA CHAMPAKA



MILLETTIA PEGUENSIS



NEOLAMARCKIA CADAMBA



PELTOPHORUM PTEROCARPUM



PLUMERIA OBTUSA



SCHLEICHERA OLEOSA



TABUBIA ARGENTEA



TABEBUIA ROSEA



ROYSTONEA REGIA

Table 2.2: SHRUB AND GROUND COVER SCHEDULE

S.No	Botanical Name	Common Name	Specification at the time of Procurement & Installation			Remarks
			Overall Height (m)	Spread (m)	Spacing (c/c in mm)	
1	<i>Alocasia SPP</i>	Elephant's ear	0.75	0.5	400	min. 5 leaves, bushy
2	<i>Bougainvillea Glabra</i>	Bougainvillea Red	0.6	0.4	500	Bushy, multi-branching
3	<i>Bougainvillea Shubra</i>	Bougainvillea White	0.6	0.4	500	Bushy, multi-branching
4	<i>Buxus Semperviren</i>	Boxwood	0.3	0.3	200	Bushy, multi-branching
5	<i>Bougainvillea SPP (pink)</i>	Bougainvillea pink	0.6	0.4	500	Bushy, multi-branching
6	<i>Bougainvillea SPP (purple)</i>	Bougainvillea purple	0.6	0.4	500	Bushy, multi-branching
7	<i>Crinum Asiaticum</i>	Grand Crinum Lilly	0.5	0.5	400	Min 6 Leaves, bushy
8	<i>Calliandra Haematecephala</i>	Red Powder Puff	0.75	0.5	500	Bushy, multi-branching
9	<i>Caesalpinia Pulcherima</i>	Dwarf Poincinia	0.75	0.5	500	Bushy, multi-branching
10	<i>Dianella Tasmanica</i>	Tasman flax lilly	0.2	0.2	200	Bushy, multi-branching
11	<i>Clerodendrum Inerme</i>	Glory bower	0.3	0.3	300	Bushy, multi-branching
12	<i>Euphorbia milii</i>	Euphorbia red	0.2	0.2	200	Bushy, multi-branching
13	<i>Ficus Longisland</i>	Ficus Longisland	0.4	0.2	200	Bushy, multi-branching
14	<i>Ficus Panda</i>	Ficus Panda	0.6	0.3	300	Bushy, multi-branching
15	<i>Galphimia Glauca</i>	Gloden Shower	0.4	0.4	400	Bushy, multi-branching
16	<i>Hamelia Patens</i>	Firebush	0.4	0.3	300	Bushy, multi-branching
17	<i>Hymenocallis Speciosa</i>	Spiderlily	0.3	0.3	300	Min 6 Leaves, bushy
18	<i>Murraya Paniculata</i>	Murraya	0.5	0.4	500	Bushy, multi-branching
19	<i>Nephrolepis Exaltata</i>	Sword fern	0.3	0.2	200	Bushy, multi-branching
20	<i>nerium Oleander</i>	Nerium pink	0.75	0.5	500	Bushy, multi-branching
21	<i>nerium Oleander (petite pink)</i>	Nerium Dwarf pink	0.5	0.3	300	Bushy, multi-branching
22	<i>Nerium Oleander (white sands)</i>	Nerium Dwarf white	0.5	0.3	300	Bushy, multi-branching
23	<i>Ophiopogon jaburan</i>	Black mondo grass	0.2	0.2	200	Bushy, multi-branching
24	<i>Plumbago capensis</i>	Blue Plumbago	0.3	0.2	450	Bushy, multi-branching
25	<i>pennisetum setaceum</i>	Fountain Grass	0.3	0.2	300	Bushy, multi-branching
26	<i>pennisetum setaceum (rubrum)</i>	Red fountain grass	0.3	0.2	300	Bushy, multi-branching
27	<i>raphis excelsa</i>	Broadleaf lady palm	0.75	0.6	600	min 6 shoots, bushy
28	<i>Russelia Equisetiformis</i>	Russelia	0.4	0.6	300	Bushy, multi-branching
29	<i>Schefflera arboricola</i>	Schefflera green	0.5	0.3	300	Bushy, multi-branching
30	<i>Schefflera arboricola var.</i>	Variegated schefflera	0.5	0.3	300	Bushy, multi-branching
31	<i>Sansevieria trifasciata</i>	mother in law tongue	0.6	0.2	200	Min 6 Leaves
32	<i>Syngonium podophyllum</i>	syngonium	0.3	0.2	200	Bushy, multi-branching

S.No	Botanical Name	Common Name	Specification at the time of Procurement & Installation			Remarks
			Overall Height (m)	Spread (m)	Spacing (c/c in mm)	
33	<i>Turnera ulmifolia</i>	yellow alder	0.3	0.3	200	Bushy, multi-branching
34	<i>Tacomaria capensis</i>	cape honeysuckle	0.4	0.3	200	Bushy, multi-branching
35	<i>Tabernaemontana coronaria</i>	veriegated chandni	0.4	0.3	300	Bushy, multi-branching
36	<i>Tecoma Gaudichaudi</i>	gaudichaudi	0.6	0.3	500	Bushy, multi-branching
37	<i>Thunbergia erecta</i>	bush clockvine	0.4	0.3	300	Bushy, multi-branching
38	<i>Wedelia Trilobata</i>	Wedelia	0.1	0.2	150	Bushy, multi-branching

7. MAINTENANCE WORKS

1. General

- i. The Contractor shall maintain the landscape for a five-year period after the date of completion (issue of Certificate of Completion).
- ii. The extent of the landscape to be maintained by the Contractor shall be deemed to cover and include all soft landscape areas within the overall project boundaries as shown on the drawings including all existing soft landscape not affected by the contract works and retained intact or nearly so through the end of the contract period as well as all the landscape works covered in the contract scope of works.
- iii. The Contractor shall ensure that a senior qualified supervisor is made available for organising and running the maintenance programme. The Contractor shall also have available an experience foreman who can supervise the workers on a day-to-day basis. An adequate trained labour force of at least 3 workers must be available for routine work and they must be on site for at least half a working day, 5 days per week during the maintenance period. Additional grass cutting operators will be needed to ensure adequate cutting and cleaning.
- iv. The Contractor's Supervisor shall inspect the site once per week during the maintenance period and shall prepare a brief schedule of operations required for the coming week. The format for the schedule of operations will cover each distinct areas of the site. The schedule shall describe the operations the Contractor intends to carry out in the coming week to cover the items listed in the specification and to ensure that the current weather conditions and growing performances, insect attack, etc is taken into account.
- v. A copy of this schedule is to be submitted to the employer every week so that a running record of proposed operations can be checked at the maintenance inspections each month. If in the opinion of the employer the maintenance works have not been satisfactorily carried out according to site conditions and the

specifications, part of the monthly payment will be withheld until the works have been satisfactorily carried out.

- vi. The contractor shall carry out all necessary measures to ensure that all pot plants, trees and shrubs and other plants shall thrive and become established within this period. All landscape areas will be inspected monthly and lists of remedial works issued after each inspection. All items on the remedial lists are to be carried out by the time of the next inspection, ie within one month.
 - vii. The Contractor shall keep the landscape areas clean and tidy at all times and dispose of all waste materials arising from the cleaning.
2. Maintenance of Planted Areas: Trees, Shrubs, Climbers, Herbaceous and Ground Covers
- i. The Contractor shall water all trees, palms, shrubs, ground cover, rooted shoots, herbaceous plants and other planting areas as often as necessary to keep the ground moist all around and to the full depth of the roots of the plants to a minimum depth of saturation of:
 - 100mm for groundcover
 - 300mm for shrubs
 - 750mm for trees
 - ii. Recycled water only shall be used for the Works. Water supply net work for this purpose shall be designed and executed by the contractor.
 - iii. An inspection of watering requirements is to be made by the Contractor at least two times a week in dry weather.
 - iv. Water shall be supplied using an approved hose or sprinkler so as not to cause compaction or wash-outs of the soil or loosening of plants. The Contractor shall immediately make good any such damage, soil erosion or outwash and plants loosened by erosion are to be replanted or if damaged, replaced.
 - v. All plant beds are to be kept in a weed free condition with a weeding operation once a month. All weeds, stones and rubbish collected from this operation shall be removed from the site to a tip to be found by the Contractor. Herbicides may not be used on this site unless a specific application in writing is made by the Contractor with full back up data on the performance of the chemicals and the particular need for the chemicals use. Approval will in all cases be subject to the Landscape Architect's decision.
 - vi. After weeding, at least once per month the soil surface is to be lightly broken up between plants using a pronged fork upto maximum depth of 100mm. Contractor shall Take care not to disturb the root systems of plants. After forking the soil loose, the mulch and loosened soil are to be raked to give an even re-distribution of the mulching materials
 - vii. Firming up and adjusting of stakes/ties shall be carried out monthly to ensure that the trees and shrubs are firmly held in the ground. If required guy ropes or tree pits shall be adjusted, tightened or loosened. If tree ties or ropes are rubbing the bark of the

- trees, the ties are to be taken off and retied. Any damaged branches are to be carefully pruned and the wounds sealed.
- viii. All protective fencing is to be maintained and kept in good condition and in position until the end of the maintenance period.
- ix. Trees shall be pruned if dead, rotten or crossed branches are present or to maintain a clear stem up to the specified height using the methods described below. Tree pruning is to be reviewed monthly.
- x. All shrubs and ground covers are to be reviewed monthly and pruned as and when required during the Maintenance Period to promote bushy growth and good flowering characteristics. The shrubs shall be checked and all dead wood, broken, damaged or crossed branches shall be cut back, depending on species. Pruning and removal of branches is to be carried out using sharp clean implements to give a clean sloping cut with one flat face. Ragged edges of bark or wood are to be trimmed with a sharp knife.
- xi. Pruning for all plants shall be carried out as follows:
- Pruning is to be done with the cut just above and sloping away from an outward facing health bud.
 - Removal of branches is to be done by cutting flush with the adjoining stem and in such a way that no part of the stem is damaged or torn.
 - Ragged edges of bark are to be trimmed with a sharp knife.
 - Any cuts or wounds over 25mm diameter are to be painted with an approved sealant after trimmed.
 - All pruning to be cleared up and removed from site after pruning.
- xii. All hedges, mat forming herbaceous plants and ground cover plants shall be clipped with shears as often as necessary (at least monthly) to maintain a tidy appearance. Tall hedges are to be cut to forms shown on the drawings. Fertiliser is to be applied to clipped areas around 1-2 weeks after clipping.
- xiii. Selective pruning of flowering plants shall be done where special flowering characteristics are required such as for Ixoras, Hibiscus, Allamanda where flowering takes places on twig ends. Heavy clipping must not be used for these species since this will remove future flower buds. Selective pruning by clipping non flowering twigs and leaving flowering twigs is necessary for these plants, and this operation must be done by experienced workers.
- xiv. The Contractor shall allow for monthly fertiliser operations during the Maintenance Period. An approved slow release fertiliser shall be applied to each plant at the rate of 50gm per shrub and 200gm per tree, one month after planting and thereafter monthly. After spreading the fertiliser around the base of the plant the granules shall be lightly forked into the soil, and the plant well watered. Herbaceous and ground cover areas shall receive 25mm of approved soil conditioner, evenly spread and mixed with 50gm/m² of approved slow release fertiliser, evenly spread over entire area and lightly forked into the soil to break up the top layer, and the area well watered on a month by month basis.

- xv. The horticultural requirements of different plants or areas may involve variations to those techniques (such as the use of organic liquid fertilisers for sensitive plants) and variations in method will be authorised as required.
- xvi. Heavy feeding plants such as Canna, Heliconia and Lantana shall be dressed with a 25mm mulch of approved organic compost or similar approved compost every 2 months, lightly forked in around the base of the plants.
- xvii. Additional mulching layer, 25mm deep to be spread and forked in over all planted areas at 3 monthly intervals.
- xviii. The Contractor shall make regular weekly checks to ensure that the plant material is protected from insects, pests and fungus. No pesticides may be used unless approval from the Landscape Architect is given from the Contractor for the chemical intended for use; concentration, spraying programme along with the full technical details of the product.

3. Maintenance of Lawn Areas

- i. The Contractor shall mow all lawn areas using approved cutting equipment to maintain a close sward to a height of not less than 20mm and not more than 30mm for all grass types.
- ii. Mowing shall be carried out generally weekly, except in dry weather and grass shall not be allowed to flower between cuts.
- iii. Weekly inspections are to be made to ensure adequate planning of grass cuts to suit growth and weather conditions. All clippings to be gathered up and removed from site.
- iv. All grass areas are to be watered by means of sprinklers during dry weather as often as is required to keep the grass green and the soil moist.
- v. The Contractor shall provide hoses and sprinklers for use from water points provided. Weekly inspections are to be made to determine the need for water and, in dry weather watering must be done to moisten the soil to a depth of 100mm.
- vi. Fertiliser of NPK value 10-15-15 or similar approved be spread at a rate of 40gm/sq m over all grass areas at monthly intervals, using approved spreading equipment to give an overall even spread. Grass areas that have been fertilised shall be watered if no rain falls within 24 hours.
- vii. The Contractor shall apply top-dressing of not more than 15mm depth fine sand and granulated compost raked and spread evenly over the lawn areas. The next top-dressing shall be applied only after the grass has grown through to a mowable height.
- viii. There shall be at least two applications of topdressing during the maintenance period, to be directed by the Landscape Architect appointed by Contractor.
- ix. If depressions or bumps over 25mm deep or high in turf areas during the maintenance period these are to be levelled out by lifting the turf and raising the soil level with sand/compost mix or trimming to level grades, followed by re-turfing.

- x. Grass areas are to be kept free of weeds, annual grasses, fungus and insect attack and free of stones or other debris throughout the maintenance period as often as is required.
 - xi. All chemicals used shall be to the approval of the Employer/Employer's representative. Assessment of these operations is to be prepared on the basis of the weekly maintenance inspection chart.
 - xii. If compaction or consolidation takes place or hard passing or baking of the soil occurs, the soil areas are to be well watered first and lightly loosened by mechanical means such as spiking, slitting or hollow tinning using equipment approved by the Employer/Employer's representative.
4. Replacement Planting
- i. If during the course of the Maintenance Period trees or shrubs or other plants die, the Contractor shall replace the plant at no cost to the Employer.
 - ii. All questions related to responsibility for the replacement planting will be subject to site inspection and agreement of the appointment of responsibility.
 - iii. This will be done very month at the monthly maintenance inspections.

8. LANDSCAPE GUIDELINES

1. General

The guidelines specifying the proportion of Landscape materials and elements use are split into sub-categories; softscape, surfaces, site furniture, signage and lighting. The percentages are split in proportion to the landscaped area of each sub-category in case of softscape and signage in a comparative note with respect to all land uses. In surfaces, the percentages are split on the basis of total hardscaped area of each land use.

Landscape guidelines for aesthetics and use are based on the factors below:

- a. Land use adjacency – Higher quality and aesthetically pleasing materials are used for open spaces adjacent to commercial areas. Plot open spaces are given secondary priority with respect to exterior aesthetics and are relative to landscape design and use of the place.
- b. Open space function – Open space function take higher priority, where depending on nature of the place. Parks have higher softscape to surface proportion for higher shade and greenery (design specific); plaza has lower proportion of softscape for more open and flexible use; active linear green has dense planting, additional to the boulevard character; non-active green buffer has minimalistic softscape for functional purpose only; greenways like plaza have lower proportion of softscape for primary shade purposes.
- c. Context and Location – Visibility and economic feasibility of a plot are vital to achieve this world class township. Therefore, to complement the buildings and with respect to surrounding features, the aesthetic features of the landscape are suggested. Canal linear park will be treated with a green edge promoting more activities alongside the canal with higher softscape for shade and aesthetics.

2. Recommended Landscape Materials

Design guidelines for choosing landscape materials

- Create links between buildings.
- Create an enclosed space along with a theme for development.
- Define these enclosed/private areas and give a sense of security for these.
- Either cater or deter pedestrian and vehicular movement around the space.
- Assist people with disabilities – cater to their needs and accommodate them in all areas.
- Visually link a development with its surrounding – mainly through bringing in uniformity in materials.
- The use of appropriate good quality and durable materials will frequently reduce long-term maintenance costs whereas the use of an inappropriate material, purely because it has low initial cost, is often a false economy.

When selecting materials for landscaping, developers should look at the following aspects:

- If the material enhances the surrounding buildings. If the material is appropriate for the character of the development, such as formal or informal, rural or urban, modern or traditional etc.
- If the material is suitable for its proposed usage and also whether the location it is being applied at is suitable.
- How does the material weather – It should be analyzed whether the material improves with age, whether it does not undergo degradation beyond a certain extent – mainly depending on the context – the local weather conditions.

Following Table 2.3 lists the guidelines for different landscaping elements for each landuse category, as per the master plan.

Table 2.3: Landscape elements Guidelines

Land use type	Sub-type	Landscape elements											
		Softscape	Surfaces	Site furniture	Signage	Special Paving	Asphalt / Road surface	Cycle track surface	Seating	Trash bins	Bollards	Cycle racks	Exterior Signage/ Hoarding
		Canopy	Shrubs	Understorey	Pre-cast concrete pavers								
Hi-tech Industry		20%	15%	35%	60%		40%		Variable	Variable			
Bio-tech Industry		20%	15%	35%	60%		40%		Variable	Variable			
R&D Industry		20%	15%	35%	60%		40%		Variable	Variable			
Residential	High-rise residences	30%	20%	40%	75%		25%	Variable	Variable	Variable	Variable	Variable	
	High-end residences	20%	20%	40%	75%		25%	Variable	Variable	Variable	Variable	Variable	
	EWS Housing	30%	20%	40%	75%		25%	Variable	Variable	Variable	Variable	Variable	
Commercial	Shopping Mall	10%		30%	60%	40%			Variable	Variable			40%
	Other retail	15%	15%	20%	100%				Variable	Variable			30%
	Hotel	15%		30%	70%	30%				Variable			
	Convention Centre	10%		30%		100%			Variable	Variable			
	Galleries	10%		30%		100%			Variable	Variable			
	Retail + Offices	15%		20%	100%				Variable	Variable			
Utility		20%			100%								
Open Space	Central Park	45%	45%	60%	50%	30%	20%	Variable	Variable	Variable	Variable	Variable	40%
	Neighbourhood Park	40%	45%	60%	80%	20%		Variable	Variable	Variable	Variable	Variable	40%
	Entrance Neighbourhood Park	40%	45%	60%	80%	20%		Variable	Variable	Variable	Variable	Variable	40%
	Linear Park	40%	45%	60%	100%			Variable	Variable	Variable	Variable	Variable	30%
	Plaza	10%				100%			Variable	Variable	Variable	Variable	20%
	Active green buffer	60%	25%	40%	100%			Variable	Variable	Variable	Variable	Variable	10%
	Non-active green buffer	20%		15%	100%								
Roads	Greenway	10%	20%	10%	100%				Variable	Variable	Variable	Variable	10%
	Boulevard	50%	40%	20%	As per road section		As per road section	Variable	Variable	Variable	Variable	Variable	30%
	Avenue	50%	40%	20%	As per road section		As per road section	Variable	Variable	Variable	Variable	Variable	30%
	Street	35%	25%		As per road section		As per road section	Variable	Variable	Variable	Variable	Variable	25%