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L a n d s c a p e Planning and Design | for Urban and Natural Spaces | Commercial and Residential | Private and Public
ABN 51 045 985 476 Project No: 1905

11 October 2019

Mr Jason Crawford and Ms Janine Crawford
C/ Turnbull Planning International Pty Limited
Suite 2301, 4 Daydream Street
WARRIEWOOD NSW 2102

Dear Mr Jason Crawford and Ms Janine Crawford,

Re: 39 Cabbage Tree Road, Bayview
Application # PLM/2019/0097
Landscape Design Intent Statement

Please find enclosed a Landscape Design Intent Statement for the above noted project. This document is to accompany the Landscape Plan Set dated 10.10.2019 which includes the following documents:

1905/1 Landscape Site Plan
1905/2 Landscape Planting Plan
1905/3 Planting Plan L2 / Weeds List / Detail #1905/C
1905/4 Construction Notes / Detail #s1905/A & B
1905/5 Plant Schedules

Your sincerely

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LANDSCAPE DESIGN INTENT

(Project name – 39 Cabbage Tree Rd Bayview – Application # PLM/2019/0097)

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Topics covered by this statement:

- Project Brief:
- Council requirements:
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  - In relation to water Management and Riparian:
- Plant selection:
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    - Proposed planting to the majority of the site:
    - Proposed rehabilitation of the drainage swale:
    - Proposed plantings to Green Roof:
  - Proposed finishes:
    - Rock / pebble mulch:
    - Garden Edging:
  - Proposed materials:
    - Topsoil:
    - Mulch:
    - Plant stock:
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  - Existing trees:
  - Plant maintenance:
  - Weed control:

PROJECT BRIEF:

I was briefed by Turnbull Planning International Pty Limited Town Planners, to provide a landscape plan and planting regime for the site that incorporated an emphasis on a generous proportion of the site that would be given over to endemic vegetation, with the proposed recreation facility building providing very much increased setbacks and a reduction in the encroachment of car parking around the building curtilage. I was also asked to look at retention of existing vegetation that enjoyed a high SULE and suggest complementary plant species to augment the existing canopy and provide suitable planting in the understorey. The brief also required that I work with the project ecologist and arborist in minimising impact on existing biodiversity and compensating for any such impacts by providing an improved environment within the site curtilage, to enhance suitable repopulation for any threatened ecological community. I was also asked to recognise in my work, that the site presently forms a degraded part of a an existing wildlife corridor.

COUNCIL REQUIREMENTS:

As included in the notes from the Development Application Prelodgement Meeting dated 28.05.2019 Council requires the following:

Landscape Plan(s)

A detailed landscape plan will be required to satisfy the outcomes and controls of the DCP as noted below:

C1.1 Landscaping
In all development a range of lowlying shrubs, medium to high shrubs and canopy trees shall be retained or provided to soften the built form. Development shall consider the use of pier and beam footings to retain existing trees.
Canopy trees are to be located a minimum of 5 metres from proposed built structures, or minimum of 3 metres where pier and beam footings are used.

D4.2 Scenic Protection
Development shall minimise any visual impact on the natural environment when viewed from any waterway, road or public reserve.

In relation to Biodiversity:

Relevant provisions that apply include:

***Pittwater LEP Clause 7.6 Biodiversity** - The proposal is required to consider feasible alternatives to avoid and minimise environmental impacts, including avoiding impacts to native vegetation (shrubs and understorey) and canopy trees.*

- *Council must be satisfied that the development is designed, sited to avoid any significant adverse environmental impact.*

***Pittwater DCP Clause B4.6 Wildlife Corridors** – The DA is located wholly within a High Priority wildlife corridor under the Pittwater 21 Development Control Plan 2014. High Priority wildlife corridors are considered as areas essential for fauna movement under the DCP. The proposal must demonstrate compliance with these control, specifically:*

- *Development shall not directly impact on / or significantly reduce / degrade habitat for locally native species, threatened species, endangered populations or endangered ecological communities.*
- *Development shall retain, and provide an adequate buffer to, wildlife corridors.*
- *Development shall provide wildlife corridors via creation, restoration, and / or regeneration of habitat.*
- *Development shall not result in a significant loss of canopy cover or a net loss in native canopy trees.*
- *Development shall ensure that at least 60% of any new planting incorporates native vegetation (as per species listed in Native Plants for Your Garden available on the Pittwater Council website). Landscaping is to be outside areas of existing bushland and not include environmental weeds.*

- *Planting is to maximise linkage within the wildlife corridor.*

Other controls that apply:

Pittwater DCP Clause B4.13 Freshwater Wetlands (non EEC)

Pittwater DCP Clause B4.14 Development in the Vicinity of Wetlands

NSW Biodiversity Conservation Act 2016
The property is also mapped as Coastal Flats Swamp Mahogany Forest which is a component of Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Coast Bioregions, an Endangered Ecological Community listed under the NSW Biodiversity Conservation Act 2016.

Required biodiversity assessment information
- *Any submitted Landscape Plan to be consistent with the Arborist Report and Ecological reports. Must incorporate minimum 60% local native species (SSF EEC community) and be located outside of any areas of native bushland. Any proposed replacement canopy trees should be Eucalyptus robusta.*

In relation to Water Management and Riparian:

The following water management and riparian controls apply:

Pittwater DCP B4.14 Development in the vicinity of wetlands

Development must minimise changes to local surface runoff, groundwater flows and water flow regimes to the wetland; and temperature, salinity, chemical makeup and sediment loads.
- *Infiltration techniques such as porous paving on the carpark will be important to mimic natural surface and groundwater flow regimes.*
- *Capturing coarse sediments prior to discharge of stormwater from the land as below in B5.9*
- *To address minimising changes to 'chemical makeup' (nutrients) I would normally expect to see at least a swale or infiltration strip/basin to temporarily retain stormwater for treatment prior to discharge, however I think a greater priority here is vegetation, with trees that will assist in infiltration and evapotranspiration and understorey species and groundcovers that will capture sediment from runoff. Therefore the Biodiversity Management Plan must demonstrate that a substantial vegetated buffer strip is to be planted along the south-eastern and northern boundaries (also riparian zones) for this purpose.*

Pittwater 21 DCP B5.13 Development on waterfront land

No development within the riparian zone (10m from top of bank of watercourses)
Landscaping with local native plants only.
- *As application of a 10m riparian zone from both waterways would sterilise the lot, Council will accept reduced riparian zones. It will be expected that at a minimum the core riparian area (50% of width closest to the creeks) would be vegetated.*
- *The Southern part of the proposed development is well within the 10m riparian zone. We would expect that as part of the Biodiversity Management Plan, significant effort should be made in providing compensatory plantings on other parts of the lot to make up for the loss of vegetated riparian areas.*

PLANT SELECTION:

CRITERIA FOR SELECTION OF SPECIES:

Category:	Subcategory:	Details:
Site characteristics:	**Existing soils:**	Modified / sandy loam / alluvial / most likely some introduced material
	Location:	coastal hinterland / approximately 2km from the Bungan Beach / <1km from Winnererremy Bay on Pittwater
	Aspect:	Relatively level low lying land / gently sloping from Cabbage Tree Rd south to an adjacent creek
	Existing vegetation:	The site is ringed predominantly with planted Swamp She-Oaks and naturally occurring Swamp Mahoganies with some tree planting within the site. Understorey consists of low growing weeds.
	Council covenants:	Site is located within a High Priority Wildlife Corridor
Plants aspects:	**Uses:**	for winter solar access and summer shade (to assist with maximising energy efficiencies) / for biodiversity / for habitat / for visual amenity
	Issues to avoid:	invasive roots / sharp edges hazardous to pedestrian access
	Management:	low water requirements / minimal maintenance eg pruning / resistance to pests and disease / longevity
	Provenance:	Selection of locally occurring species within the context of the anticipated performance of the plant given predicted changes to climate
	Availability:	Consideration of ease to source selected species
	Issues:	Consideration of issues that plant species may present eg limb drop
Tolerances:	**Climate change:**	trees are expected to live more than 30 years / in the interests of longevity consideration to be given to selecting species tolerant of projected climatic conditions / refer below to summary of projected climate conditions
	Drought:	periods of prolonged dry weather (characteristic of future climate change projections)
	Bushfire:	a harsher bushfire regime is characteristic of future climate change projections

CLIMATE CHANGE

Projection summaries:

Climate Change in Australia is a website hosted by the Australian Government and CSIRO to provide details of projected changes to Australia's climate. The website address is: https://www.climatechangeinaustralia.gov.au/en/climate-projections/future-climate/regional-climate-change-explorer/super-clusters/?current=ESC&tooltip=true&popup=true
Australia is divided into regions, Bayveiw is located in the East Coast region – details provided for possible climate changes for this region include the following:

> *The East Coast cluster comprises NRM (natural resource management) regions in the central part of the eastern seaboard of Australia. The area encompasses important headwater catchments for a high proportion of Australia's population. The cluster area has a predominantly sub-tropical climate, with regional variations such as some tropical influences in the north and some temperate influences in the south.*
> *KEY MESSAGES* (predicted for the East Coast cluster include):
> - *Average temperatures will continue to increase in all seasons (very high confidence).*
> - *More hot days and warm spells are projected with very high confidence. Fewer frosts are projected with high confidence.*
> - *Decreases in winter rainfall are projected for East Coast South with medium confidence. Other changes are possible but unclear.*
> - *Increased intensity of extreme rainfall events is projected, with high confidence.*

- *Mean sea level will continue to rise and height of extreme sea-level events will also increase (very high confidence).*
- *A harsher fire-weather climate in the future (high confidence).*
- *On annual and decadal basis, natural variability in the climate system can act to either mask or enhance any long-term human induced trend, particularly in the next 20 years and for rainfall.*

Climate analogues:

The *Climate Change in Australia* website also provides possible climate scenarios for a region or town based on several projection climate models. *The climate analogue tool matches the proposed future climate of a region of interest with the current climate experienced in another region using annual average rainfall and maximum temperature (within set tolerances).* For Sydney, *Climate Change in Australia* predicts the following:

Time frame:	The predicted climate of Sydney could be similar to that experienced at the following locations:
By 2030	Kempsey, Central Coast, Forster-Tuncurry, Taree, Newcastle, Nelson Bay, Maitland or Wauchope in central to mid northern NSW
By 2050	Kempsey, Forster-Tuncurry, Taree, Maitland, Grafton or Wauchope in mid northern NSW
By 2090	Casino in northern NSW or Bundaberg, Beaudesert, Mount Morgan, Brisbane, Yeppoon, Hervey Bay or Gympie in coastal SE Qld

Effectively by 2090, the average temperatures are predicted to increase by 4.2°C and the rainfall to reduce by 23%.
Ref: https://www.climatechangeinaustralia.gov.au/en/climate-projections/climate-analogues/analogues-explorer/

Impacts on Tree Selection:

To select tree species that will adapt to the changes in climate it is important to assess the locally indigenous species to determine:

- the range over which they currently occur to determine if they can survive in the predicted climate locales as noted above. The *Atlas of Living Australia* provides details of recordings of individual species and thus provides an indication of the existing range of selected species – website address is www.ala.org.au
- the ability of selected species to cope with extended periods of drought;
- the ability of species to tolerate hot days and extended warm spells; and,
- the ability to tolerate bushfire.

Provenance of plant stock:

To increase the success rate and thus longevity of tree planting it is proposed to source stock from locales more in keeping with the climate analogues noted above.

PROPOSED PLANT LIST:

The plant list has been selected from the plant list compiled by Narla Environmental Pty Ltd to reflect the *Swamp Sclerophyll Forest Endangered Ecological Community* as requested by Council.

The following extract is from the *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Profile* available on the NSW Office of Environment and Heritage website and provides an understanding of the structure of this vegetation community:

"The most widespread and abundant dominant trees include *Eucalyptus robusta*(swamp mahogany), *Melaleuca quinquenervia* (paperbark) ……. Other trees may be scattered throughout at low abundance or may be locally common at few sites, including *Callistemon salignus* (sweet willow bottlebrush), *Casuarina glauca* (swamp oak) and *Eucalyptus resinifera* subsp. *hemilampra* (red mahogany), *Livistona australis* (cabbage palm) and *Lophostemon suaveolens* (swamp turpentine). A layer of small trees may be present, including *Acacia irrorata* (green wattle), *Acmena smithii* (lilly pilly), *Elaeocarpus reticulatus* (blueberry ash), *Glochidion ferdinandi* (cheese tree), *Melaleuca linariifolia* and *M. styphelioides*(paperbarks). Shrubs include *Acacia longifolia, Dodonaea triquetra, Ficus*

coronata, Leptospermum polygalifolium subsp. *polygalifolium* and *Melaleuca* spp. Occasional vines include *Parsonsia straminea, Morinda jasminoides* and *Stephania japonica* var. *discolor*. The groundcover is composed of abundant sedges, ferns, forbs, and grasses including *Gahnia clarkei, Pteridium esculentum, Hypolepis muelleri, Calochlaena dubia, Dianella caerulea, Viola hederacea, Lomandra longifolia, Entolasia marginata* and *Imperata cylindrica*."

The plant list located on Landscape Plan # 1905/5 provides information regarding climatic range, tolerances and issues in addition to botanical and common names, habit, height and spread of species selected. This plant list informs the final plant selection for this project based on the criteria discussed above. Refer to the Plant Schedule for the final list of species selected for planting on the site.

PROPOSED SITING OF PLANTINGS / FINISHES

It is proposed to essentially plant all areas outside of the carpark / building / driveway / pathway footprint with species nominated in the Plant Schedule to reflect a 'natural' vegetation community reflecting the *Swamp Sclerophyll Forest Endangered Ecological Community.* The following components make up the proposed plantings:

PROPOSED PLANTINGS:

Refer to the Landscape Plan Set for details.

Proposed tree plantings:
Council requirements dated 28.05.2019 include:

- *Canopy trees are to be located a minimum of 5 metres from proposed built structures, or minimum of 3 metres where pier and beam footings are used.*
- *The development shall not result in a significant loss of tree canopy cover or a net loss in native trees.*
- *Any proposed replacement canopy trees should be Eucalyptus robusta.*

Species selected are *Eucalyptus robusta* (Swamp Mahogany)

- 25 existing trees are proposed for removal, all of which are *Casuarina glauca* (Swamp She-oak);
- it is considered that replacement of these trees with 25 canopy trees would only promote the growth of poorly formed trees, particularly as Swamp Mahoganies are selected;
- consequently, within the context of the restrictions noted above about proximity to built structures, it is proposed to plant 8 (eight) new trees (Swamp Mahoganies);
- in addition, plantings of groundcovers, grasses, small and large shrubs, and small trees are proposed to supplement these tree plantings.

Proposed stormwater infiltration / filtration plantings:
Planting strips 1m wide are proposed around the car park edges and adjacent to the driveway and entry path to assist with infiltration of stormwater flows from the pavement into the ground. Plant species include native grasses and strappy plants at close centres along with ground cover plantings.

Proposed planting to the majority of the site:
The proposed planting to much of the site is to reflect *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Profile*. The planting profile to consist of small trees, shrubs, sedges, grasses and groundcovers in addition to the selected trees noted above. Planting is to be excluded from the following areas:

- under the external staircase;
- along an alignment to accommodate emergency access; and,
- along an alignment to give access to the bin storage from the entry footpath.

These areas will be weeded and mulched and maintained in this condition.

Proposed rehabilitation of the drainage swale:
Rehabilitation planting has been proposed to the drainage swale located in the road reserve. The existing swale is weed infested with little native planting. It is proposed to remove the weeds; provide erosion control matting; and to plant into the banks with native grasses and strappy plants at close centres. The planting is proposed to control weeds, stabilise the swale, provide biodiversity and to improve aesthetics.

Proposed plantings to Green Roof:
Proposed species include native grasses and groundcovers to the bulk of the area. Larger shrubs are proposed adjacent to the balustrade to screen the remainder of the roof from immediate view.

PROPOSED FINISHES:

Rock / pebble mulch:
Rock / pebble mulch is proposed to remnant areas within the car park footprint. The areas to be pervious to allow stormwater infiltration. The pebbled areas to be unplanted due to poor conditions for plant growth.

Garden Edging:
Proposed to provide a shallow spade edge to planting areas to avoid installation of constructed edging into tree root zones.

PROPOSED MATERIALS:

Topsoil:
Sourcing of good quality topsoil fit for purpose is generally difficult. Where possible, the existing in-situ soil will be improved with additives to provide a medium suitable for native plants. Where additional soil is required, stockpiled stripped topsoil from the site is to be selected. Imported topsoil is only to be sourced where no site topsoil is available. Importing topsoil from offsite is to be avoided. If required, the imported topsoil is to be tested for suitability for purpose (planting of native species) and rejected or treated as required before use. Possible soil testing labs for this purpose include SESL in Sydney.

Mulch:
Where possible and available, material chipped onsite and sourced from the removed existing native vegetation is to be used as mulch material. Weed free and soil free greenwaste from cleared onsite vegetation is to be mulched onsite. The stockpiled mulch can be used for plantings.

Plant stock:
Trees are proposed at 200mm pot size. Larger stock requires years of lead time (45 litre bagged stock are 3 years old). To obtain such stock with the desired provenance would require a long lead time so stock size has been reduced to 200mm. Further, the other plant stock is selected as tube size given the high occurrence of tree roots on the site. Tubes will have a smaller impact on root zones during installation.

Walling:
It is proposed that required retaining walling be installed at the time excavation occurs to build the car park, driveway and footpaths to limit the period of time that cut banks and thus tree roots are exposed to avoid possible damage.

EXISTING TREES:

The plan applies the recommendations of the Arboricultural Impact Assessment prepared by Urban Forestry Australia. Trees to be retained and removed are shown on plan along with dimensions of trunks, structural root zones and tree protection zones. The Construction Notes includes relevant clauses to ensure Landscape Works are undertaken with tree protection at the forefront.

PLANT MAINTENANCE:

All landscaping works noted on these plans will be maintained and successfully established for a period of twelve months commencing from the Date of Practical Completion (DPC) of the approved landscape works. The maintenance period will also include one full summer.

WEED CONTROL:

A weed control schedule has been included. It is proposed to hand remove weed plants and to avoid the use of herbicides. The weeds included in the schedule have been identified onsite by Narla Environmental Pty Ltd.

Late correction to the Weed Schedule – the following species to be removed from the schedule as are native:

- *Commelina cynea*
- *Geranium homeanum*
- *Microlaena stipoides*