

arboricultural impact assessment – 5 florida road, palm beach

17th July 2019

prepared by Melanie Howden - Ass. Dip. Hort. (Haw. Ag. C.), SoA. Arb. MAIH, MIACA



Executive Summarv

This report has been prepared to assess the condition and significance of a number of trees on and adjacent the property known as 5 Florida Road, Palm Beach and assess the potential impact of the proposed development on the identified trees. For the purposes of this report the property known as 5 Florida Road, Palm Beach will be referred to as the site.

The tree assessments have been carried out using the Visual Tree Assessment (VTA) method (Mattheck & Breloer 2010) and development impact assessments are based upon the Australian Standard, Protection of Trees on Development Sites AS 4970-2009.

The report has been commissioned by Beecraft Pty Ltd who have also provided site instructions. Site inspections and field work were conducted on the 17th July 2019.

The site is currently developmed and contains a 2 storey dwelling towards the centre of the allotment with a detached garage located towards the road frontage. The site is a steeply sloping and falls to the road and the landscaping has an informal character. The trees on the site are a mix of planted exotic and native trees.

The proposed development involves alterations and additions to the existing dwelling and construction of a new garage at the street frontage (Beecraft 2019).

Whilst the site contains a number of trees only those in the vicinity of proposed works have been considered in this report. There are 12 trees on or adjacent the proposed development site that have been considered in this report of which; 1 tree is located on the site, 6 trees are located on the adjoining allotments and 5 trees are located within the road reserve.

Of the 12 trees considered in this report, based upon the proposed plans:

• 7 trees are to be retained (6 trees are located on the adjoining allotments and 1 tree within the road reseve), and

5 trees are proposed to be removed (1 tree on site and 4 trees within the road reserve).

A qualitative breakdown of the trees to be retained and removed is shown in the tables below.

Details of the 7 Trees to be Retained on the Adjoining Allotments (number of trees)															
Condition		Environmental / Landscape Significance													
	Declared Biosecurity Weed	Env. Pest (Exempt from DCP)	Low L/scape Sig.	Moderate L/scape Sig.	High L/scape Sig.	Very High L/scape Sig.	Threatened Species								
SULE - 1			1												
SULE - 2			1	1											
SULE - 3			1		1										
SULE - 4			1		1										
Unstable															

Details of the s	Details of the 5 Trees to be Removed on the Site & within the Road Reserve (number of trees)														
Condition		Environmental / Landscape Significance													
	Declared Biosecurity Weed	Env. Pest (Exempt from DCP)	Low L/scape Sig.	Moderate L/scape Sig.	High L/scape Sig.	Very High L/scape Sig.	Threatened Species								
SULE - 1															
SULE - 2			2	1											
SULE - 3			1												
SULE - 4															
Unstable			1												

Provided that the designed, specific and general tree protection measures are implemented, and the proposed works are carried out in a sensitive manner the proposed development works are unlikely to have a significant impact on the trees identified as being retained.

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tree legend



trees considered in this report

other trees not considered in this report

This plan is based upon:

Plan of Lot 12 in DP 10167 at 5 Florida Road, Palm Beach Ref 3179, Dated 03/12/18 & 05/06/19 (DP Surveying, Avalon Beach, NSW)

In addition to the trees identified on the survey 2 trees have been added to this plan. The additional trees are Tree No's 2 & 11 and their locations, whilst based upon surveyed features, are approximate.

The tree canopy spreads on this plan have been adjusted from those on the survey to better reflect the actual canopy spreads however they remain as indicative graphics.

drawing title

tree significance

significance in the environment

Trees need to be considered in the overall environment and are subject to specific legislation and planning instruments such as:

- Biodiversity Conservation Act (NSW) 2016 Biosecurity Act (NSW) 2015, and
- Development Control Codes.

Biodiversity Conservation Act (NSW) 2016 The Biodiversity Conservation Act lists in its schedules a number of species, populations or ecological communities that are either endangered or vulnerable. The Act requires biodiversity offsets to be made if an activity or development is going to have a significant effect on species, populations or endangered ecological communities listed in the schedules of the Act. Where identified on or adjacent the site, threatened tree species are considered in this report, because attempting and the interfit the schedules of the Act. however no attempt is made to identify trees as components of threatened ecological communities or populations

Biosecurity Act (NSW) 2015 The purpose of the Biosecurity Act is to protect the NSW economy, environment and community from the negative impact of pests, diseases and weeds. In NSW, all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. In relation to weeds, the Act identifies weed species under 4 categories being

- Weeds of National Significance;
- National Environmental Alert Weeds;
- Water Weeds;
- · Native Plants Considered to be Weeds

The Act makes provision of Regional Strategic Weed Management Plans which may include additional weed species to be dealt with weed control at a regional or local level.

Where tree is a species declared under the 4 main weed categories in the Act or where it is a species listed in a Regional Strategic Management Plan, the tree should be a priority for removal.

Development Control Codes There are a number of environmental pest species that commonly cause problems in developed urban areas or readily spread into natural bushland areas. In urban areas, these species can have aggressive root systems and cause damage to built structures or services. Alternatively, some species can be problematic in natural bushland areas degrading habitats and reducing natural biodiversity.

Many of these are recognised by Councils as pest species and are exempt from protection under Council's Development Control Plans (DCP).

significance in the landscape

Assessment of a tree's significance in the landscape is generally categorised as either:

- Very High Landscape Significance- prominent from a broad landscape perspective:
- High Landscape Significance prominent from a neighbourhood perspective
- Moderate Landscape Significance prominent from adjacent areas surrounding the site; • Low Landscape Significance - prominent from a site perspective only.

tree condition & life expectancy

condition

The assessment of the trees condition is undertaken by visual inspection of the trees themselves, surrounding vegetation and the site conditions

An assessment of each tree is undertaken taking into account the condition of the tree's roots, trunk, branches, foliage, previous pruning works, pests and disease, nesting hollows, fauna scratchings and the surrounding environment that may influence the condition of the tree.

Safe Useful Life Expectancy (SULE)

The condition information is used to determine the Safe Useful Life Expectancy (SULE) of each tree and takes into account the age of the tree, the life span of the species, local environment conditions, estimated life expectancy, the location of the tree and safety aspects.

The SULE method takes into account whether a tree can be retained with an acceptable level of risk based on the information available at the time of inspection. A SULE assessment is not static as it relates to the tree's health and the surrounding conditions. Whilst it is recognised that changes to the tree's condition will affect the assessment, changes to the surrounding environment may result in changes to the SULE assessment.

Table 1 Safe Usefu	Table 1 Safe Useful Life Expectancy (SULE), (Barrell, 2001)										
Category	Description										
1	Long -Life span greater than 40 years										
2	Medium - Life span from 15 to 40 years										
3	Short - Life span from 5 to 15 years										
4	Should be removed within 5 years										
5	Small, Young or Regularly Pruned, Trees that can readily be moved or replaced.										

In addition to the categories listed above, trees that show signs of imminent structural failure are listed as 'Unstable Uns

stable	Unstable in the ground or have significant trunk damage
	rendering them structurally hazardous.

development planning & general impacts on trees

tree protection zones

Where trees are intended to be retained, development footprints should be located away from trees so as to provide adequate clearances for a tree protection zone. Disturbance within Tree Protection Zones can be detrimental to the tree's root system and in turn affect the stability, health and condition of the tree. In many cases damage to the root systems is the major cause of tree decline in urban areas

Figure 3.1 Typical diagram of a Tree Protection Zone & Structural Root Zone of a tree based upon AS 4970 – 2009



Where trees are multi-trunk specimens assessment needs to be made based upon the number of trunks and the diameter of each trunk. Based upon the Australian Standard for Protection of Trees on Development Sites, AS 4970 - 2009, the DBH of multi-trunk trees is calculated by:

$DBH = \sqrt{(DBH_1)^2 + (DBH_2)^2 + (DBH_3)^2}$

Tree No	Genus Species	Common Name	Height (m)	Canopy Spread (m)	DBH (mm)	DAB (mm)	Description	Environmental / Landscape Significance	Condition	Foliage Condition	% Canopy Dead Wood	Evidence of Pests, Disease, Cavity, Bracket Fungi	SULE	On / off site	TPZ Radius (m)	Area of TPZ (m2)
1	Melaleuca styphelioides	Prickly- Leaved Tea Tree	5	5	270	400	Semi-mature single trunk tree with an upright spreading form; an slight trunk lean to the north and majority of canopy and branch development is towards the north. No evidence of significant branch pruning.	Low L/scape Sig.	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays fair vigour.	Fair	15%	None evident	2	Within road reserve	3.20	32.20
2	Elaeocarpus reticulatus	Blueberry Ash	5	3	80	100	Semi-mature single trunk tree with an upright spreading form; an distinct trunk lean to the north and majority of canopy and branch development is towards the north. No evidence of significant branch pruning.	Low L/scape Sig.	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	Good	5%	None evident	2	Within road reserve	2.00	12.60
3	Syzygium Iuehmannii	Small-leaved Lilly Pilly	6	4	140, 50, 30	190	Semi-mature multi trunk tree with an upright columnar form; an upright trunk/s and majority of canopy and branch development is towards the north. No evidence of significant branch pruning.	Moderate L/scape Sig.	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	Good	5%	None evident	2	Within road reserve	2.00	12.60
4	Melaleuca styphelioides	Prickly- Leaved Tea Tree	6	5	280	390	Semi-mature single trunk tree with an upright spreading form; an upright trunk/s and balanced canopy and branch development . No evidence of significant branch pruning.	Moderate L/scape Sig.	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	Good	30%	None evident	2	Within road reserve	3.40	36.30
5	Angophora floribunda	Rough-Barked Apple	14	10	490	650	Mature single trunk tree with an upright forest form; an slight trunk lean to the north and majority of canopy and branch development is towards the north west. No evidence of significant branch pruning.	High L/scape Sig.	The tree appears stable and its branch attachment appears sound. The tree is considered to be in moderate health and displays fair vigour.	Fair	30%	The tree has a trunk wound on the western side with old termite tracks present. Epicormic growth tufts are evident on the lower branches.	3	On adjacent allotment	5.90	109.40
6	Eucalyptus haemastoma	Scribbly Gum	15	13	610	790	Mature single trunk tree with an upright forest form; an distinct trunk lean to the north and majority of canopy and branch development is towards the north	High L/scape Sig.	The tree displays some signs of instability and its branch attachment appears fair. The tree is considered to be in moderate health and displays fair vigour.	Fair	30%	The tree has a significant trunk hollow at 1.5m on the northern side with termite activity evident.	4	On adjacent allotment	7.30	167.40



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development design & Tree Protection Zones

Where trees are intended to be retained, proposed developments must provide an adequate Tree Protection Zone around trees. This Tree Protection Zone is set aside for the tree's root zone and it is essential for the stability and longevity of the tree. Existing soil levels should be retained within the Tree Protection Zone.

Based upon the Australian Standard for Protection of Trees on Development Sites, AS 4970 – 2009, the radius of the Tree Protection Zone (TPZ) is calculated as: TPZ = 12 x DBH with a minimum 2.0m radius and a maximum 15m radius.

developments within the Tree Protection Zone

<u>Minor encroachments into Tree Protection Zones</u> Based upon AS 4970 – 2009 some development activity can occur within the vicinity of trees and minor encroachments can occur within the calculated Tree Protection Zone provided that:

- no more that 10% of the area (m2) of the Tree Protection Zone is removed (0.7 x TPZ radius on 1 side only);
- the encroachment does not extend into the Structural Root Zone, and
- the area (m2) to be removed is compensated for by increasing the distance of the Tree Protection Zone in other directions so that there is no net loss in area (m2) of the Tree Protection Zone

Major encroachments into Tree Protection Zones

Where the proposed development activity is greater than that described as a minor encroachment (refer above); the activity is considered to be a major encroachment i nent into the Tree Protection Zone.

Where major encroachments are to occur within the Tree Protection Zone of trees intended to be retained, it must be demonstrated that the works or activities will not have a significant impact on the health and condition of the tree. To demonstrate this detailed root mapping investigation by non invasive methods may be necessary; and other factors such as the age class, health & vigour, trunk lean, disturbance tolerance of the species, and building design may need to be taken into account in the arboricultural assessment.

Where major encroachments are proposed to occur into the Tree Protection Zone the tree's Structural Root Zone should also be taken into account

developments within the tree's Structural Root Zone

The Structural Root Zone is the area surrounding the tree where the severance of roots and excavation is likely to affect the structural stability of the tree and is likely to have a significant detrimental impact on the health & condition of the tree. Based upon AS 4970 – 2009 the radius of a tree's Structural Root Zone (SRZ) is determined by measuring the diameter of the trunk immediately above the root buttress (DAB) and calculated by: SRZ = (DAB x 50) 0.42×0.64 .

Developments should not encroach into the tree's Structural Root Zone and existing soil levels must remain unchanged. Excavation should not occur within this area unless a detailed arboricultural assessment is undertaken and Specific Tree Protection measures will be required.

drawing title

arboricultural assessment - tree data sheet

Tree No	Genus Species	Common Name	Height (m)	Canopy Spread (m)	DBH (mm)	DAB (mm)	Description Enviro Land Sign		Condition	Foliage Condition	% Canopy Dead Wood	Evidence of Pests, Disease, Cavity, Bracket Fungi	SULE	On / off site	TPZ Radius (m)	Area of TPZ (m2)
7	Viburnum tinus	Laurustinus	4	3	100, 60, 50, 50, 50, 30, 30	200	Mature multi trunk tree with an upright spreading form; an slight trunk lean to the north west and balanced canopy and branch development . No evidence of significant branch pruning.	Low L/scape Sig.	The tree appears stable and its branch attachment appears sound. The tree is considered to be in moderate health and displays fair vigour.	Fair	5%	The tree appears to have been suppressed by the adjacent vegetation which has recently been removed.	3	Within road reserve	2.00	12.60
8	Strelitzia sp.	Bird of Paradise	9	6	130, 130, 130, 130, 120, 130, 120	2000	Mature multi trunk tree with an upright spreading form; an upright trunk/s and balanced canopy and branch development . No evidence of significant branch pruning.	Low L/scape Sig.	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	Good	5%	None evident	1	On adjacent allotment	3.0	28.30
9	Callistemon viminalis	Weeping Bottlebrush	7	4	180, 260, 200	450	Mature multi trunk tree with an broad spreading form; an distinct trunk lean to the north and majority of canopy and branch development is towards the north. Lower limbs of the tree have been pruned to 4m.	Low L/scape Sig.	The tree appears stable and its branch attachment appears sound. The tree is considered to be in moderate health and displays good vigour.	Good	5%	The tree is growing on a rock shelf and the eastern trunk is dead.	3	On adjacent allotment	4.50	63.60
10	Murraya paniculata	Orange Blossom	5	4	200, 50, 50, 30, 40, 30, 30	340	Mature multi trunk tree with an upright spreading form; an upright trunk/s and balanced canopy and branch development . No evidence of significant branch pruning.	Low L/scape Sig.	The tree appears stable and its branch attachment appears sound. The tree is considered to be in good health and displays good vigour.	Very Good	5%	The southern trunk is in poor condition with poor foliage.	2	On adjacent allotment	2.70	22.90
11	Hibiscus sp.	Hibiscus	5	2	80, 50, 50, 50, 50, 40, 50	250	Over mature multi trunk tree with an upright spreading form; an upright trunk/s and balanced canopy and branch development . No evidence of significant branch pruning.	Low L/scape Sig.	The tree displays some signs of instability and its branch attachment appears poor. The tree is considered to be in poor health and displays poor vigour.	Fair	40%	The tree appears to be suppressed by the adjacent vegetation.	4	On adjacent allotment	2.00	12.60
12	Corymbia gummifera	Red Bloodwood	12	0	220	290	Dead single trunk tree with an upright form; an upright trunk/s and no branches or foliage . No evidence of significant branch pruning.	Low L/scape Sig.	The tree stability is suspect and its branch attachment appears poor. The tree is considered to be dead and displays no signs of any vigour.	None	100%	The tree is dead with basal decay on the southern side.	Unstable	On site	2.60	21.20



Figure 4.1 Site frontage on Florida Road, Palm Beach with Tree No. 1 adjacent (right) of the existing driveway



Figure 4.2 The site of the upper building extension looking south west with Tree No. 10 (centre of photo) in the background





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Figure 4.3 Looking down the existing driveway to Florida Road with Tree No's 4 (foreground left) 3, 2 & 1 (background left) and Tree No. 7 (rear right)

drawing title

arboricultural assessment - tree data sheet





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tree legend



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Site Plan, Dwg. No. 12-18-FLO, Dated, December 2018, Beecraft, Terrey Hills, NSW)

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typical application of Australian Standard 4970-2009 - Protection of Trees on Development Sites



											l I	
Tree No	Genus Species	DBH (mm)	DAB (mm)	SULE	Env./ L/scape Sig.	TPZ Radius (m)	Radius of 90% of TPZ area (7/10)	SRZ Radius (m)	Adjacent Works	Influence on Tree	Plan Status	On / off site
1	Melaleuca styphelioides	270	400	2	Low L/scape Sig.	3.20	2.2	2.3	The proposed driveway spatially conflicts with the location of the tree.	Negligible impact with appropriate Tree Protection Measures.	To be Removed	Within road reserve
2	Elaeocarpus reticulatus	80	100	2	Low L/scape Sig.	2.00	1.4	1.3	The proposed entrance stairs are within 0.9m (south east) of the tree and the proposed garage is within 1.0m (north east) of the tree.	Excavation is likely to involve severance of significant tree roots resulting in the decline of the tree and/or rendering it unstable.	To be Removed	Within road reserve
3	Syzygium luehmannii	140	190	2	Moderate L/scape Sig.	2.00	1.4	1.6	A corner of the proposed entrance stairs are within 1.5m (south east) of the tree.	No significant impact with appropriate Tree Protection Measures.	Retained with General Tree Protection Measures	Within road reserve
4	Melaleuca styphelioides	280	390	2	Moderate L/scape Sig.	3.40	2.4	2.2	The proposed entrance stairs are within 0.7m (east) of the tree.	Excavation is likely to involve severance of significant tree roots resulting in the decline of the tree and/or rendering it unstable.	To be Removed	Within road reserve
5	Angophora floribunda	490	650	3	High L/scape Sig.	5.90	4.1	2.8	The proposed garage is within 5.6m (south west) of the tree.	No significant impact with appropriate Tree Protection Measures.	Retained with General Tree Protection Measures	On adjacent allotment
6	Eucalyptus haemastoma	610	790	4	High L/scape Sig.	7.30	5.1	3	The proposed garage is within 6.5m (south west) of the tree.	No significant impact with appropriate Tree Protection Measures.	Retained with General Tree Protection Measures	On adjacent allotment
7	Viburnum tinus	100	200	3	Low L/scape Sig.	2.00	1.4	1.7	The proposed driveway crossing is within 0.8m (south west) of the tree.	Excavation is likely to involve severance of significant tree roots resulting in the decline of the tree and/or rendering it unstable.	To be Removed	Within road reserve
8	Strelitzia sp.	130	2000	1	Low L/scape Sig.	3.0	2.3	2.34	The proposed garage is within 1.8m (south west) of the tree.	Some pruning of the basal stems will be required. No significant impact with appropriate Tree Protection Measures.	Retained with General Tree Protection Measures	On adjacent allotment
9	Callistemon viminalis	180	450	3	Low L/scape Sig.	4.50	3.2	2.4	The proposed building footprint is within 2.6m (north east) of the tree. The tree is located below the existing retaining wall at a level substantially lower than the existing terraced area.	No significant impact with appropriate Tree Protection Measures.	Retained with General Tree Protection Measures	On adjacent allotment
10	Murraya paniculata	200	340	2	Low L/scape Sig.	2.70	1.9	2.1	The proposed building footprint is within 2.2m (north east) of the tree.	No significant impact with appropriate Tree Protection Measures.	Retained with General Tree Protection Measures	On adjacent allotment
11	Hibiscus sp.	80	250	4	Low L/scape Sig.	2.00	1.4	1.8	The proposed building footprint is within 2.3m (north east) of the tree.	No significant impact with appropriate Tree Protection Measures.	Retained with General Tree Protection Measures	On adjacent allotment
12	Corymbia gummifera	220	290	Unstable	Low L/scape Sig.	2.60	1.8	2	No proposed works within the tree's Tree Protection Zone.	No significant impact however, the tree is considered to be unstable.	To be Removed	On site



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tree legend



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tree protection plan prior to & during excavation and construction

tree removal

The removal of trees must be carried out in a manner that ensures no damage occurs to the roots, trunk, branches or foliage of trees identified as being retained.

tree protection fencing

Given the steep topography of the site and the scope of the development tree protection webbing shall be installed in lieu of fencing. Prior to demolition, tree protection webbing shall be erected as shown on the Tree Protection Plan Prior to & During Demolition (refer sheet 8) in accordance with the specifications below.



The building contractor shall ensure that at all times during site works no activities, stock piles, storage or disposal of materials shall take place within the fenced off areas and that all Protective Fences remain secure throughout the development work period. All access within the tree protection fencing for temporary and permanent works must be carried out under the instructions of an experienced and qualified project arborist.

tree protection signage

Tree Protection Signage is to be installed on fencing and shall be installed at maximum 15m intervals and at changes in the fencing direction (refer specification below).



minor hard landscape works

Minor hard landscape such as paths, garden edging, low (<200mm) retaining walls can be carried out within tree protection zones provided that the works are carried out under the supervision of an experienced and qualified arborist in accordance with the specification below.



Include the use of shovels, crowbars. (mattocks & axes shall not be used). retention of tree roots Excavation is to be conducted under the supervision of the project arborist. Tree root >30mm dia. shall exposed,

inspection of tree roots

Where exposed tree roots spatially conflict with construction design levels, depending upon the number and size of the tree roots, the project arborist shall either: - cleanly prune the tree roots and treat them root hormone compound, or provide instructions to leave the tree roots intact and investigate alternate locations, construction methods or design.



branch pruning

Should minor branch pruning be required, branch pruning must be carried out in accordance with Australian Standard AS 4373-2007 Pruning of Amenity Trees and the work is to be undertaken by an experienced and qualified arborist.



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Installation of services within tree protection zones

The installation of services such as drainage within the Tree Protection Zones must be carried out in accordance using hand tools (refer specification below)

hand tools

Include the use of shovels, crowbars. (mattocks & axes shall not be used).

retention of tree roots Excavation is to be conducted under the supervision of the project arborist. Tree root >30mm dia. shall be exposed, left intact and not severed or damaged

inspection of tree roots Where tree roots spatially conflict with the fall line of the service, depending upon the number and size of the tree roots, the project arborist shall either: - cleanly prune the tree roots and treat

them with root hormone compound, or provide instructions to leave the tree roots intact and backfill the excavation and investigate alternate

Protection Zones - specifications

soft landscape works

locations

specification below

within tree protection zones tree protection zones.

existing soil levels must remain unchanged be incorporated into finished landscape design levels. exceptions can occur to finished design levels where new turf is to be laid or garden beds established provided that a free draining soil base is used and the new soil base is no greater than 50mm in depth.

in turf areas the landscape design should consider utilising an established mowing edge to prevent ongoing damage to trunks from whipper snippers

the landscape design should not encourage regular pedestrian thoroughfare access across tree protection zones unless permeable pavements are provided

the tree protection zone or areas surrounding the trunks of established trees should ideally be mulched to minimise damage to the basal area of the tree and root buttresses

specifications





Soft landscaping works within the Tree Protection Zones should be carried out in accordance with the

soil decompaction or rotary hoes should not occur within

soft landscape works within Tree Protection Zones -

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general tree protection measures

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