PART 21

GENERAL SITE DESIGN

Introduction
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21.2 Landscape Design

GENERAL SITE DESIGN

INTRODUCTION

This Part is to be read in conjunction with KLEP (Local Centres) 2012.

This Part applies to all types of development, and provides a consistent area wide approach to issues that all developments must address and provides guidance on meeting the aims and objectives within the LEP.

This Part is closely related to Site Analysis in Section A Part 2.1 and outlines how development is to respond to the site and contextual attributes identified in the site analysis.

Part 21.1 - Earthworks and Slope guides developments in meeting some of the objectives and standards in Clause 6.9 Earthworks in the LEP.

In this Part, where a site contains land affected by bushfire (see Section B Part 16), riparian values (see Section B Part 17) the Greenweb (see Section B Part 18), or heritage values (see Section B Part 19) the controls in Section B apply to the extent of any inconsistency.

21.1 EARTHWORKS AND SLOPE

Objectives

1 *To respect the natural topography of a site.*

2 *To maintain the health of existing trees.*

3 *To maintain subsurface and groundwater flows and direction.*

4 *To minimise downstream impacts from erosion and sedimentation or altered water flows due to site earthworks or retaining walls.*

5 *To ensure that development is designed considering the stability of the land on which it is located.*

6 *To prevent damage to buildings and structures on adjoining land.*

7 *To minimise excavated materials going off site.*

8 *To minimise land degradation, water pollution and damage to infrastructure from erosion and accumulated sediment.*

Controls

1 Development must be accommodated within the natural slope of the land. Level changes across the site are to be primarily resolved within the building footprint. This may be achieved by:

i) stepping buildings down a site; and

ii) locating the finished ground floor level as close to existing ground level as practicable.

2 Development is to minimise earthworks on steeply sloping sites. Sites with a slope in excess of 15% may require certification from a geotechnical engineer as to the stability of the slope in regard to the proposed design.

3 Landscape cut or fill should not be more than 600mm above or below natural ground line.

4 A minimum 0.6m width is required between retaining walls to provide adequate soil area and depth to ensure that they do not read as a single level change, and for the viability of landscaping.

Note: A minimum width of 2m is required between retaining walls for this area to be included in deep soil calculations.

5 Existing ground level is to be maintained for a distance of 2m from any boundary.

6 Grassed embankments are not to exceed a 1:6 slope. Vegetated embankments, planted with soil stabilising species, may be to a maximum of 1:3.

7 Fill and excavation are not permitted within sensitive environments, such as riparian lands, bushland, or significant vegetation.

Note: A plan demonstrating the extent of batters or shoring in the vicinity of sensitive environments prepared by a suitably qualified engineer, will be required.

8 Retaining walls, excavated and filled areas shall be located and constructed to have no adverse impact on:

i) structures to be retained on the site;

ii) structures on adjacent public or private land;

iii) trees to be retained on site or on adjoining sites.

Note: A geotechnical / hydrogeological report may be required to demonstrate this.

Note: If the ground level is modified within the canopy spread, an arborist's report will be required to assess the impact of the proposed works. Refer to AS4970:2009 Protection of trees on development sites.

21.1 EARTHWORKS AND SLOPE (continued)

Controls

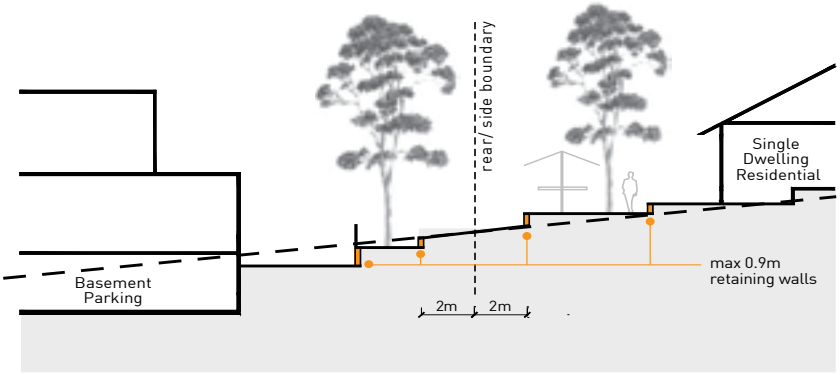

Figure 21.1-1:
Retaining walls, terraces and ground lines at boundaries.

9 Excavated and filled areas are to be constructed so as not to redirect or concentrate stormwater or surface water runoff onto adjoining properties.

10 The design of the proposal must consider the impacts of altered subsurface/groundwater flows or direction on groundwater dependent ecosystems or species.

Note: Riparian systems and a number of vegetation communities or species may be fully or partially dependent on subsurface/groundwater flows. A hydrogeological report may be required to address changes to groundwater. Details of measures proposed to mitigate such impacts are required.

11 For any dwelling house development, excavation within the building footprint must not exceed 1.0m depth relative to ground level (existing), fill must not exceed 1m relative to ground level, with a maximum level difference across the building footprint of 1.8m. See Figure 21.2-2.

12 Retaining walls on low and medium residential density sites must not exceed 1m in height above existing ground level. Where greater level change over the site is required, the site should be terraced. See Figure 21.2-1.

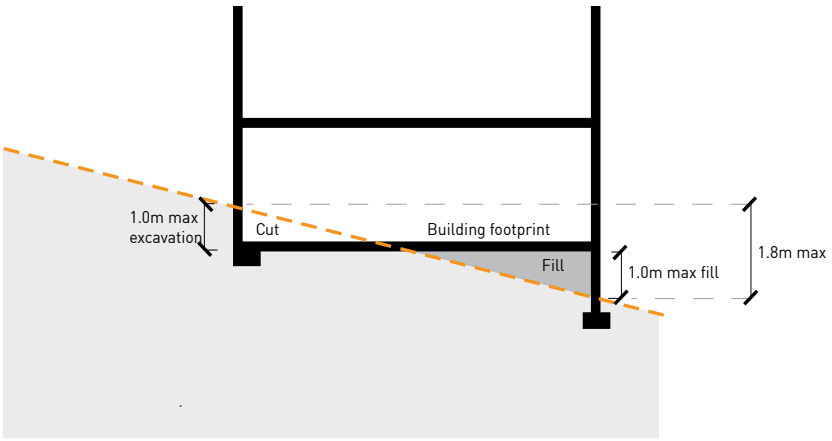

Figure 21.1-2:
Earthworks within the building footprint.

21.2 LANDSCAPE DESIGN

Objectives

1 *To contribute to the landscape character of Ku-ring-gai.*

2 *To ensure landscape design and species selection is suitable to the site and its context and considers the amenity of residents and neighbours.*

3 *To increase the resilience of significant vegetation and habitat, through the improvement of condition, extent and connectivity of vegetation.*

4 *To conserve landscaped settings for heritage items and components of heritage conservation areas.*

5 *To ensure that landscaping in the vicinity of heritage places does not detract from the heritage value of the place.*

6 *To integrate landscape design and biodiversity protection with bushfire management.*

Figure 21.2-1:
Example of a rock outcrop.

Controls

Site Planning and Design

1 The site planning and design of developments must:

i) retain and enhance indigenous vegetation, biodiversity corridors and existing natural features on the site including trees, shrubs and groundcovers, soils, rock outcrops and water features. These provide habitat, breeding sites, food and shelter for a wide variety of life forms and ecological processes that support life and define the character of the locality.

Note: Specific controls for the areas mapped for their biodiversity significance on the Greenweb map in Part 6R are included in Part 6 of this DCP.

ii) retain significant and visually prominent trees and vegetation that contributes to neighbourhood character;

iii) retain vegetation and garden fabric such as paths, walls, steps, ponds and terraces, that contribute to the heritage significance of the setting of a heritage item or a site within a heritage conservation area;

iv) be located to retain views of public reserves;

v) consider subsurface/groundwater flows near bushland;

vi) Retain habitat within the site including:

- drainage features and damp areas;
- rock outcrops
- hollow-bearing trees;
- areas of leaf litter;
- bushrock.

2 The retention of existing appropriate screen planting is encouraged.

3 Structures (including services) must be located outside the canopy spread of trees to be retained. This applies to street trees, trees on site and on adjoining sites.

4 Disturbance of natural soil profiles must be minimised.

5 Existing ground level must be maintained beneath the canopy spread of trees to be retained.

Note: If the ground level is modified by excavation or fill within the canopy spread, an assessment prepared by a suitably qualified arborist in accordance with AS 4970-2009 Protection of Trees on Development Sites, will be required.

6 The introduction of imported soils and disturbance of local seed banks must be avoided wherever possible.

7 Vegetation retention must consider the following:

21.2 LANDSCAPE DESIGN (continued)

Objectives

7 To ensure that landscaping design considers the principles of Crime Prevention through Environmental Design.

8 To reduce noise reflectivity and support visual privacy.

9 To contribute to climate control by retaining and planting trees to capture carbon.

10 To promote climate change adaptation through landscape design which:

- *minimises water use*
- *provides for summer shade*
- *is resilient to storms*
- *consolidates and interconnects vegetation, habitat and waterways, and*
- *minimises bushfire risk.*

Figure 21.2-2:
Trees planted in groups are more resilient to storms

Controls

i) healthy specimens that have a high Safe Useful Life Expectancy are to be the first priority for retention;

ii) trees within heritage items or heritage conservation areas are to be assessed in terms of heritage significance;

iii) mature trees and hollow-bearing trees within biodiversity areas are a priority for retention; and

iv) while single trees may be ecologically important in their own right, or as part of a broader community, retaining and planting trees in groups.

Note: Works within an area containing critical habitat, threatened species, populations, or threatened ecological communities may require a flora and fauna assessment in accordance with Part 5A of the Environmental Planning and Assessment Act (1979). Works that have a significant impact on the above are integrated development requiring referral to at least one government agency.

8 Seasonal temperature control and improved air quality can be achieved through effective landscape design:

i) use of vegetation to protect the north, east and west facing windows against the hot summer sun;

ii) use of deciduous vegetation to provide summer shade but allow winter sun to penetrate the building;

iii) trees with dense foliage to create more shade;

iv) vegetated courtyards to reduce temperatures in your courtyard and internal living spaces;

v) vertical shading for east and west walls and windows to protect from hot summer sun at lower angles, for example trees, shrubs and vines supported on a frame;

vi) horizontal shading for north facing windows, for example, deciduous vines grown over a pergola;

vii) tall, evergreen trees should not be planted too close to north-facing windows to avoid overshadowing in winter;

viii) use of ground cover planting, low growing shrubs, lawns and vegetated walls to reduce glare and surface temperature from paving, roofs and walls;

ix) use of large dense shrubs as windbreaks to the south-west to counter cold winter winds and channel cooling summer breezes; and

x) use of medium to large-sized shrubs or trees clipped to form a hedge to provide still air insulation and shading when grown close to a wall;

xi) the positioning of low shrubs, lawn and ponds to the north to help cool hot summer winds.

21.2 LANDSCAPE DESIGN (continued)

Controls

Planting

9 Siting and choice of planting must consider:

i) the desired function of the tree, shrub or groundcover (e.g. feature tree, provision of shade), screen planting, ground stabilising);

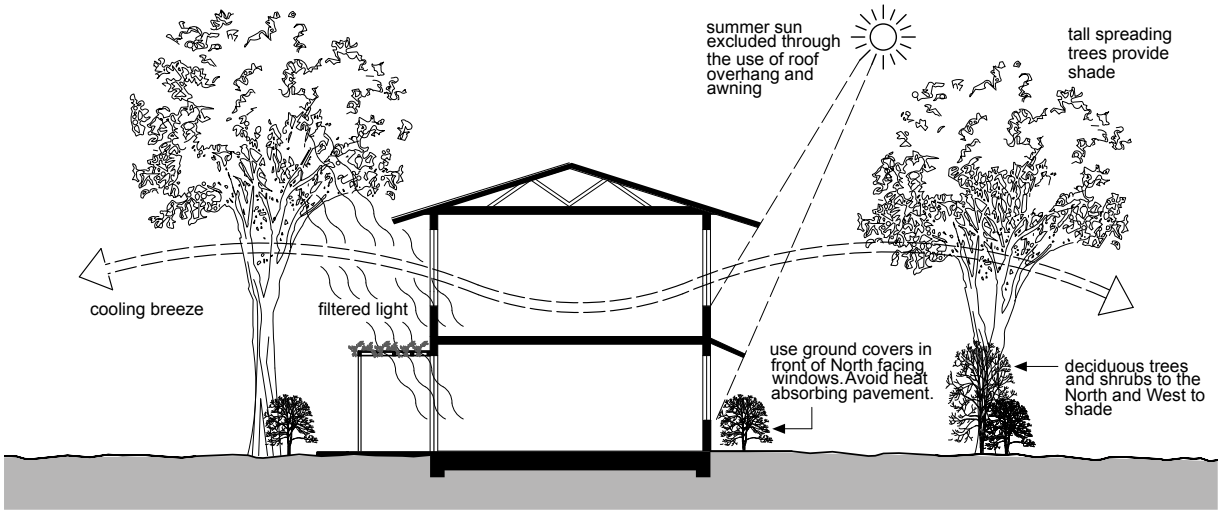

Figure 21.2-3:
Improved air quality through landscape design

Figure 21.2-4:
Tree used for shade.

ii) provision of solar access to dwellings and private open space areas on site and on adjoining sites;

iii) the horticultural style of heritage item or heritage conservation area;

iv) the appropriate range of plant height and foliage density, water efficiency, aesthetic appeal and suitability to the characteristics of the site and location;

v) the proximity of trees to buildings, walls and other structures on site and on adjoining sites;

vi) the proximity of trees to stormwater, electricity, gas, sewer and other services; and

vii) the potential hazard of planting types and densities on sites prone to bushfire risk (refer to Planning for Bushfire Protection 2006).

10 Planting beds for screen planting must be of adequate width to allow the plants to flourish.

Note: Screen planting should not be continuous on bushfire prone land.

11 Where development is located close to a reserve, the landscaping design is not to prevent passive surveillance of the reserve.

12 The height of planting within the front setback is to allow partial views to and from the dwelling or main building and beyond;

21.2 LANDSCAPE DESIGN (continued)

Controls

13 Where a property boundary is within 100m of bushland, planting is to consist of not less than 70% locally native tree species and 30% locally native understorey species. Species are to reflect the relevant vegetation communities within the area.

14 Where a property boundary is between 100m and 300m from bushland at least 50% of the overall number of trees and shrubs must be locally occurring native species. Species are to reflect the relevant vegetation communities within the area.

15 For development on sites where single residential development is permitted, and all property boundaries are greater than 300m from bushland, at least 25% of the overall number of trees and shrubs must be locally occurring native species. Species are to reflect the relevant vegetation communities within the area.

16 The planting of species listed in Council's Weed Management Policy will not be permitted.

Note: Council's Weeds Management Policy is available on Council's web site: www.kmc.gov.nsw.au

17 Species used for planting in or directly adjacent to areas with significant vegetation or habitat should be of local provenance.

Note: To enable this, propagation must be started well before any construction begins. A list of appropriate species for native vegetation communities within Ku-ring-gai is available from Council and on the Council's website (www.kmc.gov.nsw.au).