Part E- General Controls – Environmental Controls

Chapter E19: Earthworks (Land Reshaping Works)

Contents

1 INTRODUCTION

1. This Chapter of the DCP outlines Council's requirements and environmental management measures required for development involving earthworks. Other parts of this DCP include more detailed controls regarding the dimensions of filling and excavation works permitted for specific development, such as residential development.

2. The Local Environmental Plan requires that development consent be obtained for earthworks, except in certain circumstances and includes several matters that must be considered when assessing Development Applications for earthworks.

   The following definitions are as contained in the LEP.

   Fill: Refer to LEP

   Excavation: Refer to LEP

   Land reshaping involves a combination of filling and excavation.

3. These uses could be undertaken alone or as an ancillary component to other development such as excavation of a basement for a residential flat building or land reshaping works associated with a subdivision.

2 OBJECTIVES

1. The main objectives of this Chapter of the DCP are to:

   a) Provide guidelines for land filling, excavation and land reshaping works;

   b) Prevent land filling, excavation or land reshaping works which create or contribute to environmental problems both on and off site;

   c) Ensure the future use of land is not adversely affected by land reshaping works;

   d) Ensure that no adverse impact occurs to local drainage systems, overland flow characteristics and flood storage;

   e) Ensure that appropriate environmental management measures are applied to conserve the landscape and protect water quality;

   f) Promote appropriate rehabilitation and revegetation of the site;

   g) Protect human safety and the integrity of existing buildings and assets;

   h) Minimise amenity impacts upon surrounding neighbourhoods;

   i) Facilitate the regulated disposal / use of excavated material; and

   j) Ensure that buildings are designed to fit the lot and ensure that the nature, extent and depth of land reshaping works are kept to appropriate levels.

3 INFORMATION REQUIREMENTS FOR LODGEMENT WITH THE DEVELOPMENT APPLICATION

1. Any Development Application involving only fill, excavation or other land reshaping works will be required to be supported by a Statement of Environmental Effects (SEE) report which demonstrates the need for the proposed earthworks and considers the potential impacts on:

   (a) Existing landform, trees and vegetation;

(b) Geotechnical stability;

(c) Dust and air pollution;

(d) Soil erosion and sedimentation;

(e) Water pollution;

(f) Groundwater, surface water, stormwater, flood storage;

(g) Contamination;

(h) Salinity; and

(i) Neighbourhood amenity

2. The Statement of Environmental Effects (SEE) must also include information on the following:

(a) Method of compaction and degree of compaction;

(b) Method of excavation;

(c) Method of drainage;

(d) Haulage routes;

(e) Destination of extracted material;

(f) Potential impacts on adjoining properties/the environment and proposed mitigation measures;

(g) A flood study, where required by Council (Refer to Part E Floodplain Management in this DCP); and

(h) A Virgin Excavated Natural Material (VENM) and soil contamination report, where required by Council, outlining the origin and type of fill / excavated materials.

3. The Development Application must also be accompanied by a survey plan and a site plan (at a 1:100 or 1:200 scale) which shows:

(a) Existing natural contour levels and proposed finished contour (shown in bold) levels at 2 metre intervals in Australian Height Datum (AHD);

(b) Cross section plans identifying the nature, extent and depth of excavation and/or land filling and associated works, batter slopes and any retaining structures;

(c) The location of cut, fill, batters, drainage and retaining structures;

(d) Existing natural features, dams, watercourses, trees and especially any trees or other vegetation likely to be affected by works;

(e) Staging plans, where land reshaping is proposed to be done in stages;

(f) An Erosion and Sedimentation Control Plan;

(g) Rehabilitation Plan for applications involving earthworks without associated built development works that indicates:

i. Vegetation to be retained, removed and rehabilitated;

ii. Final landform;

iii. Proposed site stabilisation and weed control mechanisms;

iv. Whether fill material is capable of sustaining suitable plant growth.

4. Where development involves fill materials being temporarily stockpiled on any land, the site plan must show the location, quantity, height and configuration of proposed stockpiles. The Statement of Environmental Effects must detail:

(a) The proposed period of stockpiling;

(b) Any proposed preparation requirements, such as land clearing;

(c) Soil erosion, sedimentation and dust controls proposed to be implemented during the temporary stockpiling of the landfill material, including any proposed covering protection; and

(d) Soil characteristics, including the potential for leaching, of the stockpiled materials.

4 DEVELOPMENT STANDARDS

4.1 Stormwater Management, Sediment Control and Land Stability

1. It is the responsibility of the developer undertaking earthworks to ensure such works do not adversely impact on stormwater drainage, groundwater, surface water quality or land stability.

2. Areas of excavation must be suitably retained/battered so that uphill areas are stable and do not lose development potential.

3. Filling must be suitably retained / battered so as to avoid slumping, or sediment entering into drainage systems or downstream properties.

4. An application involving earthworks must address impacts on the geotechnical stability, groundwater and salinity of the site. Earthworks on steep slopes (i.e. land having a gradient of 15% or greater) and/or earthworks greater than 1 metre in height will generally be required to submit a geotechnical report stating the suitability of the land for development. This report shall comply with the requirements contained in the Geotechnical chapter in Part E of this DCP.

5. Any excavation within the zone of influence for any other structure or building requires a Dilapidation Report (prepared by a suitably qualified engineer) demonstrating the existing condition of neighbouring buildings and structures. The Dilapidation Report will be required to be submitted with the Development Application. Prior to works commencing a Structural Report may be necessary to propose measures that will protect the integrity of buildings and structures.

6. The alteration of overland flow or local drainage shall not be permitted to adversely impact on adjoining or adjacent properties. No net loss of flood storage and /or conveyance will be permitted. In this regard, Council may require the developer to undertake a flood study to demonstrate the likely impacts and make recommendations for the design of the proposed earthworks.

7. For exposed earthworks, a site management program incorporating sediment, dust and erosion control measures (e.g. cleaning of sediment traps, fences, access control, basins and

maintenance of vegetative cover) must be implemented prior to the commencement of any works and maintained throughout the duration of the earthworks and until vegetation cover is established.

4.2 Imported Fill

1. Imported fill must be free from any soil contamination. Any imported landfill material must be virgin excavated natural material (VENM) only. Demolition or putrescibles waste is not permitted in any landfill material.

2. Where earthworks involve land known or suspected to be contaminated, the provisions of the Contaminated Land Management Chapter in Part E of this DCP will also apply.

4.3 Earthworks Planning, Design and Construction

1. All earthworks are to be planned, designed and constructed in accordance with Australian Standard *AS3798 – Guidelines on earthworks for commercial and residential developments*.

2. Batter cross-slopes should be restricted to a slope of 25% (1 vertical in 4 horizontal).

3. Excavation of hard bedrock in urban areas shall be undertaken in a manner that minimises amenity impacts on the surrounding neighbourhood. Methods of excavation are to be selected appropriate for the bedrock type such that noise and vibration nuisance generated by the works are within Department of Environment and Climate Change limits.

4. All excavations and backfilling shall be executed safely and in accordance with appropriate professional standards and NSW Work Cover Authority requirements

5. Fill should not cover topsoil. Topsoil should be removed, stockpiled and replaced over the fill.

4.4 Use of Coalwash as Fill Material

Coal Washery Reject (CWR) is locally known as “Coalwash” and is a by-product of the coal mining industry.

CWR can have very good civil engineering properties for use as a general fill in earthworks despite it containing a residue of combustible material which may be a significant portion of the total volume of the material.

In some rare circumstances, this residue of combustible material has been ignited and once ignited is problematic to extinguish.

This Clause of Chapter E19 of the Wollongong DCP sets the minimum standard for the use of CWR such that the likelihood of ignition is within acceptable limits and updates Council’s Policy No32.03 dated 2 December 1996 Minute No364 ‘Coal Washery Refuse in Subdivisions.’

CWR is permitted for use as a general fill in civil engineering earthworks subject to its use being in compliance with the conditions described in Chapter E19 of the Wollongong DCP and Clause 4.4 in particular.

4.4.1 Development Controls

1. Very coarse CWR material (greater than 150mm particle size) is to be rejected.

2. Very fine slurry CWR material (tailings) is to be rejected.

3. Notwithstanding sub-clause 1 and 2 above, a homogenous mixture of uniformly graded CWR incorporating some very coarse materials and some very fine slurry materials is acceptable.

4. During placement and compaction of CWR, site controls are to be maintained in place to prevent run-off and dust nuisance.

5. Service trenches within the CWR are to be backfilled with inert material such as sand, road base or another granular material.

6. Notwithstanding the level of compaction of the CWR, sites developed with CWR will be designated Class P sites in accordance with Australian Standard AS2870 Residential Slabs and Footings.

7. Footings and foundation systems for any structures to be placed on the completed CWR fill emplacement, compacted in accordance with this Chapter of the Wollongong DCP, are to be designed by a structural engineer based on advice from a geotechnical consultant.

   Where the completed CWR emplacement is not in preparation for an overlying future structure, it is to be covered with not less than 300mm of inert cover such as topsoils.

Supply of CWR

8. The supply of CWR is to comply with the Coal Washery Rejects General Exemption 2009 issued by the Environment Protection Authority (EPA) under the Protection of the Environment Operations (Waste) Regulation 2005 – General Exemption Under clauses 51 and 51A.

9. The generator of the CWR must provide to the consumer of the CWR a written statement of compliance with the general exemption for CWR under the Protection of the Environment Regulation described in sub-clause 8 as above.

10. The statement of compliance from the generator must clearly state that the residue of combustibles within the CWR does not exceed 30% mean value or 40% maximum value by mass of tested samples when tested in accordance with Australian Standard AS1038 Coal and Coke and at the testing frequencies stated in Table 3 of the General Exemption.

Placement and Compaction

11. Placement of the CWR is to comply with Australian Standard AS3798 Guidelines on Earthworks for Commercial and Residential Developments.

12. Compaction is to be undertaken with Level 1 engineering control as defined in AS3798.

13. The minimum density ratio of the compacted CWR is to be 100% standard as determined by test methods AS1289.5.1.1 and AS1289.5.4.1. Moisture content determinations are to be in accordance with AS1289.2.1.1 with the exception that a 50^{o}C oven is to be used.

14. If nuclear gauges are to be used to determine field wet density then the field moisture content is to be determined by test method AS1289.2.1.1 with the exception that a 50^{o}C oven is to be used (as per sub-clauses 13 above).

15. A works-as-executed geotechnical report is required which demonstrates that the completed works comply with this Chapter of the Wollongong DCP.

    The works-as-executed geotechnical report will describe the residual geotechnical constraints on the compacted CWR fill which are to be accommodated in the design of foundation systems and footings for any structures proposed to be built on the fill.

Pre-existing CWR fill.

16. Any pre-existing CWR fill is assumed to be uncontrolled fill and not compliant with this Chapter of the Wollongong DCP.

17. Geotechnical advice is required to either:

    a) Demonstrate that the pre-existing CWR fill complies with sub-clause 9 under the heading *Supply of CWR* with respect to its content of residual combustibles **and** sub-clauses 13 under the heading *Placement and Compaction* and sub-clause 14 under the heading *Placement and Compaction* with respect to its in-situ density; or

    b) Detail a site remediation program setting out a program of remedial works which can be undertaken so that the pre-existing CWR can be brought into compliance with sub-clause 9 under the heading *Supply of CWR* with respect to its content of residual combustibles **and** sub-clauses 13 under the heading *Placement and Compaction* and sub-clause 14 under the heading *Placement and Compaction* with respect to its in-situ density.

    c) Any CWR which is determined to be non-compliant due to it being high in residual combustibles content may be blended with an inert material in sufficient proportion to bring the overall combustibles content of the blended material into the acceptable range for compliance with the Chapter of the Wollongong DCP.

18. If the CWR is to support a structure and, after seeking the geotechnical advice of sub-clause 16, is considered by the developer to be impractical to be brought into compliance with this Clause of the Wollongong DCP then the CWR is to be removed.

19. If the developer chooses to remediate the CWR into compliance with this Chapter of the Wollongong DCP then the works are to be undertaken in accordance with the requirements under the Placement and Compaction heading and by following a program developed through sub-clause 17(b).

Table 1: Minimum testing requirements

Quantity of Coalwash to be Emplaced (tonnes)	Minimum Frequency of Testing (tonnes per test)
< 5,000	1,000 (5 tests)
< 25,000	2,500 (10 tests)
< 125,000	6,000 (20 tests)
< 500,000	15,000 (35 tests)
< 2,000,000	30,000 (65 tests)
> 2,000,000	50,000

4.5 Revegetation Requirements

Vegetation providing a dense, uniformly distributed cover shall be required as soon as possible following site disturbance to prevent erosion and sedimentation occurring. Soil erosion and sediment control

measures must be in place prior to disturbance of the site and maintained during earthworks until such time as revegetation of the site has been completed.

4.6 Certification of Works

1. Council may require the following information prepared by suitably qualified persons on completion of works:

   (a) Surveyors report and works-as-executed plans with finished contour levels at 2m intervals to AHD;

   (b) Hydraulic certification;

   (c) Engineering certification of the completed earthworks in accordance with the recommendations of AS3798 and controlled fill is to have Level 1 Engineering Certification as defined in AS3798; and

   (d) Site Contamination Audit Statement issued by an accredited site auditor pursuant to Part 4 of the Contaminated Land Management Act 1997 confirming that the site is suitable for the proposed land use activity (i.e. contaminants have either been remediated and / or removed from the site or contamination levels are below the NSW Department of Environment and Climate Change or ANZECC threshold criteria).