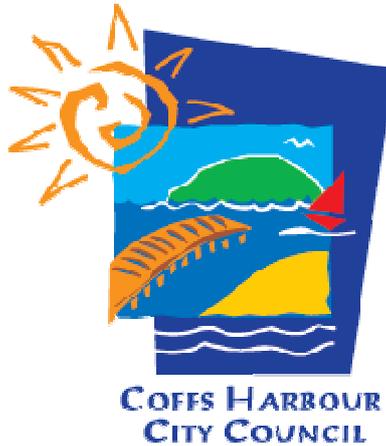


***COFFS HARBOUR CITY COUNCIL***



**DEVELOPMENT SPECIFICATION  
DESIGN**

***0021 Site regrading***

***Version 1      01 January 2009***

**0021 SITE REGRADING****1 SCOPE AND GENERAL****1.1 SCOPE**

This worksection sets out requirements for the site regrading involved in Council works and Council land development and subdivision.

Conceptual requirements are presented as necessary considerations when preparing designs for site regrading.

This worksection assumes that the Designer is familiar with requirements cited in the various construction specifications, specifically those related to earthworks, clearing and grubbing, erosion and sedimentation. Additionally the Designer needs to make reference to the associated design specifications related to stormwater drainage design, geometric road design and erosion control and stormwater management.

**1.2 OBJECTIVES**

This worksection aims to assist the Designer in achieving:

- efficient and economical design
- enhancement of the environmental character of the site whilst maintaining the natural features of the site
- provision of safe conditions for construction commensurate with the proposed purpose of the works
- equality of building conditions for residential development
- a minimal impact on adjoining properties and other works.

**1.3 REFERENCED DOCUMENTS**

The following documents referred in this worksection are:

**Worksections**

*0041 Geometric road layout*

*0074 Stormwater drainage (Design)*

*0075 Control of erosion and stormwater management*

*0250 Open space – landscaping*

*1102 Control of erosion and sedimentation*

*1111 Clearing and grubbing*

*1112 Earthworks (Roadways)*

**Standards**

AS 3798 Guidelines on earthworks for commercial and residential developments

**1.4 BIBLIOGRAPHY**

AS 2870 Residential slabs and footings—Construction

**1.5 SITE REGRADING****Suitability of site**

Areas of a site proposed for building or recreational purposes may not be suitable in their natural state for their intended function without improvement works to:

- Alleviate flooding of low-lying ground.
- Fill gullies or create emergency flowpaths after underground stormwater piping has been installed.
- Allow improved runoff from flat ground.
- Regrade excessively steep slopes that would preclude economical construction of building foundations.
- Allow effective recreational use or give reasonable access.

The Designer shall review the natural surface contours and where necessary shall design finished surface levels that ensure the land is suitably prepared.

#### **Drainage**

Where practical, areas should be regraded to minimise the necessity for underground drainage systems with surface inlet pits, and allow surface water to flow naturally to roads or drainage reserves without excessive concentration.

#### **Natural environment**

The Designer shall consider the implications of site regrading in relation to the existing natural environment. Generally site regrading shall be minimised in heavily treed areas.

#### **Overland flow**

Care shall be taken to provide depressions for overland flow from low points and over major drainage lines, to direct stormwater for storms up to a 100 year average recurrence interval (ARI).

#### **Minimal road haulage**

The design of site regrading areas in conjunction with the design of roadworks shall be considered with the objective of balancing cut to fill and achieving both an economical works and to minimise the haulage of imported fill or spoil to and from the works site.

Bulk haulage should always be considered an adverse effect on adjacent development, and infrastructure.

### **1.6 SPECIAL TREATMENT FOR PARTICULAR AREAS**

#### **Areas abutting the 100 year ARI flood levels**

Areas abutting the 100 year ARI flood levels shall be site regraded to a minimum level of 0.5 metres above the 100 year ARI flood levels. In doing so, the Designer shall ensure that other areas are then not affected by flooding.

The site shall be identified on the Drawings with appropriate notation of site specific requirements.

#### **Inundation areas**

In the event that an area is known to be affected by or inundated by local stormwater flows, the Designer shall investigate the existing conditions as they relate to the proposed Works and advise the Council in the preliminary design report on all data obtained in the investigation and recommend appropriate contour adjustments.

The report should normally be accompanied by sketch plans to clarify recommendations.

#### **Restrictions on land use**

Constraints either natural or otherwise may be required to be identified as a burden on the developed site. It is recommended that the Designer take this into account when preparing the design.

The property may ultimately be affected by a 'restriction as to user', which may be controlled by a legal instrument placed on title to the land advising prospective purchasers of any restrictions affecting the land.

#### **Piped gullies or depressions**

The finished surface of filled areas shall be designed to levels allowing an adequate cover depth over the pipeline (if piped) and permitting surface stormwater flow to be guided to inlet pits if depressions are retained in the finished surface contouring.

#### **Site regrading plans**

The location of features shall be clearly defined on the site regrading plans and defined by distance to corner boundaries, monuments, etc for purposes of relocation at the geotechnical testing stage for work as executed Drawings.

A geotechnical report specifying the site specific preparation and compaction requirements will be required to be incorporated with the site regrading plan. A description of the minimum acceptable quality of the fill shall also be specified on the plans, supported by geotechnical recommendations.

All documentation necessary from various authorities to support the filling of dams and watercourses shall be supplied with the Drawings.

#### **Finished level of any building area**

The finished level of any building area shall be designed to ensure a desirable surface grading of 1.5% (1% minimum) oriented in the direction of the drainage system designed to cater for its catchment.

Building areas containing natural ground slopes of an excessively steep nature, i.e., greater than 15% shall be brought to the attention of a Geotechnical Engineer for investigation of compatibility with the works proposed. Specific requirements shall be noted on the Drawings.

#### **Salinity prevention**

In known salt affected areas, or areas found to be salt affected by the geotechnical investigations, the Designer shall evaluate the existing conditions as they relate to the proposed development.

The Designer shall also take advice from the relevant land and water resource authority and advise the Developer, in the preliminary design report, of areas requiring action to prevent salinity development.

Appropriate regrading strategies aimed at lowering the groundwater table should also be included in the preliminary design report together with primary measures to prevent extension of salinity problems.

### **1.7 SITE PREPARATION**

#### **Clearing**

Special requirements will apply where considered necessary by the Council but generally the site shall be cleared of low scrub, fallen timber, debris, stumps, large rocks and any trees which in the opinion of Council are approaching the end of their functional life or are dangerous or will be hazardous to normal use of the site.

Prior consultation with Council's Tree Preservation Officer or equivalent is necessary. Such requirements shall be shown on the Drawings.

#### **Disposal**

All timber and other materials cleared from the site shall be removed and legally disposed of. All roots, loose timber, etc which may contribute to drain blockage shall be removed. Such requirements shall be shown on the Drawings.

#### **Overfilling area of trees**

In areas to be filled over butts of trees, allowance is to be made for clearing of all trees and replanting with advanced species, the number and type of which shall be approved by Council.

All replanting is to be clear of probable future building locations, and not to be commenced until filling has been completed and graded, with provision for watering and maintenance for duration of the contract. These specific requirements shall be shown on the Drawings.

#### **Preservation of trees**

Selected trees shall be preserved by approved means to prevent destruction normally caused by placement of conventional filling or other action within the tree drip zone.

The Tree Preservation Officer or equivalent shall be consulted for advice and all specific requirements noted on the Drawings.

### **1.8 FILL**

#### **Special requirements clause**

Items addressed below, shall be incorporated in the Special Requirements Clauses of *1112 Earthworks (Roadways)*.

#### **Fill type**

Filling is to be of sound clean material, reasonable standard and free from large rock, stumps, organic matter and other debris.

Placing of filling on the prepared areas shall not commence until the authority to do so has been obtained from the Council.

The above requirement shall be a notation on the relevant drawings.

#### **Fill quality and compaction**

All work shall be in accordance with AS 3798. Fill is to be placed in layers not exceeding 150 mm compacted thickness.

All fill is to be compacted to 95% standard maximum dry density. Maximum particle size shall be 2/3 of the layer thickness.

#### **Restricted fill**

Fill comprising natural sands or industrial wastes or by-products may only be used after the material type and location for its use is approved by the Council and will be subject to specific requirements determined by prevailing conditions.

It is essential that prior advice be given of intended use of restricted fill materials. It should be noted that failure to obtain the Council's approval may lead to an order for removal of any material considered by the Council or other relevant authorities as unsuitable or in any way unfit for filling.

#### **Top dressing**

All areas where filling has been placed are to be dressed with clean arable topsoil, fertilised and sown with suitable grasses. This work shall be carried out in accordance with *0250 Open space - landscaping*.

### **1.9 TEMPORARY DIVERSION DRAINS**

Where temporary drains are required to divert surface flows away from the site regrading area, the location and silt/erosion control treatment shall be clearly identified on the Drawings. The scale of such works shall reflect the volume of water to be diverted.

The objective will be to ensure minimal soil disturbances and material loss off the site.

Control measures will include, but not be limited to:

- Provision of trench stops every 30 m along a trench, with provision for overtopping to be directed to the kerb.
- Placement of 'blue metal' bags along kerb and gutter at maximum 30 m spacings.
- Placement of 'blue metal' bags around downstream drainage pits.

The requirements identified in *0075 Control of erosion and stormwater management* should be addressed for any additional requirements.

### **1.10 CONCURRENCE WITH ENVIRONMENTAL PROTECTION AUTHORITY (EPA)**

The Designer shall refer to the relevant State Environmental Protection Authority (EPA) with regard to any items requiring specific consideration when preparing a site regrading plan.

Such plans may need to incorporate sediment/siltation/erosion/salinity control devices with specific reference to the stage at which these are to be provided.

The responsibility shall rest with the Designer to make enquiries with EPA and subsequently obtain Council approval to proposed measures.

### **1.11 WORK-AS-EXECUTED DRAWINGS**

The Designer shall annotate on the site regrading plan, the site specific detail to be shown on the Work-as-Executed drawings.

Such detail shall include a geotechnical report certifying the works to be suitable for the intended purpose and any other certifications, testing and survey data, as required in this specification.

### **1.12 CARTAGE OF SOIL**

#### **Acceptable haul route**

The Designer shall refer to Council for acceptable haul roads with applicable load limits. This detail shall be shown on the site regrading plan.

The payment of a Bond may be required where Council has some concern about the ability of a haul road to sustain the loads without undue damage or maintenance requirements.

#### **Re-use of topsoil**

Unless otherwise approved by Council, the Drawings shall be annotated as follows – 'All topsoil shall be retained on the site and utilised effectively to encourage appropriate revegetation.'

### **1.13 ADJOINING PROPERTIES**

#### **Stormwater easement**

Where it is proposed to divert or direct piped stormwater into adjoining properties, drainage easement rights shall be created over the adjoining lots in accordance with *0074 Stormwater drainage (Design)*.

#### **Construction agreement**

A written agreement shall also be sought to carry out construction work on adjoining properties and all such agreements are to be submitted to Council.