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## EROSION AND SEDIMENT CONTROL PLAN

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**Tweed Coast Homes Pty Ltd**  
**Lots 1, 2 and 3 DP 29748 & Lot 4 DP 31209**  
**Tweed Coast Road & Cypress Crescent, Cabarita Beach**

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Prepared by:

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**Director**  
**Cozens Regan Williams Prove Pty Ltd**

Date:  
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Tweed Coast Homes Pty Ltd  
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Tweed Coast Homes Pty Ltd  
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**MIXED USE RESIDENTIAL & TOURIST DEVELOPMENT  
TWEED COAST ROAD & CYPRESS CRESCENT, CABARITA BEACH  
LOTS 1, 2 AND 3 DP 29748 & LOT 4 DP 31209**

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- S.D.501 - Erosion and Siltation Prevention Devices – Sheet 1
- S.D.502 - Erosion and Siltation Prevention Devices – Sheet 2

## **1.0 Introduction**

### **1.1 General Introduction**

Cozens Regan William Prove Pty Ltd has been commissioned by Tweed Coast Homes Pty Ltd to prepare an Erosion and Sediment Control Plan for the Mixed Use Residential and Tourist Development in Cypress Crescent, Cabarita Beach.

The Plan is required to support an application to Tweed Shire Council for the proposed development and to provide documentation for the management and mitigation of erosion and sediment during the construction phase in order to minimise any adverse downstream impacts created by the development.

Development of the site will involve earthworks, building and pavement works. The development will alter the present land use and an assessment is required to determine the impact of these proposed changes.

This plan is to provide an impact assessment and any amelioration measures required to offset any potential adverse impact.

### **1.2 Scope of Plan**

This plan focuses on the temporary impacts of sediment and erosion control likely to be encountered during the construction process and the treatment measures required to be installed to meet the objectives as set out by the "Tweed Urban Stormwater Quality Management Plan", specifically annexure D7 –"Stormwater Quality". The methods for monitoring and reporting are also documented.

This plan will be set out in accordance with Section D7.07 of the abovementioned source document.

### **1.3 Site Description**

The subject site is four allotments that are described as Lots 1, 2 and 3 DP 29748 & Lot 4 DP 31209, Cypress Crescent, which currently has existing tourist accommodation on each site. It is located on the corner of Tweed Coast Road and Cypress Crescent. Other residential buildings surround the site.

The proposed development comprises of residential units within the proposed building, associated driveway, basement car park and landscaped areas.

## **2.0 Erosion and Sediment Control Plan – D7 Requirements**

The following documentation and assumptions has been used in the preparation of the Erosion and Sediment Control Plan. Plan A.6.21/SK1 should be read in conjunction with the details contained within this document.

### **2.1 Adoption of Annexure A**

Analysis of the impacts of the proposed development will be determined in accordance with the provisions of Annexure D7 “Stormwater Quality” and this plan should be read in conjunction with the Erosion and Sediment Control Plan A.6.21/SK1. Not with standing these requirements, Annexure A “Code of Practice for Soil and Water Management on Construction works” has and should be adopted as the minimum requirements. Consideration of this reference material has been used in the preparation of this document.

### **2.2 Existing Site Drainage**

Drainage from the site is proposed to be collected in a piped system and directed to the kerb and channel in Cypress Crescent. The legal point of discharge is the kerb and channel in Cypress Crescent.

The existing site grades to the east. The site is not affected by any external catchments.

### **2.3 Vegetation**

The site is grassed and a number of trees are on the site. Removal of the grass and topsoil as well as the trees to allowing for excavation of the basement is proposed.

### **2.4 Soil Properties**

Underlying soils comprise of sandy/clay, which can be considered as erodible. Using the guidelines in Appendix B of NSW Department of Housing, 8/98, “Managing Urban Stormwater: *Soils and Construction*” the soil texture is classified as Type C. The soil hydrological group will be Type A and is determined using the criteria set in Appendix F.

The risk of erosion is high however due to the excavation of the basement, the risk of sediment being transported from the site can be considered quite low. It therefore is proposed not to place any restrictions on the timetable for construction.

## **2.5 Sediment and Erosion Control**

### **2.5.1 Potential Sediment Generation**

The development will result in one catchment from which sediment can be generated. The area to be disturbed is 0.2802ha (the whole site). While the potential exists for sediment to be generated during the construction phase, the potential sediment volume is dependent upon rainfall, site topography, the material type exposed, flow characteristics, and the construction practices and programme.

Control of the construction impacts is the primary objective for sediment and erosion control practices. The proposed development will effect the local environment in the following ways:

- a) Air pollution during construction due to wind borne dust, and sand.
- b) Noise pollution during construction.
- c) Surface water pollution due to the mobilisation of sediments, nutrients and gross pollutants during rainfall events.
- d) Ground water pollution may occur due to infiltration of dissolved nutrients during the clearing operation of the construction phase.

The issues of air, runoff and ground water pollution are considered below:-

#### **a) Air pollution**

The escape of wind borne particles from cleared areas during the earthworks operation and from finished earthworks will generally be in periods of strong winds. Regular watering the site will reduce the potential for air borne pollutants. During the operational phase air borne pollutants (dust etc.) will be negligible.

#### **b) Surface Water Pollution**

Mobilisation of sediments may have occurred during to the clearing and grubbing of the site and subsequent earthworks operations. The potential for sediment generation for the site is usually calculated using the Revised Universal Soil Loss Equation, however due to the small area of disturbance and ability of the excavated base to act like a sedimentation pond it is proposed to provide controls in accordance with standard building site practices and the provisions set out by NSW Department of Housing publication, *"Managing Urban Stormwater - Soils and Construction"*.

#### **c) Groundwater Pollution**

The underlying soils are sandy/clay and subject to infiltration. The use of infiltration is promoted and as such the potential for pollution of the groundwater is considered minimal. Once the development is completed the presence of impervious roof and paved areas will result in negligible infiltration thus reducing the potential for ground water pollution.

## **2.5.2 Construction Phase Control Measures**

The works proposed to control erosion are:

- 1) Erect sediment fences as detailed on Drawing No. A.6.21/SK1.
- 2) Install a shakedown area
- 3) Stockpile stripped topsoil. Excavate basement. Surplus material to be removed from the site.
- 4) Construction of building and driveway.
- 5) Replace geo-textile filters with mesh filters until landscaping is complete and stabilised.
- 6) Maintain all sediment devices and other interim controls regularly.
- 7) Remove sediment fences and inlet filters after the establishment of the landscaping and grass cover.

## **2.6 Erosion and Sediment Control Management**

The installation of erosion and sediment control devices requires maintenance of these devices to ensure their effectiveness in the control of potential environmental impact. Objectives and maintenance requirements for this project are detailed below.

### **2.6.1 Objectives**

The objectives of this erosion and sediment control plan are:

- a) To ensure that the water quality of the receiving waters is not worsened by the site development.
- b) Minimise sediment transport in surface water runoff during the construction and operational stages.
- c) Minimise sediment and nutrient loads entering the receiving waters.
- d) Provide a monitoring and maintenance programme for implementation during the construction phase.

### **2.6.2 Maintenance of Controls**

The Contractor is responsible for the installation and maintenance of the sediment and erosion control measures during the construction phase and the defects liability period (normally six months).

Maintenance responsibilities for the establishment of vegetation, that is the requirement to irrigate the plants and grass used to generate ground cover lies with the Contractor initially but ultimately reverts to the Owner once the defects liability period has expired.

Maintenance will require:

- 1) Inspection of silt fences and diversion drains weekly during construction and after any rainfall event.
- 2) Clean out sediment buildup following each event that causes deposits.
- 3) Clean up soil and sediment deposits promptly as they occur.
- 4) Provide inlet protection where soil disturbance is to occur.

### **2.6.3 Waste Control**

Safe waste disposal practices of materials, such as paint, slim, acid, effluent, vegetation, sediment and garbage is required. Leakage, spillage or escape from the site of any of these materials is an offence. This document only deals with the sediment generated on site and the following waste practices should be applied:-

- 1) Silt Fences:
  - a) Sediment removed from the device is to be relocated to where further pollution to down slope levels and water ways cannot occur
  - or b) sediment is to be removed from site to an appropriate land fill location.
- 2) Sediment Basin (Basement Excavation):
  - a) Stored contents of the basin (basement) will be treated with gypsum or other flocculent agents in accordance with the requirements of Appendix E, *"Managing Urban Stormwater : Soils and Construction 1998"*.

This is to be applied where the stored contents contain more than 50mg/l of suspended solids. Treatment is to be as follows:-

- Lower suspended solid to less than 50mg/l with 24 hours of the basement being inundated.
  - Allow for treated contents to stand for 36 to 48 hours for flocculent particles to settle.
  - Test for pH prior to discharging. Values to be in the range of 6.0 and 8.5.
  - Basin (basement) to be drained to approved discharge point.
- or b) Installation of temporary tanks for collection and treatment of the captured stormwater prior to discharge. Tanks size is to be determined by the rainfall event. Dewater balance/holding tanks and systems such as those used by Australian Dewatering System Pty Ltd are also acceptable provided the discharge meets the require criteria.

### **2.6.4 Responses to Complaints**

Complaints during this type of construction usually relate to noise and dust. Generally the complaint is made known to the Contractor, the Principal, the Superintendent and/or the Council.

The Contractor shall keep a record of all complaints identifying the nature of the complaint and any remedial action taken to address such complaint. The Contractor shall act as soon as possible to remedy the problem, if the complaint is considered valid and reasonable. The contractor for regular inspection by the Superintendent shall make



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a complaints record available. For the purpose of direction by others, the Contractor's details are to be supplied to Council prior to commencement of the works.

Complaints relating to dust shall require the Contractor to immediately water the exposed earth surfaces and any soil stockpile areas to control dust. Such watering shall occur immediately the complaint is registered with the Contractor. Watering should continue periodically until conditions suit, or the works are completed to a state that prevents dust transport.

## **2.7 Monitoring**

The installation of the erosion and sediment control measures as detailed in this plan will ameliorate potential impact to water quality in the receiving waters. A monitoring program is proposed to ensure that the control measures achieve the desired goals.

### **2.7.1 Monitoring Programme**

A visual monitoring program is proposed due to the relatively small size of the development and the minor amount of earthworks to take place.

Monitoring will take place on a weekly basis and after each storm event to ensure that the proposed control measures are operating as intended and are being maintained in a suitable condition.

### **2.7.2 Amelioration Measures**

Where excessive siltation or scouring or deterioration in water quality is found to occur the following measures will be adopted:

- a) Locate the source of water quality deterioration.
- b) Temporary controls are to be established to prevent further deterioration.
- c) Existing sediment and erosion controls are to be restored or upgraded.
- d) Surface flows are to be directed away from the areas susceptible to erosion
- e) Areas suffering from erosion are to be covered and/or protected with turf.

Any complaint related to the water quality or erosion and sediment control measures is to be investigated and reported within twenty-four hours (24 hrs.)

The monitoring of and maintenance of all control devices is the responsibility of the Contractor. Tweed Shire Council may provide periodic site inspections.

## **2.8 Acid Sulfate Soils**

Acid Sulfate Soils have not been dealt with under this document. Treatment of Acid Sulfate Soils is to be dealt with separately if required.

### **3.0 Conclusion**

Meeting the water quality objectives, as set out by the Tweed Shire Council is one of the primary objective and all aspects have been considered in achieving these objectives. The potential impact on the quality of receiving waters for this project is to be mitigated as follows:

- a) Sediment fences, hay bale barriers, diversion drains, and other site work practices should be installed during construction in order to control the potential erosion impacts. Installation of all devices as shown on drawing A.6.21/SK1 shall be considered as the minimum requirement.
- b) Management of operations of the site during construction with due consideration of the Code of Practice as the minimum requirements. The implementation of standard industry site practices in accordance with NSW Department of Housing, 8/98, "Managing Urban Stormwater: *Soils and Construction*" is considered satisfactory for this development.

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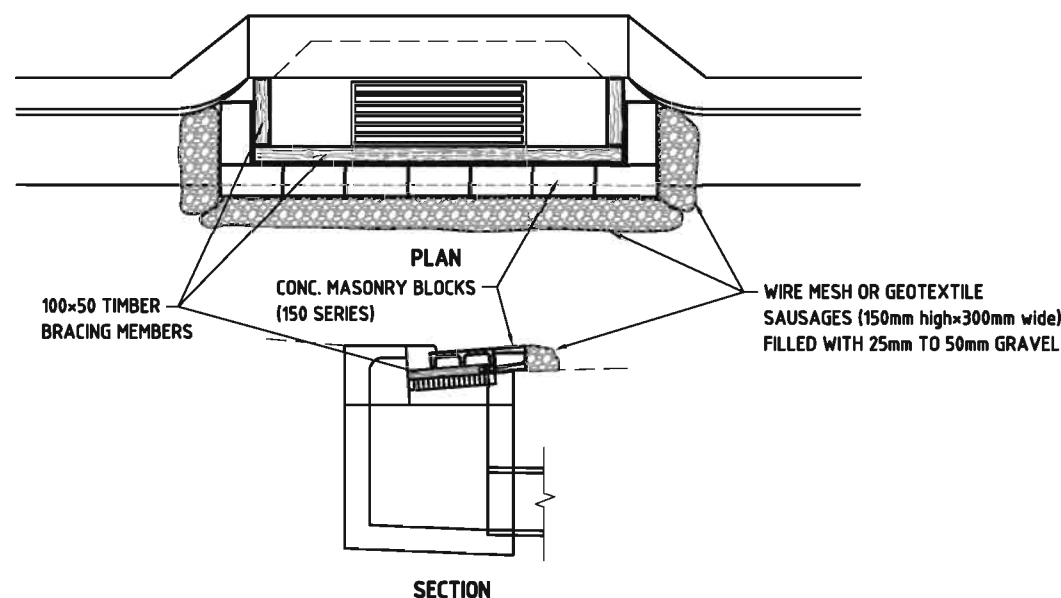
## References

1. NSW, Environment Protection Authority, 11/97, "*Managing Urban Stormwater: Council Handbook, (Draft)*".
2. NSW, Environment Protection Authority, 11/97, "Managing Urban Stormwater: Treatment Techniques".
3. The Institution of Engineers, Australia, Queensland Division, December 1996, "Soil Erosion and Sediment Control, Engineering Guidelines for Queensland Construction Sites".
4. NSW Department of Housing, 8/98, "Managing Urban Stormwater: Soils and Construction".
5. Brisbane City Council, Feb 2000, "Sediment Basin Design, Construction and Maintenance".

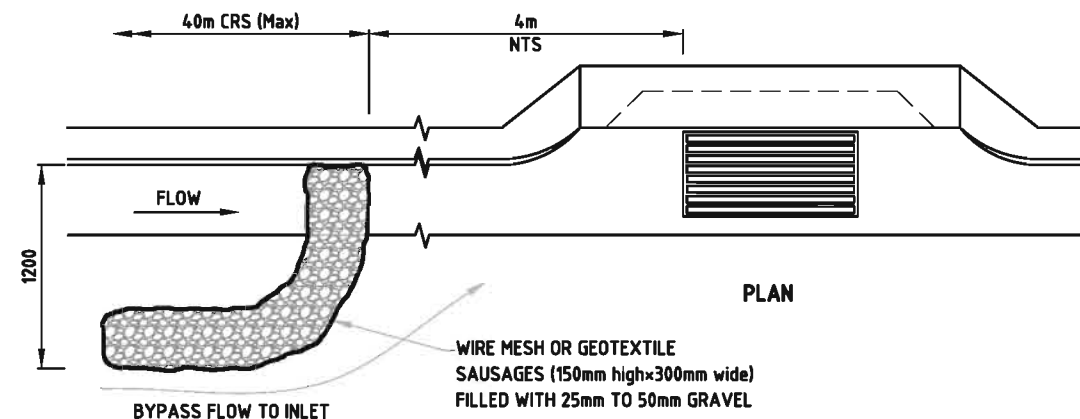
Tweed Coast Homes Pty Ltd  
Lots 1, 2 and 3 DP 29748 & Lot 4 DP 31209  
Tweed Coast Road & Cypress Crescent, Cabarita Beach  
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## FIGURES

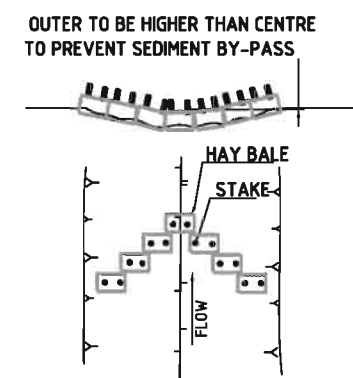




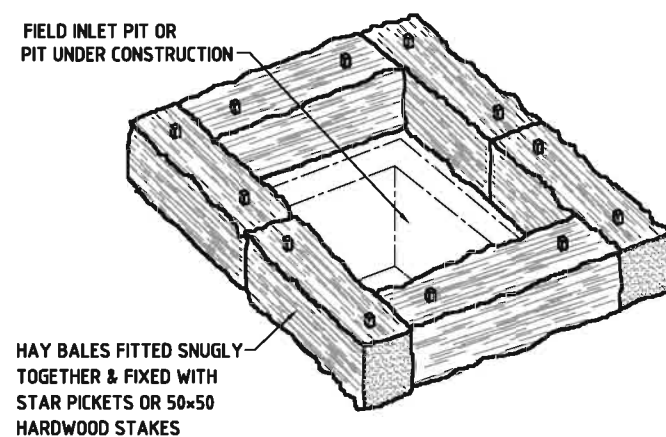
**MESH & GRAVEL INLET FILTER-SAG GULLY**  
NOT TO SCALE



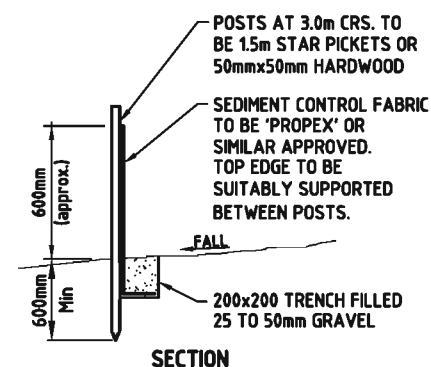
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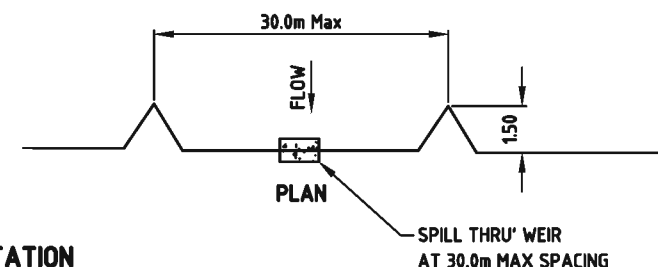
**SEDIMENT CONTROL FOR OPEN CHANNELS**  
REFER ALSO TO HAY BALE FIXING DETAIL N.T.S.



**HAY BALE PIT SURROUND**  
REFER ALSO TO HAY BALE FIXING DETAIL  
NOT TO SCALE

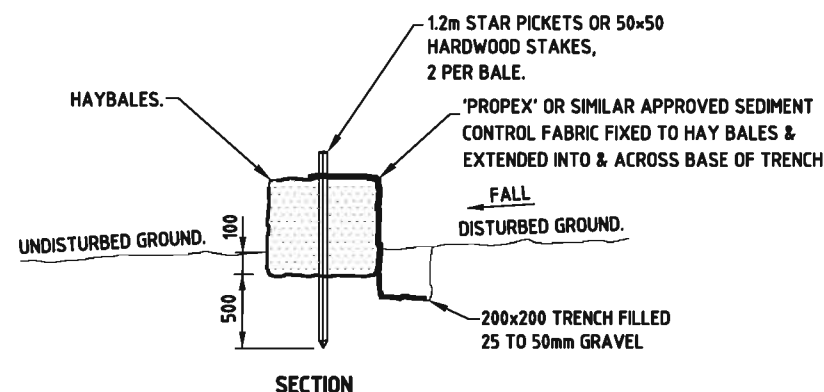


**TEMPORARY SILTATION CONTROL FENCE**  
N.T.S.

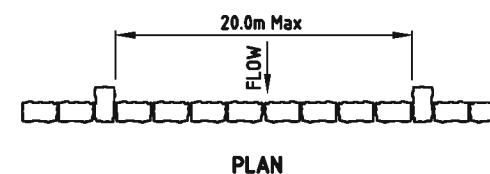



## EROSION & SILTATION PREVENTION NOTES

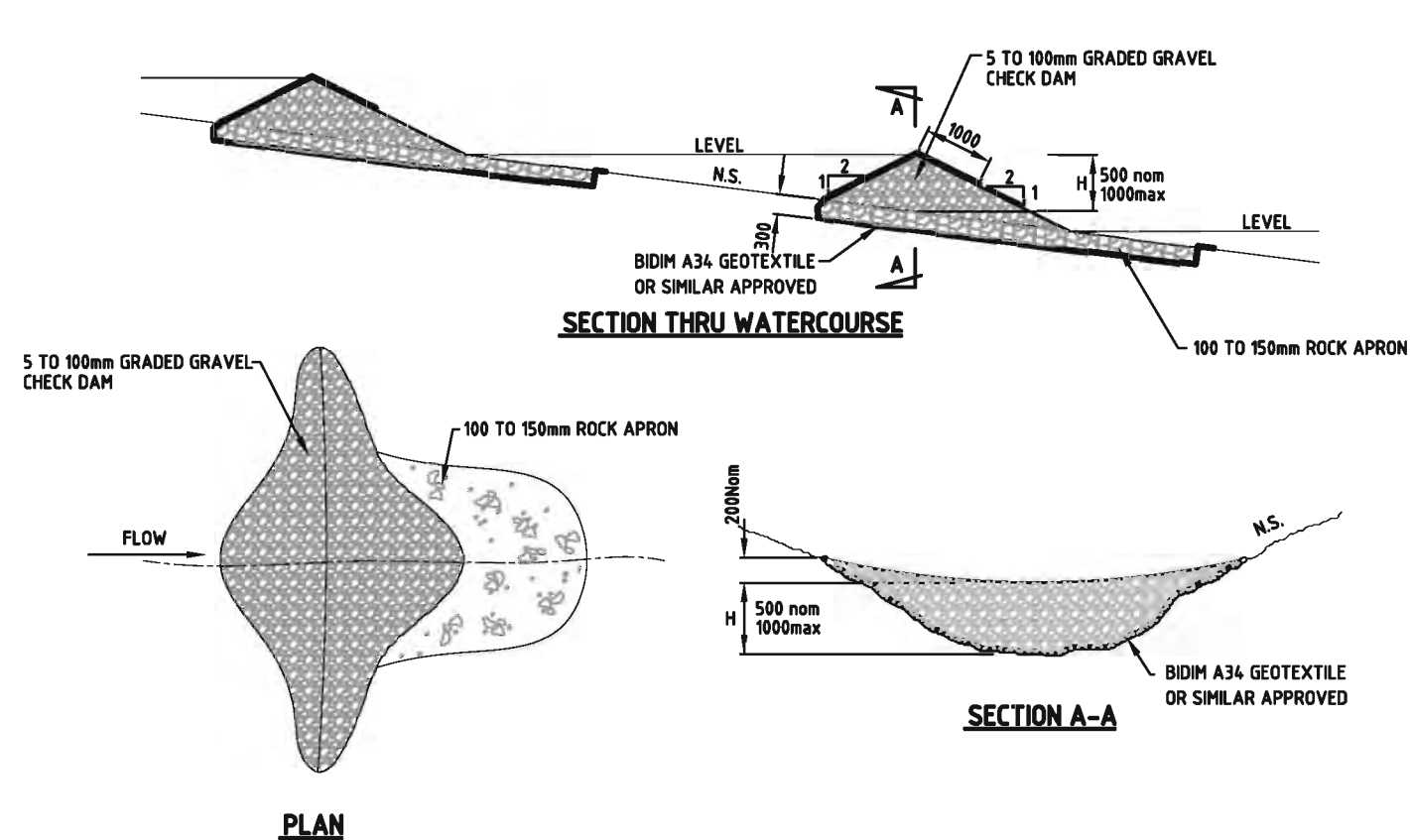
- 1 ALL EROSION & SEDIMENT CONTROLS SHALL BE DESIGNED, INSTALLED & MAINTAINED IN ACCORDANCE WITH TWEED SHIRE COUNCILS DEVELOPMENT DESIGN SPECIFICATION D7- STORMWATER QUALITY, & ITS ANNEXURE A - CODE OF PRACTICE FOR SOIL & WATER MANAGEMENT ON CONSTRUCTION SITES.
- 2 CONSTRUCTION WORKS ARE TO BE MANAGED SUCH THAT AREAS OUTSIDE THE SCOPE OF WORKS REMAIN UNDISTURBED WHERE POSSIBLE
- 3 ALL SILTATION & EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION WORKS (THE EXTENT OF THE DEVICES MAY BE VARIED FROM THAT SHOWN ON THE DESIGN PLANS TO SUIT STAGED CONSTRUCTION)
- 4 THE DEVICES SHALL BE MAINTAINED IN PLACE UNTIL ALL WORKS ARE COMPLETED & TURF OR GRASSING HAS BECOME ESTABLISHED
- 5 DURING CONSTRUCTION, ALL STORMWATER PITS SHALL BE PROTECTED USING HAY BALE PIT SURROUNDS WHICH SHALL BE MAINTAINED IN PLACE UNTIL CONSTRUCTION OF LINTEL/GRATE COMMENCES.
- 6 FOLLOWING COMPLETION OF LINTEL/GRATE, GULLYS ARE TO BE PROTECTED USING MESH & GRAVEL INLET FILTER, WHICH SHALL BE MAINTAINED IN PLACE UNTIL ALL UPSTREAM WORKS ARE COMPLETED & ESTABLISHED
- 7 ALL BATTERS & REINSTATEMENT WORKS ADJACENT NEW CONSTRUCTION WORKS SHALL BE CARRIED OUT AS SOON AS POSSIBLE AFTER COMPLETION
- 8 ALL DISTURBED AREAS & BATTERS SHALL BE TURFED OR GRASSED AS SOON AS PRACTICAL AFTER REINSTATEMENT
- 9 PROVIDE HAY BALE BARRIERS ADJACENT THE OUTLET OF ALL STORMWATER DRAINS FOR THE DURATION OF CONSTRUCTION & ESTABLISHMENT
- 10 ALL DEVICES SHALL BE INSPECTED REGULARLY AND AFTER ALL SIGNIFICANT STORM EVENTS & CLEANED, REPAIRED OR REPLACED AS REQUIRED
- 11 SAFETY ISSUES MUST BE CONSIDERED AT ALL TIMES. INCORPORATE TRAFFIC CONTROL DEVICES WHERE REQUIRED.



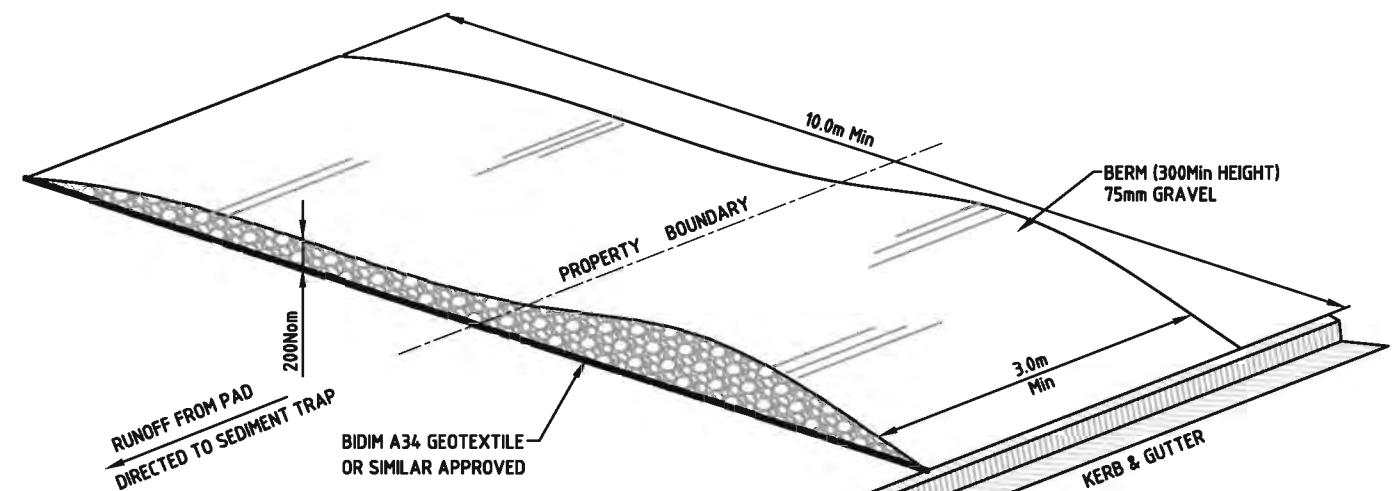
**HAY BALE FIXING DETAIL**  
N.T.S.



 <b>TWEED SHIRE COUNCIL</b> DESIGN UNIT COUNCIL OFFICES TUMBULGUM ROAD, MURWILLUMBAH, NEW SOUTH WALES, 2484 PHONE MURWILLUMBAH 02 66702400 FAX MURWILLUMBAH 02 66727513 WEBSITE www.tweed.nsw.gov.au				DESIGN ENGINEER <i>[Signature]</i> DATE 6.2003 CHECKING ENGINEER <i>[Signature]</i> DATE 6.2003 DESIGNED R.A.E. 2.2004 DESIGN NO. DRAWN R.A.E. 2.2004 SURVEY NO. CHECKED W.B. 2.2004 REDUCTION RATIO HORIZONTAL DATUM COORDS ADOPTED PM VERTICAL DATUM E N	PROJECT: EROSION CONTROL STANDARDS PLAN TITLE: EROSION & SILTATION PREVENTION DEVICES SHEET 1	DRAWING NUMBER: <b>S.D.501</b> SHEET 1 OF 1 SHEETS ISSUE <b>A B C</b>
C NOTE 1 & SILT FENCE SPILL THRU WEIR ADDED R.A.E. 21.7.04 B DRAWINGS ADOPTED FOR ISSUE TO PUBLIC R.A.E. 6.2004 A RE-ISSUED R.A.E. 4.2004 ISSUE AMENDMENT DETAILS INITIALS DATE				ACAD FILE N6:\_TSC STANDARD DRAWINGS\S.D.DRAWINGS\500EROSION CONTROL\S.D.501.dwg		

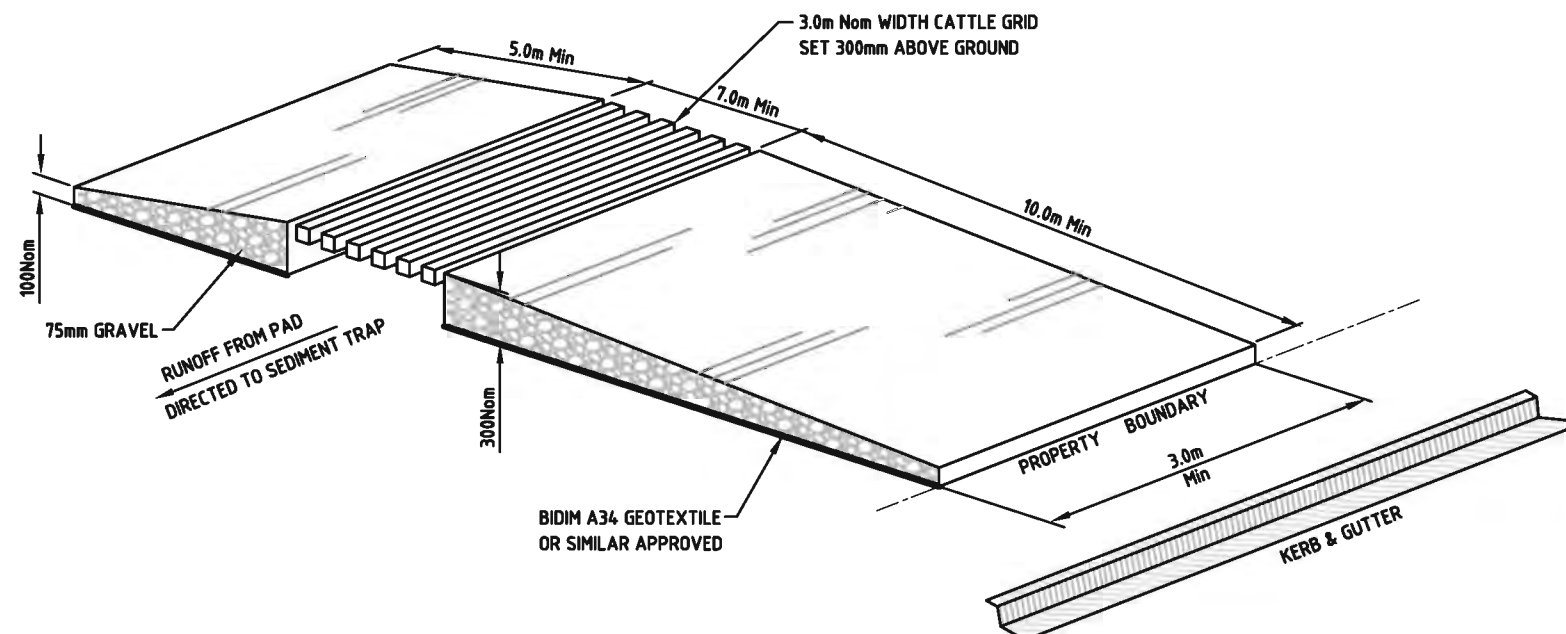


**CHECK DAMS FLOW CONTROL**  
NOT TO SCALE



**TEMPORARY CONSTRUCTION ACCESS SEDIMENT TRAP TYPE 1**

NOT TO SCALE  
NOTE. WHEEL WASH OR SPRAY MAY BE REQUIRED DURING WET WEATHER  
GRAVEL SHALL BE CLEANED/REMOVED WHEN THE EXPOSED HEIGHT OF THE GRAVEL IS LESS THAN 30mm



**TEMPORARY CONSTRUCTION ACCESS SEDIMENT TRAP TYPE 2**

NOT TO SCALE  
NOTE. WHEEL WASH OR SPRAY MAY BE REQUIRED DURING WET WEATHER

**EROSION & SILTATION PREVENTION NOTES**

- 1 CONSTRUCTION WORKS ARE TO BE MANAGED SUCH THAT AREAS OUTSIDE THE SCOPE OF WORKS REMAIN UNDISTURBED WHERE POSSIBLE
- 2 ALL SILTATION & EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION WORKS (THE EXTENT OF THE DEVICES MAY BE VARIED FROM THAT SHOWN ON THE DESIGN PLANS TO SUIT STAGED CONSTRUCTION)
- 3 THE DEVICES SHALL BE MAINTAINED IN PLACE UNTIL ALL WORKS ARE COMPLETED & TURF OR GRASSING HAS BECOME ESTABLISHED
- 4 ALL BATTERS & REINSTATEMENT WORKS ADJACENT NEW CONSTRUCTION WORKS SHALL BE CARRIED OUT AS SOON AS POSSIBLE AFTER COMPLETION
- 5 ALL DISTURBED AREAS & BATTERS SHALL BE TURFED OR GRASSED AS SOON AS PRACTICAL AFTER REINSTATEMENT
- 6 ALL DEVICES SHALL BE INSPECTED REGULARLY AND AFTER ALL SIGNIFICANT STORM EVENTS & CLEANED, REPAIRED OR REPLACED AS REQUIRED
- 7 ADJACENT RUNOFF SHALL BE DIVERTED AWAY FROM CONSTRUCTION ACCESS
- 8 SAFETY ISSUES MUST BE CONSIDERED AT ALL TIMES. INCORPORATE TRAFFIC CONTROL DEVICES WHERE REQUIRED.

B	DRAWINGS ADOPTED FOR ISSUE TO PUBLIC	R.A.E.	5.2004
A	RE-ISSUED	R.A.E.	4.2004
ISSUE	AMENDMENT DETAILS	INITIALS	DATE



**TWEED SHIRE COUNCIL**  
**DESIGN UNIT**

COUNCIL OFFICES  
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DESIGN ENGINEER		DATE	6.2003
DESIGN MANAGER		DATE	6.2003
DESIGNED	R.A.E.	5.2004	DESIGN NO.
DRAWN	R.A.E.	5.2004	SURVEY NO.
CHECKED	W.B.	5.2004	REDUCTION RATIO
HORIZONTAL DATUM	MGA	COORDS ADOPTED	PH
VERTICAL DATUM	AHD		E

PROJECT:	<b>EROSION CONTROL STANDARDS</b>	DRAWING NUMBER:	<b>S.D.502</b>
PLAN TITLE:	<b>EROSION &amp; SILTATION PREVENTION DEVICES</b>	SHEET	1 OF 1 SHEETS
	<b>SHEET 2</b>	ISSUE	A B

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