



EROSION AND SEDIMENT CONTROL PLAN

TriCare (Hastings) Limited
Lot 1 DP 831503
87-89 Tweed Coast Road, Hastings Point

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-

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AGED CARE FACILITY DEVELOPMENT
87-89 Tweed Coast Road, Hastings Point
LOT 1 DP 786570

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- Erosion and Sediment Control Plan – 220450-SK10
- Stabilised Site Access – SD 5-7
- Sediment Fence – SD 6-7

1.0 Introduction

1.1 General Introduction

Cozens Regan Group Pty Ltd has been commissioned by TriCare (Hastings) Limited to prepare an Erosion and Sediment Control Plan for the Aged Care Facility Development at the subject site.

A Senior Housing development was approved on the subject land in May 2007 by Tweed Shire Council. The development was commenced in 2009 by another provider. The constructed stage incorporates 91 independent living units across three buildings with basement car parks.

TriCare subsequently purchased the site in 2011 and currently operate the existing development.

The remaining stages, which comprised 94 supported living units and 67 residential aged care beds across 4 buildings, has never been built. Nevertheless, the consent remains valid.

TriCare has reviewed the balance of the approved development and concluded that the design no longer responds to the contemporary vision of senior living needs and requirements - including the quality of accommodation, allowance for lifestyle amenity, provision of greater passive and active communal spaces and the support and encouragement of age in place principles.

Accordingly, TriCare has elected to review the balance of the master plan and embark on a new delivery outcome for the balance stages of the Aged Care Facility community.

Development of the site will involve earthworks, building and pavement works. The development will alter the land 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 TriCare Hastings Point development site is located at 87-89 Tweed Coast Road, Hastings Point, Lot 1 DP 786570 Parish of Cudgen and County of Rous.

The 37,390m² site is located at the southern end of the Hastings Point. Hastings Point is predominantly a low-scale coastal settlement providing a range of recreational, holiday and residential opportunities.

The site is surrounded by public open space and environmental land including Cudgera Creek to the west, Cudgera Beach and dunal foreshore to the east and the Pottsville Environmental Park to the north and south. An existing Service Station adjoins the site's south-east.

The site is cleared of all existing structures and falls to the rear towards Cudgera Creek. A detailed survey of the site has been carried out, a copy of which is contained in Appendix A.

The subject property is shown below, with the approximate property highlighted in red and the approximate site extent highlighted in green.



Figure 1 – Locality Image – Google Earth

1.4 DESCRIPTION OF DEVELOPMENT

The TriCare Hastings Point development comprises both independent living units (ILUs) and a residential aged care home (RAC) home, that will be supported by a range of other services.

Specifically, the proposal includes:

- A 47 place RAC (Building D) comprising:
 - individual private rooms with ensuites facilities.
 - shared dining, lounge and sitting rooms.
 - café.
 - kitchen.
 - serveries.
 - nurses' stations.
 - offices.
 - staff room and facilities.
 - waste room; and
 - loading bay.
- 51 ILUs split across 3 buildings, including:
 - 24 ILUs in Building E
 - 18 ILUs in Building F
 - 9 ILUs in Building G.

Complimenting the ILUs and RAC, the development offers a range of communal facilities for entertainment, health, active and passive recreation. These facilities include:

- Bowling Green and pavilion with bowls store, amenities, kitchen and covered seating area.
- Indoor swimming pool and spa, with amenities and viewing area.
- Perimeter walking trail; and
- Landscaped gardens.

The proposed development will provide an important contribution to supporting the need for seniors' accommodation and care within the Kingscliff locality.

No changes to the existing Stage 1 development are proposed.

2.0 Erosion and Sediment Control Plan – D7 Requirements

The following documentation and assumptions have been used in the preparation of the Erosion and Sediment Control Plan. Plan 220450/SK10 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 220450/SK10. Notwithstanding 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 and Topography

The existing site drains to the rear and discharges to Cudgera Creek. As the site grades to the rear no ponding of water occurs. Due to the nature of the site and surrounding areas it appears that no defined overland flow from the external catchments impact on this site.

A detailed survey of the site has been carried out by Usher & Company. The site grades from a high point of RL6.12 to a low point of RL1.32. with an average grade in the order of seven percent (7%).

2.3 Vegetation

The site is grassed. Removal of the grass and topsoil to allow for preparation of the building pads is proposed.

2.4 Soil Properties

Underlying soils comprise of sand, which are considered non-dispersive. 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.

The risk of erosion and sediment being transferred from site due to the soil type and gentle slope is considered low. It therefore is proposed not to place any restrictions on the timetable for construction. It is expected for the development to be done in stages.

2.5 Erosion and Sediment Control

2.5.1 Potential Sediment Generation

The development will result in one catchment from which sediment can be generated. While the building works will be done in stages it is assumed that the area to be disturbed is 1.69ha (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 affect 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 during each stage of construction 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 sand 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. 220450/SK10.
- 2) Install shake down area.
- 3) Stripped topsoil and stockpile. Surplus material, in the order of 8,000m³ to be removed from the site.
- 4) Excavate basements and remove surplus material.
- 5) Prepare building platforms and remove surplus material from site.
- 6) Construct buildings and driveways.
- 7) Geo-textile filters to be replaced with mesh filters until landscaping is complete and stabilised.
- 8) Maintain all sediment devices and other interim controls regularly.
- 9) 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, which 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 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 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 risk of erosion and sediment transfer being low.

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 Sulphate Soils

Acid Sulphate Soils have not been dealt with under this document. Treatment of Acid Sulphate 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 220450/SK10 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.



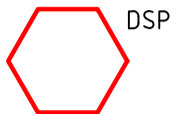



References

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".

APPENDIX A

Concept Engineering Plans

LEGEND

-  DENOTES SILTATION FENCE
REFER TO DETAIL
-  SHAKE DOWN AREA
-  DSP
DENOTES DRAINAGE STRUCTURE PROTECTION
-  ASSET PROTECTION ZONE
-  CORE REHABILITATION ZONE
-  RESIDUAL OUTER REHABILITATION ZONE



CONFIRM DISCHARGE CONNECTION POINT AND LIMIT OF PRIVATE / COUNCIL SEWER PRIOR TO CONSTRUCTION

LOCATE EXISTING WATER METERS TO CONFIRM LIMIT OF COUNCIL / PRIVATE WATER MAIN

IMPORTANT NOTE:

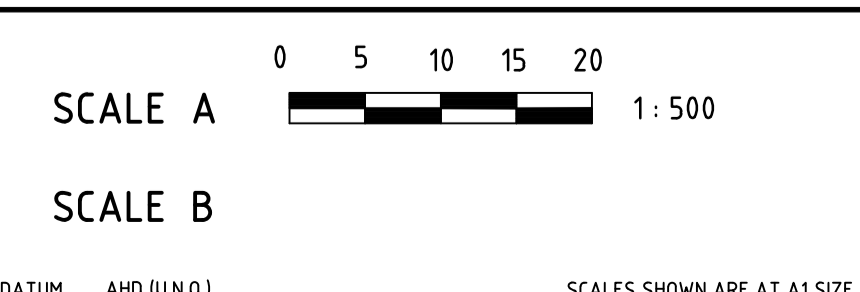



ALL UNDERGROUND SERVICES SHOULD BE LOCATED ON SITE BY RELEVANT AUTHORITIES BEFORE ANY WORK IS COMMENCED.

No.	DATE	ISSUE	REVISED	CHECKED
P1	02/25	ORIGINAL ISSUE - PRELIMINARY FOR INFORMATION ONLY		

IN ASSOCIATION WITH

**PRELIMINARY
NOT FOR CONSTRUCTION**

**COZENS
REGAN GROUP**
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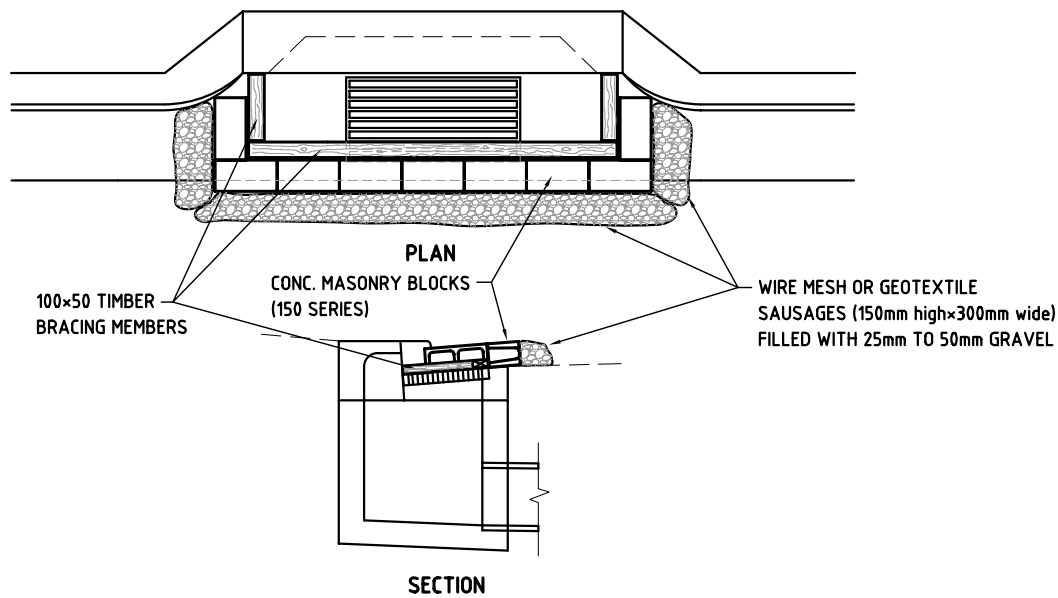
SUITE 7 ADVANCE BUSINESS CENTRE
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COZENS REGAN WILLIAMS PROVE PTY LTD
(RPECC No 4)
(WER No 549920)
(RPECC No 4536)

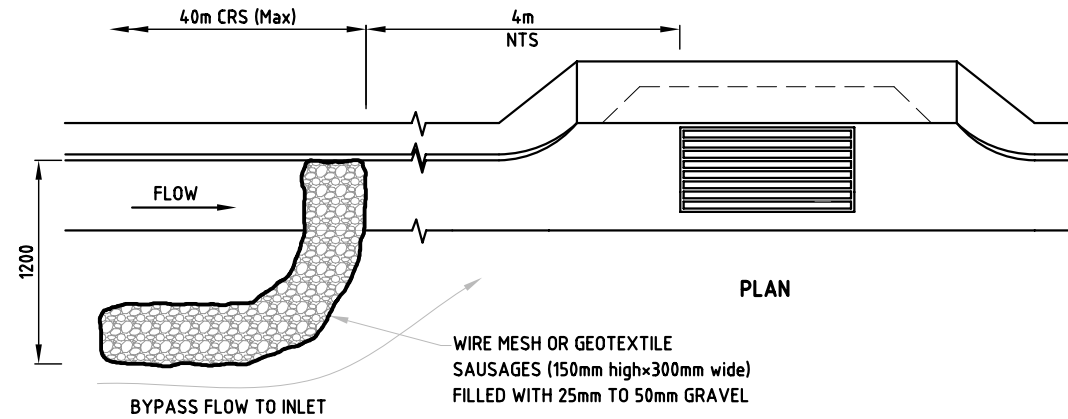
CLIENT TRI CARE (HASTINGS) PTY LTD

PROJECT PROPOSED AGED CARE FACILITY
97-89 TWEED COAST ROAD , HASTINGS POINT
CONCEPTUAL EROSION AND SEDIMENT CONTROL PLAN

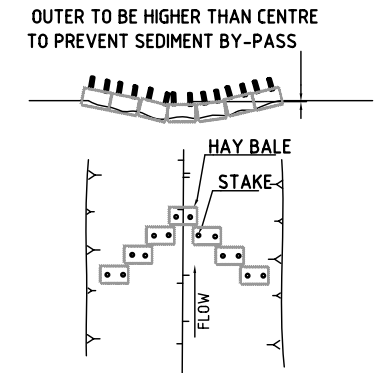
JOB NO. 220450
DRAWING NO. SK10
ISSUE P1



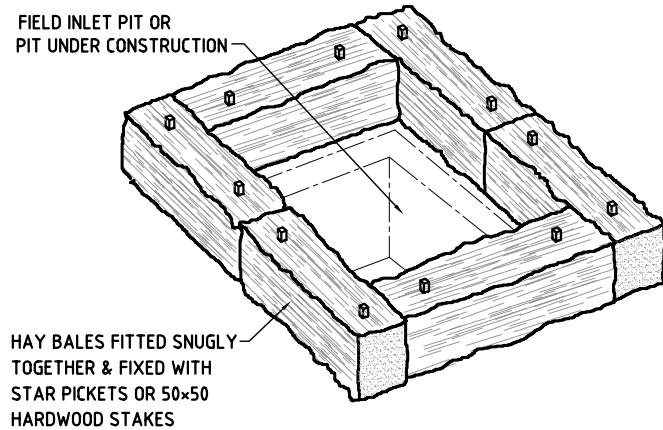
MESH & GRAVEL INLET FILTER-SAG GULLY
NOT TO SCALE



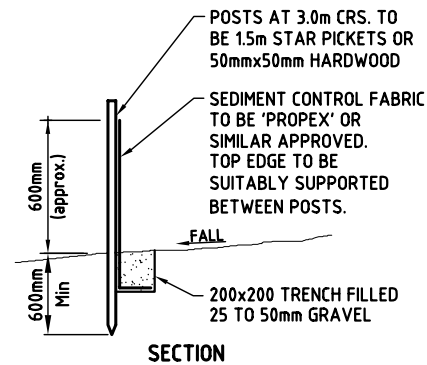
MESH & GRAVEL INLET FILTER-GRADE GULLY
NOT TO SCALE



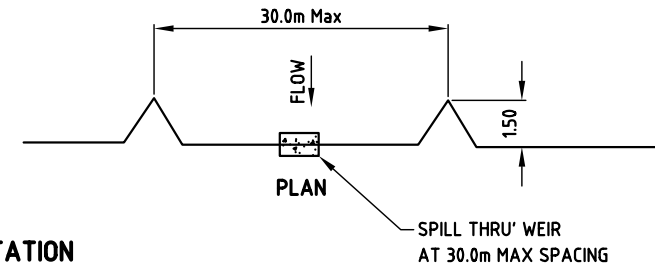
SEDIMENT CONTROL FOR OPEN CHANNELS
REFER ALSO TO HAY BALE FIXING DETAIL N.T.S.



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

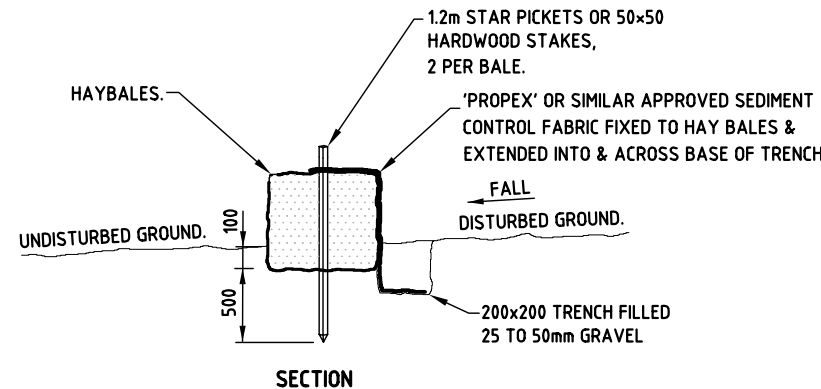


TEMPORARY SILTATION CONTROL FENCE
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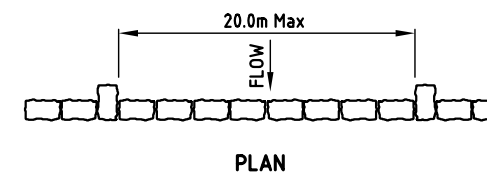


EROSION & SILTATION PREVENTION NOTES

- 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.



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.	5.2004
A	RE-ISSUED	R.A.E.	4.2004
ISSUE	AMENDMENT DETAILS	INITIALS	DATE

TWEED SHIRE COUNCIL
DESIGN UNIT

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DESIGN ENGINEER	DATE	6.2003	
CHECKING ENGINEER	DATE	6.2003	
DESIGNED	R.A.E.	2.2004	DESIGN NO.
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CHECKED	W.B.	2.2004	REDUCTION RATIO
HORIZONTAL DATUM	COORDS ADOPTED	PM	E
VERTICAL DATUM			N

PROJECT: EROSION CONTROL STANDARDS

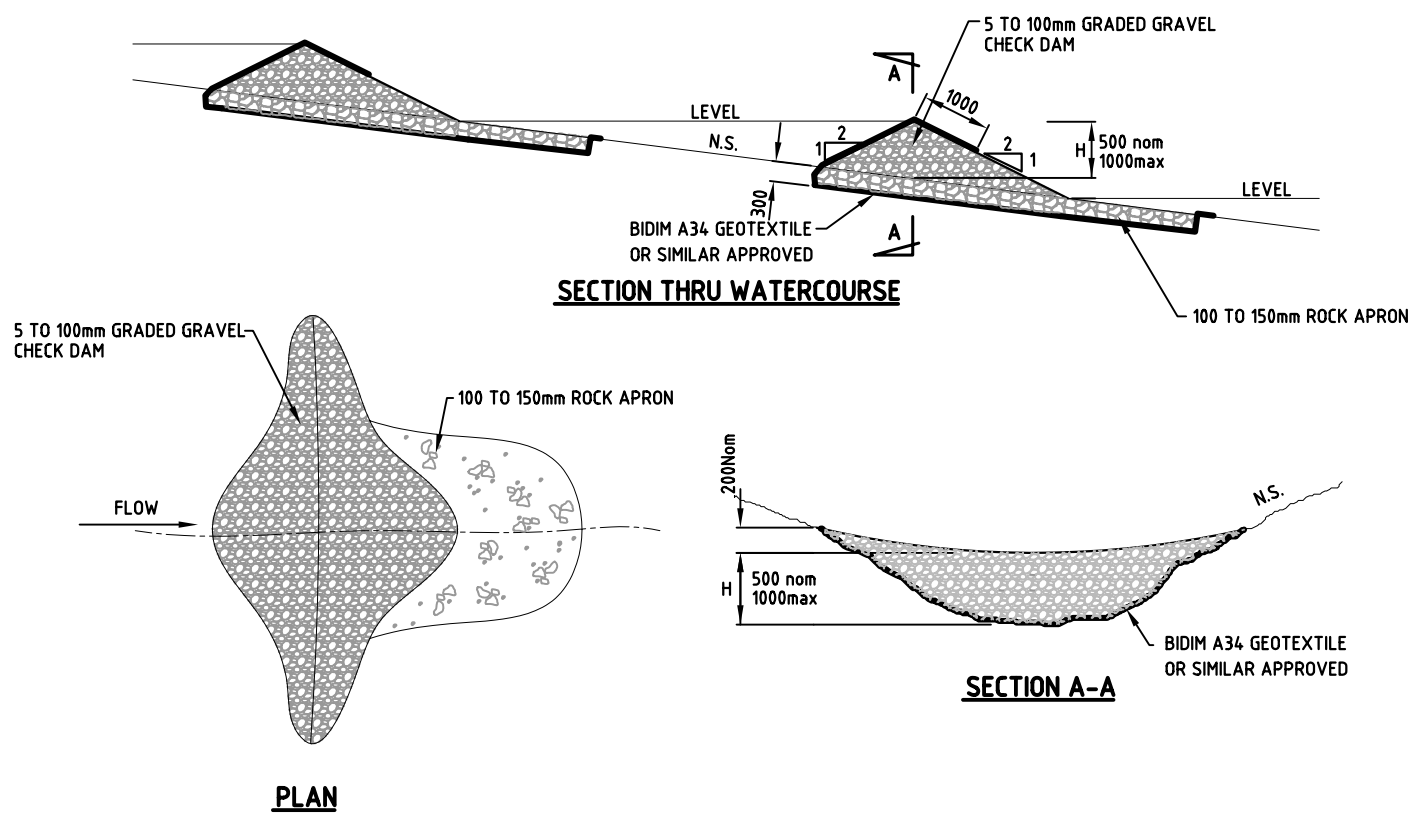
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DRAWING NUMBER: **S.D.501**

SHEET 1 OF 1 SHEETS

ISSUE	A	B	C
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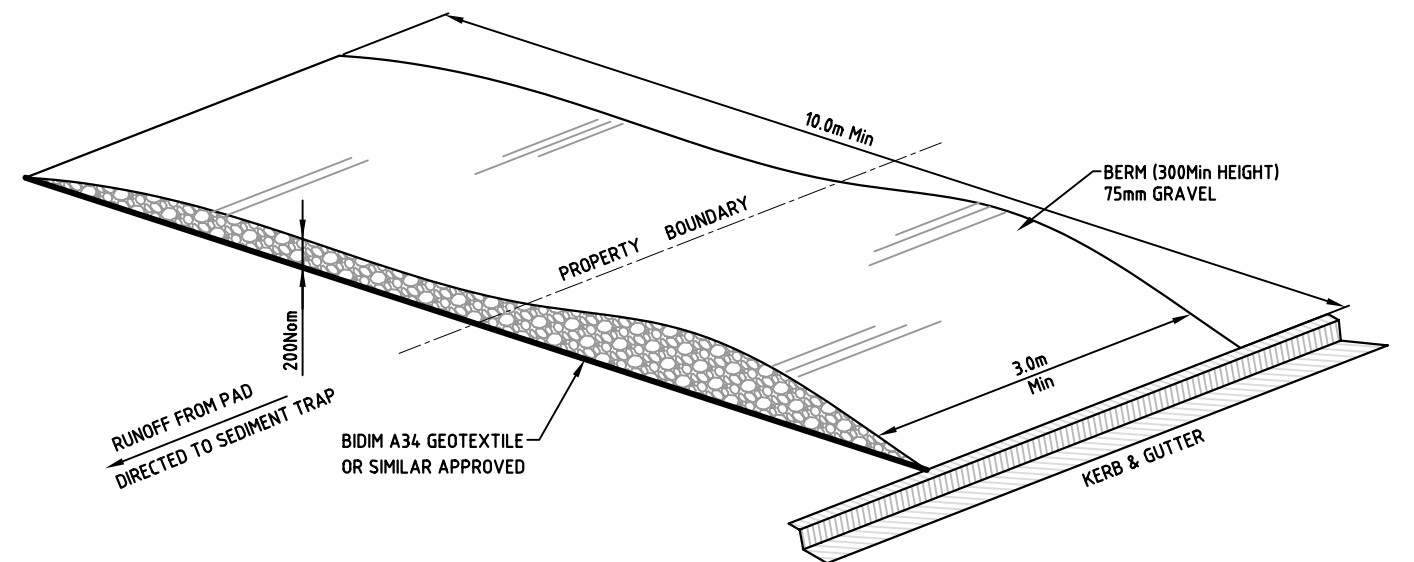
SECTION THRU WATERCOURSE

PLAN

SECTION A-A

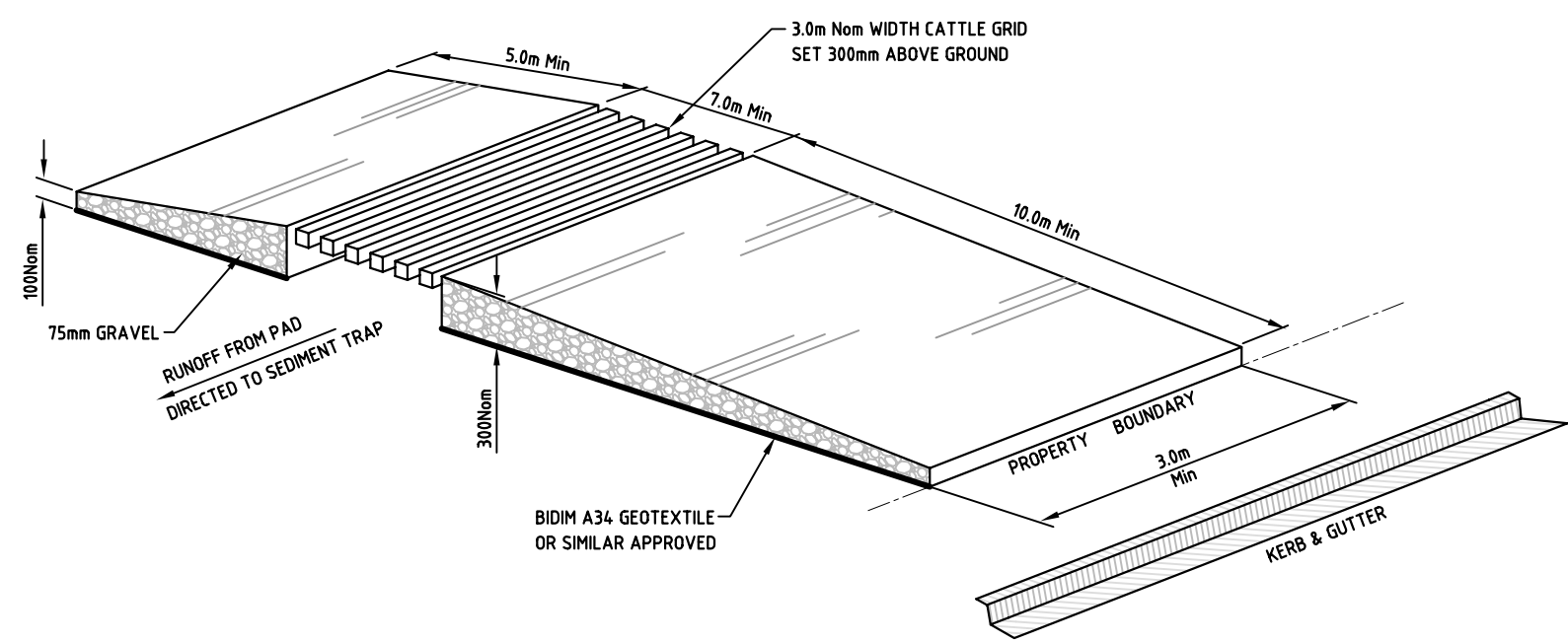
CHECK DAMS FLOW CONTROL

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.

0	10	20	30	40	50	100	150	200	250	
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			

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DESIGN ENGINEER	DATE	6.2003	
DESIGN MANAGER	DATE	6.2003	
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DRAWN	R.A.E.	2.2004	SURVEY NO.
CHECKED	W.B.	2.2004	REDUCTION RATIO
HORIZONTAL DATUM	MGA	COORDS ADOPTED	PM
VERTICAL DATUM	AHD		EN

PROJECT:	EROSION CONTROL STANDARDS
PLAN TITLE:	EROSION & SILTATION PREVENTION DEVICES SHEET 2

DRAWING NUMBER:	S.D.502
SHEET 1 OF 1 SHEETS	ISSUE A B