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SHELLHARBOUR 2529

14 NOV 2014

## NOTICE OF DETERMINATION OF A DEVELOPMENT APPLICATION

*Issued under the Environmental Planning & Assessment Act 1979 Section 81(1)(a)*

Being the applicant of Development Application No. 411/2013 (JRPP Reference 2013STH027) for consent to the following development:

**SUBDIVISION OF LAND TO CREATE 88 RESIDENTIAL LOTS, 14 SUPERLOTS, 4 PUBLIC RESERVES & 1 AUXILIARY LOT FOR FUTURE CARPARKING & SEWERAGE PUMP STATION – PRECINCTS B1 & C1 OF SHELL COVE BOAT HARBOUR PRECINCT**

**LOT 206 DP 857030, BOOLLWARROO PARADE, SHELL COVE**

**LOT 8422 DP 1169822, SHALLOWS DRIVE, SHELL COVE**

Determination date of consent **3 NOVEMBER 2014**

In accordance with section 80 of the Act, the Development Application has been determined by the GRANTING OF CONSENT BY THE **JOINT REGIONAL PLANNING PANEL (SOUTHERN REGION)** SUBJECT TO THE CONDITIONS DESCRIBED BELOW.

This development consent has been divided into different parts according to where, during the development process, each condition may be most relevant. Some conditions may be appropriate to more than one part. All conditions must be complied with.

### **PART A - ADMINISTRATIVE CONDITIONS**

#### **A1 Construction Certificate (Subdivision) & PCA Notification *Environmental Planning & Assessment Act 1979 Section 81A***

**Before any site works, building or use is commenced**, the person having the benefit of the development consent must:

- a. obtain a Construction Certificate from Shellharbour City Council or other accredited certifier, and
- b. appoint a Principal Certifying Authority.

**Note:** For Torrens Title Subdivision, the appointed Principal Certifying Authority must be Shellharbour City Council.

## A2 Prescribed Conditions

This development consent is subject to the prescribed conditions made under the *Environmental Planning & Assessment Regulation 2000*.

## A3 Development in Accordance with Plans

The development must be in accordance with the following except as modified by conditions of this consent.

Name of Plan	Prepared By	Drawing No./Revision	Drawing Date
Subdivision Plan	Tattersall Lander Pty Ltd	Job no. 213266 Reference no. 21300143 Issue D sheet no. 1	17.10.2013
Grading Plan	WorleyParsons	301015-03163-C1-DSK-1001 Issue C	08.08.2013
Site Sections	WorleyParsons	301015-03163-C1-DSK-1002 Issue B	08.08.2013
Bulk Earthworks Plan	WorleyParsons	301015-03163-C1-DSK-1003 Issue B	08.08.2013
Concept Drainage Plan	WorleyParsons	301015-03163-C1-DSK-1005 Issue B	08.08.2013
Waste Management Plan	Australand Corporation (NSW) Pty Ltd	-	06.11.2013
Statement of Environmental Effects	LFA (Pacific) Pty Ltd	Issue D	04.11.2013
Staging Plan	-	-	15.09.2014

## A4 Easements

Structures must not encroach onto any easement.

## A5 AHIP No. 2534

The terms of the Aboriginal Heritage Impact Permit No. 2534 must be complied with at all times.

## A6 Staging of Development

The development must be staged as follows, unless otherwise approved by Council in writing:

Stage	Development
1	4 superlots & 29 lots; Lots 27-32, 45-56, 70-80, superlots 95-98 & associated streets & laneways as shown on the staging plan.
1A	9 lots & 1 auxiliary lot; Lots 1-9 & 103 & associated streets as shown on the staging plan.
2	5 superlots, 10 lots & 3 public reserves; Lots 17-26, superlots 89-93, reserves 104-106 & associated streets & laneways as shown on the staging plan.
3	5 superlots & 40 lots & 1 public reserve; Lots 10-16, 33-44, 57-69, 81-88, superlots 94, 99-102, reserve 107 & associated streets & laneways as shown on the staging plan.

All conditions of this consent apply to each stage, unless otherwise specified.

## **PART B - PRIOR TO ISSUE OF CONSTRUCTION CERTIFICATE (SUBDIVISION)**

### **B1 Initial Geotechnical Report**

A geotechnical report, prepared by a suitably qualified and experienced geotechnical engineer, must be submitted to the Certifying Authority for approval prior to the issue of the Construction Certificate.

The report must cover, but not be limited to, the following:

- a. extent and stability of proposed embankments including those acting as retarding basins,
- b. recommended Geotechnical testing requirements,
- c. level of geotechnical supervision for each part of the works as defined under AS 3798 - *Guidelines on Earthworks for Commercial and Residential Developments*,
- d. an analysis of the level of risk to existing adjacent structures/buildings including the scenario of a construction contractor using vibratory rollers anywhere within the site the subject of these works. In the event that vibratory rollers could affect adjacent structures/buildings, high risk areas must be identified on a plan and the approved engineering plans must be amended to indicate that vibratory rollers must not be used within that zone,
- e. the impact of the installation of services on overall site stability and recommendations on short term drainage methods, shoring requirements and other remedial measures that may be appropriate during installation,
- f. the recommended treatment of any unstable areas within privately owned allotments,
- g. requirement for subsurface drainage lines, and
- h. overall assessment of the engineering plans for the proposed development and their suitability in relation to the site's geotechnical characteristics.

### **B2 Soil and Water Management Plan (SWMP)**

Prior to the issue of the Construction Certificate, a SWMP must be submitted to and approved by the Certifying Authority.

The SWMP must clearly identify site features, constraints and soil types together with the nature of the proposed land disturbing activities and specify the type and location of erosion and sediment control measures. In addition, rehabilitation techniques that are necessary to deal with such activities shall be referred to where applicable.

The SWMP must take into account the requirements of Landcom's publication *Managing Urban Stormwater - Soils and Construction (2004)* thus ensuring the following objectives are achieved, namely:

- a. minimise the area of soils exposed at any one time,
- b. conserve topsoil for reuse on site,
- c. identify and protect proposed stockpile locations,
- d. preserve existing vegetation and identify revegetation techniques and materials,
- e. control surface water flows through the development construction site in a manner that:
  - i. diverts clean run-off around disturbed areas,
  - ii. minimises slope gradient and flow distance within disturbed areas,
  - iii. ensures surface run-off occurs at non-erodible velocities, and

- iv. ensures disturbed areas are promptly rehabilitated.
- f. trap sediment on site to prevent off site damage. Hay bales are not to be used as sediment control devices. To ensure regular monitoring and maintenance of erosion and sediment control measures and rehabilitation works until the site is stabilised (includes landscaping),
- g. specifies measures to control dust generated as a result of construction activities on site,
- h. temporary sediment ponds must be fenced where the batter slope exceeds 1 vertical to 5 horizontal,
- i. design scour protection for the 20 year ARI event at all inlet and outlet structures, and
- j. include measures to prevent the tracking of sediment off the site.

### **B3 Soil and Water Management Plan (SWMP) Bond**

The developer must lodge a bond to the amount of \$200 per lot to ensure compliance with erosion and sediment control measures incorporated in the approved SWMP. This bond must be in the form of an irrevocable bank guarantee made out in favour of Shellharbour City Council, and must operate as follows:

- a. the bond must be submitted to Council prior to the release of the Subdivision Construction Certificate,
- b. the bond must be held by Council until the expiration of the defects liability period for the subdivision, which commences at the completion of all engineering works, including placement of the final seal on all new roads, and
- c. if Council is to advise the developer that maintenance work is required on the erosion and sediment control measures, remedial work shall be substantially commenced within forty eight (48) hours from the time of advice. Failure to comply with this direction will give Council the right to employ an appropriate contractor, (which could include the Soil Conservation Service) to undertake such measures as deemed necessary and fund these works from the bond guarantee.

### **B4 Section 94 Contribution - Open Space Dedication – Stages 2 & 3**

In accordance with the provisions of Council's *Section 94 Contributions Plan 2013* dated 18 December 2013, passive open space must be dedicated to Council free of cost to cater for the open space needs of this development. The land required for dedication and embellishment is for:

- Stage 2 – 3,223m<sup>2</sup> (lot no.s 104 – 106), and
- Stage 3 – 195.3m<sup>2</sup> (lot no. 107).

Lot no.s 105 and 106, to be dedicated as open space, have been classified as a local park and must be embellished in accordance with the requirements for this category of park as contained in Appendix D of Shellharbour *Section 94 Contributions Plan 2013*.

Details of all proposed embellishment works must be submitted to Council for approval prior to the release of the Subdivision Construction Certificate for Stages 2 and 3.

The *Section 94 Contributions Plan 2013* may be inspected or a copy purchased at the Customer Service Counter at Council's offices, or downloaded from [www.shellharbour.nsw.gov.au](http://www.shellharbour.nsw.gov.au)

## **B5 Road Design**

The road design must comply with the following:

- a. the grading and layout of all roads and lots must not allow for trapped low points and in addition ensure that overland flow is passed safely over public land,
- b. the road pavement must be designed with one layer of asphalt having a minimum thickness of 40mm AC 14. The pavement design for the proposed roads must be carried out by a qualified Geotechnical/Civil engineer in accordance with *AUSTROADS Guide to Pavement Technology*,
- c. all vertical and horizontal alignment of all streets and all street intersections within the development must have adequate sight distance provided in accordance with AUSTROADS requirements,
- d. the geometric design of all roads, traffic facilities, intersection treatments, mid-block devices and entry features must be such as to permit a 12.5m single unit vehicle to manoeuvre in order to enter and leave each road travelling in a forward direction and without leaving the carriageway, and
- e. the relevant drawings must be annotated and properly referenced showing compliance with this condition. The drawings must be submitted with application for a Subdivision Construction Certificate for approval by the Certifying Authority.

## **B6 Road Drainage Plans**

Road and drainage plans must be prepared by a suitably qualified engineer in accordance with Council's *Subdivision Design Code*. The plans must be submitted to the Certifying Authority for approval prior to the release of the Subdivision Construction Certificate. All road and drainage work must then be constructed in accordance with Council's construction standards and approval at no cost to Council.

All stormwater pipes within the road reserves and within drainage easements intended to be dedicated to Council must be installed generally to the HS3 standard in accordance with the current edition of AS 3725 - *Design for Installation of Buried Concrete Pipe*.

## **B7 Pit Grates**

All pits must have flush fitting grates. All pits larger than 600mm x 600mm must be grated galvanised steel grid hinges and be heavy duty type where traffic loading is expected.

## **B8 Structural Design of Deep Pits**

All pits deeper than 0.9 metres shall be designed by a certified structural engineer and be in accordance with AS3600-2009. Pits deeper than 1.2 metres must have plastic Coated galvanised steel step irons (plastic coated black steel step irons will not be accepted) and pits deeper than 1.8 metres must be reinforced concrete. Details to this effect must be incorporated on the detailed drainage design that is submitted to the Certifying Authority for the Subdivision Construction Certificate.

## **B9 Stormwater Discharge**

Stormwater discharge point to the natural watercourse must be protected against erosion.

Details must be submitted and be to the satisfaction to the Certifying Authority prior to the release of the Subdivision Construction Certificate.

**B10 Electricity Substation**

Where required, the land owner must dedicate to the applicable energy supplier, free of cost, an area of land within the development site (excluding any approved landscaped area) to enable an electricity substation to be installed. The size and location of the substation must be submitted for approval of both Council and the energy provider prior to the Subdivision Construction Certificate being issued.

**B11 Acid Sulfate Soils**

Prior to the issue of a Construction Certificate, a suitably qualified professional must be engaged to prepare a site specific acid sulfate soils management plan. The management plan is to provide detail on how the framework outlined in Appendix J of the Statement of Environmental Effects, Acid Sulfate Soils Management Plan will be specifically applied.

**B12 Bond & Inspection Fee**

Prior to the issue of the Construction Certificate:

- a. a deposit must be lodged with Council to ensure that the street trees are maintained for a six month period following the release of the Subdivision Certificate. A bank guarantee can be lodged with Council where the bond is \$2,000 or more, and
- b. an inspection fee in accordance with Council's *Fees and Charges* must be paid to Council for:
  - street tree & landscape inspection prior to the release of the Subdivision Certificate
  - street tree & landscape inspection following completion of the maintenance period,

for each stage as detailed in the following table:

Stage	New Street Tree Bond (\$300 per lot)	Street Tree & Landscape Inspection Fee
1	\$9,900	\$246
1A	\$2,700	\$70
2	\$4,500	\$114
3	\$13,500	\$340

**B13 Landscape Plan**

Prior to the issue of a Subdivision Construction Certificate, the nominated communal land/public reserves must be landscaped. In this regard, two copies of a landscape plan prepared by a landscape architect must be submitted to Council prior to the release of the Construction Certificate. The landscape plan must be prepared in accordance with:

- a. Council's *Shellharbour Development Control Plan*,
- b. the requirements of condition no. B4 (Stages 2 & 3), and
- c. 'Crime Prevention Through Environmental Design' (CPTED) principles.

## **PART C - PRIOR TO COMMENCEMENT OF WORKS**

### **C1 Aboriginal Archaeology**

The applicant must ensure that the construction/project supervisors are fully informed and briefed with respect to the Consent and Aboriginal Heritage Impact Permit No. 2534. Details of measures taken to ensure compliance with this condition must be submitted to Council prior to the commencement of works but no later than the meeting referred to in Condition C2.

### **C2 Site Council**

A site meeting with Council's Senior Subdivision Engineer (or delegate), Council's Aboriginal Community Liaison Officer, the applicant and contractor must be held not less than 7 days prior to the commencement of work on site.

### **C3 Public Liability**

Where occupation of and/or works within Council's road reserve are proposed, the owner or contractor must provide evidence to Council of a Public Risk Insurance Policy with a minimum cover of \$20M for the full duration of the proposed works prior to the commencement of works. The Policy must note Council as an interested party.

### **C4 Dilapidation Report**

It is the applicant's responsibility to notify Council of any existing damage to public areas in the vicinity of the development site through the submission of a Dilapidation Report supported with suitable photographic records. This information shall be submitted to Council prior to the commencement of work.

### **C5 Waste Management - Excavated Material**

Any surplus excavated material from the site must be taken to an approved land fill site. Details of this location shall be submitted and be approved by the Certifying Authority prior to the commencement of works. Excavated material may only be taken to another site with prior written approval of Council.

### **C6 Soil and Water Management Plan Implementation (SWMP)**

The measures required in the SWMP approved by the Certifying Authority must be implemented prior to the commencement of works.

### **C7 Construction Traffic Management Plan (CTMP)**

Prior to the commencement of works, a CTMP detailing vehicle routes, number of trucks, hours of operation, access arrangements, impact on pedestrians and traffic control must be submitted to and approved by the Certifying Authority.

It is the developer's responsibility to adequately inform construction workers, sub-contractors and supervisors to ensure that the Construction Traffic Management Procedures are adhered to at all times.

## **C8 Site Management Plan**

Prior to the commencement of works, the developer must submit to and obtain approval for a construction and site management plan from the Certifying Authority that clearly sets out the following:

- a. what actions are proposed to ensure safe access to and from the site and what protection will be provided to the road and footpath area from building activities, crossings by heavy equipment, plant and materials delivery and static load from cranes, concrete pumps and the like,
- b. the proposed method of loading and unloading excavation machines, building materials and formwork within the site,
- c. the proposed areas within the site to be used for the storage of excavated material, construction materials and waste containers during the construction period,
- d. how it is proposed to ensure that soil/excavated materials is not transported on wheels or tracks of vehicles or plant and deposited on the roadway, and
- e. the proposed method of support to any excavation adjacent to adjoining buildings or the road reserve. The proposed method of support is to be certified by an accredited certifier in civil engineering.

## **PART D – DURING CONSTRUCTION WORKS**

### **D1 Site Documentation**

A full set of approved documents (Development Consent, Construction Certificate Drawings and associated documentation) must be maintained on site for the duration of the construction works.

### **D2 Hours of Work**

Noise generating activities including construction, excavation and delivery of equipment and materials, must only be carried out between:

- 7am to 5pm Mondays to Fridays, and
- 8am to 1pm Saturdays.

### **D3 Maintenance of Soil and Water Management Plan (SWMP)**

The soil and water management controls must be maintained at all times during each stage of the development and checked for adequacy daily. The controls must not be removed until the development is completed and the disturbed areas have been stabilised to the satisfaction of the Certifying Authority.

Maintenance must include but is not limited to ensuring:

- a. all sediment fences, sediment traps and socks are properly placed and are working effectively, and
- b. that drains, gutters and roads are maintained clear of sediment at all times.

It is an offence under the *Protection of the Environment Operations Act 1997* to allow soil or other pollutants to fall or be washed into any waters or be placed where it is likely to fall or be washed into any waters. Substantial penalties may be issued for any offence.



#### **D4 Lots and Site Filling**

All lot and site filling shall be performed under level 1 Geotechnical supervision in accordance with AS 3798-2007 or subsequent amendments.

#### **D5 Subdivision Design Code Compliance**

All works to be dedicated as a Council asset must be installed/constructed in accordance with Council's *Subdivision Design Code*.

#### **D6 Geotechnical Testing - Drainage**

Geotechnical testing must be carried out and results submitted to the Certifying Authority to verify that the pipe trench bedding and backfill complies with the requirements outlined in Australian Standard *AS 3725 - Design for Installation of Buried Concrete Pipe*.

Geotechnical testing must verify that the pipe trench bedding and backfill complies with the requirements for HS3 bedding/backfill must be performed at the rate of one test per 50m of pipeline with not less than two tests in any section of pipe exceeding 25m in length.

#### **D7 Earthworks Cut, Fill & Grading**

The maximum grading of cut or fill must be 45 degrees (1:1) where there is no retaining wall or no other method of stabilising cut or fill. The maximum depth of cut or fill on any portion of the allotment must generally be in accordance with the Grading, Site Sections and Bulk Earthworks Plans.

#### **D8 Road Construction and Road Drainage Construction**

The site manager must arrange for a satisfactory inspection by Shellharbour City Council of the following works:

- a. all road drainage works prior to backfilling of the work, and
- b. all road construction inspections as per Council's *Subdivision Design Code*.

#### **D9 Street Lighting**

A Public Lighting Design Brief must be submitted to Shellharbour City Council for approval for the provision of street lighting on all new public roads to be dedicated to Council. A street lighting design plan must be prepared by an accredited service provider for contestable works in NSW and submitted to the Energy provider for approval prior to construction. All street lighting must comply with the electricity service provider *Street Lighting Policy* and illumination requirements. All costs associated with the installation of street lighting must be borne by the developer.

The street lighting plan should take into consideration the open space links, nominated as Lots 104 and 107, having regard to CPTED principles.

#### **D10 Traffic Committee – Signposting & Line Marking**

A Signposting and Line Marking Plan must be lodged with Shellharbour City Council's Traffic Committee for written approval. The plan must detail all facilities, signage and line-marking required within and surrounding the development.

**D11 Waste Management**

The management of waste must comply with the approved Waste Management Plan. All receipts such as waste disposal dockets must be retained. Any variations to the Waste Management Plan shall have prior written approval of the Certifying Authority.

**PART E - PRIOR TO OCCUPATION**

Not Applicable

**PART F - PRIOR TO ISSUE OF SUBDIVISION CERTIFICATE**

**F1 Final Plan of Subdivision**

Prior to the release of the final plan of subdivision, it will be necessary to obtain a Subdivision Certificate. In this regard, it will be necessary to submit:

- a. an application for a Subdivision Certificate,
- b. five paper prints of the final plan of subdivision,
- c. the original and two paper copies of the 88B Instrument and Administration Sheet,
- d. fees appropriate at the time of submission of the application, and
- e. an electronic copy of the subdivision linework. The electronic copy should be in Map Grid of Australia 1994 Zone 56 (GDA94) coordinates and must contain closed linework of boundaries and easements. It must be submitted in DWG or DXF format on cd-rom or by email to [traffic&subdivision@shellharbour.nsw.gov.au](mailto:traffic&subdivision@shellharbour.nsw.gov.au)

All sections of the plan, 88B Instrument and Administration Sheet including the original and copies, (except for the General Manager's date and signature) must be completed prior to lodging the plan.

**F2 Sydney Water Section 73 Compliance Certificate**

A Section 73 Compliance Certificate under the *Sydney Water Act 1994* shall be obtained from Sydney Water Corporation.

Application shall be made through an authorised Water Servicing Coordinator. Please refer [www.sydneywater.com.au](http://www.sydneywater.com.au) > *Building and Developing* > *Developing your Land* > *Water Servicing Coordinator* or telephone 13 2092 for assistance. Please make early application for the Certificate as there may be water and sewer pipes to be built and this can take some time. This can also impact on other services and building, driveway or landscape design.

The Section 73 Certificate shall be submitted to the Principal Certifying Authority prior to the issue of the Subdivision Certificate.

**F3 Section 94 Contributions**

A contribution must be paid to Council towards the provision of community infrastructure and services prior to the issue of the Subdivision Certificate for each stage as detailed in the table below. This amount has been calculated in accordance with Shellharbour City Council's *Section 94 Contributions Plan 2013* dated 18 December 2013.

Stage	S94 Contribution, subject to annual indexation
1	\$346,245.00

Stage	S94 Contribution, subject to annual indexation
1A	\$94,430.45
2	\$157,384.09
3	\$472,152.27

The contribution amount contained in this condition is the base rate indexed to the date the consent is issued. The contribution amount will be adjusted in accordance with the indexation methods detailed in the *Contributions Plan*. Current indexed rates are available from Council.

The *Contributions Plan* may be inspected or a copy purchased at the Customer Service Counter at Council's offices, or downloaded from [www.shellharbour.nsw.gov.au](http://www.shellharbour.nsw.gov.au)

#### **F4 Road Dedication**

Prior to issue of the Subdivision Certificate, Benkelman beam testing must be undertaken on all roads proposed for dedication as road reserve. Testing must be carried out in accordance with the current version of the Shellharbour City Council's *Subdivision Design Code* at the time of issue of this consent. The acceptance criteria will be based on the tolerable deflections as specified by AUSTRROADS at the time of issue of this consent.

At the time immediately prior to all subdivision roads becoming designated gazetted public road, an inspection is to be undertaken by Council to determine that the road is in satisfactory condition. The roads are to be handed over to Council at no cost to Council prior to issue of the Subdivision Certificate.

#### **F5 Inspection of Stormwater Pipes**

All stormwater pipes within road reserves and within drainage easements intended to be dedicated to Council must be inspected by CCTV. The CCTV must be carried out after all earthworks and road pavement works within the locality of the pipelines have been completed. A copy of the CCTV inspection must be recorded and submitted to the Principal Certifying Authority prior to the release of the Subdivision Certificate. Damaged pipes must either be replaced or repaired to the Principal Certifying Authority's satisfaction prior to the issuing of a Subdivision Certificate.

#### **F6 Final Geotechnical Report**

A final geotechnical report prepared by a suitably qualified and experienced geotechnical consultant must be submitted to the Principal Certifying Authority prior to the issue of the Subdivision Certificate. The report must include, but is not necessarily limited to,:

- a. all earthwork operations,
- b. a fill plan showing extent and depth of fill,
- c. certification that all earthworks within the site have complied with Council's *Subdivision Design Code*. This shall include appropriate test results, test location diagram and date of testing,
- d. certification that all recommendations contained in geotechnical reports lodged in support of this development have been satisfied,
- e. the exact extent of any restricted building zones or any other restrictions affecting any of the allotments. Particular attention shall be paid to the location of drainage lines, which must be burdened with a title restriction in the Section 88B Instrument,

- f. identification of all land affected by landslip or instability constraints (if applicable), and
- g. verification that the pipe trench bedding and backfill complies with the requirements for HS3 bedding/backfill.

**F7 Lot Creation Geotechnical Report**

A Geotechnical Engineer's report must be submitted to the Principal Certifying Authority with the Subdivision Certificate application. The report must be prepared by a Chartered Professional Engineer with professionally recognised geotechnical experience and must include:

- a. the classification of the proposed lot in accordance with the Australian Standard 2870-Residential Slabs and Footings or subsequent amendments,
- b. the classification of the lot in relation to risk of slope instability, and
- c. the required site preparation and construction constraints within the building envelope of the lot appropriate to the assessed risk of slope instability.

**F8 Works As Executed Plans - Subdivision**

Works As Executed plans must be submitted to the Principal Certifying Authority by a Registered Surveyor with the Subdivision Certificate application. The Works As Executed dimensions and levels must be shown in red on a copy of the approved Construction Certificate plans. As a minimum, the plan must show:

- a. compliance with the approved design plans of all drainage works within council land, road reserve and drainage easements including connection into the subject lot/s, surface and invert levels of all pits, invert levels and sizes of all pipelines,
- b. certification from a registered surveyor that all storm water pipes and other services are wholly within an appropriate easement (where relevant),
- c. compliance with the approved design plans of paved areas within rights of carriageway and road reserve,
- d. the extent, depth and final levels of filling,
- e. the location of all underground service conduits, and
- f. all deviations from the approved Civil Engineering Plans

All levels must relate to Australian Height Datum.

**F9 Service Conduits**

Service conduits must be placed across carriageways prior to the placing of any pavement material. In this regard, a copy of the services plans must be submitted to the Principal Certifying Authority prior to the placement of pavement material. Alternatively, the services crossings must be under bored.

**F10 Statement of Completion of Subdivision Construction Works**

A Statement of Completion of Subdivision Construction Works issued by the Certifying Authority must be submitted to the Principal Certifying Authority with the Subdivision Certificate application. The Statement can be obtained upon satisfactory completion of works approved by the Construction Certificate.

### **F11 Land Title & 88B Instrument**

Prior to issue of a Subdivision Certificate:

- a. All irrelevant easements and title restrictions must be expunged,
- b. Lots affected by new or existing services must be burdened with easements and restrictions on the use of land to the satisfaction of the Principal Certifying Authority and the relevant utility providers, and
- c. Restrictions must be placed on title as relevant with respect to:
  - drainage/inter-allotment drainage
  - kerbside collection of waste is not permitted from Harbour Boulevard and view corridor street no.s 1 and 2
  - any substation
  - fill on affected lots
  - acid sulphate soils
  - acoustic attenuation for lots within 40m of Harbour Boulevard in accordance with 'The Assessment of Air Quality and Noise' prepared by Wilkinson Murray Pty Limited Report no. 05135-CP Version E dated January 2010 with Council being the consent authority to modify, revoke or vary
  - preventing vehicular access from Harbour Boulevard.

### **F12 Utility services**

Prior to the release of the Subdivision Certificate for the development written advice must be submitted to the Principal Certifying Authority:

- a. that all requirements for the supply of electricity to the proposed allotments have been satisfied from the relevant electricity provider, and
- b. that all requirements for the supply of gas services to the proposed allotments have been satisfied from a natural gas accredited contractor.

### **F13 Street Names**

Proposed street names for all new roads shall be submitted for Council's consideration.

The submission shall include the:

- a. reasons for/or background/history to the names and estate theme,
- b. an A4 size plan of the street/reserve layout with proposed names and road numbers if applicable, and
- c. fees in accordance with Council's *Fees & Charges*.

Street names and/or public reserve names must be finalised prior to release of the Subdivision Certificate.

**F14 Completion of Landscape works**

The nominated communal land/public reserves must be landscaped in accordance with the approved Landscape Plan prior to the release of the Subdivision Certificate. The landscape or turf areas must not be reduced or replaced with hard impermeable surface. Any variations to the design or species used must be authorised by Council in **writing before any changes are made.**

**F15 Street Tree & Public Reserve Inspection**

The street trees and public reserves must be inspected by Council and be to the satisfaction of Council prior to the release of the Subdivision Certificate. It is the responsibility of the developer to notify Council for the inspection/s.

**F16 Verification of Waste Management**

Documentation verifying that all waste streams were managed in accordance with the Waste Management Plan shall be provided to the Principal Certifying Authority prior to the issue of a Subdivision Certificate. All records, such as waste disposal docketts or photographic evidence, shall be retained by the Principal Certifying Authority.

**F17 Repairs to Public Infrastructure**

Any damage to public infrastructure, other than that previously noted in the Dilapidation Report (refer Part C), is the responsibility of the developer. All damage must be repaired and reinstated prior to the issue of the Subdivision Certificate. This work shall be carried out by Council, or Council approved contractor, at the developer's expense.

**F18 Release of Certificate**

The Subdivision Certificate shall not be released until all works required for the development, subject of this consent, have been completed.

**PART G - AFTER ISSUE OF SUBDIVISION CERTIFICATE**

**G1 Street Trees – Minor Roads**

One tree must be planted on the Council footpath reserve for each lot following the completion of an estimate of 70% of construction of the dwellings of the subdivision. All trees are to be installed and fitted with the following requirements:

- a. tree species as per the approved plan
- b. trees must be set back a minimum 900mm from the back of the kerb or midway between the footpath and kerb. Where the tree is less than 900mm from the footpath, root barriers must be installed
- c. 1m x 1.5m timber edging installed at the base of the tree constructed from the back of the kerb
- d. two hardwood stakes with 50mm hessian ties, fixed in a figure 8, to support each tree
- e. minimum 75mm depth of organic mulch applied a minimum 600mm diameter surrounding the base of the trunk.

## **G2 Street Tree Planting Distances**

The following recommended clearances are to be taken into account prior to the installation of street trees:

- a. minimum three metres either side of a driveway or vehicular crossing
- b. minimum two metres from services and signage
- c. minimum one point five metres from a stormwater outlet/pit
- d. minimum three metres from street light posts
- e. minimum fifteen metres from pedestrian crossing and traffic signals

## **G3 Street Tree & Public Reserve Maintenance Period**

The newly planted street trees and landscaped public reserve/s must be maintained for a period of 6 months from the date as determined by Council's Landscape Technical Officer.

## **G4 Street Tree & Public Reserve Handover Inspection**

The street tree and public reserve handover inspection is required to be carried out at the end of the street tree and public reserve maintenance period. Council shall take full maintenance responsibility of all street trees following a satisfactory result at the end of the 6 month maintenance period.

## **G5 Public Reserve Dedication**

All areas to be dedicated as public reserve must be cleared of both environmental weeds and noxious weeds prior to dedication.

## **G6 Street Tree & Landscape Bond Refund**

The street tree and landscape bond will be returned following a six month maintenance period commencing from the date of the satisfactory result of the final inspection of the street trees and landscaped public reserve/s. In the event that any street trees/landscape are found damaged, dying or removed, Council will have the option to retain the whole or part of the bond. The developer must notify Council for a reinspection of the street trees and public reserves.

## **G7 Maintenance of Road & Drainage Works**

All road and drainage works must be maintained for a minimum period of 12 months commencing from the date of issue of the Subdivision Certificate, unless otherwise agreed to by Council. The developer must ensure that any defective works must be rectified and/or replaced during the maintenance period in accordance with the approved Construction Certificate plans. All costs arising during the maintenance period must be borne by the developer. Roads and drainage shall be maintained in its original construction condition for this liability period. The developer must notify Council for a re-inspection at the end of the maintenance period.

## ***REASONS FOR THE IMPOSITION OF CONDITIONS***

1. To minimise any possible adverse environmental impacts of the proposed development.
2. To ensure that the amenity and character of the surrounding area is protected.

3. To ensure that the design and siting of the development complies with the provisions of Environmental Planning Instruments and Council's Codes and Policies.
4. To ensure that the development does not conflict with the public interest.

<b>Advisory Notes - General</b>
---------------------------------

**AN1      Erection of Signs**

The principal contractor and the Principal Certifying Authority will need to have a sign (or signs) erected and maintained on the development site that provides their name and contact telephone number (during and outside work hours for the principal contractor), and stating that unauthorised entry to the site is prohibited. The principal contractor and Principal Certifying Authority can have separate signs or they can both use one sign if they choose.

A maximum penalty of 10 penalty units applies for failure to erect and maintain sign(s) detailing principal contractor and Principal Certifying Authority identification.

**AN2      WorkCover Authority**

The requirements of WorkCover Authority must be satisfied at all times.

**AN3      Obstacle Height Limitation - Airport**

There are height limitations relating to the operation of the airport for developments/activities/construction that may involve cranes, plant or machinery in the Shellharbour Local Government Area. Further details can be obtained from Council concerning the obstacle height limitations.

**AN4      Failure to Comply with Consent**

Failure to comply with any of the conditions of consent may result in a Penalty Infringement Notice being issued against the owner/applicant/builder. Substantially greater penalties may be imposed by the Court for non compliance

**AN5      Lapsing of Development Consent**

In accordance with section 95 of the *Environmental Planning & Assessment Act 1979*, the development approval lapses five years after the approval date unless building, engineering or construction work relating to the building has physically commenced.

**AN6      Right to Appeal**

If you are dissatisfied with this decision, section 97 of the *Environmental Planning & Assessment Act 1979* gives you the right to appeal to the Land & Environment Court within six months after the date on which you receive this notice.

**AN7      Review of Determination**

If you are dissatisfied with this decision, section 82A of the *Environmental Planning & Assessment Act 1979* provides that you may request Council to review its determination. The request cannot be made after the time limit for making of an appeal under section 97 expires.

**AN8      To Vary Development Consent**

The plans and/or conditions of this consent are binding and may only be varied upon **application** to Council under section 96 of the *Environmental Planning & Assessment Act 1979*. The appropriate fee shall accompany the application and no action shall be taken on the requested variation **unless and until** the **written** authorisation of Council is received by way of an amended consent.

**AN9      Prescribed Payment System Tax Obligations**

You may have a taxation obligation under the Prescribed Payment System. For more information, contact the Australian Taxation Office on telephone 132866.



**Development Application No. 411/2013**  
**Lot 206 DP 857030 Boolwarroo Parade & Lot 8422 DP 1169822 Shallows Drive, Shell Cove**

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**AN10 Dial Before You Dig**

Underground assets may exist in the area that is subject to your application. In the interests of health and safety and in order to protect damage to third party assets, please contact Dial Before You Dig at [www.1100.com.au](http://www.1100.com.au) or telephone on 1100 before excavating or erecting structures (this is the law in New South Wales). If alterations are required to the configuration, size, form or design of the development upon contacting the Dial Before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial Before You Dig service in advance of any construction or planning activities.

**AN11 Telecommunications Act 1997 (Commonwealth)**

Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the *Criminal Code Act 1995 (Cth)* and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact Telstra's Network Integrity Team on 1800810443.

**AN12 Development within Vicinity of a High Pressure Gas Main**

Contact Dial Before You Dig on 1100 or [www.dialbeforeyoudig.com.au](http://www.dialbeforeyoudig.com.au). Proposed works in the vicinity of any high pressure gas main must be directed to:

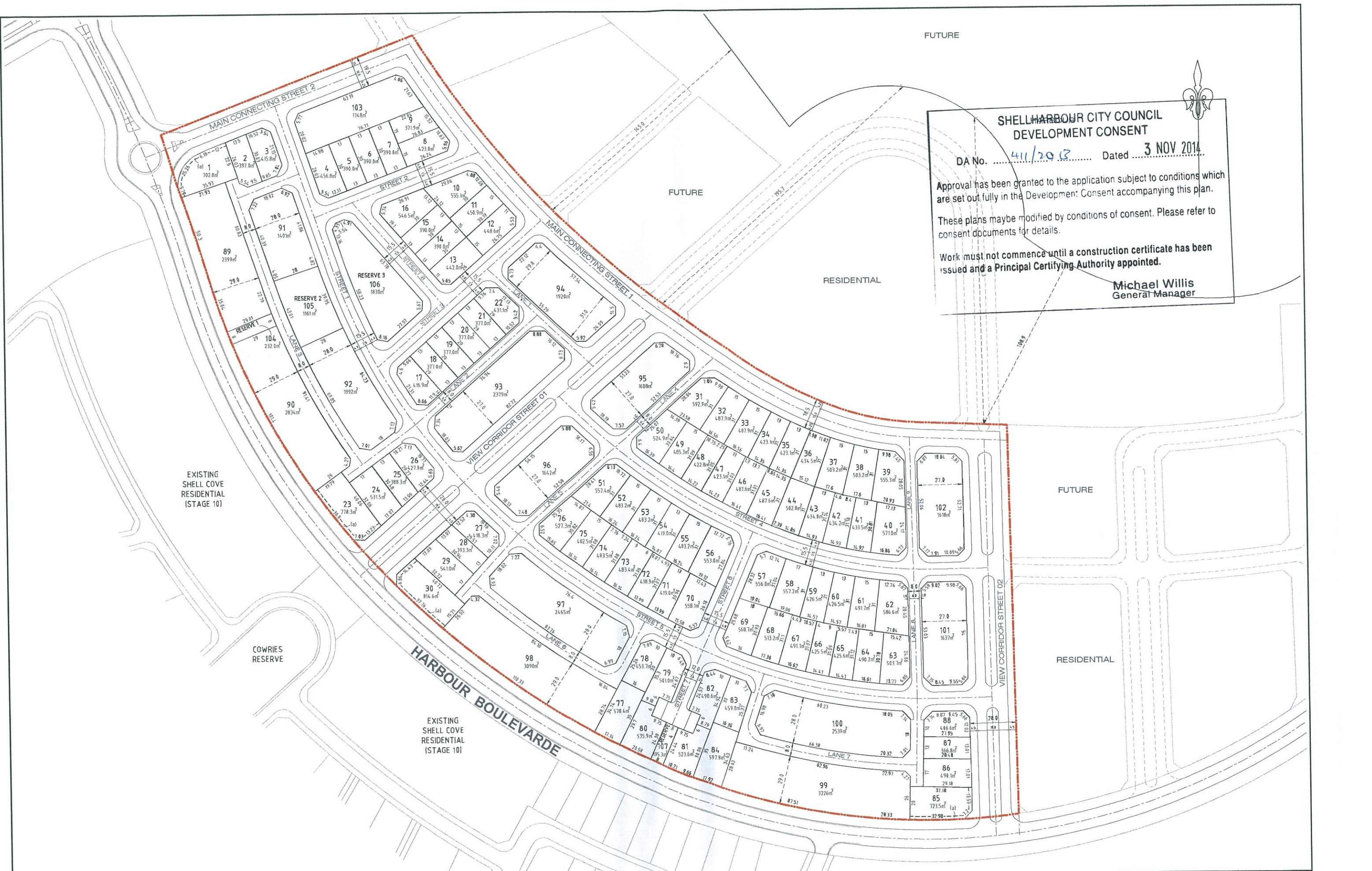
Jemena Asset Management Pty Ltd  
PO Box 6507  
SILVERWATER NSW 2128

Attention: Land Services Department



Catherine Bern  
**Team Leader - Planning**  
**City Development**

On behalf of Michael Willis, General Manager



FUTURE

FUTURE

RESIDENTIAL

FUTURE

RESIDENTIAL

**SHELL HARBOUR CITY COUNCIL  
DEVELOPMENT CONSENT**

DA No. 411/2013 Dated 3 NOV 2013

Approval has been granted to the application subject to conditions which are set out fully in the Development Consent accompanying this plan.

These plans may be modified by conditions of consent. Please refer to consent documents for details.

Work must not commence until a construction certificate has been issued and a Principal Certifying Authority appointed.

**Michael Willis**  
General Manager

EXISTING SHELL COVE  
RESIDENTIAL  
(STAGE 10)

COWRIES  
RESERVE

EXISTING SHELL COVE  
RESIDENTIAL  
(STAGE 10)

D	Minor Lot Boundary Adjustments	AV	AV		11/10/13	
C	Amended per Client Comments	AV	AV		17/9/13	
B	Reissued to Client for Comment	AV	AV		2/9/13	
A	Original Issue	AV	AV		2/9/13	
REV	DETAILS OF AMENDMENT	DESIGNED	DRAWN	CHECKED	APPROVED	DATE:

\* Denote the original signature and date when revision was issued.

**TATTERSALL  
LANDER PTY LTD**  
DEVELOPMENT CONSULTANTS  
ENGINEERING, SURVEYING & PLANNING

2 Bourke St. P.O. Box 580  
RAYMOND TERRACE 2324  
Fax (02) 49871733 Phone (02) 49871500

**DRAFT DIMENSIONED MASTERPLAN  
PROPOSED SUBDIVISION OF  
LOT 9041 DP 1172320 & LOT 206 DP 857030  
HARBOUR BOULEVARDE, SHELL COVE PRECINCTS B1 & C1**

<b>COUNCIL</b> SHELL HARBOUR CITY COUNCIL	<b>REFERENCE</b> 2130014.3
<b>PARISH</b> TERRAGONG	<b>SHEET SIZE</b> A3
<b>SCALE</b> 1:2000 on A3	<b>SHEET No.</b> 1
<b>DATE</b> : Plotted 09/38 17/10/13	

BOAT HARBOUR

SHELLHARBOUR CITY COUNCIL  
DEVELOPMENT CONSENT

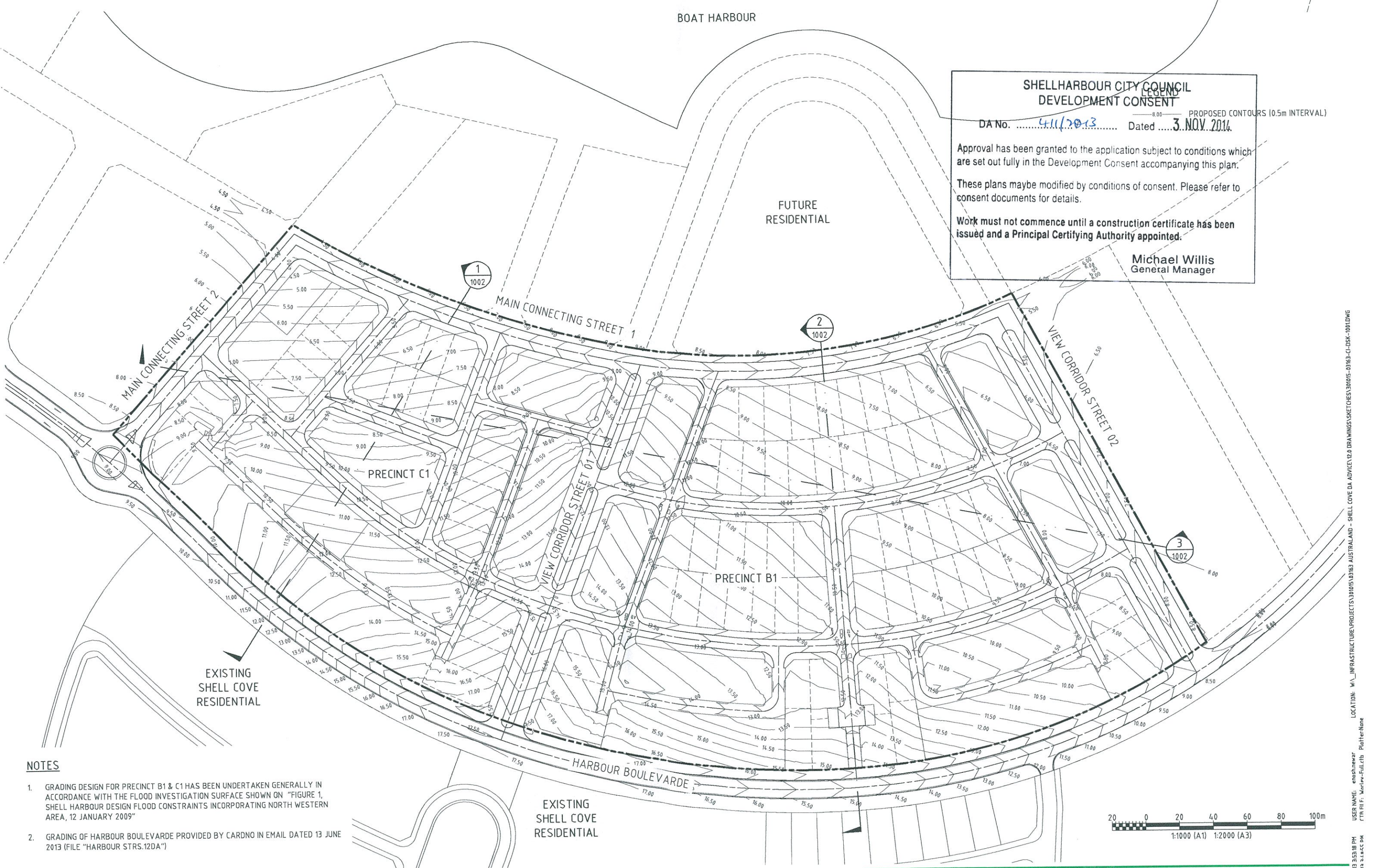
DA No. 411/2013 Dated 3 NOV 2014  
LEGEND  
8.00 PROPOSED CONTOURS (0.5m INTERVAL)

Approval has been granted to the application subject to conditions which are set out fully in the Development Consent accompanying this plan.

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Michael Willis  
General Manager



NOTES

1. GRADING DESIGN FOR PRECINCT B1 & C1 HAS BEEN UNDERTAKEN GENERALLY IN ACCORDANCE WITH THE FLOOD INVESTIGATION SURFACE SHOWN ON "FIGURE 1, SHELL HARBOUR DESIGN FLOOD CONSTRAINTS INCORPORATING NORTH WESTERN AREA, 12 JANUARY 2009"
2. GRADING OF HARBOUR BOULEVARDE PROVIDED BY CARDNO IN EMAIL DATED 13 JUNE 2013 (FILE "HARBOUR STRS.12DA")



ISSUE	DATE	ISSUE DESCRIPTION
C	08.08.13	ISSUED FOR DA
B	21.06.13	ISSUED FOR COMMENT
A	19.06.13	ISSUED FOR COMMENT

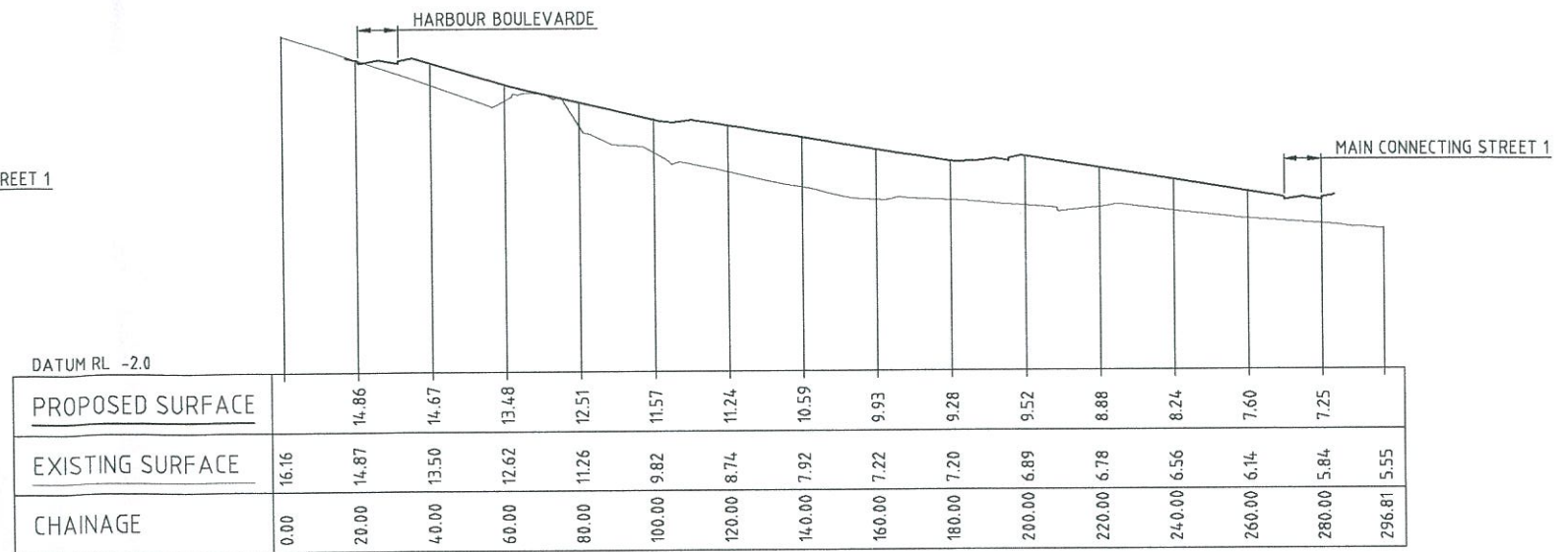
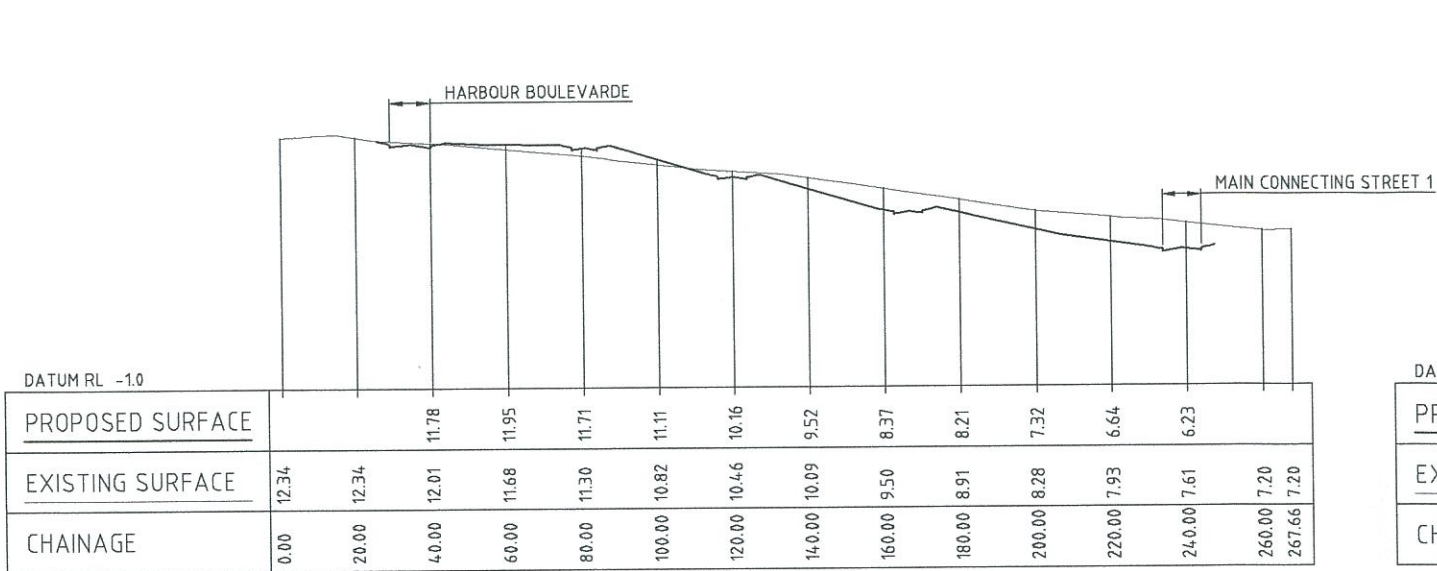


SHELL COVE - SUBDIVISION PRECINCT B1 & C1

GRADING PLAN

301015-03163-CI-DSK-1001

LOCATION: WA\_INFRASTRUCTURE\PROJECTS\301015\03163 AUSTRALAND - SHELL COVE DA ADVISE\12.0 DRAWINGS\SKETCHES\301015-03163-CI-DSK-1001.DWG  
USER NAME: enochnewar  
PTR FILE: WorlPar-Full.ctb  
PLOT DATE & TIME: 7/12/2013 3:33:18 PM  
PLOT SCALE: 1:1000



SECTION 1  
SCALE HORIZONTAL 1:1000  
SCALE VERTICAL 1:200

SECTION SHELL HARBOUR CITY COUNCIL  
SCALE HORIZONTAL 1:1000  
SCALE VERTICAL 1:200  
DEVELOPMENT CONSENT  
3 NOV 2014

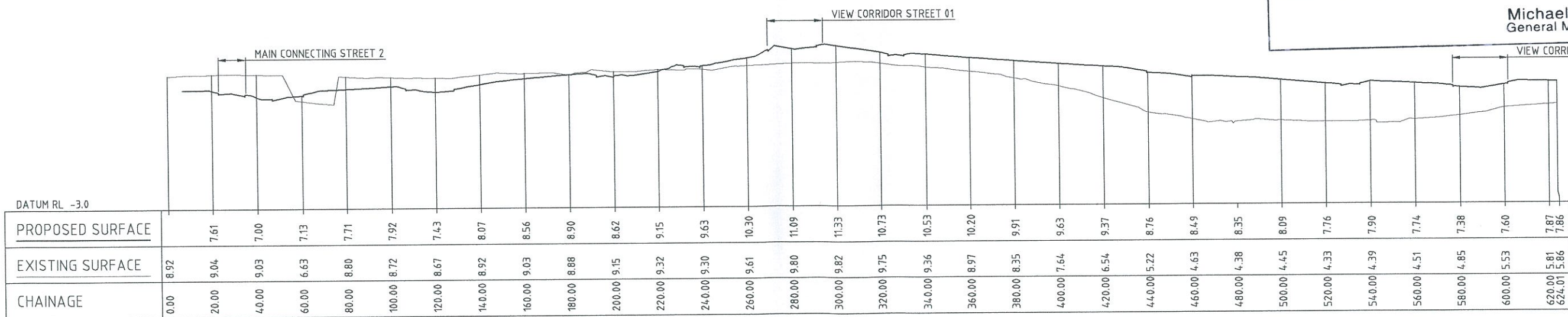
DA No. 411/2013 Dated

Approval has been granted to the application subject to conditions which are set out fully in the Development Consent accompanying this plan.

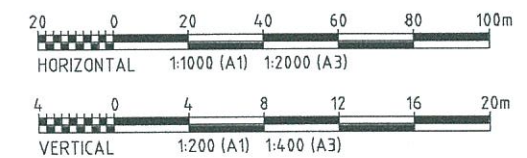
These plans may be modified by conditions of consent. Please refer to consent documents for details.

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Michael Willis  
General Manager



SECTION 3  
SCALE HORIZONTAL 1:1000  
SCALE VERTICAL 1:200



ISSUE	DATE	ISSUE DESCRIPTION
B	08.08.13	ISSUED FOR DA
A	21.06.13	ISSUED FOR COMMENT

BOAT HARBOUR

SHELLHARBOUR CITY COUNCIL  
DEVELOPMENT CONSENT

DA No. 411/2013 Dated 3 NOV 2014

Approval has been granted to the application subject to conditions which are set out fully in the Development Consent accompanying this plan.

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Work must not commence until a construction certificate has been issued and a Principal Certifying Authority appointed.

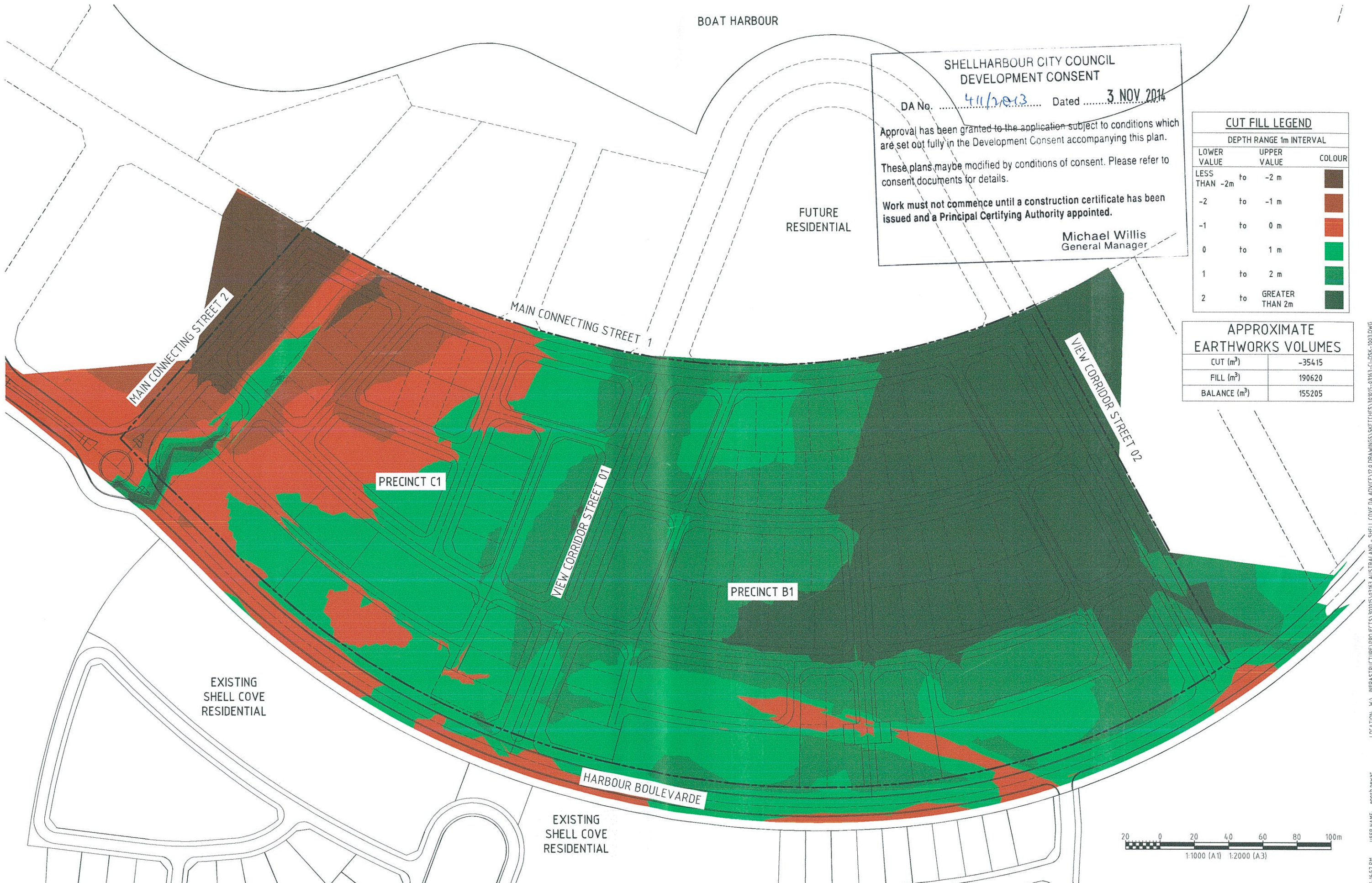
Michael Willis  
General Manager

CUT FILL LEGEND

DEPTH RANGE 1m INTERVAL		
LOWER VALUE	UPPER VALUE	COLOUR
LESS THAN -2m	to -2 m	
-2	to -1 m	
-1	to 0 m	
0	to 1 m	
1	to 2 m	
2	to GREATER THAN 2m	

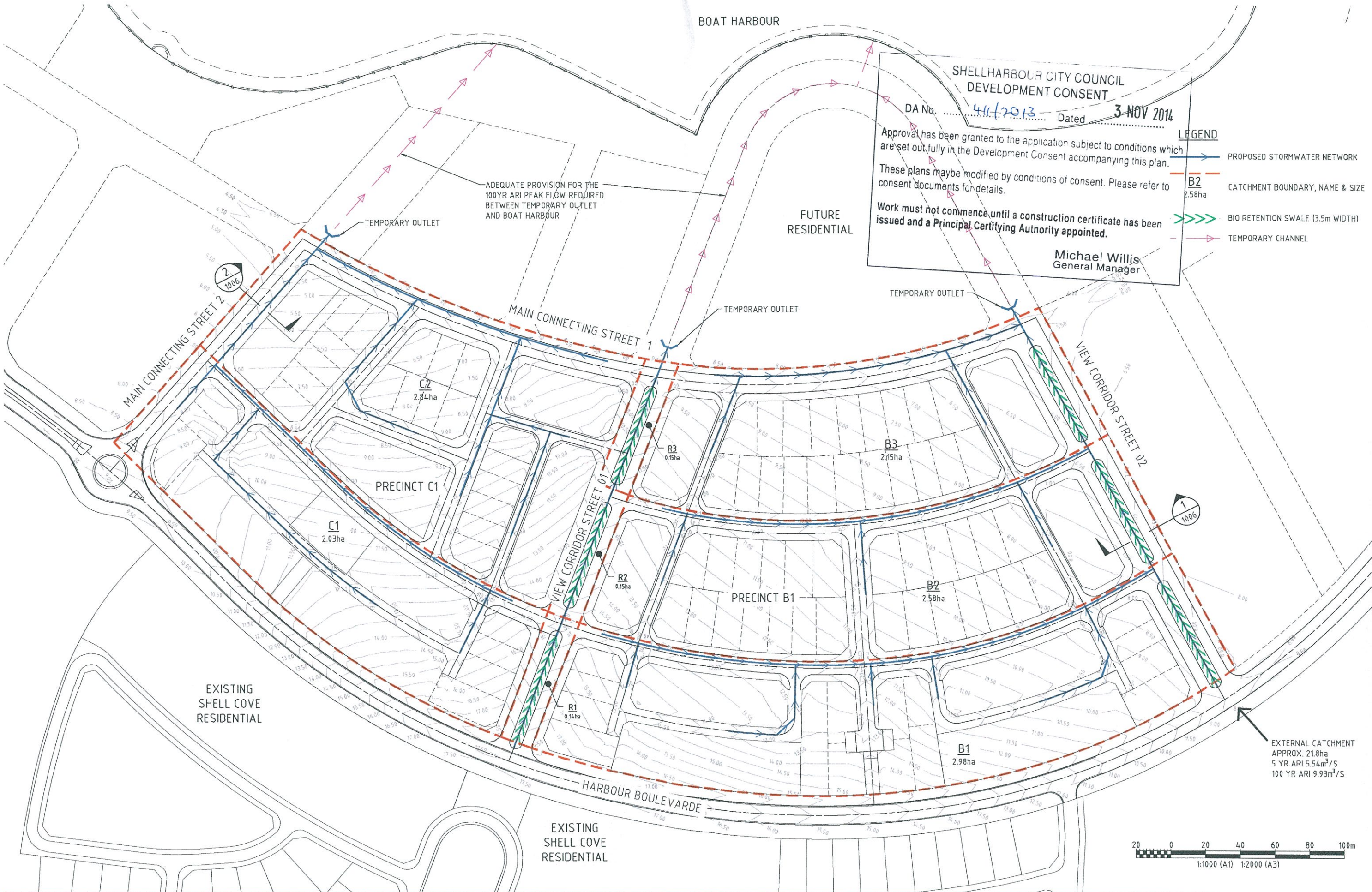
APPROXIMATE  
EARTHWORKS VOLUMES

CUT (m <sup>3</sup> )	-35415
FILL (m <sup>3</sup> )	190620
BALANCE (m <sup>3</sup> )	155205



LOCATION: W:\INFRASTRUCTURE\PROJECTS\301015\03163 AUSTRALAND - SHELL COVE DA ADVICE\12.0 DRAWINGS\SKETCHES\301015-03163-CI-DSK-1003.DWG  
USER NAME: enoshnewar  
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ISSUE	DATE	ISSUE DESCRIPTION
B	08.08.13	ISSUED FOR DA
A	21.06.13	ISSUED FOR COMMENT



SHELL HARBOUR CITY COUNCIL  
DEVELOPMENT CONSENT

DA No. 411-7013 Dated 3 NOV 2014

Approval has been granted to the application subject to conditions which are set out fully in the Development Consent accompanying this plan.

These plans maybe modified by conditions of consent. Please refer to consent documents for details.

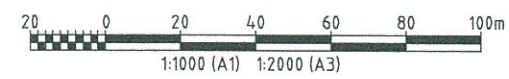
Work must not commence until a construction certificate has been issued and a Principal Certifying Authority appointed.

Michael Willis  
General Manager

- LEGEND**
- PROPOSED STORMWATER NETWORK
  - CATCHMENT BOUNDARY, NAME & SIZE
  - BIO RETENTION SWALE (3.5m WIDTH)
  - TEMPORARY CHANNEL

ADEQUATE PROVISION FOR THE 100YR ARI PEAK FLOW REQUIRED BETWEEN TEMPORARY OUTLET AND BOAT HARBOUR

EXTERNAL CATCHMENT  
APPROX. 21.8ha  
5 YR ARI 5.54m<sup>3</sup>/S  
100 YR ARI 9.93m<sup>3</sup>/S

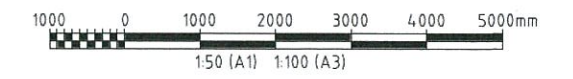
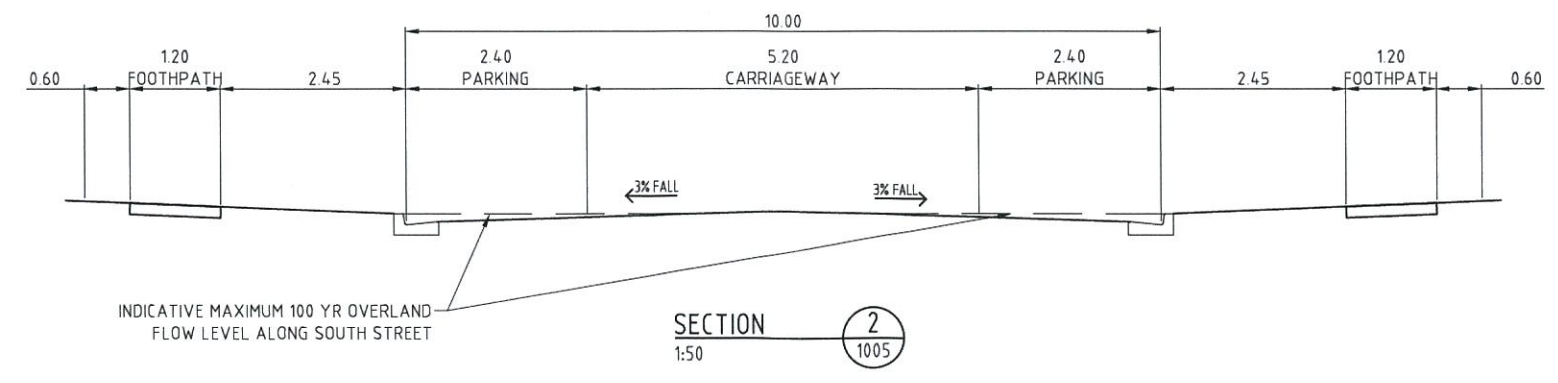
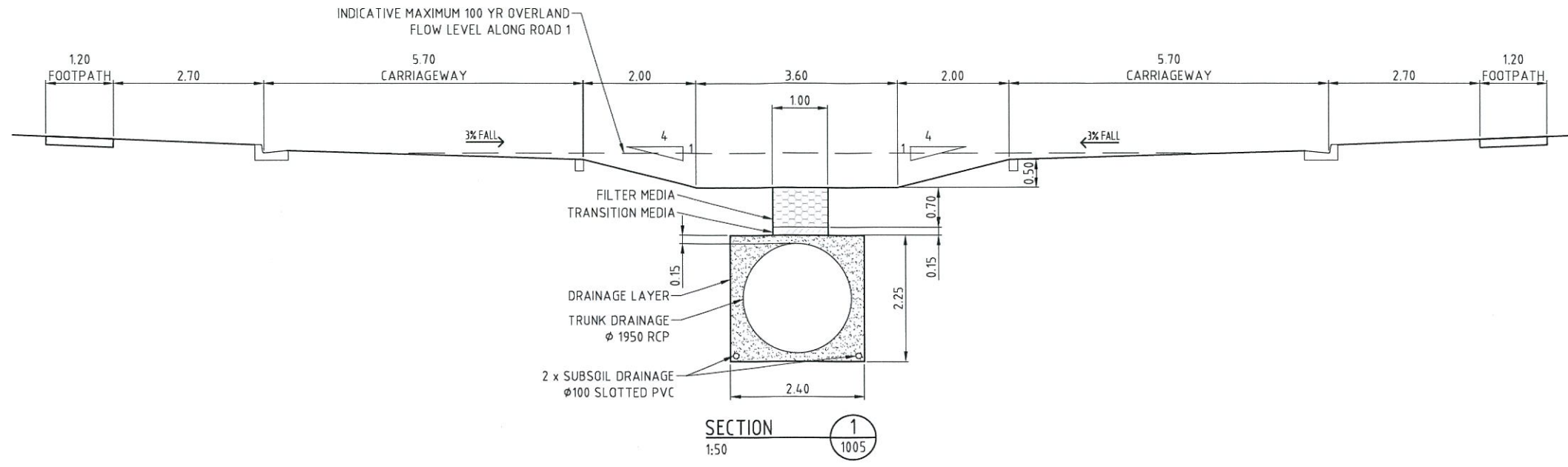


ISSUE	DATE	ISSUE DESCRIPTION
B	08.08.13	ISSUED FOR DA
A	21.06.13	ISSUED FOR COMMENT



SHELL COVE - SUBDIVISION PRECINCT B1 & C1  
STORMWATER MANAGEMENT CONCEPT PLAN  
301015-03163-CI-DSK-1005

LOCATION: W:\INFRASTRUCTURE\PROJECTS\301015\03163 AUSTRALAND - SHELL COVE DA - ADVICE\12.0 DRAWINGS\SKETCHES\301015-03163-CI-DSK-1005.DWG  
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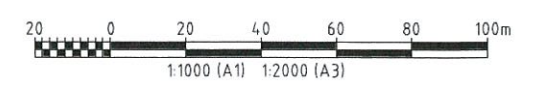
ISSUE	DATE	ISSUE DESCRIPTION
B	08.08.13	ISSUED FOR DA
A	24.06.13	ISSUED FOR COMMENT



- LEGEND**
- CLEAN WATER DIVERSION
  - DIRTY WATER DIVERSION
  - SEDIMENT FENCE
  - STRAW BALE CHECK DAM
  - SEDIMENT BASIN
  - STABILISED SITE ACCESS
  - INDICATIVE STOCKPILE
  - LEVEL SPREADER

**NOTE:**

- REFER TO 301015-03163-CI-DSK-1006 & 1007 FOR SEDIMENT & EROSION CONTROL NOTES AND DETAILS



ISSUE	DATE	ISSUE DESCRIPTION
B	08.08.13	ISSUED FOR DA
A	21.06.13	ISSUED FOR COMMENT



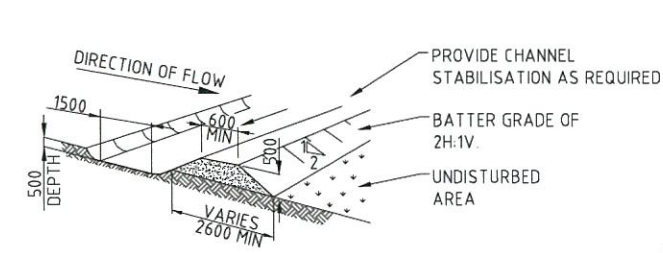
**SHELLCOVE - SUBDIVISION PRECINCT B1 & C1**

**SEDIMENT & EROSION CONTROL PLAN**

**301015-03163-CI-DSK-1007**

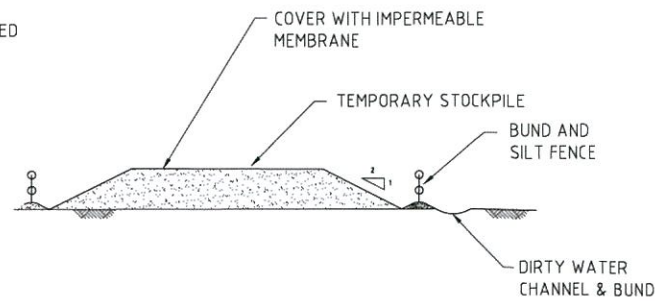
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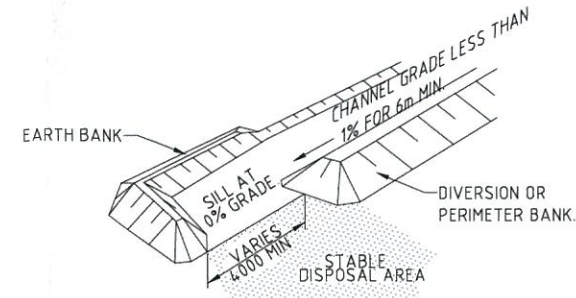
**DIRTY WATER DIVERSION CHANNEL**

NOT TO SCALE  
 MAX FLOW RATE 2.88m<sup>3</sup>/s  
 2 YR ARI MAX 1.30m<sup>3</sup>/s  
 5 YR ARI MAX 2.00m<sup>3</sup>/s



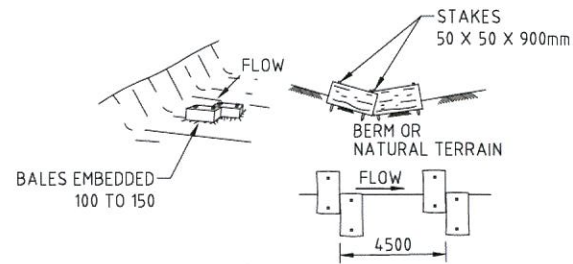
**TYPICAL TEMPORARY STOCKPILE**

NOT TO SCALE



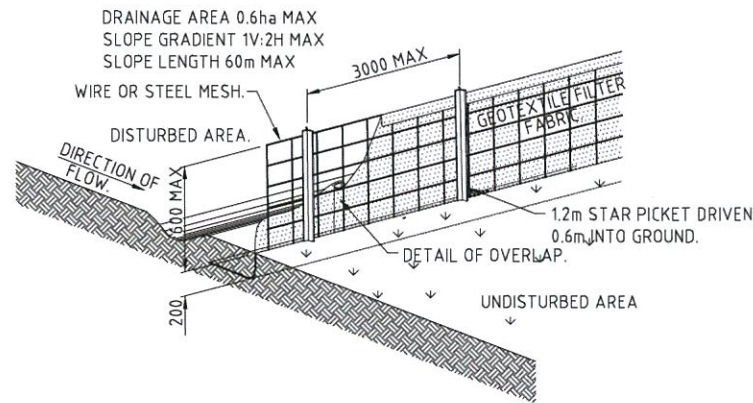
**LEVEL SPREADER (OR SILL)**

NOT TO SCALE



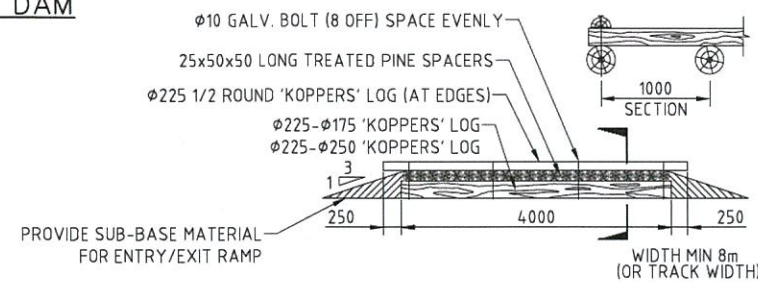
**STRAW BALE CHECK DAM**

NOT TO SCALE



**SEDIMENT FENCE**

NOT TO SCALE



**LONG TERM CONSTRUCTION SITE ENTRY/EXIT**

NOT TO SCALE

**NOTES:**

ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE DEPARTMENT OF HOUSINGS "BLUE BOOK".

**GEOFABRIC LINED SEDIMENT FENCE**

- FOR SEDIMENT FENCE, JOIN SECTIONS OF FABRIC AT A STAR PICKET WITH 150mm OVERLAP.
- DRIVE 1.5m LONG STAR PICKETS INTO GROUND, 3m APART.
- DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
- BACKFILL TRENCH OVER BASE OF FABRIC
- FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.

**TEMPORARY DIVERSION CHANNELS**

- DRAINS TO BE OF PARABOLIC OR TRAPEZOIDAL CROSS SECTION NOT V-SHAPED.
- EARTH BANKS TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE.
- CONSTRUCTION IS OF A TEMPORARY NATURE AND SHALL BE REMOVED AT COMPLETION OF WORKS.
- DIRECT DISCHARGE TO LEVEL SPREADER.
- COMPACT WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE THAN FIVE DAYS.
- EARTH BANKS TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW.
- ALL OPEN DRAINS TO BE TURFED AS A MINIMUM. PROVIDE JUTE MESH LINING ON ANY DRAIN WITH A LONGITUDINAL GRADE EXCEEDING 5%.
- DIRTY WATER DIVERSION CHANNEL (OR LIP ON THE TOP OF FILL BATTERS) DIRECTING FLOW INTO SEDIMENT BASIN. STRAW BALES TO BE PLACED AT 50m INTERVALS AS A MINIMUM TRANSVERSE PROTECTIVE DEVICE
- FOR DIRTY WATER DIVERSION CHANNELS OF 0-2.5% PROVIDE TRANSVERSE STRAW BALE PROTECTION, FOR GRADES OF 2.5-20% PROVIDE GRADE STABILISING STRUCTURES AND FOR GRADE 20%+ PROVIDE ROCK CHECK DAMS.
- A 'CLEAN' WATER DIVERSION CHANNEL SHALL BE PROVIDED ON THE HIGH SIDE OF THE WORKS. ALL FLOWS SHALL BE DIRECTED AROUND THE CONSTRUCTION SITE WITHOUT COMING IN CONTACT WITH DISTURBED GROUND.

**TURF BUFFER STRIP**

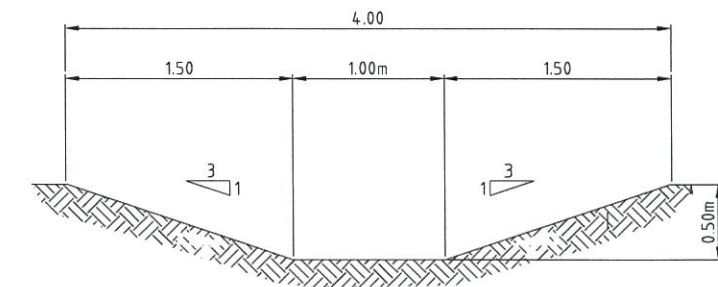
- PROVIDE 300mm TURF STRIP BEHIND KERB AND GUTTER AND SURROUNDING ALL INLET PITS NOT SURROUNDED BY PAVEMENT.

**DISTURBED AREAS**

- REVEGETATION MUST BE APPLIED TO DISTURBED AREAS AS SOON AS PRACTICAL AFTER COMPLETION OF EARTHWORKS AND MUST BE ESTABLISHED PRIOR TO RELEASE OF THE MAINTENANCE SECURITY.
- VEGETATION SHALL BE RETAINED IN UNDISTURBED AREAS AND LOCATIONS OF CUT TO FILL TRANSITIONS.

**SEDIMENT BASIN**

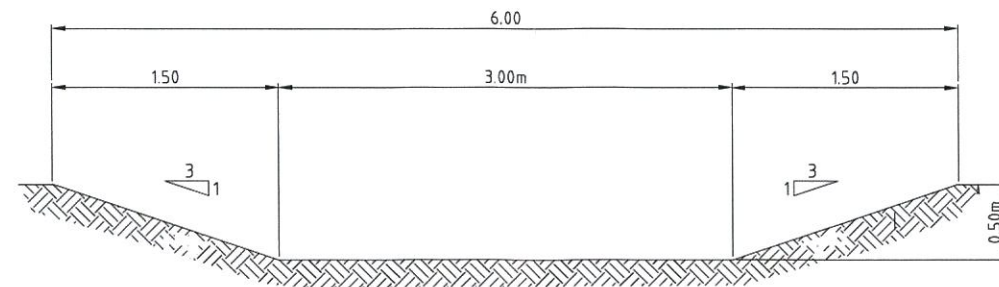
- TEMPORARY SEDIMENT POND WILL REQUIRE THE ADDITION OF GYPSUM TO PROMOTE FLOCCULATION
- GYPSUM IS TYPICALLY ADMINISTERED AT THE RATE OF 30kg/100m<sup>3</sup> OF STORED WATER. HOWEVER, GYPSUM SHOULD BE ADDED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS BUT AS A MINIMUM SHOULD BE APPLIED ONCE A MONTH & IMMEDIATELY FOLLOWING A RAINFALL EVENT.
- THE CONTRACTOR SHALL MONITOR THE WATER QUALITY WITHIN THE SEDIMENT POND & SAMPLE & TEST FOR SUSPENDED SOLIDS AFTER THE FIRST TWO RAINFALL EVENTS TO CALIBRATE GYPSUM DOSING REQUIREMENTS.



**HABOUR BOULEVARDE CLEAN WATER DIVERSION CHANNEL**

SCALE 1:25

HABOUR BOULEVARDE  
 1.1m<sup>3</sup>/s 2 YR ARI  
 1.7m<sup>3</sup>/s 5 YR ARI  
 MAX CAPACITY FLOWRATE  
 2.29m<sup>3</sup>/s



**VIEW CORRIDOR STREET 02 CLEAN WATER DIVERSION CHANNEL**

SCALE 1:25

ROAD 1  
 2.1m<sup>3</sup>/s 2 YR ARI  
 3.2m<sup>3</sup>/s 5 YR ARI  
 MAX CAPACITY FLOWRATE  
 3.47m<sup>3</sup>/s

ISSUE	DATE	ISSUE DESCRIPTION
B	08.08.13	ISSUED FOR DA
A	21.06.13	ISSUED FOR COMMENT

Note: These "Standard Calculation" spreadsheets relate only to low erosion hazard lands as identified in figure 4.6 where the designer chooses to not use the RUSLE to size sediment basins. The more "Detailed Calculation" spreadsheets should be used on h

### 1. Site Data Sheet

Site name: Shell Cove subdivision  
 Site location: Shell Cove  
 Precinct: Precinct B1 and C  
 Description of site: Assumes Type D soils of low to moderate erosion hazard

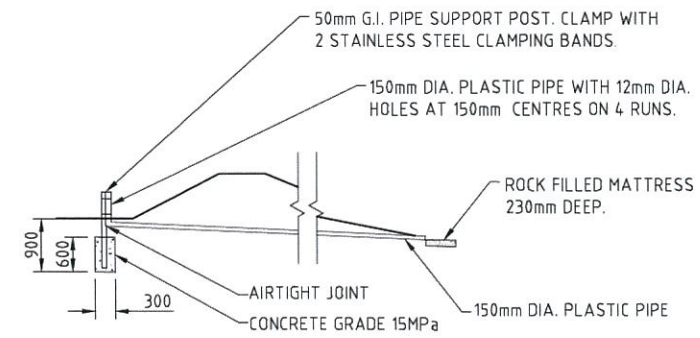
Site area	Site		Remarks
	B	C	
Total catchment area (ha)	7.93	5.09	
Disturbed catchment area (ha)	7.93	5.09	

**Soil analysis**

Soil landscape	Illawarra	DIPNR mapping (if relevant)
Soil Texture Group	Type D   Type D	Sections 6.3.3(c), (d) and (e)

**Rainfall data**

Design rainfall depth (days)	5	5	See Sections 6.3.4 (d) and (e)
Design rainfall depth (percentile)	80	80	See Sections 6.3.4 (f) and (g)
x-day, y-percentile rainfall event	33	33	See Section 6.3.4 (h)
Rainfall intensity: 2-year, 6-hour storm	13.9	13.9	See IFD chart for the site
Rainfall erosivity (R-factor)	4220	4220	Automatic calculation from above data



SEDIMENT BASIN LOW FLOW OUTLET  
 DETAIL  
 NOT TO SCALE

### 4. Volume of Sediment Basins, Type D and Type F Soils

Basin volume = settling zone volume + sediment storage zone volume

#### Settling Zone Volume

The settling zone volume for Type F and Type D soils is calculated to provide capacity to contain all runoff expected from up to the y-percentile rainfall event. The volume of the basin's settling zone (V) can be determined as a function of the basin's surface area and depth to allow for particles to settle and can be determined by the following equation:

$$V = 10 \times C_v \times A \times R_{y\text{-}\%ile, x\text{-}day} \text{ (m}^3\text{)}$$

where:

10 = a unit conversion factor

C<sub>v</sub> = the volumetric runoff coefficient defined as that portion of rainfall that runs off as stormwater over the x-day

R = is the x-day total rainfall depth (mm) that is not exceeded in y percent of rainfall events. (See Sections 6.3.4(d), (e), (f), (g) and (h)).

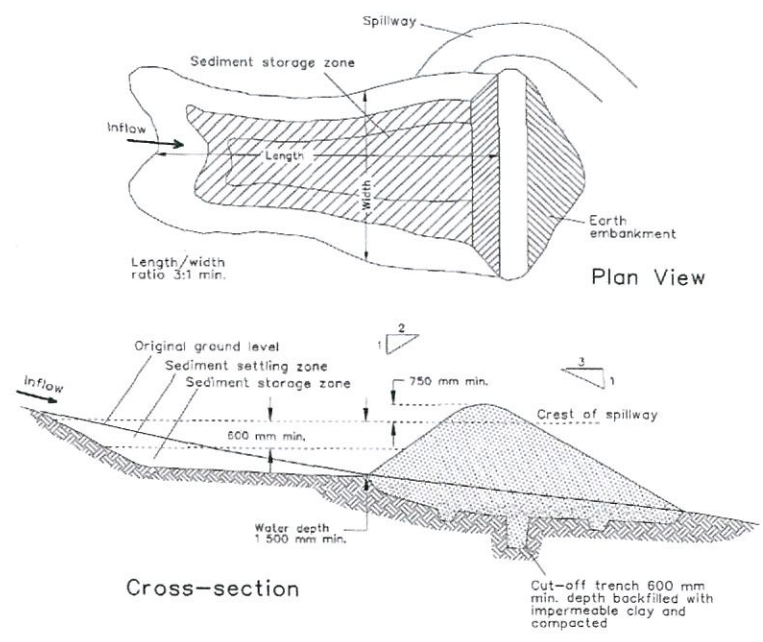
A = total catchment area (ha)

#### Sediment Storage Zone Volume

In the standard calculation, the sediment storage zone is 50 percent of the setting zone. However, designers can work to capture the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(ii)), in which case the "Detailed Calculation" spreadsheets should be used.

#### Total Basin Volume

Site	C <sub>v</sub>	R x-day y-%ile	Total catchment area (ha)	Settling zone volume (m <sup>3</sup> )	Sediment storage volume (m <sup>3</sup> )	Total basin volume (m <sup>3</sup> )
B	0.50	33	7.93	1306.45	654	1962.675
C	0.50	33	5.09	839.85	420	1259.775
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0



ISSUE	DATE	ISSUE DESCRIPTION
B	08.08.13	ISSUED FOR DA
A	21.06.13	ISSUED FOR COMMENT

**LEGEND**

-  Precinct B1 & C1 Boundary
-  Cadastral Boundaries
- STREET TREE PLANTING**
-  Street Planting Type 1 (View Corridor Roads 1 & 2 and Major Streets)
-  Street Planting Type 2 (Local Streets)
-  Street Planting Type 3 (Local Streets)
-  Planting Type 4 (Verge planting, also under Street Tree Type 2)
-  Planting Type 5 (Swale Planting)
- THRESHOLD TREATMENTS**
-  Entry wall Feature / Fence
-  Threshold Treatment 1
-  Threshold Treatment 2
-  Threshold Treatment 3

