ORDER

In the Planning and Environment Court

No. 340 of 2002

Held at: Brisbane

Between: **DONALD THALLON (SURVEYS) PTY LTD ACN 010 000 843 (TRADING AS DTS GROUP AND AMEX CORPORATION PTY LTD ACN 008 814 293)** Appellant

And: **REDLAND SHIRE COUNCIL** Respondent

Before His Honour Judge McLauchlan QC

The 11 day of September 2002

UPON READING the Notice of Appeal filed on 29 January 2002 and the Affidavit of James Robert Ireland filed on 6 September 2002.

AND UPON HEARING the solicitors for the Appellant and the solicitors for the Respondent.

IT IS DECLARED THAT the Appellant has complied with the requirements of Section 4.1.41 of the *Integrated Planning Act 1997*.

IT IS ORDERED by consent that:

1. The appeal be allowed;

2. The application for a development permit for a material change of use to develop land situated at 41-49 Donald Road and 21-35 Serpentine Creek Road, Redland Bay in the State of Queensland and also described as Lot 1 on RP 167793 and Lot 2 on RP 850031 for residential purposes, be approved subject to the conditions attached and marked "*A*"; and

Each party bear its own costs of and incidental to the appeal.

By the Court

Deputy Registrar

THE PLANNING AND ENVIRONMENT COURT BRISBANE

ORDER
Filed on behalf of the Respondent
Form PEC-8

Clayton Utz, Lawyers
Level 26, 215 Adelaide Street
Brisbane Qld 4000
GPO Box 55 Brisbane Qld 4001
Telephone: (07) 3292 7000
Facsimile: (07) 3003 1366
KMT:PJB:41502779

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1. The layout of subdivision indicated on Drawing Ref: A1 897/14 dated 27/6/2002 is accepted in general principle insofar as the general road pattern is concerned and clarification of Lot 2 on RP167793 (See Further Advice). A formal reconfiguration application is required for Council's endorsement. The size and shape of allotments shall be determined in accordance with all relevant Council Local Laws, Regulations and Policies at the time of reconfiguration application to the satisfaction of Council.

2. As indicated on Drawing A1 897/14 dated 27/6/2002 the areas nominated as park shall be transferred free of cost to the Crown for park purposes with Council as Trustee in association with Council being required to sign a plan of survey for reconfiguring of allotments for the development. As trustee of the land and on receipt of proposed works, Council shall grant consent for the developer to undertake works associated with discharge through the park, once the land has been transferred to Council.

3. No vegetation is to be removed within the area to be dedicated for park purposes without the express approval of Council or its delegated Officer.

4. At the time of seeking Development Permit for reconfiguration the applicant shall provide an acoustic report from a suitably qualified person to the satisfaction of the Services Manager Health and Environment. The proposed development is to be designed and constructed in accordance with requirements of Council's Planning Policy – Impact of Transportation Systems on Urban Amenity. The design level noise criteria from this document are detailed in the table below.

   The design, layout and orientation of a dwelling house shall contribute to the achievement of the design level noise criteria stated in the following table through appropriate:

   (a) Placement of bedrooms, living areas, non-habitable spaces and wall openings (doors and windows);

   (b) Selection, specification and installation of building materials, including but not limited to walls, roofing, ceilings, insulation, doors and windows.

Design Level Noise Criteria for Proposed Dwelling Houses Adjacent to Roads

Measurement Location	Design Level Road Traffic Noise Criteria
1m in front of the most exposed part of a proposed new noise sensitive place	For a State controlled road: Road traffic noise levels are to comply with the external noise criteria specified in Section B6 of the *Road Traffic Noise Management Code of Practice*, published by the Queensland Department of Main Roads. That is: 63 dB(A) L10(18 hour) or less, where the L90 (8 hour) between 10pm and 6am is greater than 40dB(A), or 60 dB(A) L10(18 hour) or less, where the L90 (8 hour) between 10pm and 6am is less than or equal to 40dB(A). For another public road: In accordance with schedule 1 of the Environmental Protection (Noise) Policy 1997.

Measurement Location	Design Level Road Traffic Noise Criteria
Inside bedrooms of a proposed dwelling house, multiple dwelling or accommodation unit.	(a) Average Lmax (10pm-6am) not greater than 50dB(A), and (b) LAeq(1hr)(10pm-6am) – not greater than 35dB(A)
Inside living rooms of a proposed dwelling house, multiple dwelling or accommodation unit.	LAeq(1hr)(6am - 10pm) – not greater than 45dB(A)
External formal living space of a proposed dwelling house, multiple dwelling or accommodation unit.	LAeq(1hr)(6am to 10pm) not greater than 55dB(A)

Notes:

- For the purposes of this Approval, LA eq (1hr)(6am to 10pm) represents the highest 1hour equivalent continuos A-weighted sound pressure level between 6am and 10pm. The LA eq (1hr) is to be calculated from the highest four consecutive 15-minute samples and is not restricted to measurement from the hour.

- For the purposes of this Approval, the average Lmax(10pm-6am) represents the average of the A-weighted maximum sound pressure levels of road vehicle pass by events between 10pm and 6am and shall exclude emergency vehicles.

- The external formal living space criteria represents the traffic noise level to be achieved whether free field or non -free field. A correction of plus 2.5 dB(A) for facade reflection is to be included in calculations where appropriate. External areas exceeding the design level criteria for external formal living space will not be considered as external formal living space.

- The calculation and prediction of traffic noise levels is to be in accordance with the Road Traffic Noise Management Code of Practice, published by the Queensland Department of Main Roads and in accordance with Australian Standard 2702-1984: Acoustics – Methods for the measurement of road traffic noise. Alternative road traffic noise prediction models may be used where they can be justified as being appropriate to the circumstances of the particular situation and location.

- An assessment of road traffic noise is to be based on the ultimate traffic flow for the road. If such data does not exist a 10-year planning projection is to be used.

- The determination of building construction, siting and design measures required to achieve internal noise levels shall be in accordance with Australian Standard 2107: Acoustics-Recommended design sound levels and reverberation times for building interiors and Australian Standard 3671- 1989: Acoustics – Road traffic noise intrusion – Building siting and construction. Alternative methods may be used where they can be justified as being appropriate to the circumstances of the particular situation and location.

5. Environmental Management

The site shall be managed in an environmentally responsible manner complying with all Federal, State and Local laws and policies. Construction shall comply with the Environmental Protection Act, Policies and Guidelines to prevent or minimise either environmental harm or nuisance. An Environmental Management Plan shall address the management of all environmental issues during the construction of the subdivision and specify features that will be incorporated into the site to ensure the future environmental integrity of the future subdivision.

5.1 Environmental Management Plan

An Environmental Management Plan (EMP) shall be approved by Council prior to approval of any reconfiguration of the site. The EMP shall take cognisance of the above requirements and shall include but not be limited to the following:

1. General Introduction
1.1. EMP Structure and Process
    1.1.1. Management Structure and Responsibility
    1.1.2. Construction Phase
    1.1.3. Operational Phase
    1.1.4. Non-conformance procedure
    1.1.5. External Complaint Management
    1.1.6. Personnel Training
1.2. Site Description and Operation
2. Vegetation Management Plan (VMP)
3. Fauna Management Plan
4. Water Quality Management Plan
4.1. Stormwater Quality Management Plan (SQMP)
4.2. Erosion and Sediment Control Plan (ESCP)
5. Air Quality Management Plan
6. Cultural Heritage
7. Waste Management Plan
8. Storage and Containment of Hazardous Materials
9. Contaminated Land Management
10. Monitoring and Reporting
11. Review and Update

5.1.1. Vegetation Management Plan

A detailed VMP, including both graphical and textual information, shall be prepared by a suitably qualified person in consultation with Council.

The VMP is to be prepared for the areas to be dedicated as open space. The primary function of the dedicated areas are as a conservation reserve with passive recreational park land and water quality control features being in the open areas of the existing site.

Existing and replanted native vegetation is to be managed so as to maintain and enhance the site's environmental values and to provide weed management. The existing native vegetation is to be retained where possible and enhanced by revegetation works.

The VMP shall be forwarded and approved in writing prior to Council being required to determine an application for a reconfiguration.

The following details are to be submitted within the VMP:

- A statement of objectives, a description of management strategies, potential impacts, actions/controls, maintenance, monitoring, performance indicators, corrective actions and reporting;
- A survey accurate plot and supporting text of all existing tree species. The survey shall identify species, height and canopy spread located within the 3m firebreak and the proposed area to be dedicated as park/open space;
- A Revegetation Plan to be utilised in any conservation area and in any biological stormwater management facility. The replanting schemes shall comprise local native plant species;
- Details of planting schedules and timings, including any staging program;
- Details of fertiliser and chemical use;
- Details of all proposed planting including the numbers, container sizes, planting density and ting location. Revegetation planting shall incorporate a stratum of species;
- A Weed Management Plan shall be prepared to address declared plants and environmental weeds in the conservation area as defined in the RSC Pest Management Plan. The plan is requested to outline the extent, location and methods of eradication and is to be carried out in consultation with Council. This will include ongoing monitoring and maintenance. Weed management will be initiated early in the project to ensure a completed weed eradication programme before commencement of the "on maintenance "phase of the project;
- Details of a monitoring and maintenance schedule for at least 12 months including weed management and the replacement of any dead plants; and
- The VMP shall be authorised by the applicants' hydraulic consultant to ensure stormwater overland flow paths and areas required for the treatment of stormwater are integrated.

Particular attention will be paid to protection of trees which are located in close proximity to proposed roads, driveways and any proposed fill to ensure that appropriate measures are implemented to maintain their present health.

5.1.2. Stormwater Quality Management Plan

A SQMP is to be prepared and submitted to Council addressing the quality and quantity of stormwater runoff.

The SQMP will be prepared identifying strategies and treatments that result in discharge quality of any waters into any receiving waterway meeting the following standards: Guidelines on Identifying and Applying Water Quality Objectives in Brisbane City March 2001.

The following shall form part of the SQMP:

(a) A statement of objectives, order of works schedule, description of proposed strategies, monitoring, reporting, and corrective action for non-compliance with the SQMP;

(b) Timing and staging of construction for all works associated with the development;

(c) Site topography, catchment areas, soil type, quality of receiving waters;

(d) A quantitative analysis of sources of all stormwater runoff, water pollution and changes in water quality including soil stability and erosion, nutrient generation and disposal, impacts of imported soils to the site and likely chemical composition of stormwater;

(e) Direction of runoff, discharging points, treatment drainage lines and outlets to prevent scouring;

(f) A full hydraulic analysis of the flow rates, critical velocity, concentration of stormwater run off and where relevant, evaporation rates for all drainage lines;

(g) A full hydraulic analysis of the effects of earthworks and placement of fill on the current drainage system and natural watercourses

(h) Other methods proposed to minimise impact on the downstream water quality in terms of quantity and quality, including the ability of the downstream treatment system to handle the stormwater runoff from the upstream;

(i) Description of the assessment and performance criteria to be met by the system and nomination of measurable Performance Indicators to ensure that the proposed system is operating effectively; and

(j) Monitoring and maintenance schedules during the construction and operational phases of the development including predicted frequency and responsibility of all treatment structures and the overall system.

All stormwater management practices, treatments and general design and construction methods shall be based upon 'Best Management Practices' and the guidelines and be consistent with the following:

- Draft Guidelines for Urban Stormwater Management; ANZECC 1996
- Soil Erosion and Sediment Control – Engineering Guidelines for Queensland; IEAust 1996
- Stormwater Quality Control Guidelines; Department of Natural Resources & EPA 1998
- Queensland Urban Drainage Manual; Neville Jones and Associates 1992
- The Constructed Wetlands Manual; Department of Land and Water Conservation NSW 1998

5.1.3. Erosion and Sediment Control

(a) Prior to the construction phase of this proposed development the applicant shall be responsible for the installation and maintenance of erosion and sediment management facilities until the development has been accepted as completed by Council.

(b) The applicant shall submit details of erosion and sediment control techniques and procedures for approval by Council at the same time as engineering drawings for each stage of the development. The Erosion and Sediment Control Plan shall include a schedule detailing the stages at which various control techniques would be in place.

(c) Recommended erosion control techniques include but not be limited to:

- diversion of runoff away from disturbed areas;
- stabilisation of disturbed areas as soon as construction is complete using mulches (straw, forest mulch, etc.) or other techniques. These mulches must be free of exotic, weed and declared pest plant seeds and other material capable of propagation; and
- reference to the "Best Practice Guidelines for the Control of Stormwater (Pollution from Building Sites)" published by Brisbane City and Gold Coast City Councils, 1998.

Sediment control shall include but not be limited to, the provision of gross pollutant traps, cut off drains, check dams, silt fences, and turfing.

(d) The applicant shall be responsible for the restoration of the site and any adjoining affected lands where sediment deposition has occurred as a consequence of construction activity associated with the development until the expiration of the maintenance period of six (6) months. Such restoration shall be completed in a reasonable time determined by the Manager Development Co-ordination.

5.1.4. Site Contamination

Prior to Council being required to determine an application for any reconfiguration for the development the applicant shall submit a Site Contamination Report from a suitably qualified person to the satisfaction of the Manager Development Coordination. The report is to include, but not be limited to, details of any existing contamination and remediation measures proposed, and a statement of suitability where applicable.

5.2 **Cultural Heritage**

Should any aboriginal, archaeological or historic sites, items or places be identified, located or exposed during the course or construction or operation of the development, all activities shall cease and the Senior Cultural Heritage Officer (pH. 07 3225 1074) of the Environmental Protection Agency is to be contacted immediately. The above information and contact numbers are to be noted on the engineering drawings as part of the requirements of an Environmental Management Plan.

5.3 **Fauna Management**

Following identification of fauna on the site, specific management approaches are to be detailed, especially where fauna is likely to interact with the construction along the foreshore and creek riparian zone.

Attention to the protection of fauna shall be made during the construction phase. During the removal of any potential fauna habitat on the site, a suitably qualified person shall assess the sites and ensure that fauna been removed in an acceptable manner before the tree or habitat removal.

5.4 **Fencing**

(a) **Temporary Fencing**

Prior to the commencement of construction works, a temporary star picket, three strand wire fence shall be erected to Council's satisfaction, on the boundary line separating designated allotments and the open space area. Water quality control during construction shall be addressed upstream of this fence.

The temporary fence shall include nominated access points to allow for approved landscape treatments, stormwater quality feature construction, weed removal and revegetation of the 'open space' area. The fence shall remain until the completion of civil works including road and drainage construction, the installation of permanent fencing or bollarding is installed and alternative water quality control facilities are constructed and approved.

No unapproved construction activities are to occur beyond this fence, including vehicle access, material stockpiling, storage of chemicals and/or maintenance fluids, site compound, the tapering of construction batters, site spoil or rubbish etc.

All approved open space works are to be carried out in accordance with details indicated on the approved VMP and associated drawings prior to site construction works being accepted 'on-maintenance'.

5.5 **Location of Infrastructure**

Only infrastructure approved by council shall be located in any public open space. Infrastructure such as power transformers and sewage pump stations is to be located outside park areas.

5.6 Trees located along the Unwin and Donald Road verges are to be retained where practical. Wherever possible these unconstructed roads will be connected to the proposed parklands within the site or with natural areas existing on adjacent properties.

6. **Engineering Requirements**

6.1 A signalised intersection shall be constructed at the Torquay Road/Collins Street/Donald Road/Serpentine Creek Road intersection shown generally on RSC sketch plans. It is acknowledged that Council will acquire the additional necessary land from other owners. Such acquisition shall occur within reasonable time on receipt of notice from the applicant that works are to proceed. The cost of this construction will be offset against contributions towards road works infrastructure.

6.2 Unwin Road shall be constructed to a width of six metres where nominated on Drawing No. A1 897/14 dated 27/6/2002. The design shall accommodate intersection treatments to be constructed at a future time at the intersections of Muller and Unwin Roads and the proposed new roads.

(a) A six metre wide strip of land shall be dedicated to the Council for further road widening for the full frontage of Serpentine Creek Road and there will be no future access to proposed allotments as shown on Drawing Ref: A1 897/14 dated 27/6/2002. It is acknowledged by Council that no further requirements for land dedication will be imposed at the time of subdivision. This includes the two metre landscaping requirements.

(b) The applicant shall be required to construct a 7.0 metre wide carriageway and 2.4 metre wide (minimum) raised median with kerbing and channelling to the western side and to both sides of the raised medium only, as shown generally in accordance on RSC Drawing No. RS5-3-1A.

(c) Construction of Serpentine Creek Road will coincide with the development of the frontages of the relevant stages that front Serpentine Creek Road.

The cost of works required in (a), (b) and (c) can be deducted from the road works infrastructure charge.

6.3 Roads designated as Access Place or Access Street shall provide for a minimum 15.0 metre wide road reserve and a minimum 5.5 metre wide (invert to invert) sealed pavement with concrete kerb and channel type M1 in accordance with Council Standards. The road shall generally be located centrally within the road reserve.

6.4 Roads designated as a Collector Street shall provide for an ultimate road reserve of minimum 18.0 metres wide and a minimum of 8.0 metres (invert to invert) sealed pavement with concrete kerb and channel type M1 in accordance with Council standards except where detailed below.

Where the collector street abuts park/open space the road shall have kerb and channel type B1 located on the park side (and M1 on the allotment side). The road shall be located so that the invert alignment of the kerb and channel fronting the allotments shall be 5.25 metres from the proposed new allotments.

The applicant shall construct a 2.0 metre bikeway adjacent to Road Number 4. This bikeway is to be located within the road reserve.

6.5 The applicant shall prepare a traffic management plan showing LATM devices where appropriate in accordance with Queensland Streets. If additional road reserve is required to accommodate these devices the layout shall be adjusted to suit.

6.6 The design of roads shall be generally in accordance with the provisions of Queensland Street principles except as provided for herein.

6.7 Allotment drainage shall conform to Level II as specified in Queensland Urban Drainage Manual. Where roof water drainage is directed to kerb and channel, a kerb adaptor shall be cast in situ into the kerb.

6.8 Where stormwater is to be discharged and dispersed onto land not in the ownership of the applicant the applicant shall undertake procedures as detailed in Section 3 of QUDM to ensure a legal point of discharge is obtained. Documentary evidence of stormwater discharge approvals and any other relevant agreements in relation to this matter shall accompany the Operational Works application to be lodged with Council.

6.9 All roads and drainage works in association with the development shall be constructed to Council's standards including provision for an ARI 100 year overland flow path through roads, parks and drainage reserves. An assessment of the effect of 50% blockage of the inlets shall be included in the drainage calculations.

6.10 The applicant shall design all underground drainage components to reflect the concerns for the environment at the outlet to public open space/conservation area. The design and construction of the stormwater system shall incorporate facilities that would ensure Best Management Practice with regard to the quality of stormwater being discharged to the

environment. The location of all discharges should be agreed by Council to ensure minimal disturbance to the receiving environments.

6.11 All major overland flows shall be located and designed to minimise damage to downstream environments. The design of roads and allotment earthworks shall be undertaken to minimise the volume of overland flow being discharged at any one point.

6.12 Bicycle safe grates as approved by A.S.3996-92 shall be used on all catch pits and anti ponding pits.

6.13 **Sewerage**

Provision shall be made for sewerage reticulation to fully service each allotment in accordance with Council Standards.

6.14 **Water Supply**

(a) Water connections and water meters shall be provided to each allotment in accordance with Council's approved Standard Drawings. The ready tap system for water connections shall be installed where appropriate. The water meters are supplied by Council to the developer at approved rates. The details of the water meters and their locations shall be made available in the prescribed form prior to Council being required to accept the development "on maintenance".

(b) Where any connections are to be made from existing live mains the applicant shall request "Redland Water" to make such connections at the applicant's expense.

6.15 **General**

(a) Comply with Council's Design Standards for Developments, Council's Local Laws, Policies and Relevant State Government Legislation.

(b) Provide underground electricity reticulation to each lot and street lighting to Australian Standard A.S.1158.1 and the requirements of ENERGEX and Council, including provision of lighting for pathways.

(c) Provision shall be made for underground telephone conduits to service each lot in accordance with requirements of Australian Standards to accommodate carriers and submission of documentary evidence that an agreement has been entered into with a carrier for the provision of such a service to each lot prior to release of survey plans by Council.

(d) If it is identified that any areas proposed for allotments and roads are filled in excess of 300mm or suspected of having any contaminants or uncontrolled filling then a report shall be submitted to Council by a qualified geotechnical consultant. Such report shall be acceptable to Council and shall provide for a certification by the qualified geotechnical consultant that all unsuitable material has been removed from site and that all areas that have been disturbed have been compacted to the requirements of A.S.3798.

(e) All details of benching, filling and retaining walls shall be included in the Operational Works application.

(f) With the submission of a detailed engineering design, calculations for overland drainage flow shall be submitted in order to verify that the overland flow path is adequate at all locations throughout the subdivision.

(g) Provide Permanent Survey Marks at positions as determined by the Manager Infrastructure Development.

7. **Parks and Recreation Requirements**

7.1 Landscape Plan Requirements

The applicant shall have a landscape plan prepared by a member of The Australian Institute of Landscape Architecture (AILA) or by a professional of similar qualifications showing the following information:

(a) Tree planting:- 50 trees including koala food trees and Melaleuca with species and location of planting to be agreed with the Manager Development Co-ordination. All planted stock to be protected with mulch and other tree protection methods as directed on site;

(b) Construction details and other information of all proposed retaining walls, fences, entry statement walls, play equipment, gazebo's, seating and all other hard landscape features;

(c) Provision of irrigation to all newly constructed roundabouts where planting/turfing is a requirement;

(d) Provision of a 3m heavily mulched fire break to all residential properties abutting land dedicated for 'parkland';

(e) Details of proposed planting of the 2m buffer within the 6m road resumption land. Buffer planting shall utilise a combination of endemic plant species and other native species in accordance with Council's policy 'Impact of Transportation Systems on Urban Amenity'. Where possible existing vegetation shall be retained;

(f) Provision of planting within extended park/road reserve external to lots 12-15 and adjacent to the new four way intersection. Where possible retain the existing mature vegetation and enhance this vegetation utilising a combination of endemic species and other native specie. An open grassed area shall also be provided for community passive recreational purposes and the applicant shall relocate the existing seat;

(g) Provision of 20m diameter planted area beneath the large dead tree on the north western corner of the northern 'park'; The applicant shall provide a survey accurate plot in association with the reconfiguration application.

(h) Log bollard fencing, lockable bollards and slide post gates to be installed to that part of the park boundary where abutting road reserves as indicated by Council officers;

(i) Provision of landscaping in the road reserves for the purpose of street tree planting utilising a combination of endemic species and other native species. Following Council approval the applicant shall provide such streetscape planting prior to acceptance of works 'on maintenance';

7.2 Dams to be retained;

The landscape plan shall provide details of the role and treatment of the large dam to be retained on the land to be used for Park purposes including the following conditions to apply in order to establish a safe usage zone around its perimeter. The following conditions will be used as *Guidelines Only* and Council will consider such alternatives as may be agreed by the developer and Council. The smaller of the two dams shall be filled and levelled:

(a) The eastern edge of the large dam shall have a fauna friendly fence constructed and have a densely planted protective buffer in association with the existing vegetation. The western edge is NOT to have a step down at the waters highest edge but rather a smooth (flush) transition from the ground surrounding the dam. The edge is to have a maximum gradient of 1:5 for a minimum distance of 5.0 metres inside the dam from the waters edge;

(b) A temporary fence is to be erected for the full perimeter of the dam with a minimum set back distance of 2.0 metres from the waters highest edge and be maintained in place for a minimum period equal to the 6 month on-maintenance period;

(c) The landscape plan should show no more than two (2) formalised access points to the waters edge with a minimum length of 3-5 metres and with the balance of dam perimeter to be densely revegetated for the set back distance of 2.0 metres to discourage access;

(d) The formalised access points as above are to be connected to and by a path that is to be installed with materials approved by the Manager Development Co-ordination;

(e) Signage to be erected at no less than three (3) points around the dam that specifies permitted and non-permitted activities within the dam. These signs need to be approved by the Manager Development Co-ordination;

(f) To accommodate construction as required above, it is accepted that the dam be dewatered prior to the commencement of works. The dam shall then be reinstated in accordance with the provisions set out above. Prior to the emptying of the dam please contact Council's fauna officers two days before works are to commence. Council's fauna officers may be contacted on (07) 3829 0638;

7.3 Tree Maintenance

Where existing trees are to be retained within proposed land used for town planning (park) purposes and / or road reserve(s), ALL dead wood and potentially dangerous tree(s)/tree limbs are to be removed. Where construction works impact on the health of a tree to initiate deterioration and/or death to the whole or part of the tree during the period of construction, the applicant is to attend to the removal of that tree or part thereof under the direction of the Manager, Development Co-ordination or Council representing officer.

All tree works will be performed by a qualified arborist who is a member of the Australian Arborist Association or equivalent professional organisation and to AS 4373-1996 Pruning of Amenity Trees.

This work is to be carried out prior to site construction works being accepted On-maintenance, in consultation with the Manager, Assessment Services.

8. **Contributions**

(a) The applicant shall pay to the Council in respect of the proposed development a contribution towards the augmentation of water supply head works, in accordance with the Council's adopted policy in that regard, at the time the Council is required to seal and release any plan of subdivision of the land, at the rate current under that policy at the time of payment. This condition does not cover the cost of water reticulation to individual allotments or connection of the land to the Council's water supply system and that all such costs are the responsibility of the Applicant.

Further it is advised that the rates of contribution under the policy are reviewed annually in July.

(b) The applicant shall pay to the Council in respect of the proposed development a contribution towards the sewerage augmentation, in accordance with the Council's adopted policy in that regard, at the time the Council is required to seal and release any plan of subdivision of the land, at the rate current under that policy at the time of payment. This contribution does note cover the cost of sewerage connection to individual allotments or connection of the land to the Council's sewerage system and that all such costs are the responsibility of the Applicant.

Further it is advised that the rates of contribution under policy are reviewed annually in July.

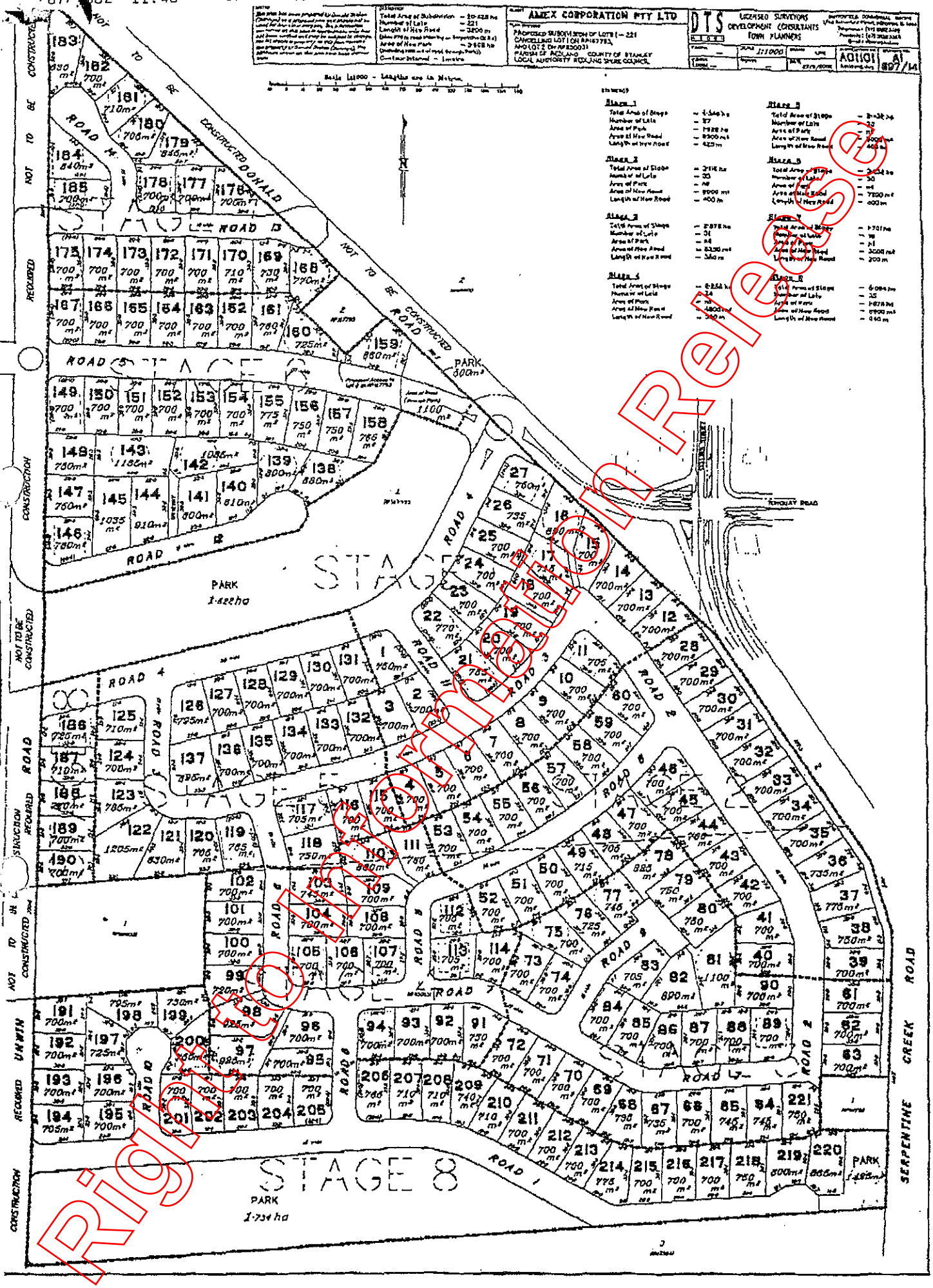
(c) Prior to Council being required to sign and seal a Plan of Survey for reconfiguration, the applicant shall contribute to the Road Works Infrastructure Charge in accordance with Amendment 11 to the Development Control Plan for the Redland Bay Area. Such contributions shall be on lot basis and at a rate to be determined by Council resolution from time to time. (Rate as adopted by Council resolution of 12 September 2001 is $4481).

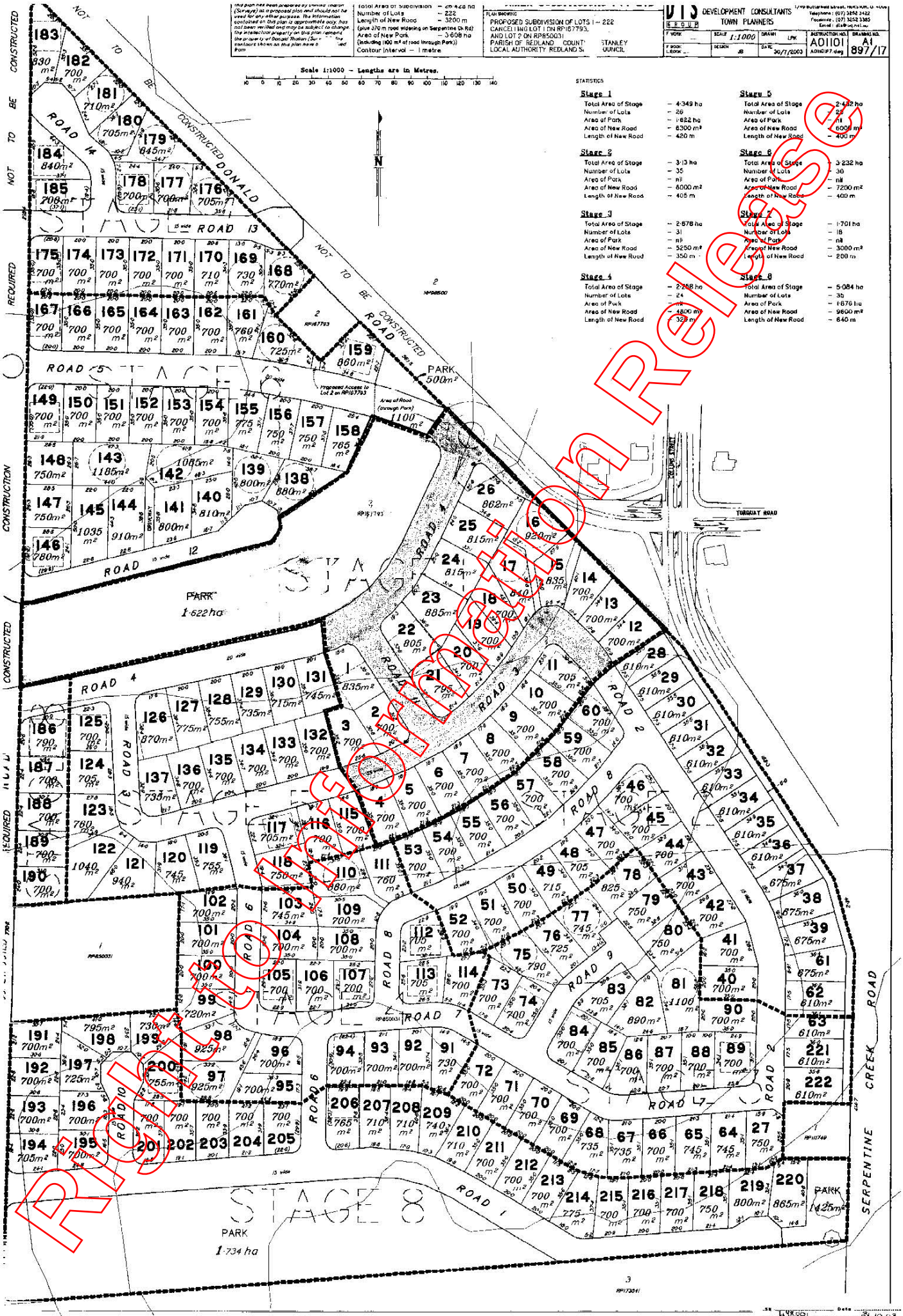
(d) Contribute a sum of $22.00 per allotment to Council for the purpose of paying the State Government Split Valuation Fees. This amount shall be paid prior to signing of the Plan of Survey and be for each allotment contained on the Plan of Survey.

(e) The applicant shall contribute $530 per lot or a lesser amount agreed by Council prior to Council being required to sign a plan of survey towards the upgrading of the intersection of German Church Rd and Cleveland Redland Bay Rd in accordance with the report "Cleveland Redland Bay Road/ German Church Road Intersection February 2001" prepared for the Department of Main Roads

9. **Further Advice**

The Applicant be advised that it is acknowledged by Council that Lot 2 on RP167793 does not form part of this application. Upon any form of reconfiguration application, the proposed access as shown on Drawing Ref: A1 897/14 dated 27/6/2002 shall be amalgamated with Lot 2 on RP167793 or for example, extend the road reserve insofar that it shall adjoin Lot 2 on RP167793. It is noted that Lot 2 on RP167793 has a different zoning and different ownership.





Redland City Council
ABN 86 058 929 428

Cnr Bloomfield & Middle Sts.
Cleveland Qld 4163

PO Box 21,
Cleveland Qld 4163

Telephone 07 3829 8999
Facsimile 07 3829 8765

Email rcc@redland.qld.gov.au
www.redland.qld.gov.au

14 September 2009

Your Ref:
Our Ref: GC
File No: EC004782.7
Contact: Land Development Unit

Brown Consulting (Qld) Pty Ltd
Po Box 10349
BRISBANE ADELAIDE STREET QLD 4000

Amended Approved Plans

Dear Sir/ Madam

Description:	**Operational Works – 18 Lots**
Application Reference No:	**EC004782.7**
Legal Description:	**Lot 101 SP 167774**
Address:	**41 Donald Road Redland Bay QLD 4165**

The following plans are to supersede the Civil Engineering Works Approved Plans as referred to in the Decision Notice for Operational Works dated 05/09/2008.

Brown Consulting Drawing No's B070713-100B, /101D, /102C, /103A, /104C, /105, /106, /107A, /108C, /109C, /110E, /111E, /112D, /113C, /114, /115, /116, /117, /200C, /201C, /300B, /301, /400E

Should you have any queries regarding this matter please do not hesitate to contact the Council's Land Development Unit on phone 07 3829 8784.

Yours faithfully

Richard Braithwaite
Senior Engineering Officer
Land Development

"VALENCIA SPRINGS ESTATE"

REDLAND BAY

STAGE 7

FOR AMEX SUBDIVISIONS PTY. LTD.

DRAWING INDEX

ROADWORKS AND DRAINAGE

SEWERAGE RETICULATION

WATER RETICULATION

STORMWATER QUALITY MANAGEMENT

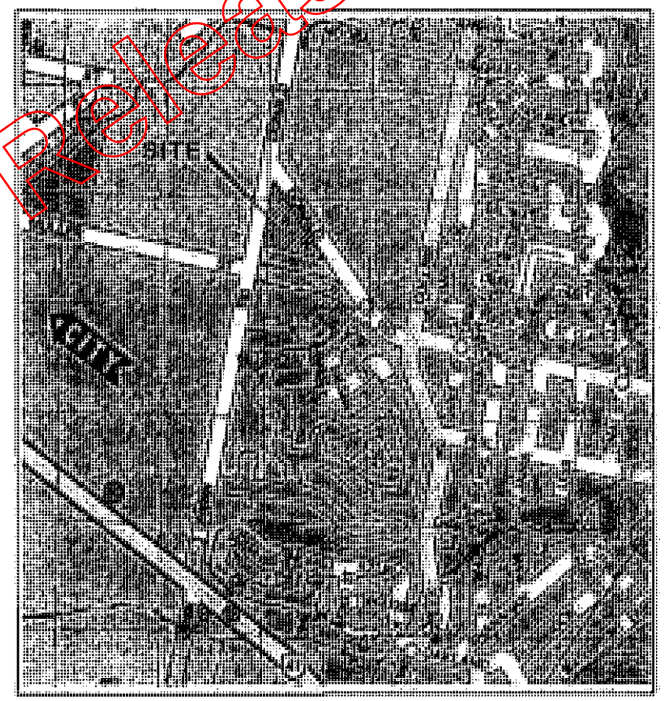
NO. OF LOTS = 18
AREA OF SITE = 1.82 Ha

RP DESCRIPTION
PART OF LOT 2 ON RP 850031
PARISH OF REDLAND
COUNTY OF STANLEY

DATUM LEVEL
P.S.M. 154627
RL 16.88 AHD
CORNER OF BALSAM STREET
AND EBONY CRESCENT

CONSTRUCTION HOLD POINT
PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY LEVELS OF ALL EXISTING CROSSINGS AND CONNECTION POINTS.

CONSTRUCTION HOLD POINT
ONCE THE BASE OF MANHOLES, INSPECTION PITS, GULLIES AND FIELD INLETS FOR STORMWATER DRAINAGE AND SEWER RETICULATION HAVE BEEN POURED, FURTHER CONSTRUCTION SHALL NOT PROCEED UNTIL THE SUPERINTENDENT AND OR ENGINEER HAVE INSPECTED THE WORKS FOR FINISHED LEVELS AND APPROVED CONSTRUCTION TO CONTINUE.



LOCALITY PLAN
NTS
UBD. MAP 246. REF. N.7.

Redland City Council
Operational Works Approval
14 SEP 2018
Refer Development Permit for Conditions of Approval
Signature

WORKS AS CONSTRUCTED
It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed
Signature ..... Andrew McPhail 6921, Jeff Griffiths 4115, Dean Payne 4802
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	13.12.17	
B	MJH	MJH	25.04.18	SIGNS AND LINEMARKING PLAN ADDED
C	MJH	MJH	25.05.18	DRG No 4 107 ADDED
D				
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
MICROFILM No.
PROJECT No. B07018

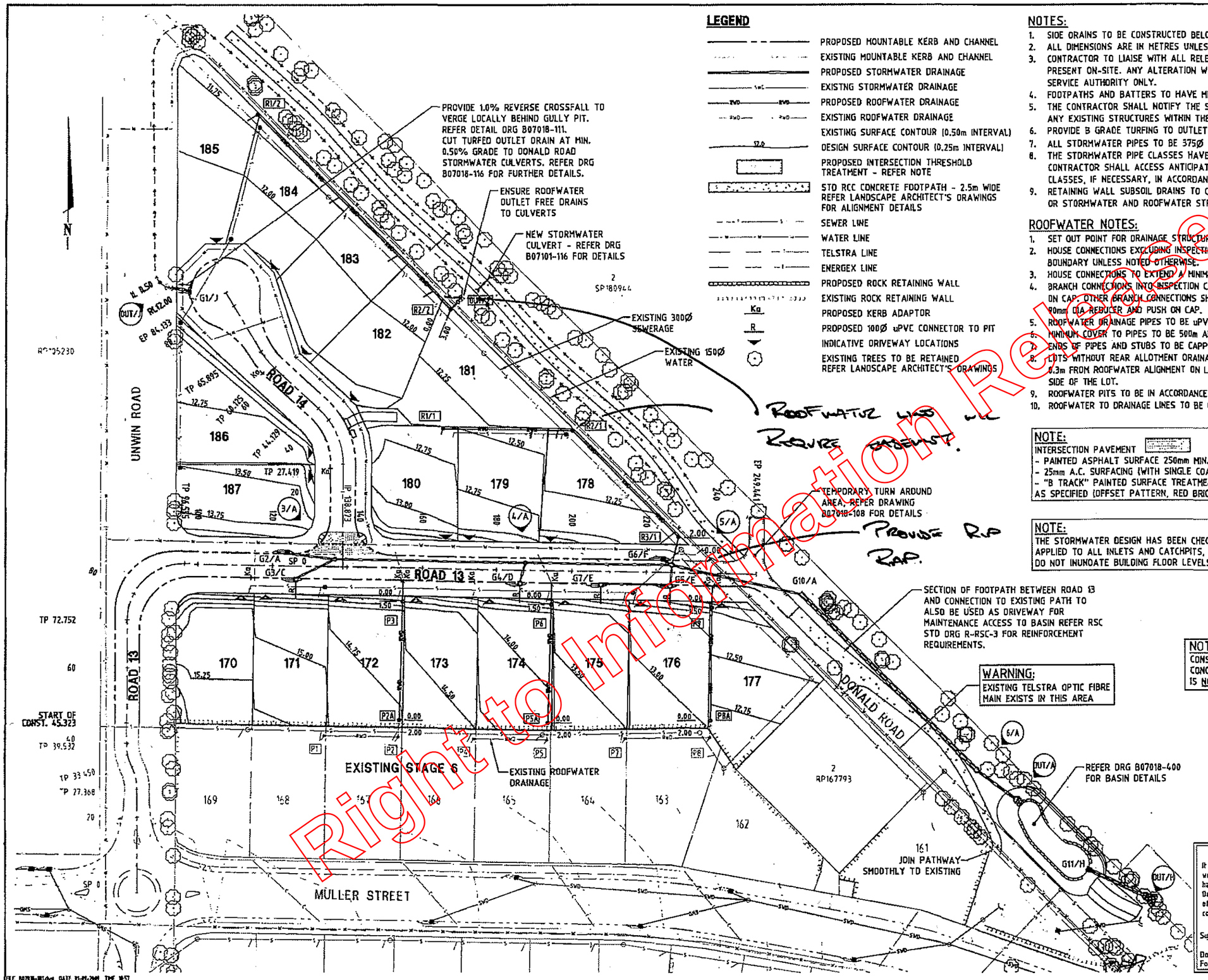
SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED Andrew McPhail RPEQ 6921, Jeff Griffiths RPEQ 4115, Dean Payne RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN

DRAWING TITLE: DRAWING INDEX AND LOCALITY PLAN
DRAWING NUMBER: B07018-100
ISSUE: B



LEGEND

- PROPOSED MOUNTABLE KERB AND CHANNEL
- EXISTING MOUNTABLE KERB AND CHANNEL
- PROPOSED STORMWATER DRAINAGE
- EXISTNG STORMWATER DRAINAGE
- PROPOSED ROOFWATER DRAINAGE
- EXISTING ROOFWATER DRAINAGE
- EXISTING SURFACE CONTOUR (0.50m INTERVAL)
- DESIGN SURFACE CONTOUR (0.25m INTERVAL)
- PROPOSED INTERSECTION THRESHOLD TREATMENT - REFER NOTE
- STD RCC CONCRETE FOOTPATH - 2.5m WIDE REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR ALIGNMENT DETAILS
- SEWER LINE
- WATER LINE
- TELSTRA LINE
- ENERGEX LINE
- PROPOSED ROCK RETAINING WALL
- EXISTING ROCK RETAINING WALL
- PROPOSED KERB ADAPTOR
- PROPOSED 100Ø uPVC CONNECTOR TO PIT
- INDICATIVE DRIVEWAY LOCATIONS
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS

NOTES:

1. SIDE DRAINS TO BE CONSTRUCTED BELOW ALL KERB AND CHANNEL AS PER RCC STANDARDS.
2. ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE.
3. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE. ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY.
4. FOOTPATHS AND BATTERS TO HAVE MINIMUM OF 75mm TOPSOIL (AND GRASSING IF ORDERED).
5. THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
6. PROVIDE B GRADE TURFING TO OUTLETS AS DIRECTED BY THE SUPERINTENDENT.
7. ALL STORMWATER PIPES TO BE 375Ø R.C.P. OR F.R.C. CLASS 2 UNLESS NOTED OTHERWISE.
8. THE STORMWATER PIPE CLASSES HAVE BEEN DESIGNED FOR SERVICE LOADS ONLY, AND THE CONTRACTOR SHALL ACCESS ANTICIPATED CONSTRUCTION LOADS AND UPGRADE THE PIPE CLASSES, IF NECESSARY, IN ACCORDANCE WITH A.S. 3725 - 1989.
9. RETAINING WALL SUBSOIL DRAINS TO CONNECT TO KERB AND CHANNEL SUBSOIL, SWALE SUBSOIL, OR STORMWATER AND ROOFWATER STRUCTURES.

ROOFWATER NOTES:

1. SET OUT POINT FOR DRAINAGE STRUCTURES IS TO THE GEOMETRIC CENTRE.
2. HOUSE CONNECTIONS EXCLUDING INSPECTION PITS SHALL BE LOCATED 4.0m UPSTREAM OF THE SIDE BOUNDARY UNLESS NOTED OTHERWISE.
3. HOUSE CONNECTIONS TO EXTEND A MINIMUM OF 1m PAST ADJACENT SEWER LINES.
4. BRANCH CONNECTIONS INTO INSPECTION CHAMBERS SHALL BE 100mm DIA WITH A 100mm-90mm PUSH ON CAP. OTHER BRANCH CONNECTIONS SHALL BE THROUGH PIPE DIA X 100mm "YJ" WITH 100mm - 90mm DIA REDUCER AND PUSH ON CAP.
5. ROOFWATER DRAINAGE PIPES TO BE uPVC CLASS "SN4" OR FRC CLASS 2 WITH RUBBER RING JOINTS.
6. MINIMUM COVER TO PIPES TO BE 500m AND TO SUIT FINISHED SURFACE LEVEL.
7. ENDS OF PIPES AND STUBS TO BE CAPPED.
8. LOTS WITHOUT REAR ALLOTMENT DRAINAGE SHALL HAVE WITHIN 0.5m OF THE SIDE BOUNDARY, OR 0.3m FROM ROOFWATER ALIGNMENT ON LOT 172 AND 177, A KERB ENTRY ADAPTOR ON THE LOWEST SIDE OF THE LOT.
9. ROOFWATER PITS TO BE IN ACCORDANCE WITH LM.E.A.Q. STD DRG D-0110.
10. ROOFWATER TO DRAINAGE LINES TO BE CONNECTED WITH EPOXY SADDLE JOINT.

NOTE:
INTERSECTION PAVEMENT
- PAINTED ASPHALT SURFACE 250mm MIN. COMPACTED DEPTH GRAVEL PAVEMENT.
- 25mm A.C. SURFACING (WITH SINGLE COAT 7mm CHIP SEAL).
- "B TRACK" PAINTED SURFACE TREATMENT OR APPROVED EQUIVALENT COMPLETE AS SPECIFIED (OFFSET PATTERN, RED BRICK INFILL).

NOTE:
THE STORMWATER DESIGN HAS BEEN CHECKED WITH A 50% BLOCKAGE FACTOR APPLIED TO ALL INLETS AND CATCHPITS, TO ENSURE OVERLAND FLOWS LEVELS DO NOT INUNDATE BUILDING FLOOR LEVELS.

NOTE:
CONSTRUCTION OF 2.5m WIDE SHARED CONCRETE PATHWAY IN DONALD ROAD IS NOT PART OF STAGE 7 CIVIL WORKS

WARNING:
EXISTING TELSTRA OPTIC FIBRE MAIN EXISTS IN THIS AREA

ROOFWATER LINE TO REQUIRE EASEMENT.

PROVIDE RIP RAP.

Redland City Council
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Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Signature .....
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-101.dwg DATE 11-09-2009 TIME 10:57
Ref's X_B07018-TITLE X_B07018-BASE USR. Ian Lynch

PRINT	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	KJH	KJH	12.12.07	
A	KJH	KJH	25.04.08	ROAD 13 CURVE WIDENING AMENDED / PRAM RAMPS ADDED
B	KJH	KJH	23.6.09	GULLY PIT G1/E AND RWD PITS ADDED AND NOTE AMENDED
C	KJH	KJH	15.06.09	SWD LINE A AMENDED
D	KJH	KJH	25.08.09	SWD / RWD AMENDED
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES) 1:500 10 5 0 10 20 A1 1:1000 A3
MICROFILM No.
PROJECT No. B07018

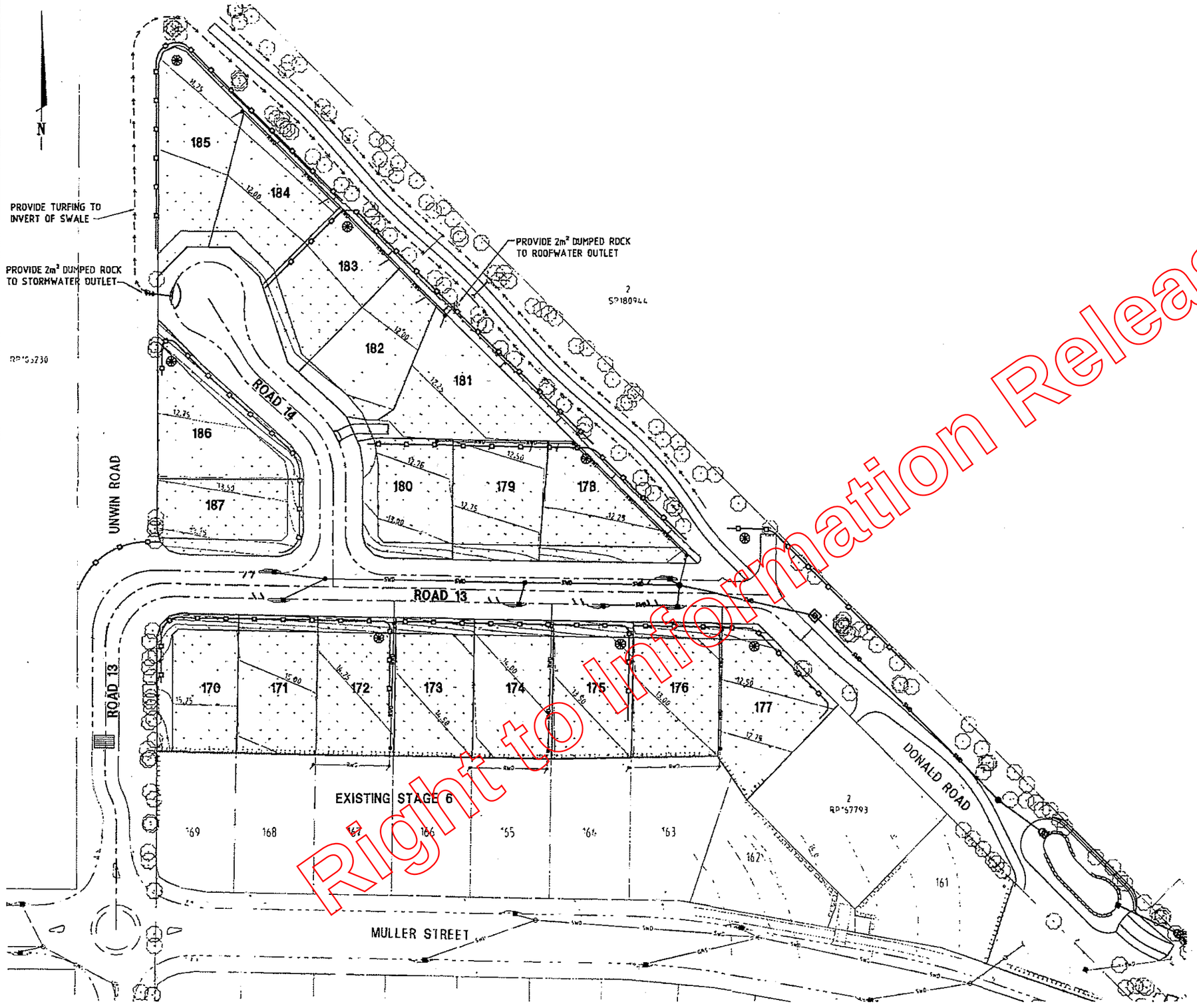
SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED Dean Payne
ANDREW McPHAIL RPEQ 4971
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN

DRAWING TITLE: ROADWORKS AND DRAINAGE LAYOUT PLAN
DRAWING NUMBER: B07018-101
ISSUE: D



LEGEND

- SEDIMENT FENCE (OR AS DIRECTED BY SITE ENGINEER)
- KERB INLET PROTECTION (SAG GULLIES)
- KERB INLET PROTECTION (GULLIES ON GRADE)
- FIELD INLET PROTECTION
- EARTHWORKS AREAS TO BE TOP SOILED AND GRASS SEEDED
- TEMPORARY ENTRY/EXIT DEVICE - REFER DETAIL
- 12.0 PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS

NOTES:
1. REFER DRG B07018-103 FOR NOTES AND DETAILS.
2. PROVIDE 'GRADE B' TURFING WITH RETURNS TO-
   - FULL VERGE BETWEEN KERB AND LOT BOUNDARY.
   - 2 STRIPS BEHIND DRIVEWAYS AND PATHWAYS
   - AND TO TOTAL WIDTH OF SWALES.

REFER DRG B07018-103 FOR TYPICAL DETAIL.

⊛ PROVIDE 'SPILL THROUGH WEIR' IN SEDIMENT FENCE. 'SPILL THROUGH WEIR' TO BE GENERALLY IN ACCORDANCE WITH SILT FENCE DETAIL WITH GEOTEXTILE FABRIC TO BE WRAPPED AROUND STAR PICKET PLACED HORIZONTAL APPROX 400mm ABOVE FINISHED SURFACE.

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PRINT ISSUE	CHECK	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.97	
B	MJH	MJH	25.04.98	TURFING NOTE AMENDED
C	MJH	MJH	27.04.99	EXP ADDED TO NEW GULLY
D	MJH	MJH	25.08.99	RWD / SWD AMENDED
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE 1 METRES 1
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT AMEX SUBDIVISIONS PTY LTD

PROJECT VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN

DRAWING TITLE
EROSION AND SEDIMENT CONTROL LAYOUT PLAN

DRAWING NUMBER B07018-102

ISSUE C

EROSION AND SEDIMENT CONTROL NOTES

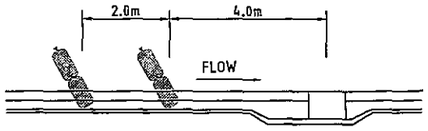
1. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO CONTROL & MINIMISE EROSION AND DOWNSTREAM SEDIMENTATION OURING ALL STAGES OF CONSTRUCTION INCLUDING THE MAINTENANCE PERIOD.
2. ALL PERIMETER BANK/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
3. IT ALL TIMES THE CONTRACTOR SHALL MONITOR THE PREVAILING WEATHER CONDITIONS AND PROTECT ANY DOWNSTREAM CONSTRUCTION AND GULLY INLETS.
4. INLETS SHALL HAVE SILT PROTECTION IN ACCOROANCE WITH KERB INLET PROTECTION DETAIL AT LOCATIONS SHOWN OR AS DIRECTED BY THE SUPERINTENDENT.
5. THE EXTENT OF GRASSING SHALL BE DETERMINED BY THE SUPERINTENDENT AND SHALL BE SEEDED, AS SPECIFIED, WITHIN SEVEN DAYS OF FINAL TRIMMING.
6. CONSTRUCT WASH OOWN BAY OR SHAKE DOWN AT ENTRY/EXIT TO COUNCIL STANDARDS AND TO THE SATISFACTION OF COUNCIL'S LICENSING AND COMPLIANCE OFFICER.
7. CLEARING OF SITE AND STOCKPILE SITE TO BE OETERMINED ON SITE BY SUPERINTENDENT AND IS TO BE CLEAR OF ANY WATER COURSE.
8. WHERE POSSIBLE PROVIDE CUT-OFF DRAINS TO DIVERT CLEAN WATER FROM UNDISTURBED CATCHMENT.
9. PROVIDE 2 TURF STRIPS OVER SEWER/ROOFWATER LINES WHERE ADJACENT TO EXISTING PROPERTIES.
10. ALL SEDIMENT FENCES TO BE INSTALLED TO THE SATISFACTION OF COUNCIL'S LICENSING AND COMPLIANCE OFFICER.
11. ALL OPEN ENDED PIPEWORK LOCATED IN OPEN TRENCHES AND INCOMPLETE PITS ARE TO BE CAPPED WITH SUITABLE FILTER CLOTH AT THE END OF EACH DAYS' WORK AND IMMEDIATELY PRIOR TO STORMS.
12. ALL MATERIALS TRACKED OR SEDIMENT WASHED ONTO COUNCIL'S ROAD FROM THE DEVELOPMENT ARE TO BROOMED UP AND COLLECTED.
13. ALL TEMPORARY EROSION AND SEDIMENT CONTROL (ESC) MEASURES ARE TO BE MAINTAINED AND FULLY OPERATIONAL DURING THE MAINTENANCE PERIOD, AND ARE TO BE REMOVED AFTER THE SATISFACTORY COMPLETION OF AN "OFF MAINTENANCE" INSPECTION AND PRIOR TO FORMAL ACCEPTANCE BY COUNCIL.
14. NO OBSTRUCTIONS SHALL BE PLACED ON COUNCIL'S PUBLIC ROADS OR GULLY PITS FOR SAFETY REASONS
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH COUNCIL'S REQUIREMENTS IN RELATION TO GRASS STRIKE AND GRASS COVERAGE RATES AT THE ON AND OFF MAINTENANCE INSPECTIONS
16. NOTWITHSTANDING THE DESIGN SHOWN ON THE DRAWINGS THE CONTRACTOR IS RESPONSIBLE TO IMPLEMENT SEDIMENT CONTROL OEVICES USING BEST PRACTICES AS NECESSARY TO MINIMISE THE QUANTITY OF SEDIMENT LEAVING THE SITE.
17. SOME VARIATIONS TO THE SPECIFIED CONSTRUCTION SEQUENCE MAY BE NECESSARY IN CERTAIN AREAS TO FACILITATE CONSTRUCTION. WHERE THIS IS THE CASE, ANY VARIATION MUST BE APPROVED BY THE SUPERINTENDENT PRIOR TO IMPLEMENTATION.

SEDIMENT MANAGEMENT PROGRAM:

1. CLEARING
- SEDIMENT FENCES TO BE CONSTRUCTED AS INDICATED OR REQUIRED.
- EXISTING GRASSED AREAS TO REMAIN WHERE POSSIBLE.
- SHAKE DOWN/WASH DOWN BAY AT ENTRY/EXIT POINT AS REQUIRED BY SUPERINTENDENT.
- REFER ALSO TO VEGETATION MANAGEMENT PLAN
- SUPERINTENDENT TO CONFIRM EXTENT OF CLEARING TO CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS
2. EARTHWORKS
- SEDIMENT FENCES AND DIVERSION DRAINS TO BE CONSTRUCTED AS INDICATED OR REQUIRED.
3. SEWER/RDOFWATER/STORMWATER/ SERVICES
- EXCAVATED MATERIAL TO BE PLACED ON HIGH SIDE OF TRENCH AND TO PROTECT PIPE WORK AND DIRECT SURFACE RUNOFF AWAY FROM EXCAVATIONS.
- TOPSOIL AND GRASS SEED AREAS IN ALLOTMENTS IMMEDIATELY AFTER COMPLETING THE SEWER AND ROOFWATER DRAINAGE CONSTRUCTION AND TURF OVER TRENCHES WHERE ADJACENT TO EXISTING PROPERTIES.
4. STOCKPILE
- SEDIMENT FENCE TO BE ERECTED 5m FROM TOE OF BATTER ON LOW SIDE OF STOCKPILE.
- CUT OFF DRAIN ON HIGH SIDE TO DIRECT SURFACE RUNOFF AROUND STOCKPILE.
5. ROADWORKS
- SEDIMENT FENCES TO ALLOTMENTS TO BE ERECTED.
- KERB INLET PROTECTION TO BE PROVIDED TO ALL GULLIES UNLESS NOTED OTHERWISE.
- TURF FILTER STRIPS BEHIND KERB AND CHANNEL.
6. ALLOTMENTS
- MULCH, TOPSOIL AND SEED ALLOTMENTS AS DIRECTED.
- SEDIMENT FENCES TO ALLOTMENTS TO BE ERECTED.
- COVERS TO GULLY GRATES TO BE REMOVED IF THE SUPERINTENDENT INDICATES THE GRASS STRIKE IS SUFFICIENT.
7. MAINTENANCE PERIOD
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED:
  - AT LEAST DAILY (WHEN WORK IS OCCURRING ON SITE) OR WEEKLY (WHEN WORK IS NOT OCCURRING ON SITE)
  - WITHIN 24 HOURS OF EXPECTED RAIN; AND
  - WITHIN 18 HOURS OF A RAINFALL EVENT
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED THE SAME DAY WHEN THE CAPACITY OF THE EROSION AND SEDIMENT CONTROL MEASURE FALLS BELOW 75%.
- ANY REPAIRS TO EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE EFFECTED IMMEDIATELY. SEDIMENT AFTER RAIN IS TO BE CLEANED FROM STREETS AND ALLOTMENTS IMMEDIATELY AND CORRECTIVE ACTION TAKEN TO AVOID A RE-OCCURRENCE OF THE FAILURE.

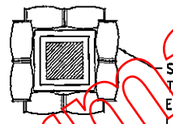
CONSTRUCTION SEQUENCE:

A. CONSTRUCT ENTRY AND EXIT POINTS TOGETHER WITH SHAKE DOWN DEVICE.
B. ERECT SEDIMENT FENCES ALONG DOWNSTREAM ADJACENT PROPERTY BOUNDARIES AS DIRECTED.
C. CLEARING, GRUBBING AND STRIPPING OF THE SITES EARTHWORKS AREAS.
D. UNDERTAKE EARTHWORKS OPERATIONS. CONSTRUCT BIO RETENTION BASIN, EXCLUDING FILTER MATERIAL.
E. CONSTRUCT ALL UNDERGROUND HYDRAULIC SERVICES ENSURING STORMWATER DRAINS REMAIN CAPPED DURING CONSTRUCTION.
F. PLACE SEDIMENT FENCES AT BOUNDARIES ADJACENT TO ROADWAYS WHERE LOT SLOPES TOWARDS ROAD.
G. TOPSOIL AND SEED ALL LOTS FOLLOWING PROGRESSIVE COMPLETION OF KERB AND CHANNEL.
H. ON COMPLETION OF WORKS AND 70% GRASS COVER AND APPROVAL BY COUNCIL, SEDIMENT CONTROL DEVICES TO BE REMOVED.
I. COMPLETE BIO RENTENTION BASIN FILTER MEDIA TO THE SUPERINTENDENTS DIRECTIONS.



GULLIES ON GRADE
NTS

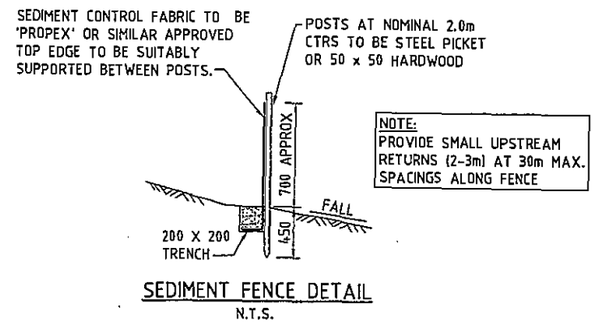
SAG GULLIES
NTS



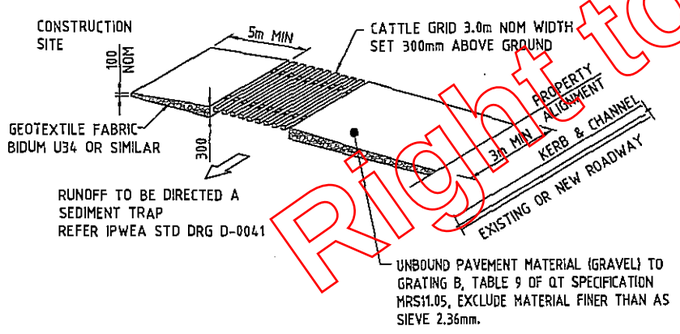
SAND BAG PROTECTION (SAND BAGS TO BE EMBEDDED 50mm, AND ARE TO EXTEND 150mm ABOVE THE INVERT LEVEL OF INLET)

FIELD INLET
NTS

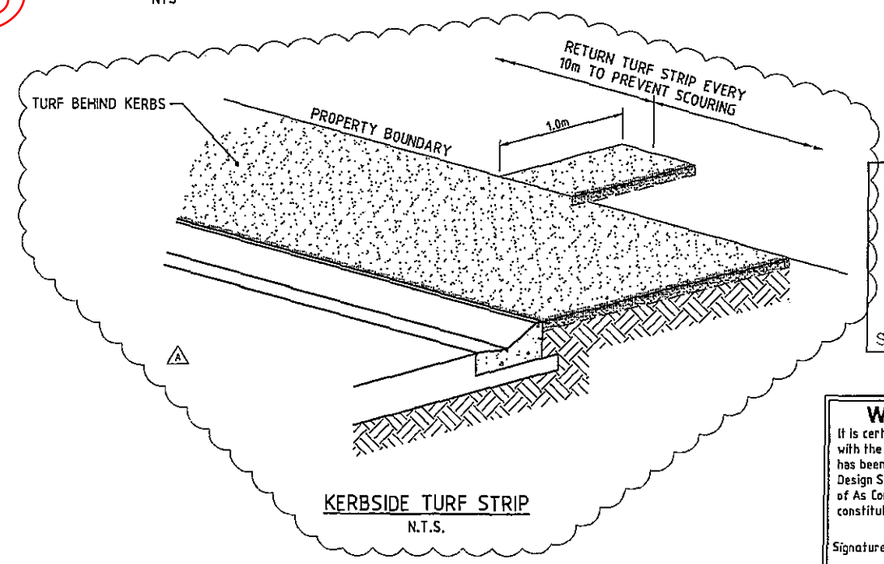
SANDBAGS AT GULLIES
TO BE PROVIDED AT ALL GULLIES



SEDIMENT FENCE DETAIL
N.T.S.



TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP
NTS



KERBSIDE TURF STRIP
N.T.S.

Redland City Council
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Signature .....

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Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-103.dwg DATE: 25-06-2008 TIME: 1440
Xref's: X_B07018-TITLE USR: mark hastings

ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	TURF DETAIL AMENDED
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

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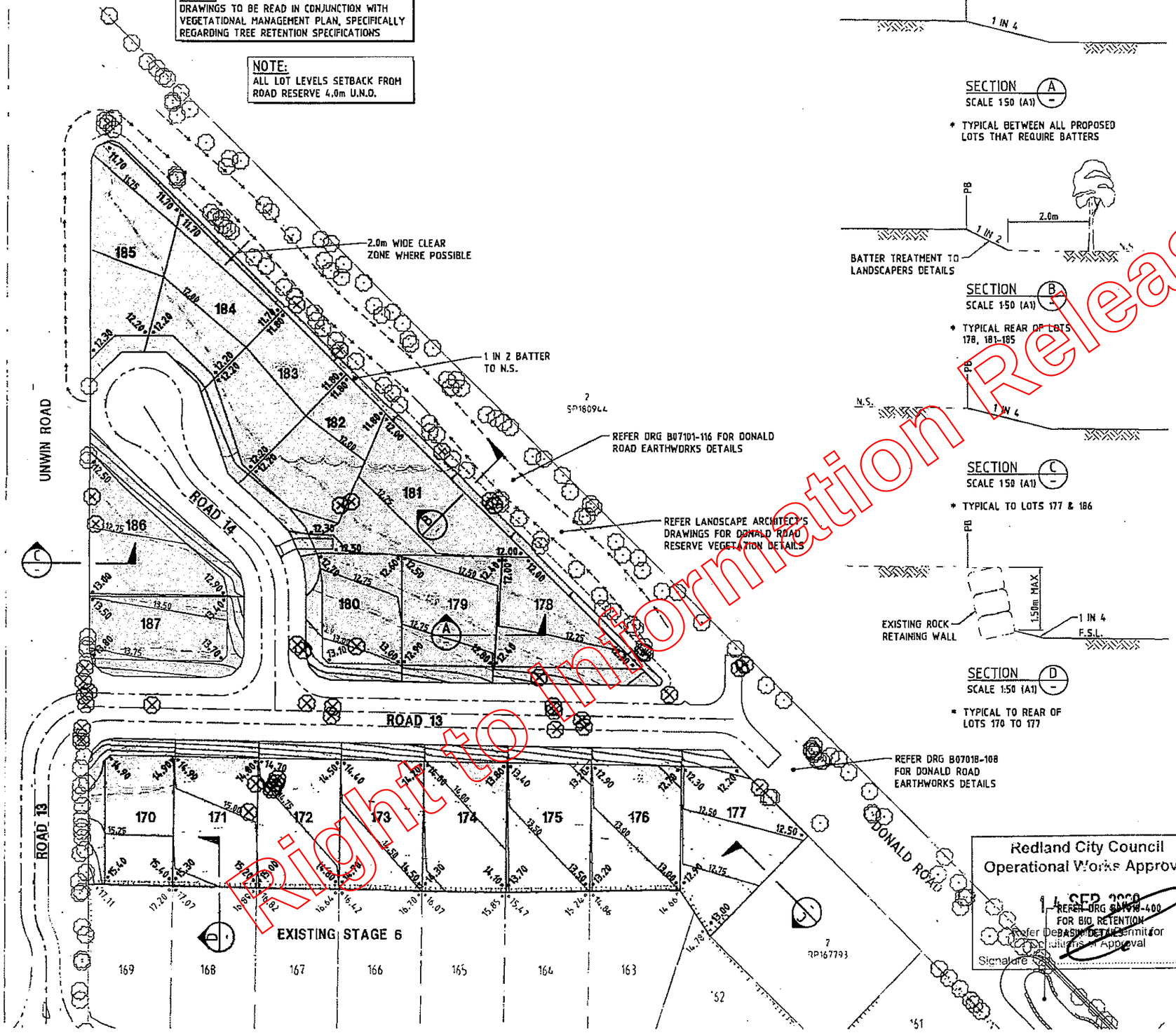
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

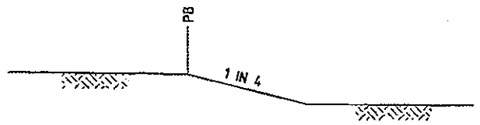
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol

DRAWING TITLE: EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
DRAWING NUMBER: B07018-103
ISSUE: A

NOTE:
DRAWINGS TO BE READ IN CONJUNCTION WITH VEGETATIONAL MANAGEMENT PLAN, SPECIFICALLY REGARDING TREE RETENTION SPECIFICATIONS

NOTE:
ALL LOT LEVELS SETBACK FROM ROAD RESERVE 4.0m U.N.O.





SECTION A
SCALE 1:50 (A1)

* TYPICAL BETWEEN ALL PROPOSED LOTS THAT REQUIRE BATTERS

SECTION B
SCALE 1:50 (A1)

* TYPICAL REAR OF LOTS 178, 181-185

SECTION C
SCALE 1:50 (A1)

* TYPICAL TO LOTS 177 & 186

SECTION D
SCALE 1:50 (A1)

* TYPICAL TO REAR OF LOTS 170 TO 177

LEGEND

- 12.00 — PROPOSED FINISHED SURFACE LEVEL
- 12.0 — PROPOSED SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING SURFACE CONTOURS (0.50m INTERVAL)
- PROPOSED ROCK RETAINING WALL
- EXISTING ROCK RETAINING WALL
- AREA OF CUT
- AREA OF FILL
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS
- EXISTING TREES TO BE REMOVED REFER LANDSCAPE ARCHITECT'S DRAWINGS

EARTHWORKS NOTES:

1. NOTWITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE CROSS SECTIONS, THE ACTUAL LIMITS SHALL BE DETERMINED ON-SITE BY THE ENGINEER DURING CONSTRUCTION AND SIMILARLY THE FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE ENGINEER DURING CONSTRUCTION
2. SUBGRADE TEST RESULTS TO BE FORWARDED TO SUPERVISING ENGINEER FOR DETERMINATION OF BOX DEPTHS PRIOR TO EXCAVATION. TESTS SHALL INCLUDE SOAKED CBR AND/OR OTHER TESTS AS REQUESTED BY THE SUPERVISING ENGINEER.
3. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY
4. ALL FILL IS TO BE COMPACTED IN ACCORDANCE WITH R.C.C. GUIDELINES AND SPECIFICATIONS UNLESS NOTED OTHERWISE
5. THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
6. ALL DRAINAGE STRUCTURES TO BE PRESERVED FROM THE EFFECTS OF STRUCTURAL LOADING GENERATED BY THE EARTHWORKS.

FAUNA MANAGEMENT NOTES:

1. AT LEAST 14 DAYS BEFORE COMMENCEMENT OF ANY VEGETATION REMOVAL, DEWATERING OR EARTHWORKS, THE DEVELOPER MUST APPOINT AN ACCREDITED WILDLIFE SPOTTER TO EXAMINE THE SITE FOR WILDLIFE HABITAT, AND TO SUPERVISE CLEARING OPERATIONS.
2. PRIOR TO THE PRE-START MEETING, THE SPOTTER SHOULD PROVIDE COUNCIL WITH A PLAN INDICATING THE BROARD RANGE OF FAUNA EXPECTED ON THE SITE, THE PROPOSED METHOD OF OPERATION, AND ANY EXPECTED CONSTRAINTS.
3. DURING CLEARING OPERATIONS, THE CLEARING CONTRACTOR MUST:
   - LIAISE WITH THE ON-SITE SPOTTER; AND
   - ENSURE THAT EACH TREE OR OTHER FEATURE IDENTIFIED BY THE SPOTTER AS BEING A RISK TO WILDLIFE IF FELLED, DISTRUBED OR DEWATERED, IS NOT DAMAGED OR DISTURBED UNTIL THE SPOTTER ADVISES THAT IT IS APPROPRIATE TO DO SO.
4. BEFORE COMMENCEMENT OF AND DURING CLEARING OPERATIONS, IT IS THE RESPONSIBILITY OF THE SPOTTER TO:
   - BE PRESENT AT THE SITE OF CLEARING, DEWATERING, AND OTHER OPERATIONS;
   - IDENTIFY ANY TREE OR FEATURE WITH WILDLIFE PRESENT, AS WELL AS ANY TREE THAT HAS A CROWN WHICH IS INTERMESHED OR OVERLAPPING WITH SUCH A TREE; ADVISE THE CONTRACTOR OF THE PRECISE LOACTION OF EACH SUCH TREE OR OTHER FEATURE.

Redland City Council
Operational Works Approval
14 SEP 2009
REFER DRG SW018-400 FOR BIO RETENTION BASIN DETAILS
Refer Decision Notice/Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature ..... Andrew McPhail 6921, Jeff Griffiths 4115, Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004762.7

FILE: B07018-104.dwg DATE: 11-09-2009 TIME: 15:04
Xref's: X_B07018-TITLE X_B07018-BASE USR: Tom Lynch

PRINT ISSUE	CADCHK	DRAWCHK	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	EXISTING TREE SURVEY UPDATED
C	MJH	MJH	23.09.09	LOT 177 LEVELS, SECTION B AMENDED & SANDSTONE WALL DETAIL REMOVED
D	MJH	MJH	25.08.09	DONALD ROAD EARTHWORKS
E				
F				

DESIGN CHECK:
DRAWN CHECK:
SCALE 1 METRE)
1:500 10 5 0 10 20 A1
1:1000 A3
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED: ANDREW McPHAIL RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN

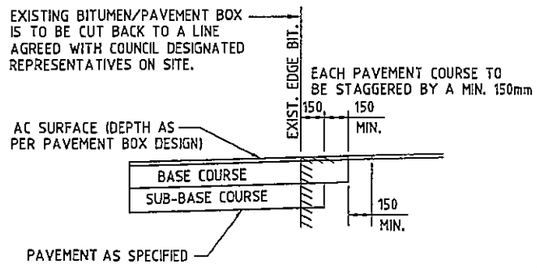
DRAWING TITLE: BULK EARTHWORKS LAYOUT PLAN
DRAWING NUMBER: B07018-104
ISSUE: C

PRELIMINARY PAVEMENT DESIGN

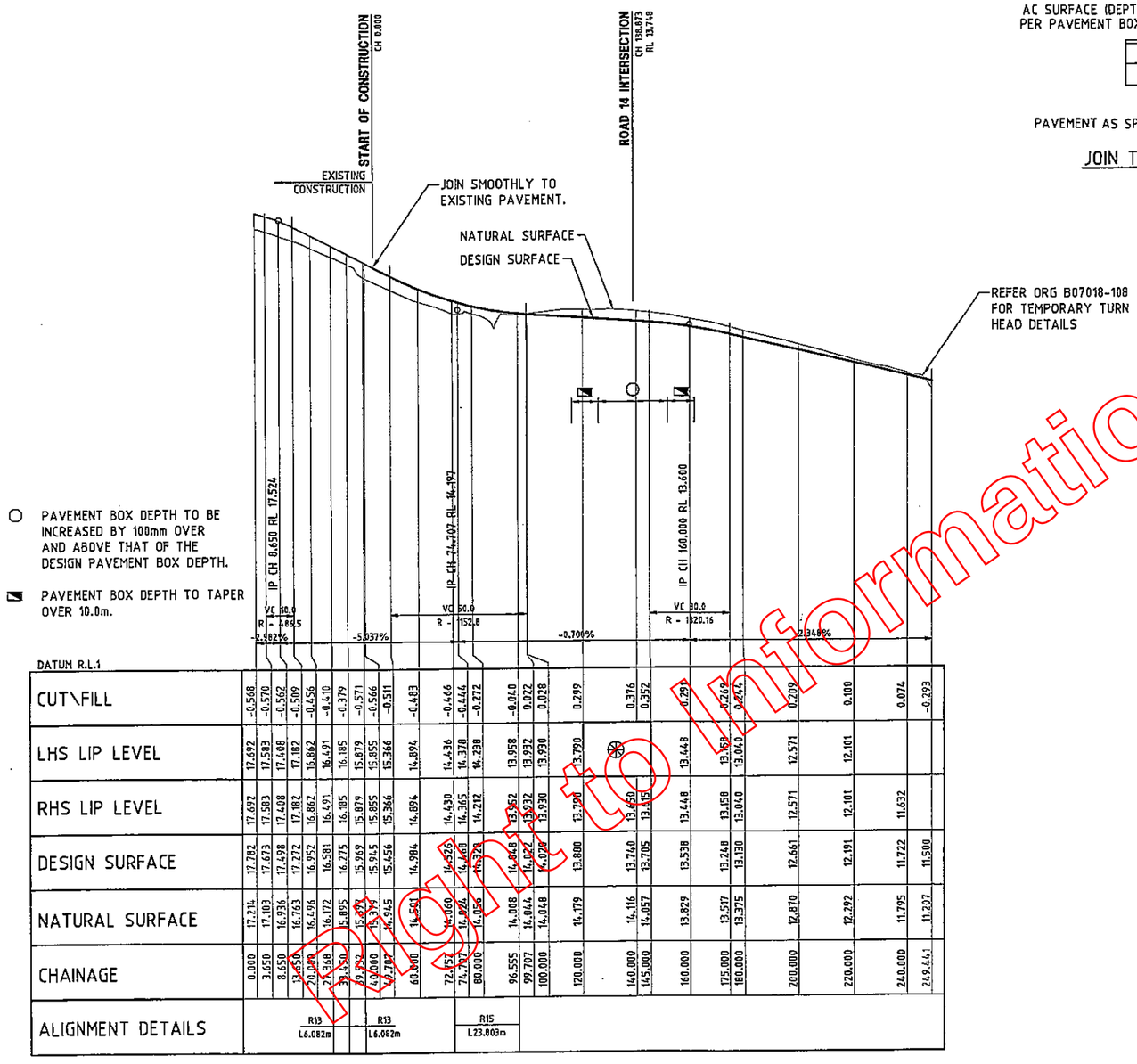
ROAD	TRAFFIC ESA'S	ROAD CLASS	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BDX (MM)
ROAD 13	5×10^4	A	25 #	125	125	-	280

NOTE:
PRELIMINARY PAVEMENT DESIGNS HAVE BEEN BASED ON MINIMUM REQUIREMENTS. ACTUAL PAVEMENT DESIGNS WILL BE BASED ON TEST RESULTS TAKEN AFTER STRIPPING HAS BEEN COMPLETED.

A 7mm SINGLE COAT 'CHIP SEAL' IS TO BE PLACED UNDER AC SURFACING ON ALL ROADS. (RSC REQUIRMENT) REFER TO RSC STANDARDS FOR SPRAY RATES.



JOIN TO EXISTING PAVEMENT DETAIL
N.T.S.



○ PAVEMENT BOX DEPTH TO BE INCREASED BY 100mm OVER AND ABOVE THAT OF THE DESIGN PAVEMENT BOX DEPTH.

PAVEMENT BOX DEPTH TO TAPER OVER 10.0m.

DATUM R.L.1

CUT\FILL	-0.568	-0.570	-0.562	-0.509	-0.456	-0.410	-0.379	-0.571	-0.566	-0.511	-0.483	-0.466	-0.444	-0.272	-0.040	0.022	0.028	0.299	0.376	0.352	0.291	0.269	0.209	0.100	0.074	-0.293
LHS LIP LEVEL	17.692	17.583	17.408	17.182	16.862	16.691	16.185	15.879	15.855	15.366	14.894	14.436	14.378	14.238	13.958	13.932	13.930	13.790	⊛		13.448	13.158	13.040	12.571	12.101			
RHS LIP LEVEL	17.692	17.583	17.408	17.182	16.862	16.691	16.185	15.879	15.855	15.366	14.894	14.430	14.365	14.212	13.952	13.932	13.930	13.790	13.650	13.415	13.448	13.158	13.040	12.571	12.101	11.632		
DESIGN SURFACE	17.782	17.673	17.498	17.272	16.952	16.581	16.275	15.969	15.945	15.456	14.984	14.526	14.468	14.322	14.048	14.027	14.028	13.880	13.740	13.705	13.538	13.248	13.130	12.661	12.191	11.722	11.509	
NATURAL SURFACE	17.214	17.103	16.936	16.763	16.496	16.172	15.895	15.629	15.317	14.945	14.591	14.160	14.064	14.056	14.008	14.044	14.048	14.179	14.116	14.057	13.829	13.577	13.375	12.870	12.292	11.795	11.207	
CHAINAGE	0.000	3.650	8.650	13.650	20.088	27.368	33.450	39.592	46.000	52.707	60.000	72.153	74.707	80.000	96.555	99.707	100.000	120.000	140.000	145.000	160.000	175.000	180.000	200.000	220.000	240.000	249.441	
ALIGNMENT DETAILS	R13 L6.082m							R13 L6.082m						R15 L23.803m														

⊛ REFER INTERSECTION DETAILS FOR LIP LEVELS

WORKS AS CONSTRUCTED
It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed.

Signature ..... Andrew McPhail 6921, Jeff Griffiths 4115, Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-105.dwg DATE: 18-12-2007 TIME: 08:25
Xref's: X_B07018-TITLE X_B07018-ROADS USR: mark hastings

AMENDMENT	PRINT ISSUE	CALCS	DRAWN	DATE
	A	M.H	M.H	12.12.07
	B			
	C			
	D			
	E			
	F			

AMENDMENT DETAILS

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:1000 1:2000 HORIZONTAL A3
1:100 1:200 VERTICAL A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

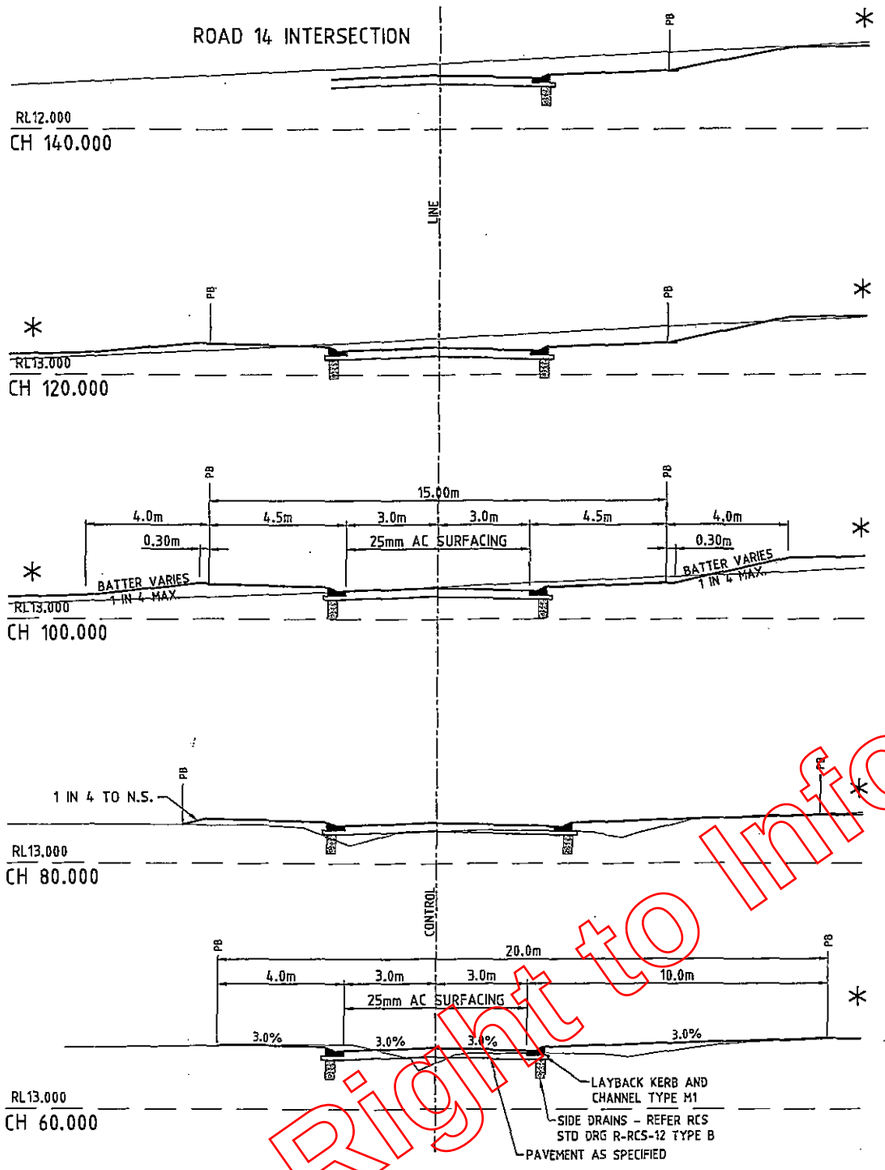
CLIENT: AMEX SUBDIVISIONS PTY LTD

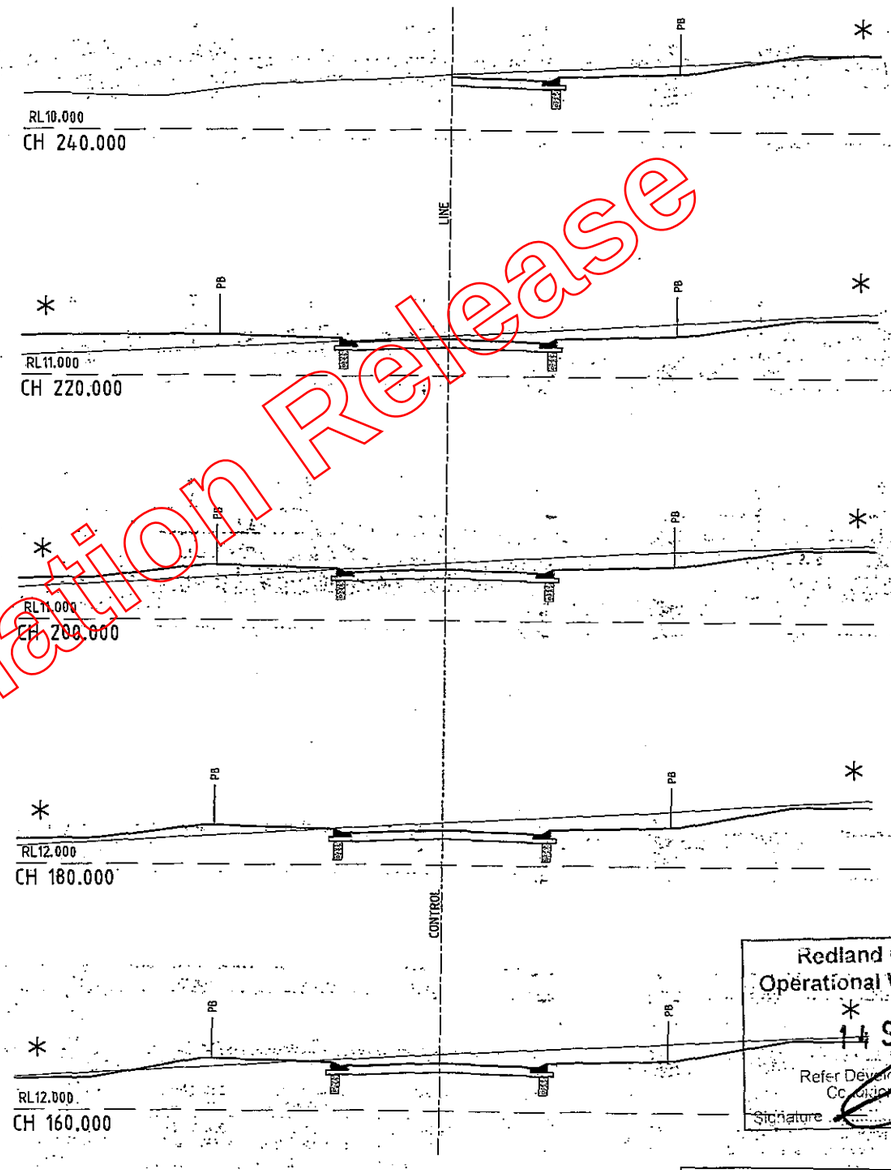
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Brunei
BROWN

DRAWING TITLE: ROAD 13 LONGITUDINAL SECTION

DRAWING NUMBER: B07018-105 ISSUE





* REFER B05018-104 FOR FINISHED SURFACE LEVELS

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-106.dwg DATE: 18-12-2007 TIME: 08:25
Xref's: X_B07018-TITLE X_B07018-ROADS USR: mark hastings

FIRST ISSUE	CALCS	DRAWN	DATE
	MJH	MJH	12.12.07

AMENDMENTS: A, B, C, D, E, F — AMENDMENT DETAILS

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:100 1 0 1 2 3 4 5 A1
1:200 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Tauranga

BROWN

DRAWING TITLE: ROAD 13 CROSS SECTIONS

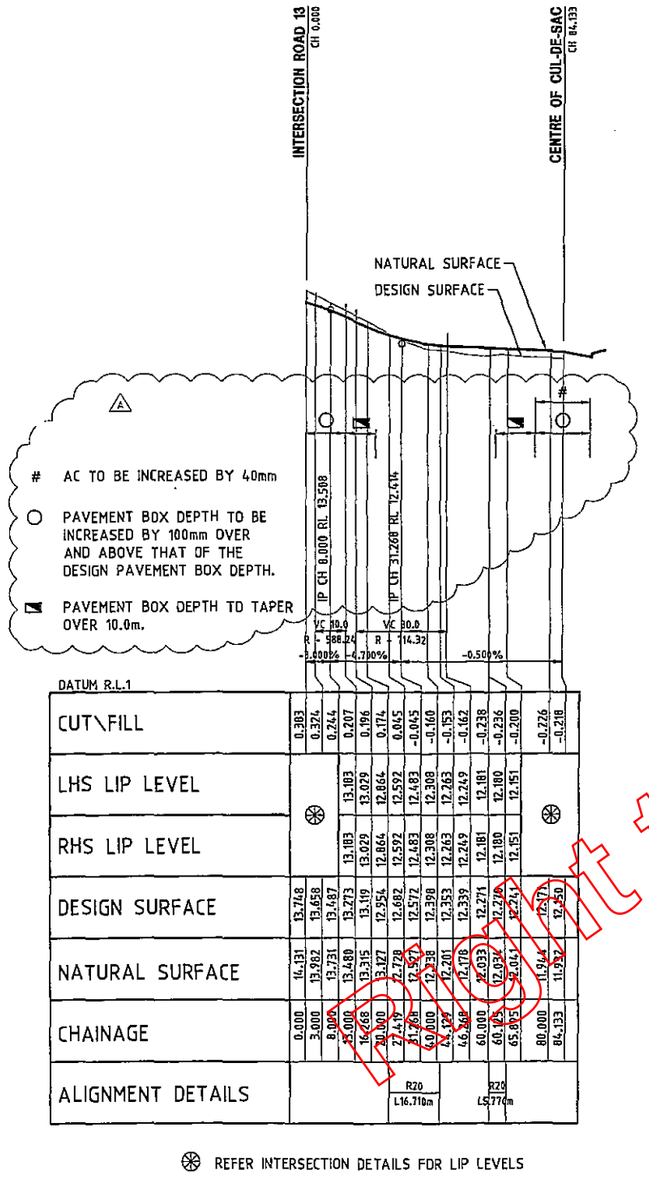
DRAWING NUMBER: B07018-106 ISSUE:

PRELIMINARY PAVEMENT DESIGN

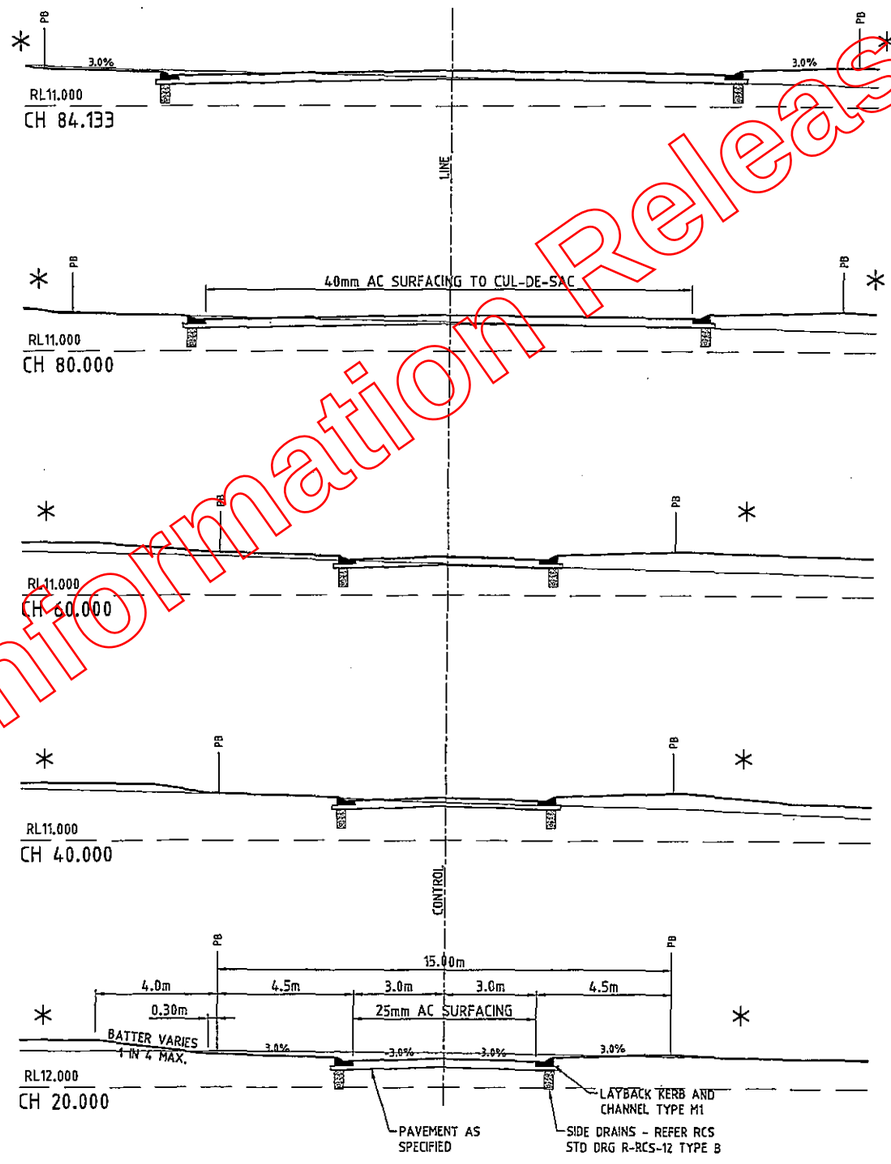
ROAD	TRAFFIC ESA'S	ROAD CLASS	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BOX (MM)
ROAD 14	5 x 10^4	A	25 #	125	125	-	280

NOTE:
PRELIMINARY PAVEMENT DESIGNS HAVE BEEN BASED ON MINIMUM REQUIREMENTS. ACTUAL PAVEMENT DESIGNS WILL BE BASED ON TEST RESULTS TAKEN AFTER STRIPPING HAS BEEN COMPLETED.

A 7mm SINGLE COAT 'CHIP SEAL' IS TO BE PLACED UNDER AC SURFACING ON ALL ROADS. (RSC REQUIRMENT) REFER TO RSC STANDARDS FOR SPRAY RATES.



⊛ REFER INTERSECTION DETAILS FOR LIP LEVELS



* REFER B07018-104 FOR FINISHED SURFACE LEVELS

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-107.dwg DATE: 25-06-2008 TIME: 1444
Xref's: X_B07018-TITLE X_B07018-ROADS USR: mark hastings

PRINT TABLE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
A	MJH	MJH	25.06.08	PAVEMENT AND AC DEPTHS AMENDED IN CUL-DE-SAC

SHEET SIZE: A B C D E F

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:1000 10 0 10 20 30 40 50 A1
1:2000 HORIZONTAL A3
1:100 2 1 0 2 4 A1
1:200 VERTICAL A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

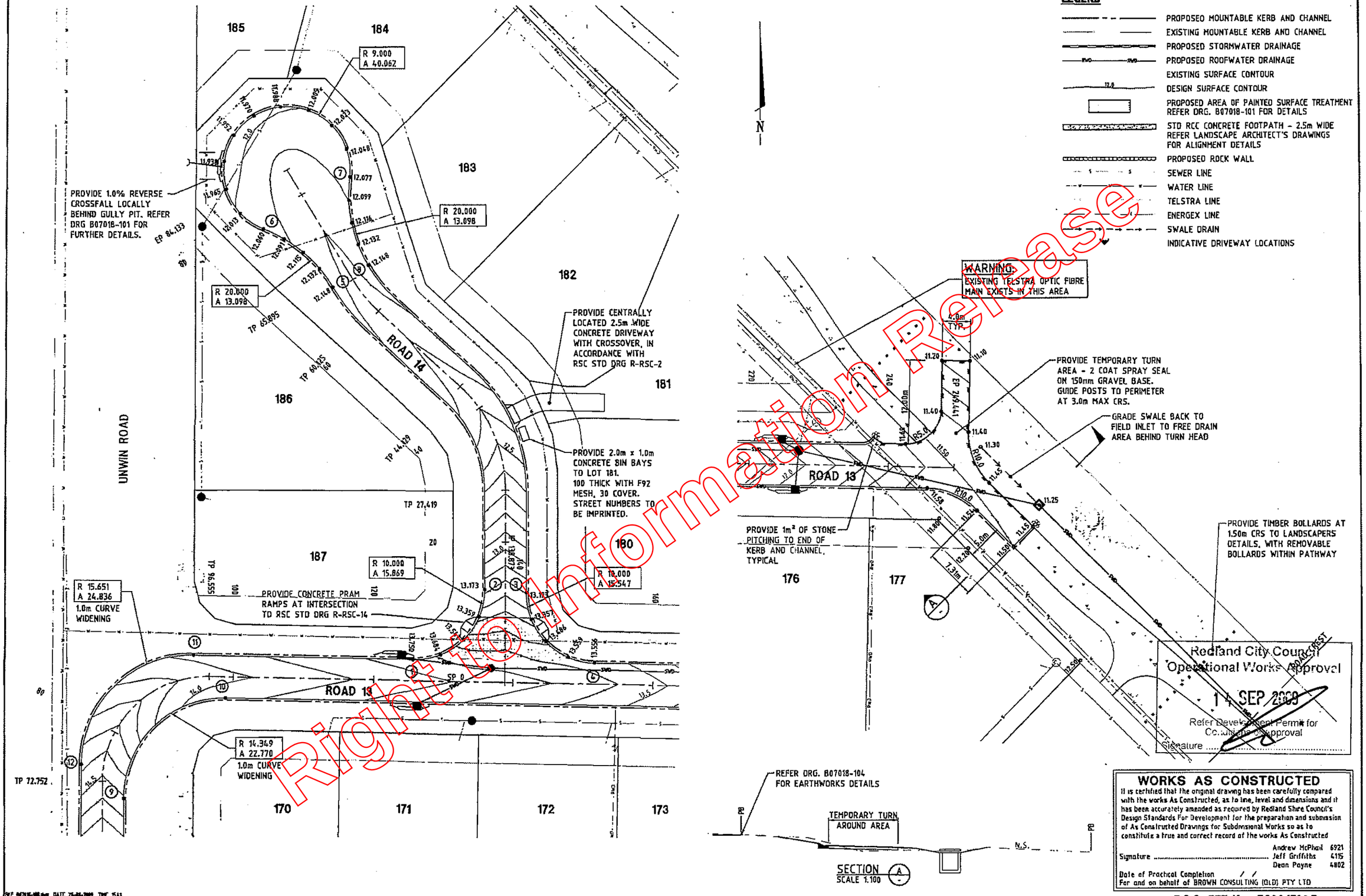
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3237 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Barcelona Coast Brunei

BROWN ACEA

DRAWING TITLE: ROAD 14 LONGITUDINAL SECTION AND CROSS SECTIONS

DRAWING NUMBER: B07018-107 ISSUE: A



WORKS AS CONSTRUCTED

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Signature .....
Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

PRINT DATE	CAD ID	DRAWN	CHECK	AMENDMENT DETAILS
A	KJH	KJH	12.12.07	
B	KJH	KJH	25.04.08	CURVE WIDENING AMENDED / PRAM RAMPS / TURNHEAD DETAILS AMENDED
C	KJH	KJH	23.09.09	LOT 177 / TURNHEAD EARTHWORKS DETAILS AND LEGEND AMENDED
D	KJH	KJH	25.09.09	RVD / SWD AMENDED
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES) 1:250 1:500 5 0 5 10 A1 A3
MICROFILM No.
PROJECT No. B07018

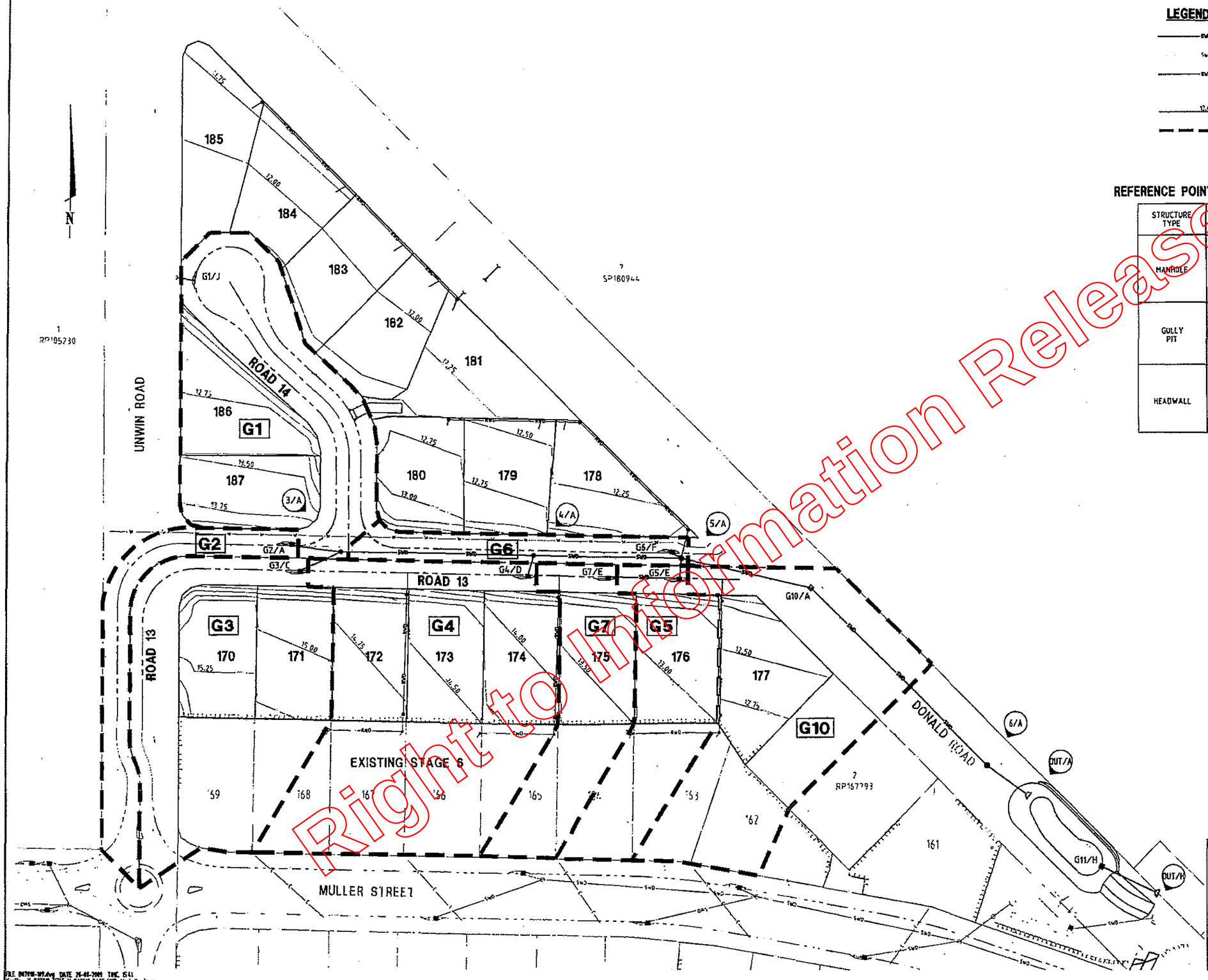
SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

DRAWING TITLE: INTERSECTION DETAILS LAYOUT PLAN
DRAWING NUMBER: B07018-108
ISSUE: C



LEGEND

- PROPOSED STORMWATER DRAINAGE
- EXISTING STORMWATER DRAINAGE
- PROPOSED ROOFWATER DRAINAGE
- EXISTING SURFACE CONTOURS
- PROPOSED SURFACE CONTOURS
- CATCHMENT BOUNDARY

REFERENCE POINT LOCATION FOR DRAINAGE STRUCTURES

STRUCTURE TYPE	HORIZONTAL CONTROL (REFERENCE POINT LOCATION)	VERTICAL CONTROL (REFERENCE LEVEL)
MANHOLE	℄ MAIN SHAFT	FINISHED SURFACE LEVEL
GULLY PIT	INTERSECTION OF ℄ PIT AND NOMINAL KERB LINE	LIP LEVEL
HEADWALL	INTERSECTION OF HEADWALL FACE & PIPE CENTRE LINE	INVERT LEVEL

CATCHMENT TABLE

CATCHMENT AREA	AREA (Ha)
G1	0.325
G2	0.099
G3	0.368
G4	0.464
G5	0.160
G6	0.068
G7	0.160
G10	0.328

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-109.dwg DATE 26-08-2009 TIME 15:41
Xref's X_B07018-TITLE X_B07018-BASE USR: Mark Heritage

PART	CADD	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	SWD AMENDED
C	MJH	MJH	23.07.09	CATCHMENT G7 AND MANHOLE NO 4/A ADDED
D				RWD / SWD AMENDED
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW MCPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

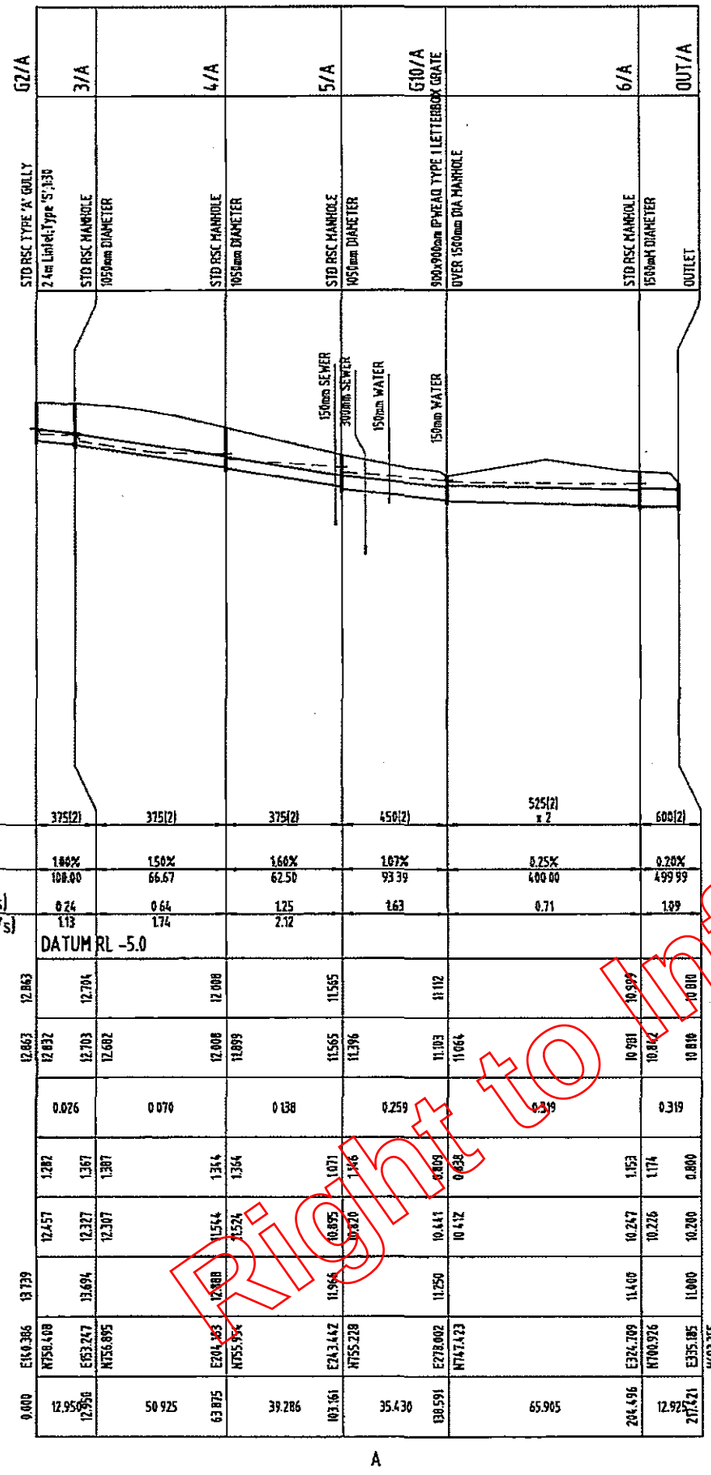
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

BROWN

DRAWING TITLE: STORMWATER DRAINAGE CATCHMENT PLAN

DRAWING NUMBER: B07018-109

ISSUE: C



PIPE SIZEmm (Class)	375(2)	375(2)	375(2)	450(2)	525(2) x 2	600(2)
PIPE GRADE %	1.40%	1.50%	1.60%	1.07%	0.25%	0.20%
PIPE SLOPE 1 in X	100.00	66.67	62.50	93.39	400.00	499.99
FULL PIPE FLOW VELOCITY (m/s)	0.24	0.64	1.25	1.63	0.71	1.09
PART FULL FLOW VELOCITY (m/s)	1.13	1.74	2.12			
DATUM RL -5.0						
WATER LEVEL IN STRUCTURE	12.863 / 12.704	12.008	11.565	11.112	10.999	10.810
HYDRAULIC GRADE LEVEL	12.863 / 12.832 / 12.703	12.682 / 12.008	11.899 / 11.565	11.396 / 11.193	11.064 / 10.981	10.842 / 10.819
PIPE FLOW (Cumecs)	0.026	0.070	0.138	0.259	0.319	0.319
DEPTH TO INVERT	1.282 / 1.367	1.307 / 1.314	1.364 / 1.071	1.346 / 0.809	0.838 / 1.153	1.174 / 0.860
INVERT LEVEL OF DRAIN	12.457 / 12.327	12.307 / 11.544	11.524 / 10.895	10.820 / 10.441	10.412 / 10.247	10.226 / 10.260
DESIGN SURFACE LEVEL	13.739 / 13.694	12.988	11.966	11.250	11.400	11.080
SETOUT	E149.366 N7558.698 / E153.247 N7558.895	E204.353 N7555.954	E243.442 N7555.228	E278.802 N7547.423	E324.209 N7700.926	E335.185 N693.355
RUNNING CHAINAGE	0.000 / 12.950 / 12.950	50.925 / 63.875	39.286 / 103.161	35.430 / 138.591	65.905 / 204.496	12.925 / 217.421

LINE A

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature ..... Andrew McPhan 6921, Jeff Griffiths 4115, Dean Payne 4602

Date of Practical Completion / /

For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-TITLE.dwg DATE: 30-06-2009 TIME: 15:42
Ref's: X_B07018-TITLE X_B07018-SWD USR: Mark Hastings

PRINT INDEX	CHECK	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	27.05.08	STRUCTURE R/A AMENDED
C	MJH	MJH	25.06.08	SWD LONGS AMENDED
D	MJH	MJH	23.01.09	SWD LONG AMENDED, STRUCTURE R/A DETAILS DELETED
E	MJH	MJH	25.06.09	SWD LINE A AMENDED
F	MJH	MJH	25.08.09	SWD AMENDED

DESIGN CHECK
DRAWN/CHECK

SCALE (METRES)
1:1000 1:2000 HORIZONTAL: 10 0 10 20 30 40 50 — A1 A3
1:100 1:200 VERTICAL: 2 1 0 2 4 — A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW McPHAN RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4602
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

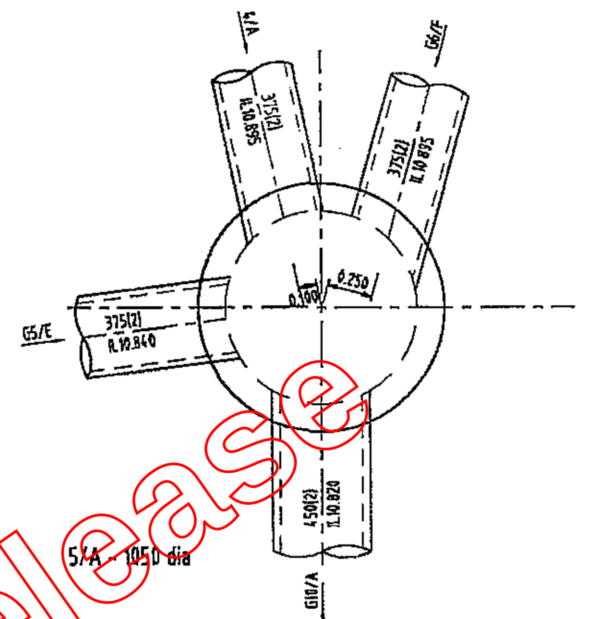
DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 1 OF 2

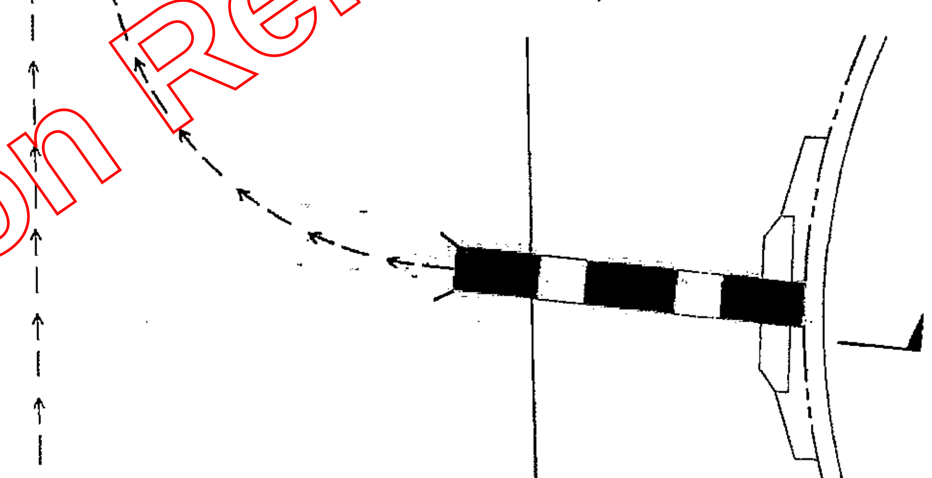
DRAWING NUMBER: B07018-110

ISSUE: E

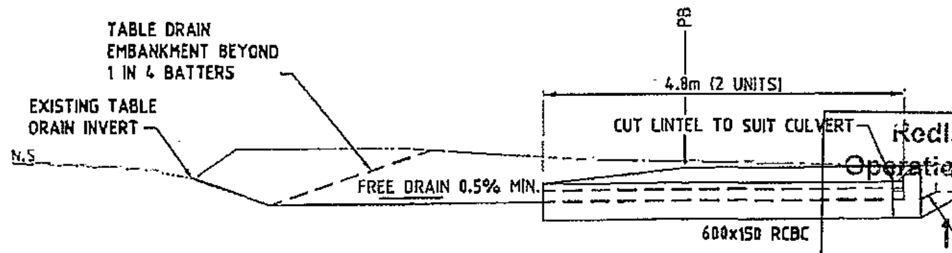
STRUCTURE NAME / LINE	C	D	E	F	H	J
STRUCTURE NAME	G3/A; 3/A	G4/D; 4/A	G7/E; G5/E; 5/A	G6/F; 5/A	G11/H; OUT/H	G1/J; OUT/J
STRUCTURE DESCRIPTION	STD RSC TYPE 'A' GULLY 2.4m Lintel; Type 'S'; 1:30; STD RSC MANHOLE 1050mm DIAMETER	STD RSC TYPE 'A' GULLY 2.4m Lintel; Type 'S'; 1:30; STD RSC MANHOLE 1050mm DIAMETER	STD RSC TYPE 'A' GULLY 2.4m Lintel; Type 'S'; 1:30; STD RSC TYPE 'A' GULLY 2.4m Lintel; Type 'S'; 1:30; STD RSC MANHOLE 1050mm DIAMETER	STD RSC TYPE 'A' GULLY 2.4m Lintel; Type 'S'; 1:30; STD RSC MANHOLE 1050mm DIAMETER	FIELD INLET 900x900mm DMEAQ TYPE 1 WITH LETTERBOX GRATE; OUTLET	STD RSC SMALL LINTEL CUT TO SUIT CULVERT - REFER DETAIL; OUTLET
PIPE SIZEmm (Class)	375(2)	375(2)	375(2); 375(2)	375(2)	375(2) x 2	600 x 150 (RCBC)
PIPE GRADE %	1.00%	1.00%	1.00%; 0.50%	1.00%	0.50%	0.62%
PIPE SLOPE 1 in X	100.00	100.00	100.00; 200.00	100.00	200.00	160.00
FULL PIPE FLOW VELOCITY (m/s)	0.48	0.66	0.43; 0.73	0.21	0.86	0.67
PART FULL FLOW VELOCITY (m/s)	1.39				1.24	1.05
WATER LEVEL IN STRUCTURE	12.936; 12.704	12.207; 12.008	11.718; 11.640; 11.565	11.583; 11.565	10.653; 10.275	11.838; 11.650
HYDRAULIC GRADE LEVEL	12.936; 12.820; 12.703; 12.682	12.207; 12.017; 12.008; 11.899	11.718; 11.642; 11.628; 11.576; 11.565; 11.396	11.583; 11.565; 11.565; 11.396	10.653; 10.355; 10.275	11.838; 11.680; 11.650
PIPE FLOW (Cumecs)	0.053	0.073	0.047; 0.080	0.023	0.189	0.060
DEPTH TO INVERT	1.278; 1.367	1.270; 1.344	1.290; 1.036; 1.056; 1.126	1.047; 1.071	0.520; 0.600	0.393; 0.500
INVERT LEVEL OF DRAIN	12.445; 12.327	11.598; 11.544	11.075; 10.886; 10.866; 10.840	10.922; 10.895	9.980; 9.980	11.530; 11.500
DESIGN SURFACE LEVEL	13.723; 13.694	12.868; 12.888	12.365; 11.922; 11.966	11.969; 11.966	10.500; 10.500	11.923; 12.000
SETOUT	E142.662 N751.815; E153.247 N756.895	E202.652 N750.706; E204.183 N755.954	E224.081 N750.310; E242.931 N749.962; E243.442 N755.228	E241.052 N756.547; E243.442 N755.228	E355.000 N674.479; E369.484 N667.682	E114.553 N828.366; E109.790 N828.957
RUNNING CHAINAGE	0.000; 11.741 (11.741)	0.000; 5.461 (5.461)	0.000; 18.853 (18.853); 5.291 (24.144)	0.000; 2.730 (2.730)	0.000; 16.000 (16.000)	0.000; 4.800 (4.800)

150mm SEWER





OUT/J OUTLET DETAIL



SECTION (A)
SCALE 1:50

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature ......

WORKS AS CONSTRUCTED
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Signature ...... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-111.dwg DATE: 01-07-2009 TIME: 11:44
Xref's: X_B07018-TITLE X_B07018-SWD USE: 1nn 1ynch

AMDT	CALC	DRAWN	DATE	AMENDMENT DETAILS
ISSUE	MJH	MJH	12.12.07	
A	MJH	MJH	21.05.08	STRUCTURE OUT/A AMENDED
B	MJH	MJH	25.06.08	SWD LONGS AMENDED
C	KJH	KJH	23.01.09	SWD LONGS AMENDED, STRUCTURE OUT/A DETAIL DELETED
D	KJH	KJH	15.06.09	SWD LINE A AMENDED
E	KJH	KJH	25.06.09	SWD AMENDED
F				

DESIGN CHECK / DRAWN CHECK

SCALE (METRES): 1:1000 / 1:2000 HORIZONTAL (A1 / A3); 1:100 / 1:200 VERTICAL (A1 / A3)

MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED: ANDREW McPHAIL RPEQ 6921 / JEFF GRIFFITHS RPEQ 4115 / DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7, UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN

DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 2 OF 2
DRAWING NUMBER: B07018-111 ISSUE: E

CALCULATIONS TABLE

LOCATION / TIME / SUB-CATCHMENT RUNOFF

DESIGN ARI (yrs)	STRUCTURE No	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT (%)	Tc SUB-CATCHMENT TIME OF CONC (min)	I RAINFALL INTENSITY (mm/h)	C10 10yr RUNOFF CO-EFFICIENT	C CO-EFFICIENT OF RUNOFF	A SUB-CATCHMENT AREA (ha)	C×A EQUIVALENT AREA (ha)	ΣCA SUM OF (C × A) (ha)	Q SUB-CATCHMENT DISCHARGE (l/s)
2 100	G2/A	G2/A to 3/A	G2			5.00 5.00	151 305	0.88 0.88	0.75 1.00	0.100 0.100	0.075 0.100	0.075 0.100	31 85
2 100	G3/C	G3/C to 3/A	G3			13.00 13.00	104 213	0.77 0.77	0.65 0.92	0.360 0.360	0.234 0.331	0.234 0.331	68 196
2 100	3/A	3/A to 4/A	G2 G3										
2 100	G4/D	G4/D to 4/A	G4			13.00 13.00	104 213	0.77 0.77	0.65 0.92	0.460 0.460	0.299 0.423	0.299 0.423	86 250
2 100	4/A	4/A to 5/A	G2 G3 G4										
2 100	G7/E	G7/E to G5/E	G7			13.00 13.00	104 213	0.77 0.77	0.65 0.92	0.164 0.164	0.105 0.147	0.104 0.147	30 87
2 100	G5/E	G5/E to 5/A	G7 G5			13.00 13.00	104 210	0.77 0.77	0.65 0.92	0.164 0.164	0.106 0.147	0.106 0.147	30 87
2 100	G6/F	G6/F to 5/A	G6			5.00 5.00	151 305	0.88 0.88	0.75 1.00	0.070 0.070	0.053 0.070	0.053 0.070	22 59
2 100	5/A	5/A to G10/A	G2,G3 G4 G7,G5 G6										
2 100	G10/A	G10/A to 6/A	G2 G3 G4,G7 G5 G6 G10			13.00 13.00	104 213	0.77 0.77	0.65 0.92	0.320 0.320	0.208 0.294	0.208 0.294	60 174
2 100	6/A	6/A to OUT/A	G2 G3 G4,G7 G5 G6 G10										
2 100	G11/H	G11/H to OUT/H	G11			5.00 5.00	151 305	0.88 0.88	0.75 1.00	0.001 0.001	0.001 0.001	0.001 0.001	0 1
2 100	G1/J	G1/J to OUT/J	G1			13.00 13.00	104 213	0.77 0.77	0.65 0.92	0.320 0.320	0.208 0.294	0.208 0.294	60 174

INLET DESIGN

STRUCTURE No	FLOW IN K&C (INC. BYPASS) (l/s)	ROAD GRADE AT INLET (%)	MINOR FLOW ROAD CAPACITY (l/s)	INLET TYPE	Qg FLOW INTO INLET (l/s)	Qb BYPASS FLOW (l/s)	BYPASS STRUCTURE No.	
G2/A	31	0.70	152	1	26	5	G6/F	FLOW WIDTH/DEPTH 1.44m DOWNSTREAM 1.45m
G3/C	68	0.70	152	1	53	15	G4/D	FLOW WIDTH/DEPTH 2.10m DOWNSTREAM 0.575m
3/A				16				
G4/D	101	2.30	276	1	73	28	G7/E	FLOW WIDTH/DEPTH 1.19m DOWNSTREAM 0.99m
4/A				16				
G7/E	58	2.30	276	1	47	11	G5/E	FLOW WIDTH/DEPTH 1.46m DOWNSTREAM 0.534m
G5/E	41	2.30	276	1	34	7		FLOW WIDTH/DEPTH 1.23m DOWNSTREAM 0.355m
G6/F	27	2.30	276	1	23	4		FLOW WIDTH/DEPTH 0.97m DOWNSTREAM 0.56m
5/A				16				
G10/A	60	8.00	267	295.2	60	1		FLOW WIDTH/DEPTH 3.43m
6/A				16				
G11/H	0	8.00	267	295.2	0	1		FLOW WIDTH/DEPTH 0.34m
G1/J	60	1.00	207	175.09	60	1		FLOW WIDTH/DEPTH 0.78m

DRAIN DESIGN

STRUCTURE No	Tc CRITICAL TIME OF CONC (min)	I RAINFALL INTENSITY (mm/h)	ΣCA TOTAL (C × A) (ha)	Qt MAJOR TOTAL FLOW (l/s)	Qm MAJOR SURFACE FLOW CAPACITY (l/s)	Qs MAJOR SURFACE FLOW (l/s)	Qp PIPE FLOW (l/s)	L REACH LENGTH (m)	S PIPE GRADE (%)	PIPE / BOX DIMENSIONS (CLASS) (mm)	V FLOW VELOCITY FULL (PIPE GRADE VELOCITY) (m/s)	T TIME OF FLOW IN REACH (min)	STRUCTURE CHART No
G2/A	5.00 5.00	151 305	0.075 0.100	85	2531	59	26 (Pipe flow = Grate flow)	12.950	1.00	375(2)	0.24 (1.59)	0.22	
G3/C	13.00 13.00	104 213	0.234 0.331	196	2531	143	53 (Pipe flow = Grate flow)	11.741	1.00	375(2)	0.48 (1.59)	0.29	
3/A	13.29 13.29	103 211	0.309 0.431	253	2531	182	70 (Pipe flow = Sum upstream pattern flows)	54.925	1.56	375(2)	0.64 (1.14)	1.45	
G4/D	13.00 13.00	104 213	0.295 0.423	250	3048	177	73 (Pipe flow = Grate flow)	5.461	1.00	375(2)	0.66 (1.59)	0.09	
4/A	14.05 14.05	100 206	0.606 0.854	489	3048	354	138 (Pipe flow = Sum upstream pattern flows)	39.286	1.60	375(2)	1.25 (2.00)	0.52	
G7/E	13.00 13.00	104 213	0.104 0.147	87	3048	40	47 (Pipe flow = Grate flow)	36.855	1.00	375(2)	0.43 (1.59)	0.31	
G5/E	13.31 13.31	103 211	0.290 0.294	172	3048	92	80 (Pipe flow = Sum upstream pattern flows)	5.291	6.54	375(2)	0.73 (1.12)	0.09	
G6/F	5.00 5.00	151 305	0.053 0.070	59	3048	36	23 (Pipe flow = Grate flow)	2.738	1.00	375(2)	0.21 (1.59)	0.05	
5/A	14.57 14.57	99 203	0.867 1.211	717	3048	458	259 Additional flow 0.138 cumecs (Pipe flow = Sum upstream pattern flows)	35.439	1.07	450(2)	1.63 (1.83)	0.36	
G10/A	14.93 14.93	98 201	1.077 1.545	874	0	555	28 (Pipe flow = Sum upstream flows)	65.965	1.05	525(2) x 2	0.71 (1.60)	1.10	
6/A	16.03 16.03	95 195	1.077 1.545	848	2038	528	319 (Pipe flow = Sum upstream pattern flows)	12.925	0.28	600(2)	1.19 (0.98)	0.29	
G11/H	16.00 16.00	95 195	0.001 0.001	1	0	1	119 (Pipe flow set by user)	16.100	0.50	375(2) x 2	0.86 (1.12)	0.21	
G1/J	13.00 13.00	104 213	0.208 0.294	174	0	114	60 (Pipe flow = Sum upstream flows)	4.800	0.62	600 x 150 DIC(1)	0.67 (1.93)	0.04	

STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS

STRUCTURE No	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS
G2/A	Qg 0.026 Qo 0.026 Do 375 CHART 32 Vo2/2gDo 0.01 m/Do Kg side flow 10.64 and flow 7.45
G3/C	Qg 0.053 Qo 0.053 Do 375 CHART 32 Vo2/2gDo 0.03 m/Do Kg side flow 9.91 and flow 7.88
3/A	Qo 0.070 Do 375 Routine 2.15 Join Pipes G2/A and G3/C Vel1 0.161 Vel2 0.475
G4/D	Qg 0.073 Qo 0.073 Do 375 CHART 32 Vo2/2gDo 0.05 m/Do Kg side flow 8.55 and flow 6.35
4/A	Qo 0.138 Do 375 Routine 2.? Combined pipes in-line case Join Pipes 3/A and G4/D Vel1 0.617 Vel2 0.656
G7/E	Qg 0.047 Qo 0.047 Do 375 CHART 32 Vo2/2gDo 0.03 m/Do Kg side flow 8.15 and flow 5.34
G5/E	Qg 0.034 Qo 0.080 Do 375 Angle 85 Chart 41 S/Do 2.5 chart Du/Do 1.00 K0 1.02 K0.5 2.43 Qu/Qo 0.58 Cg 0.88 K 2.19 S/Do 2.5 K0 1.92 K0.5 2.42 K 2.19 S/Do 2.0 K0 2.4 K0.5 2.45 K 2.42
G6/F	Qg 0.023 Qo 0.023 Do 375 CHART 32 Vo2/2gDo 0.01 m/Do Kg side flow 7.79 and flow 5.58
5/A	Qo 0.259 Do 450 Routine 3.2 Join Pipes G6/F and 4/A Vel1 0.137 Ve2 1.240 Eq Dia 473 Angle 170 Flow 0.152 Routine 2.1 Combined pipes in-line case Join Pipes
G10/A	Qg 0.060 Qo 0.319 Do 742 Angle 32 Chart 36 S/Do 2.5 chart Du/Do 0.61 K0 1.07 K0.5 1.48 Qu/Qo 0.81 Cg 0.45 K 1.35 S/Do 2.0 K0 1.21 K0.5 1.82 K 1.52 S/Do 1.5 K1 1.53 K0.5 2.05 K 1.71
6/A	
G11/H	Qg 0.119 Qo 0.119 Do 530 CHART 32 Vo2/2gDo 0.10 m/Do Kg side flow 7.91 and flow 6.03
G1/J	Qg 0.060 Qo 0.060 Do 250 CHART 32 Vo2/2gDo 0.15 m/Do Kg side flow 6.97 and flow 5.45

HEADLOSSES / PART FULL

STRUCTURE No	V²/2g VELOCITY HEAD (m)	Ku U/S HEADLOSS COEFFICIENT	hu U/S PIPE STRUCT HEADLOSS (m)	Kl LAT. HEADLOSS CO-EFFICIENT	hl LAT. PIPE STRUCT. HEADLOSS (m)	Kw W.S.E. CO-EFFICIENT	hw CHANGE IN W.S.E. (m)	Sf PIPE FRICTION SLOPE (%)	hf PIPE FRICTION HEADLOSS (L × Sf) (m)	DEPTH (m)	Vp VELOCITY (m/s)
G2/A	0.003	10.64	0.031			10.64	0.031	0.02	0.003	0.097	1.13
G3/C	0.012	9.91	0.116			9.91	0.116	0.15	0.017	0.142	1.19
3/A	0.021	0.97	0.021	Eq Dia 475 Angle 90 Flow 0.070 CHART 54 Du/Do 1.27 alpha 0 Kw 0.21 Ku 0.?? WSE 0.02 Ku 0.97 Kw 1.85		1.85	0.039	0.16	0.087	0.148	1.16
G4/D	0.022	8.55	0.194			8.55	0.190	0.17	0.009		
4/A	0.080	1.37	0.109	Eq Dia 530 Angle 14 Flow 0.138 CHART 54 Du/Do 1.41 alpha 0 Kw 0.05 Ku 0.63 WSE 0.18 Ku 0.97 Kw 0.38 Interpolated Ku 1.30 Kw 1.37		1.37	0.109	0.62	0.245	0.125	2.12
G7/E	0.009	8.15	0.076			8.15	0.076	0.07	0.026		
G5/E	0.027	1.91	0.052	Interp val for S/Do 2.86 Kw 2.36 CHART 36 S/Do 2.5 K0 1.82 K0.5 1.71 K 1.72 S/Do 2.0 K0 2.14 K0.5 1.92 K 1.93 Interp val for S/Do 2.86 Ku 1.91		2.36	0.064	0.21	0.011		
G6/F	0.002	7.79	0.018			7.79	0.018	0.02	0.000		
5/A	0.135	1.25	0.169	Eqv G6/F & 4/A and G5/E Vel1 1.139 Vel2 0.491 Eq Dia 540 Angle 141 Flow 0.227 CHART 54 Du/Do 1.21 alpha 0 Kw 0.05 Ku 1.99 WSE 0.11 Ku 0.81 Kw 0.83 Interpolated Ku 1.25 Kw 1.25		1.25	0.169	0.83	0.293		
G10/A	0.026	1.50	0.039	Interp val for S/Do 2.37 Kw 1.86 CHART 35 S/Do 2.0 K0 1.58 K0.5 1.52 K 1.33 S/Do 1.5 K0 1.16 K0.5 1.38 K 1.45 Interp val for S/Do 2.37 Ku 1.50		1.86	0.048	0.03	0.013		
6/A	0.061	2.30	0.139			2.60	0.157	0.25	0.032		
G11/H	0.038	7.91	1.298			7.91	0.299	0.21	0.047	0.245	1.24
G1/J	0.023	6.97	0.158			6.97	0.158	0.32	0.015	0.095	1.05

DESIGN LEVELS

STRUCTURE No	OBVERT LEVELS (m)	DRAIN SECTION H.G.L. (m)	UPSTREAM H.G.L. (m)	LAT. H.G.L. (m)	W.S.E. (m)	SURFACE OR K&C INVERT LEVEL (m)	STRUCTURE No.
G2/A	12.832 12.702	12.832 12.703	12.843		12.863	13.735	G2/A
G3/C	12.820 12.703	12.820 12.703	12.936		12.936	13.723	G3/C
3/A	12.682 11.939	12.882 12.844	12.783		12.784	13.654	3/A
G4/D	11.973 11.919	12.017 12.008	12.207		12.207	12.868	G4/D
4/A	11.839 11.270	11.839 11.565	12.048		12.044	12.888	4/A
G7/E	11.458 11.261	11.642 11.628	11.718		11.718	12.365	G7/E
G5/E	11.261 11.215	11.576 11.565	11.628		11.640	11.922	G5/E
G6/F	11.297 11.278	11.565 11.545	11.583		11.583	11.969	G6/F
5/A	11.219 10.891	11.396 11.103	11.545		11.565	11.566	5/A
G10/A	10.946 10.711	11.164 10.981	11.103		11.112	11.250	G10/A
6/A	10.836 10.800	10.842 10.810	10.981		10.999	11.400	6/A
G11/H	10.355 10.275	10.355 10.275	10.653		10.653	10.544	G11/H
G1/J	11.686 11.658	11.680 11.658	11.838		11.838	11.923	G1/J

Redland City Council
Operational Works Approval

14 SEP 2009

Refer Development Permit for Conditions of Approval

Signature ....

WORKS AS CONSTRUCTED

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Signature .... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion / /

For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-112.dwg DATE 28-08-2009 TIME 15:52
Xref's X_B07018-TITLE X_B07018-SWD USL Mark Hastings

PRINT ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	MJH	MJH	12.12.07	
A	MJH	MJH	25.06.08	SWD AMENDED
B	MJH	MJH	23.01.09	SWD AMENDED
C	MJH	MJH	15.06.09	SWD LINE A AMENDED
D	MJH	MJH	25.08.09	SWD AMENDED
E				
F				

DESIGN CHECK / DRAWN CHECK

SCALE (METRES)

MICROFILM No.

PROJECT No. B07018

SURVEYOR. DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT
AMEX SUBDIVISIONS PTY LTD

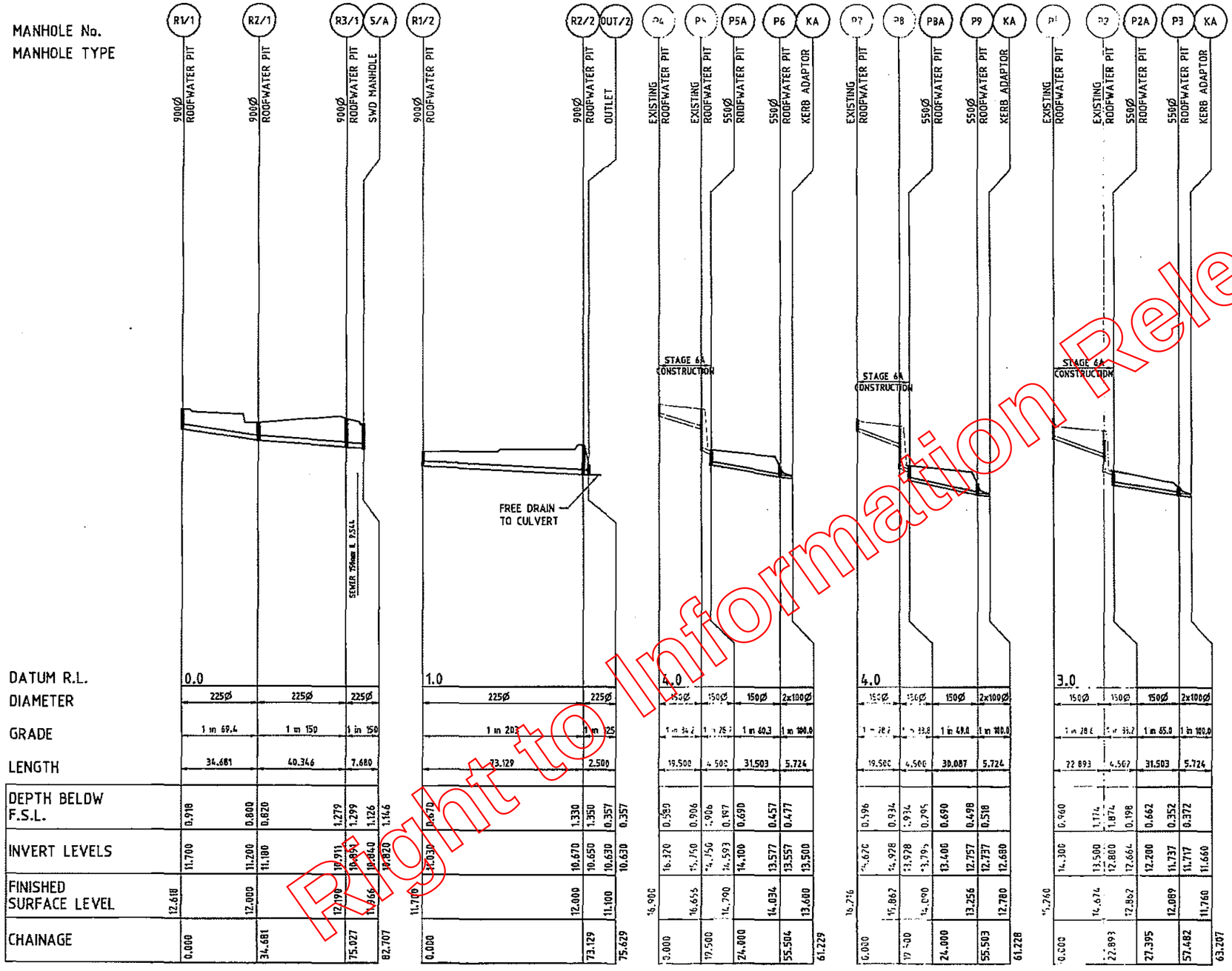
PROJECT
VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

BROWN

DRAWING TITLE
STORMWATER DRAINAGE CALCULATIONS TABLE

DRAWING NUMBER B07018-112 ISSUE D



Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-113.dwg DATE 28-08-2009 TYPE ISO5
Xref's X_B07018-TITLE X_B07018-SWD USR Mark Hastings

PART	CHECK	DRAWN	DATE	AMENDMENT DETAILS
A	KJH	KJH	12.12.07	
B	KJH	KJH	23.01.09	RWD MHS ADDED AND MH'S AMENDED
C	KJH	KJH	15.06.09	SWD LINE A AMENDED
D	KJH	KJH	25.08.09	SWD AMENDED

DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
1:1000 10 0 10 20 30 40 50 A1
1:2000 HORIZONTAL A3
1:100 2 1 0 2 4 A1
1:200 VERTICAL A3

MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
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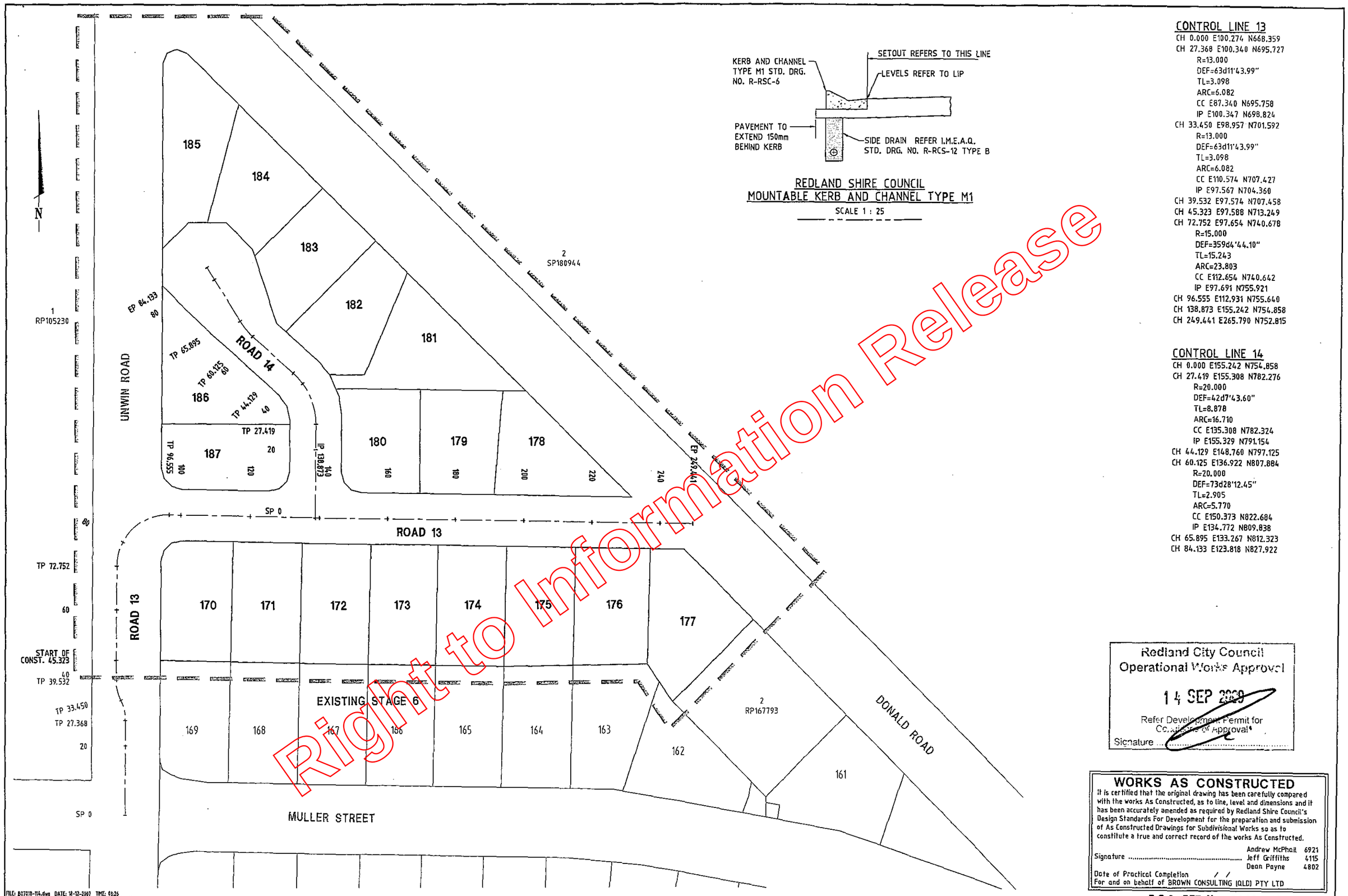
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

DRAWING TITLE: ROOFWATER DRAINAGE LONGITUDINAL SECTIONS
DRAWING NUMBER: B07018-113
ISSUE: C



REDLAND SHIRE COUNCIL
MOUNTABLE KERB AND CHANNEL TYPE M1

SCALE 1 : 25

CONTROL LINE 13

CH 0.000 E100.274 N668.359
CH 27.368 E100.340 N695.727
R=13.000
DEF=63d11'43.99"
TL=3.098
ARC=6.082
CC E87.340 N695.758
IP E100.347 N698.824
CH 33.450 E98.957 N701.592
R=13.000
DEF=63d11'43.99"
TL=3.098
ARC=6.082
CC E110.574 N707.427
IP E97.567 N704.360
CH 39.532 E97.574 N707.458
CH 45.323 E97.588 N713.249
CH 72.752 E97.654 N740.678
R=15.000
DEF=359d4'44.10"
TL=15.243
ARC=23.803
CC E112.654 N740.642
IP E97.691 N755.921
CH 96.555 E112.931 N755.640
CH 138.873 E155.242 N754.858
CH 249.441 E265.790 N752.815

CONTROL LINE 14

CH 0.000 E155.242 N754.858
CH 27.419 E155.308 N782.276
R=20.000
DEF=42d7'43.60"
TL=8.878
ARC=16.710
CC E135.308 N782.324
IP E155.329 N791.154
CH 44.129 E148.760 N797.125
CH 60.125 E136.922 N807.884
R=20.000
DEF=73d28'12.45"
TL=2.905
ARC=5.770
CC E150.373 N822.684
IP E134.772 N809.838
CH 65.895 E133.267 N812.323
CH 84.133 E123.818 N827.922

Redland City Council
Operational Works Approval
14 SEP 2009
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Signature .....

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-114.dwg DATE: 18-12-2007 TIME: 08:26
Xref's: X_B07018-TITLE X_B07018-BASE USR: mark hastings

ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B				
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

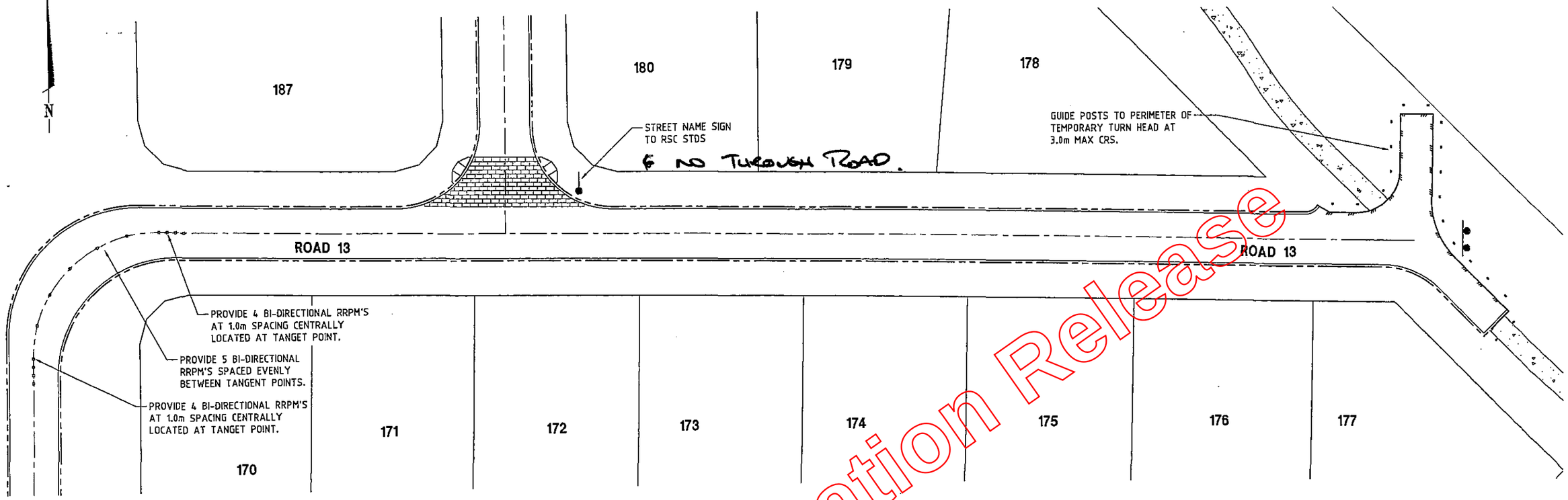
PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Brunei

DRAWING TITLE: SURVEY SETOUT LAYOUT PLAN

DRAWING NUMBER: B07018-114

ISSUE



Redland City Council
Operational Works Approval

14 SEP 2009

Refer Development Permit for
Conditions of Approval

Signature .....

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Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-115.dwg DATE: 25-06-2008 TIME: 12:21
Xref's: X_B07018-TITLE X_B07018-BASE USR: mark hastings

PRINT	CALC'D	DRAWN	DATE	AMENDMENT DETAILS
ISSUE	MJH	MJH	25.06.08	
A				
B				
C				
D				
E				
F				

AMENDMENTS

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:250 1:500 5 0 5 10 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: OTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

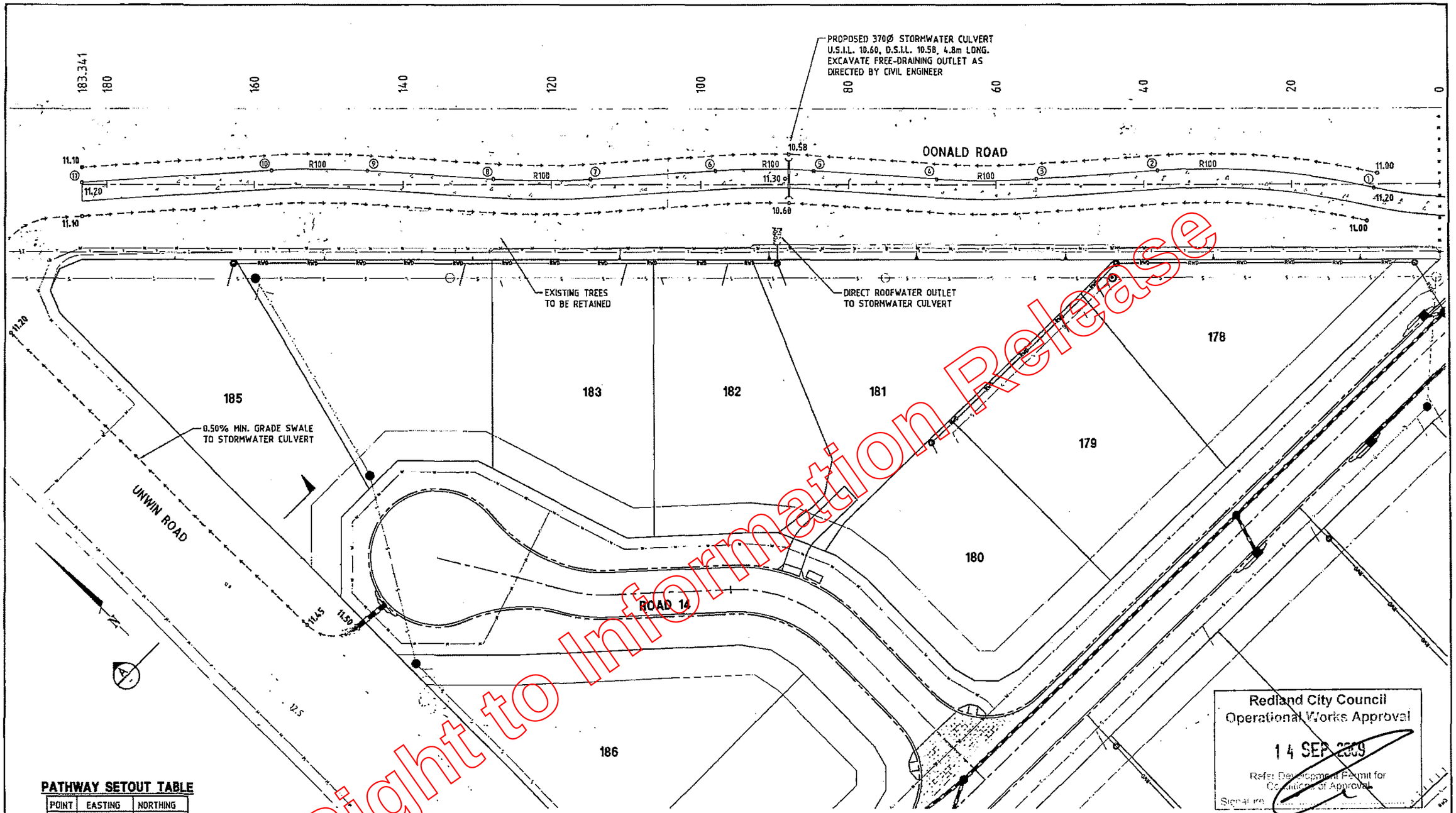
PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Brunel
BROWN ACEA

DRAWING TITLE: SIGNS AND LINEMARKING LAYOUT PLAN

DRAWING NUMBER: B07018-115

ISSUE



PATHWAY SETOUT TABLE

POINT	EASTING	NORTHING
1	248.475	773.622
2	229.329	795.962
3	216.862	806.821
4	207.433	816.207
5	196.386	828.775
6	186.958	838.161
7	174.340	849.152
8	164.912	858.538
9	153.724	871.266
10	144.614	880.373
11	125.345	897.302

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for
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Signature .....

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-116.dwg DATE 01-09-2009 TIME 10:52
Xref's: X_B07018-TITLE X_B07018-BASE USR: Ian Lynch

ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	KJH	KJH	30.06.09	
B				
C				
D				
E				
F				

DESIGN CHECK
DRAWING CHECK

SCALE (METRES)
1:250 1:500 5 0 5 10 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

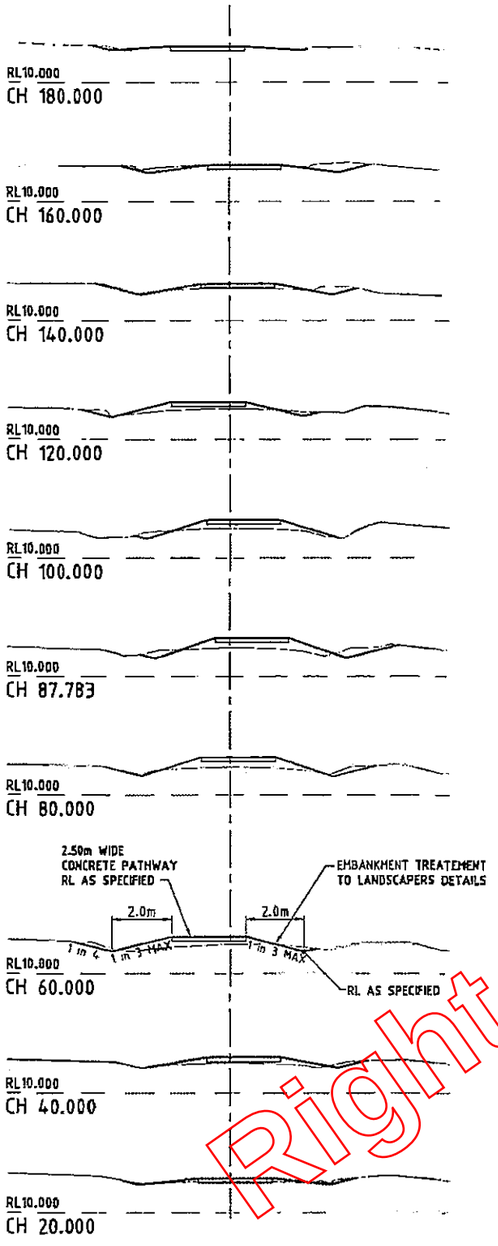
CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Cairns Melbourne Sydney Singapore Auckland Bund

DRAWING TITLE
DONALD ROAD PATHWAY
EARTHWORKS LAYOUT PLAN

DRAWING NUMBER
B07018-116



Redland City Council
Operational Works Approval

14 SEP 2018

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Jeff Griffiths 4115
Dean Payne 4802

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R.S.C. REF No. -EC004782.7

XREFS: X_047818-111.DWG X_047818-BASE USR: Mark Hastings

ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	NH	NH	20.08.07	
B				
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:250 5 0 5 10 A1
1:500 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

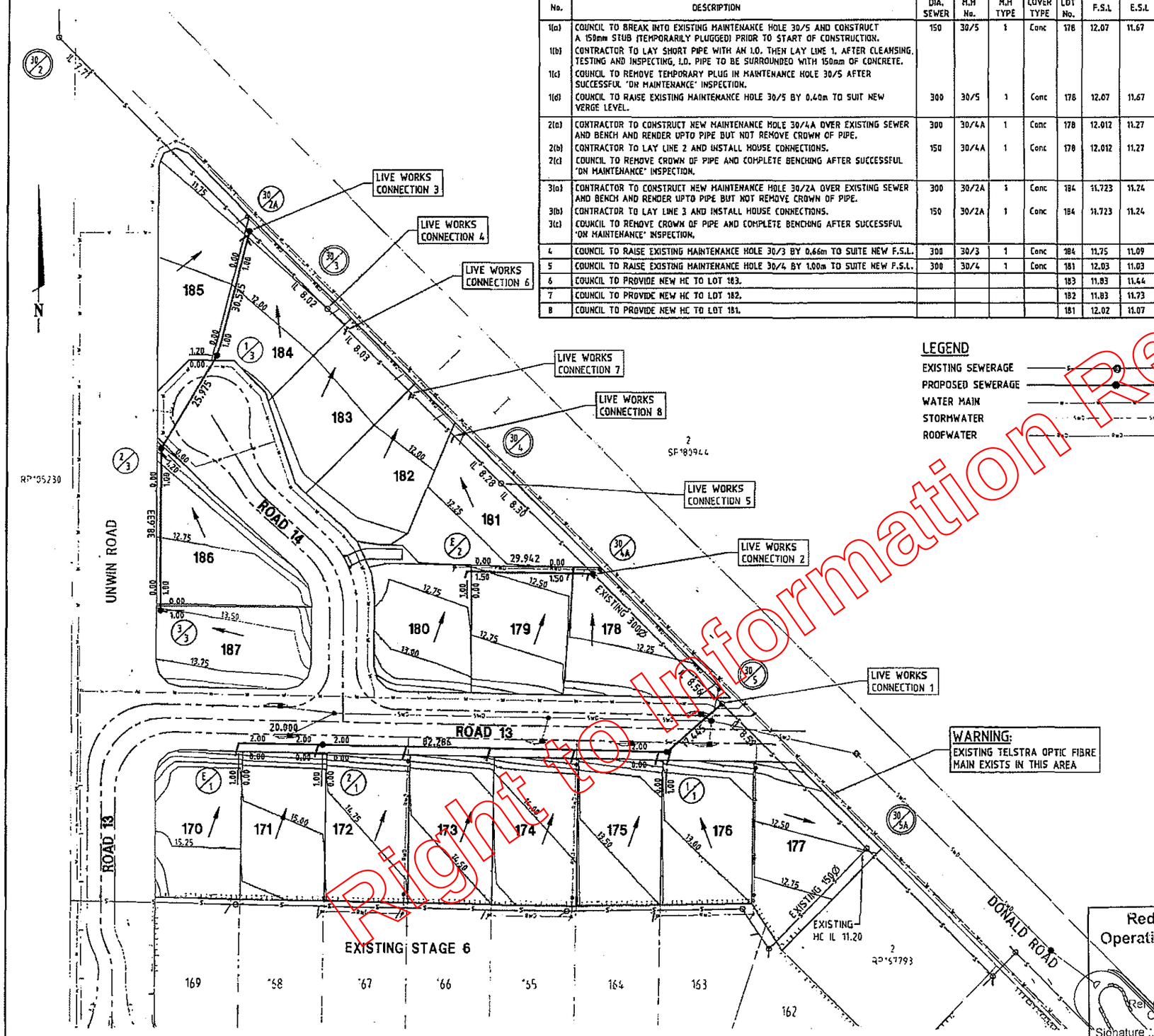
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

BROWN

DRAWING TITLE: DONALD ROAD PATHWAY CROSS SECTIONS

DRAWING NUMBER: B07018-117

ISSUE



R.C.C. & CONTRACTOR LIVE SEWER WORKS

No.	DESCRIPTION	DIA. SEWER	M.H No.	M.H TYPE	COVER TYPE	LOT No.	F.S.L	E.S.L	I.L	DEPTH
1(a)	COUNCIL TO BREAK INTO EXISTING MAINTENANCE HOLE 30/5 AND CONSTRUCT A 150mm STUB (TEMPORARILY PLUGGED) PRIOR TO START OF CONSTRUCTION.	150	30/5	1	Conc	178	12.07	11.67	9.70	2.37
1(b)	CONTRACTOR TO LAY SHORT PIPE WITH AN I.O. THEN LAY LINE 1. AFTER CLEANSING, TESTING AND INSPECTING, I.O. PIPE TO BE SURROUNDED WITH 150mm OF CONCRETE.									
1(c)	COUNCIL TO REMOVE TEMPORARY PLUG IN MAINTENANCE HOLE 30/5 AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.									
1(d)	COUNCIL TO RAISE EXISTING MAINTENANCE HOLE 30/5 BY 0.40m TO SUIT NEW VERGE LEVEL.	300	30/5	1	Conc	178	12.07	11.67	9.70	2.37
2(a)	CONTRACTOR TO CONSTRUCT NEW MAINTENANCE HOLE 30/4A OVER EXISTING SEWER AND BENCH AND RENDER UPTO PIPE BUT NOT REMOVE CROWN OF PIPE.	300	30/4A	1	Conc	178	12.012	11.27	8.407	3.605
2(b)	CONTRACTOR TO LAY LINE 2 AND INSTALL HOUSE CONNECTIONS.	150	30/4A	1	Conc	178	12.012	11.27	10.726	1.286
2(c)	COUNCIL TO REMOVE CROWN OF PIPE AND COMPLETE BENCHING AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.									
3(a)	CONTRACTOR TO CONSTRUCT NEW MAINTENANCE HOLE 30/2A OVER EXISTING SEWER AND BENCH AND RENDER UPTO PIPE BUT NOT REMOVE CROWN OF PIPE.	300	30/2A	1	Conc	184	11.723	11.24	7.931	3.792
3(b)	CONTRACTOR TO LAY LINE 3 AND INSTALL HOUSE CONNECTIONS.	150	30/2A	1	Conc	184	11.723	11.24	9.818	2.105
3(c)	COUNCIL TO REMOVE CROWN OF PIPE AND COMPLETE BENCHING AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.									
4	COUNCIL TO RAISE EXISTING MAINTENANCE HOLE 30/3 BY 0.66m TO SUITE NEW F.S.L.	300	30/3	1	Conc	184	11.75	11.09	8.02	3.73
5	COUNCIL TO RAISE EXISTING MAINTENANCE HOLE 30/4 BY 1.00m TO SUITE NEW F.S.L.	300	30/4	1	Conc	181	12.03	11.03	8.28	3.75
6	COUNCIL TO PROVIDE NEW HC TO LOT 183.					183	11.83	11.44	10.60	1.23
7	COUNCIL TO PROVIDE NEW HC TO LOT 182.					182	11.83	11.73	10.60	1.23
8	COUNCIL TO PROVIDE NEW HC TO LOT 181.					181	12.02	11.07	10.52	1.50

LEGEND

EXISTING SEWERAGE
PROPOSED SEWERAGE
WATER MAIN
STORMWATER
ROOFWATER

NOTES:

1. THE CONTRACTOR SHALL VERIFY FINISHED SURFACE LEVELS AND CONFIRM EXISTING LEVELS WHERE NEW WORK JOINS TO EXISTING BEFORE CONSTRUCTION OF SEWERS AND HOUSE CONNECTIONS.

2. ALL SEWER DRAINLINES SHALL BE CONSTRUCTED USING ONE OF THE FOLLOWING APPROVED PIPE TYPES, THE CLASS OF THE RESPECTIVE DRAINLINE BEING DEPENDENT UPON ITS DEPTH AND LOCATION.
   - uPVC CLASS SH OR CLASS SEH:
   - DUCTILE IRON HEAVY CONCRETE LINED CLASS K9 WITH POLYTHENE SLEEVING;
   - VITRIFIED CLAY,
   - HOBAS G.R.P.;
   - F.R.C. (NOT TO BE USED DOWNSTREAM OF PUMPED SEWERAGE);
   - 'ULTRA -RIB' uPVC SEWER PIPES (SUBJECT TO A SITE BY SITE APPROVAL).

3. HOUSE CONNECTION BRANCHES SHALL BE LOCATED GENERALLY 1.0m-1.2m UPSTREAM OF THE ALLOTMENT BOUNDARY AND WHERE APPLICABLE THE HOUSE CONNECTION SHALL EXTEND A MINIMUM OF 1.0m BEYOND THE PROPERTY BOUNDARY. THE HOUSE CONNECTION SHALL BE LOCATED AT THE LOWEST PART OF THE ALLOTMENT AND AT SUFFICIENT DEPTH TO SERVICE THE WHOLE ALLOTMENT.

4. SEWER DRAINLINES SHALL BE BACKFILLED AND BEDDED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. S-0090 Rev A.

5. BEDDING AND BACKFILLING OF SEWER TRENCHES BENEATH ROADWAYS SHALL BE COMPACTED IN ACCORDANCE WITH IMEAQ Std.Dwg.No.W-0040 Rev A (ROADWAYS AND QT SHOULDERS).

6. COMPACTION TEST RESULTS/ CERTIFICATES SHALL BE SUPPLIED TO THE SUPERINTENDENT FOR SUBMISSION TO COUNCIL, IN ORDER TO DEMONSTRATE THAT THE SEWER TRENCHES HAVE BEEN COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS OF AUSTRALIAN STANDARD AS1289. TESTING FREQUENCY SHALL BE 1 TEST EVERY 50 METRES OF EVERY ALTERNATIVE LAYER OF THE TRENCH BACKFILL.

7. SEWER HOUSE CONNECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. S-0030 Rev A.

8. SEWER HOUSE CONNECTION BRANCHES SHALL NOT EXCEED 3.0 METRES IN HEIGHT. WHERE THE DEPTH FROM THE INVERT OF THE HOUSE CONNECTION BRANCH EXCEEDS 2.1 METRES ONE OF THE FOLLOWING MATERIALS SHALL BE USED IN LIEU OF uPVC:
   - DUCTILE IRON WITH FUSION BONDED EPOXIES COATING FOR THE SLOPE JUNCTION AND ADJOINING BEND.
   - JOINT COMMITTEE APPROVED GLASS REINFORCED PLASTIC DROP SEWER JUNCTIONS.

9. ALL SEWER HOUSE CONNECTIONS SHOWN ARE THE HIGHEST POSSIBLE TO SERVICE THE RESPECTIVE ALLOTMENT(S), SHOULD THE CONTRACTOR CONSTRUCT THE CONNECTIONS TO A HIGHER LEVEL, THE COSTS ASSOCIATED WITH THE LOWERING OF THE CONNECTION(S) SHALL BE BOURN BY THE CONTRACTOR.

10. O.B's TO FINISH 1.0m INSIDE ALLOTMENT BOUNDARIES, 1.0 METRE AWAY FROM ROOFWATER LINES WHICHEVER IS THE FURTHER.

11. SEWER MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH IMEAQ Std. Dwg. No 'S S-0020 Rev A, S-0021 Rev A, S-0024 Rev A.

12. SEWER MANHOLE COVERS AND FRAMES SHALL BE CONSTRUCTED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. S-0025 Rev A AND S-0026 Rev A.

13. STEP IRONS SHALL NOT BE CONSTRUCTED WITHIN SEWER MANHOLES.

14. WHERE SEWER MANHOLES ARE IN EXCESS OF 3.0 METRES IN DEPTH; THE WALL THICKNESS SHALL BE INCREASED TO 225mm AND THE BASE SLAB SHALL BE INCREASED IN DEPTH TO 300mm(MIN). WHERE THE DEPTH OF SEWER MANHOLES EXCEEDS 6.0 METRES, SAID MANHOLES WILL NEED TO BE DESIGNED (CERTIFIED) BY A STRUCTURAL ENGINEER.

15. ALL WORK ASSOCIATED WITH LIVE SEWERS OR MANHOLES ARE TO BE CARRIED OUT BY THE LOCAL AUTHORITY AT THE DEVELOPER'S COST UNLESS NOTED OTHERWISE.

16. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT LOCAL AUTHORITY STANDARDS AND DRAWINGS.

17. THE CONTRACTOR IS TO VERIFY LOCATIONS OF EXISTING SERVICES WITH THE RELEVANT AUTHORITIES BEFORE COMMENCING CONSTRUCTION.

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

PRINT	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	MJH	MJH	12.12.07	
A	MJH	MJH	25.04.08	LOT 176 HC MOVED
B	MJH	MJH	23.05.08	GRILLY PIT ADDED, LOT 171 EVERGES, PIPE LENGTH AND NOTES AMENDED
C	MJH	MJH	25.08.09	RWD / SWD LAYOUT AMENDED - NO CHARGE TO SEWER
D				
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES) 1:500 10 5 0 10 20 A1 / 1:1000 A3
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW McPHAIL RPEQ 6921 / JEFF GRIFFITHS RPEQ 4115 / DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN

DRAWING TITLE: SEWERAGE RETICULATION LAYOUT PLAN
DRAWING NUMBER: B07018-200
ISSUE: C

MANHOLE No.	30/5	1/1	2/1	E/1	30/4A	E/2	30/2A	1/3	2/3	3/3
MANHOLE TYPE/DROP	1 C	1 C	1 A		1 C	1	1 C	1 A	1 A	1
MANHOLE COVER	B	B	B		A	A	A	A	A	A
JUNCTION LINE NO.	EXIST				EXIST		EXIST			
JUNCTION DROP TYPES	A				A		A			

M.H. TYPE LEGEND

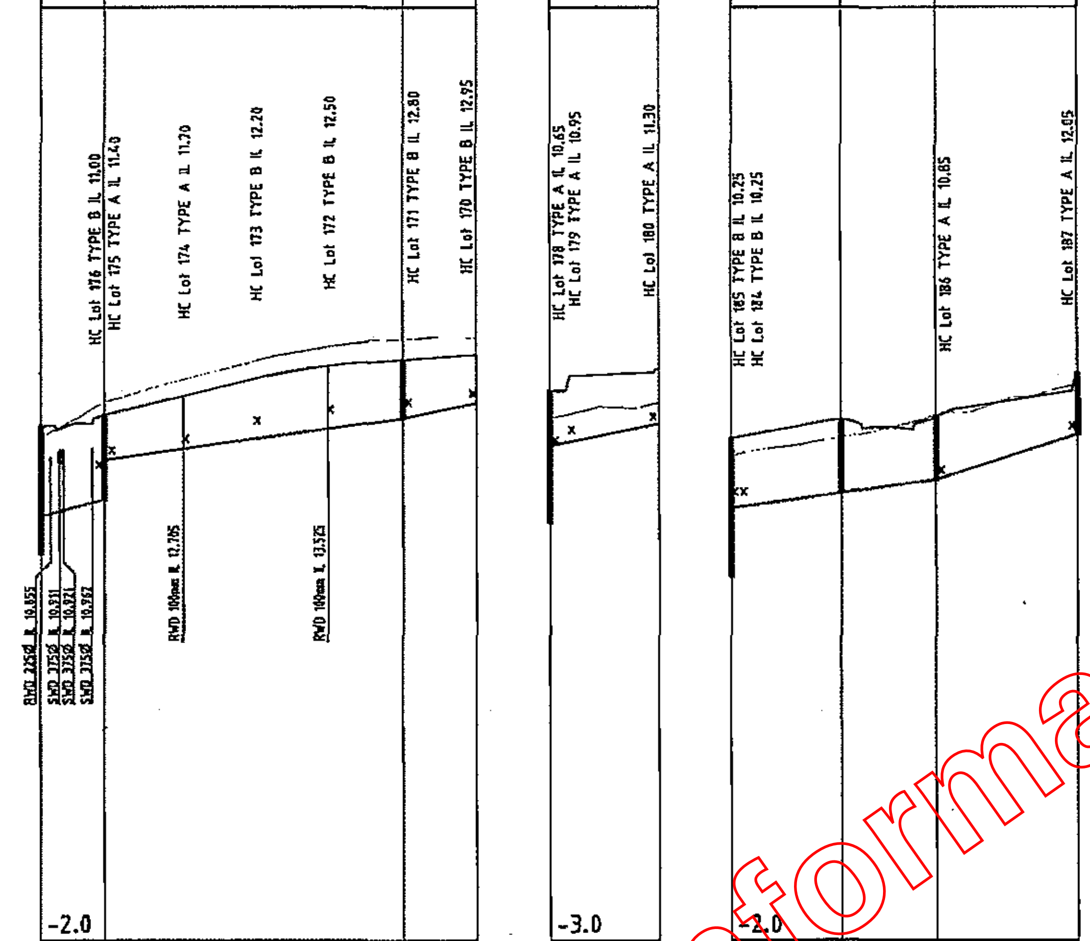
1 - Ø1050 MANHOLE
2 - Ø1500 MANHOLE

M.H. COVER LEGEND

A - CIRCULAR CAST IRON - CONCRETE FILLED
B - CIRCULAR CAST IRON - CLASS D
C - CIRCULAR CONCRETE CLASS B

NOTES:

1. REFER TO IPWEAQ STD. DRG. S-0020 AND S-0021 FOR MH INLET DROP TYPES.
2. REFER TO IPWEAQ STD. DRG. S-0030 FOR HOUSE CONNECTION BRANCH TYPES.



Datum R.L.: Line 1: -2.0; Line 2: -3.0; Line 3: -2.0

LINE NUMBER	1			2	3		
STREET ETC.	ROAD RESERVE			PRIVATE PROPERTY	PRIVATE PROPERTY	ROAD RESERVE	PRIVATE PROPERTY
DIAMETER	Ø150 uPVC CLASS SN8			Ø150 uPVC CLASS SN8	Ø150 uPVC CLASS SN8		
GRADE	1 in 40.0	1 in 73.9	1 in 50.0	1 in 52.1	1 in 80.0	1 in 80.0	1 in 32.3
LENGTH	17.445	82.286	20.000	29.942	30.525	25.975	38.633

Manhole	JUNCTION INVERT LEVEL	DEPTH BELOW F.S.L.	INVERT LEVELS	FINISHED SURFACE LEVEL	CHAINAGE
30/5	8.59	3.510 / 2.470	8.560 / 9.600	12.070	0.000
1/1		2.322 / 1.222	10.036 / 11.136	12.358	17.445
2/1		1.615 / 1.590	12.250 / 12.275	13.865	99.731
E/1		1.330	12.675	14.005	119.731
30/4A		3.602 / 1.486	8.410 / 10.526	12.012	0.000
E/2		1.518	11.100	12.618	29.942
30/2A		3.993 / 2.104	7.930 / 9.818	11.723	0.000
1/3		2.023 / 1.983	10.200 / 10.240	12.223	30.525
2/3		1.734 / 1.694	10.565 / 10.605	12.299	56.500
3/3		1.709	11.800	13.509	95.133

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature ....

WORKS AS CONSTRUCTED

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Signature .... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-201.dwg DATE 26-08-2009 TIME 08:03
Xref's X_B07018-TITLE USR Mark Hastings

AMDT MARK	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	MJH	MJH	12.11.07	
A	MJH	MJK	25.06.08	LOT 176 HC / COVER TYPES / STRUCTURE NAMES AMENDED
B	AL	MK	20.02.09	PIPE LENGTH AMENDED
C	MJH	MJH	25.08.09	RWD / SWD AMENDED
D				
E				
F				

DESIGN CHECK / DRAWN CHECK

SCALE (METRES): 1:1000 A1, 1:2000 A3 HORIZONTAL; 1:100 A1, 1:200 A3 VERTICAL

MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

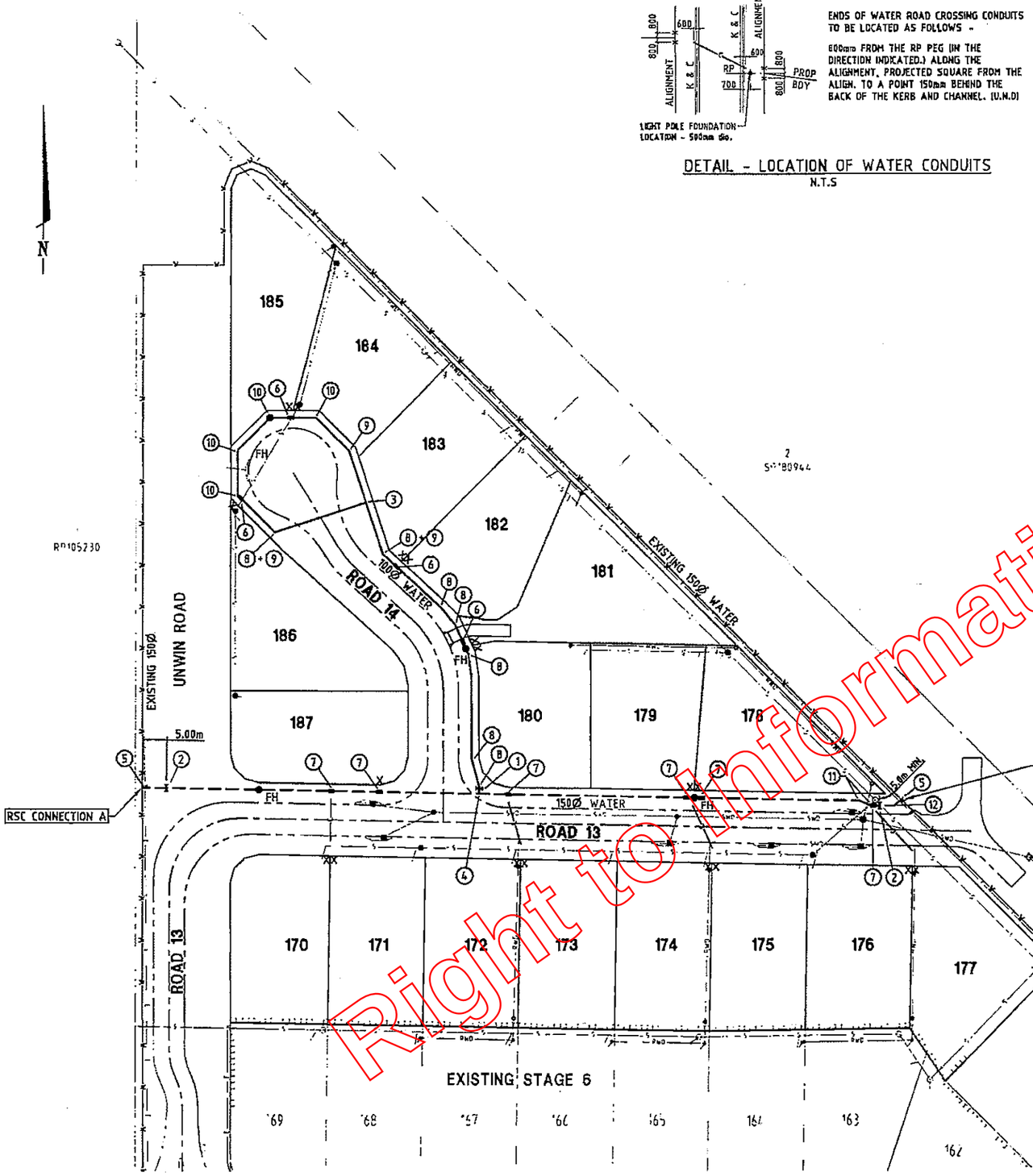
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

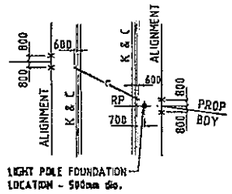
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

BROWN

DRAWING TITLE: SEWERAGE RETICULATION LONGITUDINAL SECTION

DRAWING NUMBER: B07018-201 AMDT: C





ENDS OF WATER ROAD CROSSING CONDUITS TO BE LOCATED AS FOLLOWS -

600mm FROM THE RP PEG (IN THE DIRECTION INDICATED.) ALONG THE ALIGNMENT, PROJECTED SQUARE FROM THE ALIGN. TO A POINT 150mm BEHIND THE BACK OF THE KERB AND CHANNEL. (U.N.O)

DETAIL - LOCATION OF WATER CONDUITS
N.T.S

TABLE OF FITTINGS

ITEM No.	DESCRIPTION
1	100Ø SLUICE VALVE
2	150Ø SLUICE VALVE
3	100Ø x 100Ø TEE
4	150Ø - 100Ø REDUCING TEE
5	150Ø x 150Ø TEE
6	100Ø READYTAP CONNECTOR
7	150Ø READYTAP CONNECTOR
8	100Ø x 11.25° BEND
9	100Ø x 22.5° BEND
10	100Ø x 45° BEND
11	150Ø x 22.5° BEND
12	150Ø x 45° BEND

LEGEND

- EXISTING WATER MAIN
- PROPOSED WATER MAIN 100Ø
- PROPOSED WATER MAIN 150Ø
- STORMWATER
- ROOFWATER
- SEWERAGE
- ELECTRICITY
- TELSTRA
- PROPOSED WATER CONDUITS (100 DIA.UPVC CLASS 12)
- WATER SERVICE POINT OF ENTRY x

SYMBOLS
- SLUICE VALVE
- DEAD END
- FIRE HYDRANT
- REDUCER

R.S.C. CONNECTION 'A'
STREET ROAD 13
AT LOT 187

NOTES
COUNCIL TO INSTALL NEW 150x150 TEE AND LAY PIPE FITTINGS UP TO SLUICE VALVE.

R.S.C. CONNECTION 'B'
STREET ROAD 13
AT LOT 178

NOTES
COUNCIL TO INSTALL NEW 150x150 TEE AND LAY PIPE FITTINGS UP TO SLUICE VALVE.

NOTE:
MAINS TO BE LAID IN 1.5m ALIGNMENT UNLESS OTHERWISE DIRECTED BY THE SUPERINTENDENT.

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-300.dwg DATE: 25-08-2009 TIME: 14:19
Xref's: X_B07018-TITLE X_B07018-BASE USR: Mark Hastings

ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	13.01.09	GALLY PIT ADDED
C	MJH	MJH	25.08.09	RWD / SWD LAYOUT AMENDED - NO CHANGE TO WATER
D				
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Auckland Coast Based
BROWN
ACECA

DRAWING TITLE: WATER RETICULATION LAYOUT PLAN

DRAWING NUMBER: B07018-300

ISSUE: B

WATER RETICULATION NOTATIONS

1. WATER SERVICE CONNECTIONS TO EXISTING WATERMAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH RSC Std. Dwg. No. W-RSC-3 Rev C.

2. WATER SERVICE CONNECTIONS TO NEW WATERMAINS SHALL INCORPORATE THE USE OF 'READY TAP FITTINGS', REFER TO RSC Std. Dwg. No. W-RSC-4 Rev A.

3. THRUST BLOCKS SHALL BE PROVIDED TO ALL BENDS (HORIZONTAL AND VERTICAL); TEES; REDUCERS; DEAD ENDS; VALVES; etc REFER IMEAQ Std. No. W-0041 Rev A.

4. ALL WATERMAINS SHALL BE BEDDED AND BACKFILLED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. W-0040 REV A.

5. BLUE RRPM's SHALL BE PLACED, ALONG THE ROADWAY CENTRELINE, OPPOSITE ALL HYDRANTS.

6. YELLOW RRPM's SHALL BE PLACED, ALONG THE ROADWAY CENTRELINE, OPPOSITE ALL VALVES.

7. ALL FIRE HYDRANTS SHALL BE LOCATED OPPOSITE COMMON PROPERTY BOUNDARIES, UNLESS SPECIFICALLY NOTED OTHERWISE.

8. ALL SLUICE VALVES SHALL BE LOCATED OPPOSITE THE FIRST TRUNCATION OF THE LOT THEY FRONT, UNLESS SPECIFICALLY NOTED OTHERWISE.

9. ALL WATERMAINS SHALL BE LOCATED WHOLLY WITHIN THE DESIGNATED WATERMAIN CORRIDOR. COUNCIL RESERVES THE RIGHT TO REQUEST THE CONTRACTOR TO RECONSTRUCT THOSE PORTIONS OF THE WATERMAIN, WHICH ARE CONSTRUCTED OUTSIDE OF THE DESIGNATED CORRIDOR(S).

10. HYDRANTS AND VALVES, INCLUDING MARKER POSTS COMPLETE, SHALL BE INSTALLED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. W-0060 Rev A AND W-0061 Rev A.

11. THE CONTRACTOR SHALL ENSURE THAT A WATERSERVICE, INCLUDING THE PROVISION OF AN ABOVE GROUND METER, IS PROVIDED TO EACH ALLOTMENT.

12. WATERMAINS TO BE LOCATED ON AN ALIGNMENT OF 1.5 METRES OFF THE PROPERTY BOUNDARY UNLESS NOTED OTHERWISE.

13. ALL LIVE CONNECTION WORKS SHALL BE COMPLETED BY COUNCIL AT THE DEVELOPERS EXPENSE.

PIPES, FITTINGS & VALVES

1. ALL C.I. FITTINGS SHALL BE TO A.S. 2544 WITH SOCKET ENDS DESIGNED FOR USE WITH P.V.C. OR DUCTILE IRON PIPES AS APPLICABLE AND SHALL BE 'LIGHT' CEMENT LINED.

2. PRESSURE PIPES USED FOR WATER SUPPLY INSTALLATIONS SHALL BE RUBBER RING JOINTED PIPES AND SHALL BE EITHER uPVC CLASS 16 (HARDIE IPLEX 'BLUE BRUTE' OR SIMILAR APPROVED) OR DUCTILE IRON CEMENT LINED CLASS K9 PIPES TO A.S. 2280.

3. PIPES MUST BE AC/DUCTILE IRON OD COMPATIBLE. OTHER TYPES AND CLASSES OF PIPE SHALL NOT BE INSTALLED.

4. CAST IRON GATE (SLUICE) VALVES ARE TO CONFORM TO A.S. 2638.

5. ALL VALVES AND HYDRANTS SHALL BE COATED INTERNALLY AND EXTERNALLY WITH A FUSION BONDED EPOXY.

6. ALL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL GRADE 316.

7. VALVES AND FITTINGS SHALL BE LOCATED ON FOOTPATH.

8. BENDS SHALL BE USED WHERE ANGLES EXCEED THE MANUFACTURER'S RECOMMENDED MINIMUM RADIUS FOR LAYING PIPES ON CURVES.

9. THE SERVICES INTO EACH OF THE PROPOSED ALLOTMENTS SHALL BE ON AN 0.5m ALIGNMENT, 0.2m INTO THE ALLOTMENT, AND AT LEAST 0.45m METRES BELOW THE FINISHED SURFACE LEVEL.

10. THE CONTRACTOR SHALL INSTALL WATER METERS TO EACH WATER SERVICE PROVIDED IN THE DEVELOPMENT. THE WATER METERS SHALL BE SUPPLIED BY COUNCIL TO THE CONTRACTOR AT APPROVED RATES, AND THE WATER SERVICE, INCLUDING METERS, SHALL BE INSTALLED IN ACCORDANCE WITH THE RELEVANT COUNCIL STANDARDS.

11. THE MINIMUM DISTANCE BETWEEN TWO ADJACENT READYTAP CONNECTORS SHOULD BE 600mm.

SERVICE CONDUITS

1. SERVICE CONDUITS 100Ø TO BE INSTALLED UNDER THE ROADWORKS CONTRACT SHALL BE LOCATED AT 0.8m DOWNHILL FROM THE LINE DIVIDING ALLOTMENTS SO AS NOT TO CONFLICT WITH ELECTRICAL AUTHORITY POLES AND SHALL BE INSTALLED TO DETAILS SHOWN ON R.S.C. STD. DWG. R-RSC-13.

2. WHERE THE UNDERGROUND POWER IS BEING INSTALLED CONDUITS MAY, IN CERTAIN CASES, BE PLACED 1.0m UPHILL FROM THE LINE DIVIDING ALLOTMENTS SO AS NOT TO CONFLICT WITH POWER SUPPLY CONDUITS. IN THESE INSTANCES, CHANGES OF CONDUIT LOCATIONS WILL BE SHOWN ON THE DRAWINGS.

3. SERVICE CONDUIT MARKERS MUST BE LOCATED DIRECTLY ABOVE CONDUITS.

4. SERVICE CONDUIT SHOULD BE EXTENDED 300mm PAST THE FOOTPATH.

NOTE

SHOULD THESE MAINS BE INSTALLED BY OTHERS, THEN COUNCIL (ONLY) SHALL MAKE ANY CONNECTIONS TO EXISTING MAINS THAT ARE REQUIRED AND ALL COSTS INCURRED BY COUNCIL SHALL BE CHARGED DIRECTLY TO THE SUBDIVIDER. SIMILARLY SHOULD EXISTING MAINS NEED LOWERING, HYDRANTS OR VALVES RAISED OR RELOCATED, THEN THIS WORK SHALL BE CARRIED OUT ONLY BY COUNCIL AT THE DEVELOPERS EXPENSE.

NOTE:

ALL WATER AND SEWER CONSTRUCTION WORK UNDERTAKEN BY THE CONTRACTOR IS TO COMPLY WITH THE REQUIREMENTS OF THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT 1995. CONTACT YOUR NEAREST OFFICE OF THE DIVISION OF ACCIDENT PREVENTION FOR INFORMATION.
Phone: NORTH (07) 3247 9478, SOUTH (07) 3896 3368

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
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Signature ..... Andrew McPhail 6921, Jeff Griffiths 4115, Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-301.dwg DATE: 18-12-2007 TIME: 08:26
Xref's: X_B07018-TITLE USR: mark hastings

PRINT MARK	CALCS	DRAWN	DATE
	MJH	MJH	12.12.07

AMENDMENT DETAILS

DESIGN CHECK

DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No.
B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT
AMEX SUBDIVISIONS PTY LTD

PROJECT
VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Brunei

DRAWING TITLE
WATER RETICULATION NOTES

DRAWING NUMBER
B07018-301

ISSUE

NOTE:
REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR BASIN VEGETATION DETAILS

BASIN DETAILS:
BASE SURFACE LEVEL - RL 10.20
BASE SURFACE AREA - 150m² MIN.
TOP OF BATTER LEVEL - RL 11.00 MIN.
PONDING VOLUME - 110m³ MIN.
PONDING DEPTH - 0.60m
SPILLWAY RL - 10.80
SPILLWAY WIDTH - 3.0m

SETOUT

POINT	EASTING	NORTHING
1	348.374	673.313
2	354.019	678.983
3	353.278	679.720
4	350.446	681.128
5	347.615	682.536
6	344.761	685.377
7	342.069	690.227
8	336.449	688.240
9	338.242	684.568
10	341.139	680.516

N

LEGEND
- PROPOSED STORMWATER DRAINAGE
- EXISTING SURFACE CONTOUR
- STD RCC CONCRETE FOOTPATH - 2.5m WIDE REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR ALIGNMENT DETAILS
- SEWER LINE
- WATER LINE
- TELSTRA LINE
- ENERGEX LINE
- ROCK PROTECTION
- CLEAN OUT IO

PROVIDE 5m² ROCK PROTECTION TO OUTLET
IL 10.20
OUT/A
MIN. TOP OF EMBANKMENT RL 11.00. PROVIDE 0.50m WIDE BUND WHERE NECESSARY
CLEAN OUT IO WITH CONCRETE SURROUNDING
1 IN 4 MAX
R3.0
R10.0
1 in 8
FILTER AREA MIN. 20m²
R15.0
R5.0
FILTER MEDIA SUBSOIL DRAINAGE PIPE
G11/H. 900x900mm PIT WITH LETTER BOX GRATE (IPWEAQ TYPE 1). TOP OF PIT RL 10.50 IL 9.98
FALL 1%
IL 9.98
R6.0
RELIEF SPILLWAY REFER TO DETAIL
RL 10.80
3.0m WIDE SWALE - 1 IN 6 SIDES TO LANDSCAPE ARCHITECTS DETAILS
MIN 0.5% FALL
11.0
11.5
EXISTING WATER
EXISTING SEEPAGE
- STAGE 6 BIO RETENTION BASIN -
PROVIDE 5m² GROUTED STONE PITCHING ROCK PROTECTION TO OUTLET AS DIRECTED
OUT/H
R 9.80
PROVIDE DELTA LOCK BAGS.

1 IN 4 MAX BATTERS
RL 11.0 MIN.
WL 10.80
1% FALL
IL 10.20
R 9.55
SMALL ROCK WALL 0.50m HIGH MAX (TYPICAL)

SECTION A
SCALE 1:100 (A1)

WIDTH 3.0m
0.5m
0.5m
1 IN 6
SPILLWAY RL 10.80
1 IN 6
TOP OF BANK RL AS SPECIFIED
200W x 300H CONCRETE (N32) WEIR. SL 81 MESH CENTRAL.

RELIEF SPILLWAY
SCALE 1:50 (A1)

1.0m
0.40m
0.10m
0.15m
FILTER MEDIA (COARSE SAND 0.70mm)
BIDUM A12 OR EQUIVALENT
TRANSITION LAYER (COARSE SAND 2mm)
GRAVEL DRAINAGE LAYER (5mm AGGREGATE NO FINES)
100Ø SLOTTED PIPE DRAIN

TYPICAL FILTER MEDIA SECTION
SCALE 1:10 (A1)

NOTE:
BIO FILTRATION BASIN FILTER MEDIA IS TO BE INSTALLED AFTER JOB COMPLETION OF THE WORKS TO THE SUPERINTENDENT'S DIRECTIONS.

WARNING:
EXISTING TELSTRA OPTIC FIBRE MAIN EXISTS IN THIS AREA

SAFETY HANDRAIL ABOVE ENDWALL

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
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Signature .....
Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-400.dwg DATE: 01-09-2009 TIME: 12:05
Xref's X_B07018-TITLE X_B07018-BASE USR Hart Hastings

PRINT ISSUE	CHECK	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	GENERAL AMENDMENTS
C	MJH	TL	23.01.09	BASIN DETAILS AMENDED
D	MJH	TL	15.07.09	BASIN DISCHARGE AMENDED
E	AM	TL	25.08.09	MINOR AMENDMENTS
F	MJH	MJH	28.08.09	BASIN LEVEL RAISED - NOTES, SECTIONS AND DETAILS AMENDED

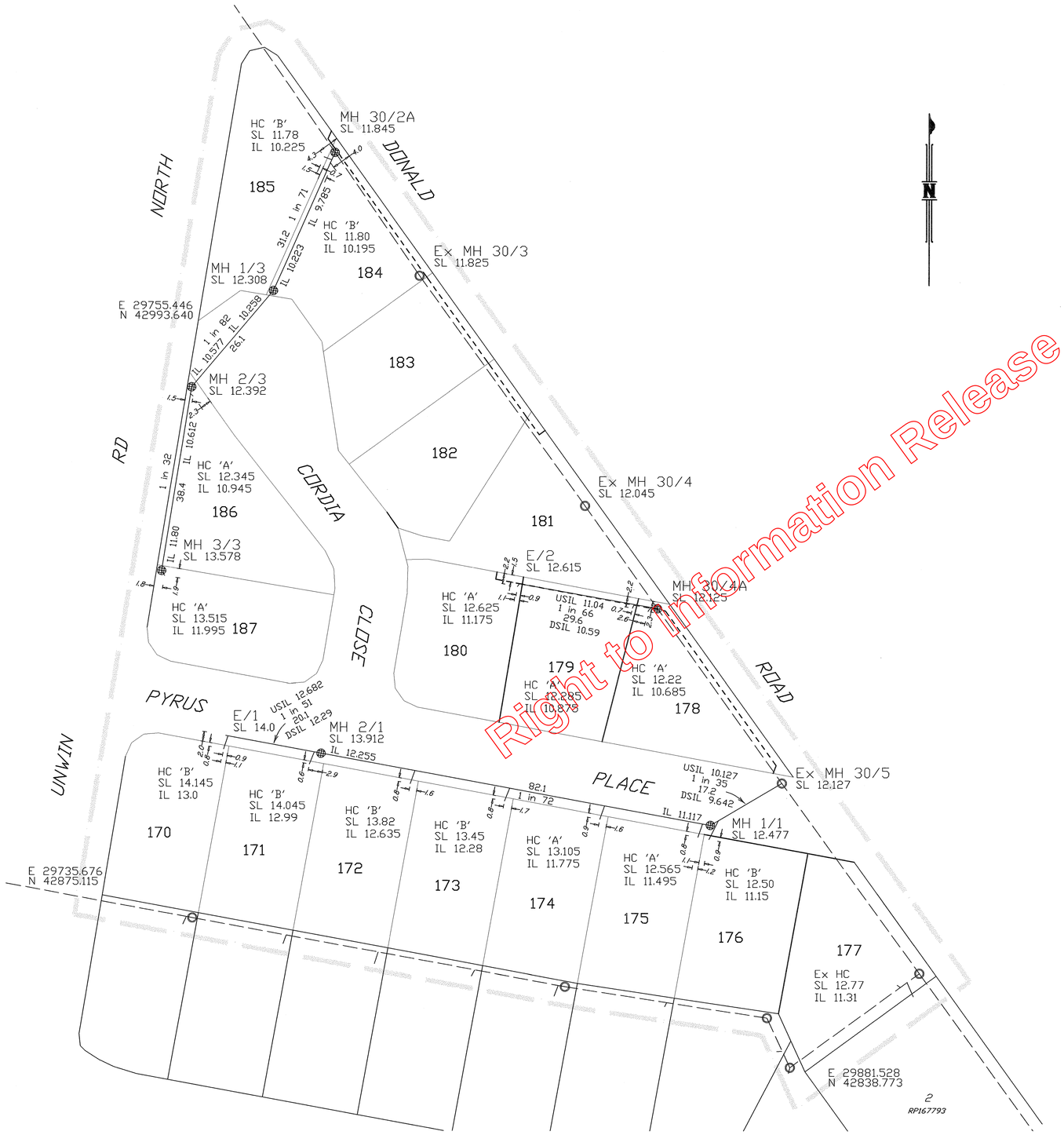
DESIGN CHECK
DRAWN/CHECK
SCALE (METRES)
1:100 1 0 1 2 3 4 5 A1
1:200 A3
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED ANDREW McPHAIL RPEQ 6921 JEFF GRIFFITHS RPEQ 4115 DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN

DRAWING TITLE: BIO RETENTION BASIN LAYOUT PLAN AND DETAILS
DRAWING NUMBER: B07018-400
ISSUE: E



LEGEND

- SEWER MANHOLE
- SEWER LINE
- EXISTING SEWER MANHOLE
- EXISTING SEWER LINE
- STAGE BOUNDARY

NOTES
The contents of this file including the intellectual property remain the property of DTS Group QLD.

Real Property Description
Lots 170-187 on SP220877
Original Portion 130

Parish of Redland
County of Stanley

Reference
PSM 39922 - RL 19.398m AHD.
Located in Carol Street.

NOTES
1. All sewer lines are 150Ø uPVC unless noted otherwise.
2. All sewer manholes are 1050Ø unless noted otherwise.
3. All sewer lines are class 'SN8' unless noted otherwise.

As-Constructed Works

It is certified that the locations, levels and dimensions of the infrastructure shown herein are a true representation of the constructed works and that the As-Constructed survey was performed to the prescribed accuracy standards.

Registered/Licensed Surveyors Signature .....

Company Title ..... Director of DTS Group QLD P/L

As-Constructed Works

It is certified that the works herein have been constructed to Local Government standards, relevant approved specifications and the operational works approval. The As-Constructed Drawings for these works constitutes a true and correct record of the works constructed and complies with the design intent.

Signature ..... RPEQ No. 4802

Date of Practical Completion 22/04/2010

Company Title ..... Brown Consulting

REDLAND CITY COUNCIL

RSC REF: **EC004782.7** NAME: **VALENCIA SPRINGS - STAGE 7**

COUNCIL DEVELOPMENT NUMBER: **SB004782.7**

AS CONSTRUCTED DETAILS

AS CONSTRUCTED - SEWER		SCALE: 1:500	No. OF SHEETS 1 of 4
DESIGNED	BROWN CONSULTING	DRAWING No.	A011017ac.Dwg
CHECKED	AW	DRAWN	AS

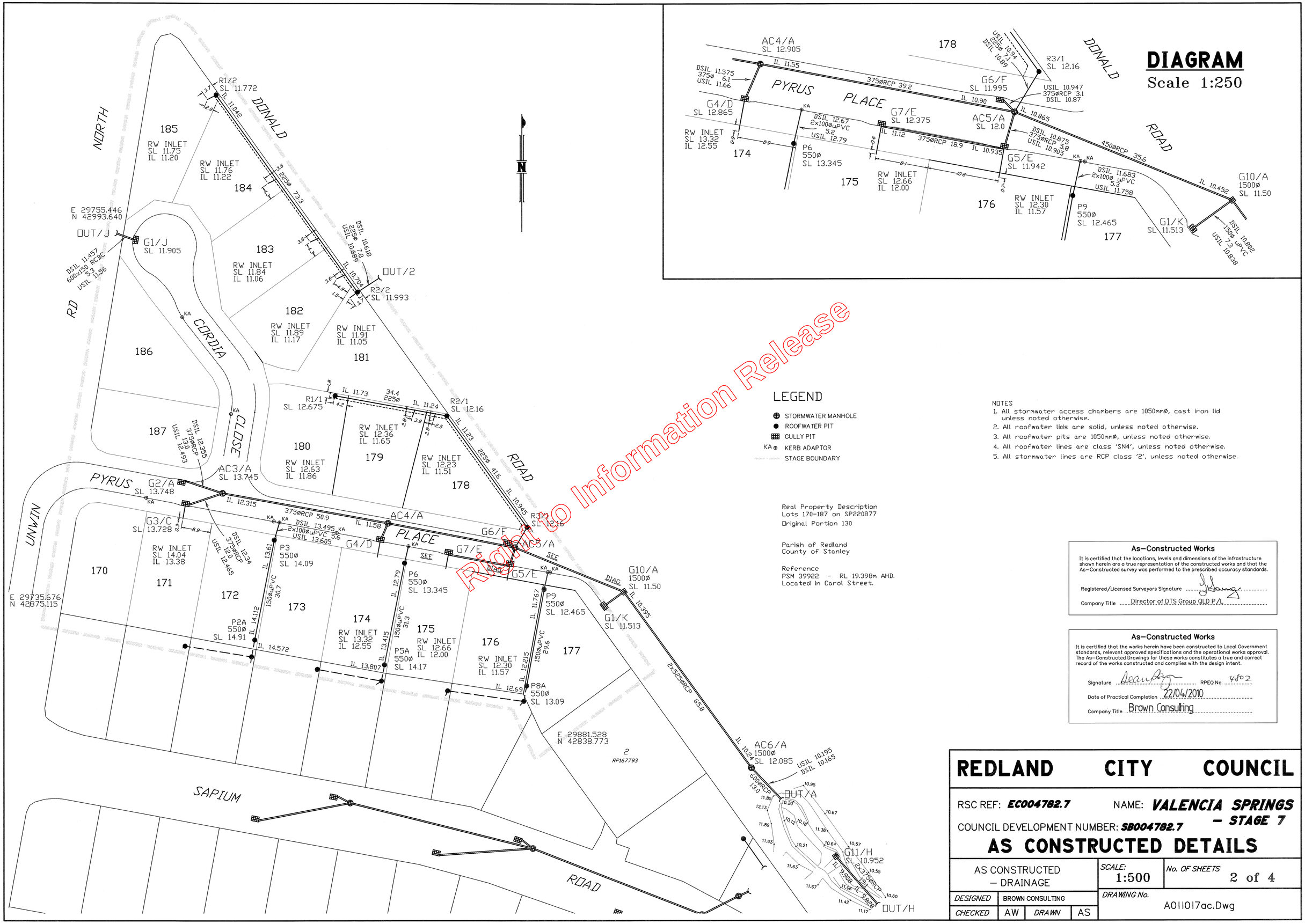


DIAGRAM
Scale 1:250

LEGEND

- STORMWATER MANHOLE
- ROOFWATER PIT
- GULLY PIT
- KA KERB ADAPTOR
- STAGE BOUNDARY

NOTES
1. All stormwater access chambers are 1050mmØ, cast iron lid unless noted otherwise.
2. All roofwater lids are solid, unless noted otherwise.
3. All roofwater pits are 1050mmØ, unless noted otherwise.
4. All stormwater lines are class 'SN4', unless noted otherwise.
5. All stormwater lines are RCP class '2', unless noted otherwise.

Real Property Description
Lots 170-187 on SP220877
Original Portion 130

Parish of Redland
County of Stanley

Reference
PSM 39922 - RL 19.398m AHD.
Located in Carol Street.

As-Constructed Works

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Registered/Licensed Surveyors Signature .....
Company Title ..... Director of DTS Group QLD P/L

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Signature ..... RPEQ No. 4802
Date of Practical Completion 22/04/2010
Company Title ..... Brown Consulting

REDLAND CITY COUNCIL

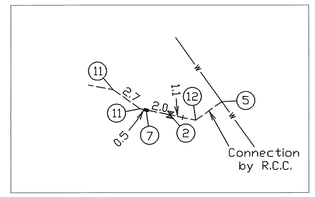
RSC REF: ***EC004782.7*** NAME: ***VALENCIA SPRINGS - STAGE 7***

COUNCIL DEVELOPMENT NUMBER: ***SB004782.7***

AS CONSTRUCTED DETAILS

AS CONSTRUCTED – DRAINAGE				SCALE: 1:500	No. OF SHEETS 2 of 4
DESIGNED	BROWN CONSULTING			DRAWING No. A011017ac.Dwg	
CHECKED	AW	DRAWN	AS		

DIAGRAM SCALE 1:250



LEGEND

- STAGE BOUNDARY
- 100ø uPVC
- 150ø uPVC
- 200ø uPVC
- 250ø uPVC
- EXISTING WATER MAIN
- WATER CONDUIT
- FIRE HYDRANT
- VALVE

1	100ø SLUICE VALVE
2	150ø SLUICE VALVE
3	100ø x 100ø TEE
4	150ø – 100ø REDUCING TEE
5	150ø x 150ø TEE
6	100ø READYTAP CONNECTOR
7	150ø READYTAP CONNECTOR
8	100ø x 11.25° BEND
9	100ø x 22.5° BEND
10	100ø x 45° BEND
11	150ø x 22.5° BEND
12	150ø x 45° BEND
×	WATER METER

NOTES
The contents of this file including the intellectual property remain the property of DTS Group QLD.

Real Property Description
Lots 170-187 on SP220877
Original Portion 130

Parish of Redland
County of Stanley

Reference
PSM 39922 - RL 19.398m AHD.
Located in Carol Street.

ALL WATER MAINS ARE LAID ON A 1.50m ALIGNMENT AND ARE WITHIN TOLERANCE UNLESS NOTED OTHERWISE

ALL WATER MAINS ARE uPVC CLASS 16 UNLESS NOTED OTHERWISE.

As–Constructed Works

It is certified that the locations, levels and dimensions of the infrastructure shown herein are a true representation of the constructed works and that the As–Constructed survey was performed to the prescribed accuracy standards.

Registered/Licensed Surveyors Signature .....

Company Title ..... Director of DTS Group QLD P/L

As–Constructed Works

It is certified that the works herein have been constructed to Local Government standards, relevant approved specifications and the operational works approval. The As–Constructed Drawings for these works constitutes a true and correct record of the works constructed and complies with the design intent.

Signature ..... RPEQ No. 4902

Date of Practical Completion 22/04/2010

Company Title Brown Consulting

REDLAND CITY COUNCIL

RSC REF: EC004782.7 NAME: VALENCIA SPRINGS – STAGE 7

COUNCIL DEVELOPMENT NUMBER: SB004782.7

AS CONSTRUCTED DETAILS

AS CONSTRUCTED – WATER				SCALE: 1:500	No. OF SHEETS 3 of 4
DESIGNED	BROWN CONSULTING			DRAWING No. A011017ac.Dwg	
CHECKED	AW	DRAWN	AS		

N

LEGEND

- AREA EXCAVATED
- AREA FILLED
- STAGE BOUNDARY
- *14.15 FINISHED SURFACE LEVEL

NOTES
The contents of this file including the intellectual property remain the property of DTS Group QLD.

Real Property Description
Lots 170-187 on SP220877
Original Portion 130

Parish of Redland
County of Stanley

Reference
PSM 39922 - RL 19.398m AHD.
Located in Carol Street.

As-Constructed Works

It is certified that the locations, levels and dimensions of the infrastructure shown herein are a true representation of the constructed works and that the As-Constructed survey was performed to the prescribed accuracy standards.

Registered/Licensed Surveyors Signature .....

Company Title Director of DTS Group QLD P/L

As-Constructed Works

It is certified that the works herein have been constructed to Local Government standards, relevant approved specifications and the operational works approval. The As-Constructed Drawings for these works constitutes a true and correct record of the works constructed and complies with the design intent.

Signature ..... RPEQ No. 4802

Date of Practical Completion 22/04/2010

Company Title Brown Consulting

REDLAND CITY COUNCIL

RSC REF: **EC004782.7** NAME: **VALENCIA SPRINGS – STAGE 7**

COUNCIL DEVELOPMENT NUMBER: **SB004782.7**

AS CONSTRUCTED DETAILS

AS CONSTRUCTED – LEVELS				SCALE: 1:500	No. OF SHEETS 4 of 4
DESIGNED	BROWN CONSULTING			DRAWING No. A011017ac.Dwg	
CHECKED	AW	DRAWN	AS		

FORM CQA/CF/09G

10 November 2009
Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RECEIVED
NOV 2009
Job No. Lot 178 testing
G
W
BP
MC
AM
MM
CANP
DC please check against plan DC

RE: CERTIFICATE OF CONTROLLED FILLING:
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 178

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 178 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rblh0831jd.docFORM CQA/CF/09G

10 November 2009

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 323
FAX (07) 3801 363
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 173
FAX (07) 5450 153
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 295
FAX (07) 5465 279
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688
FAX (07) 5429 688

NATA

Master Builders

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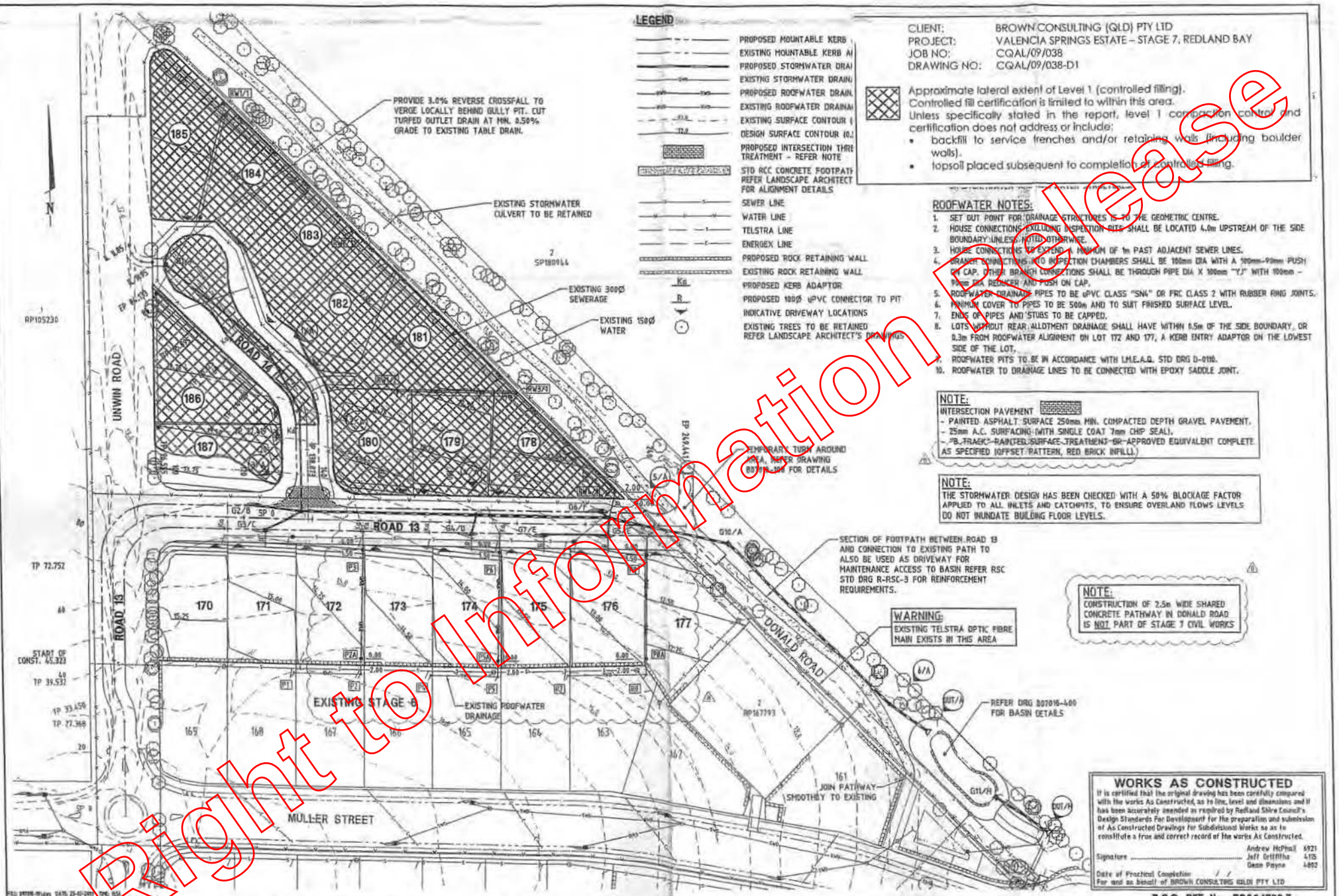

Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RE: CERTIFICATE OF CONTROLLED FILLING:
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 179

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 179 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rbln0831jd.doc

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 323
FAX (07) 3801 363
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 173
FAX (07) 5450 153
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 295
FAX (07) 5465 279
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688
FAX (07) 5429 688

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AGTA
Master Builders

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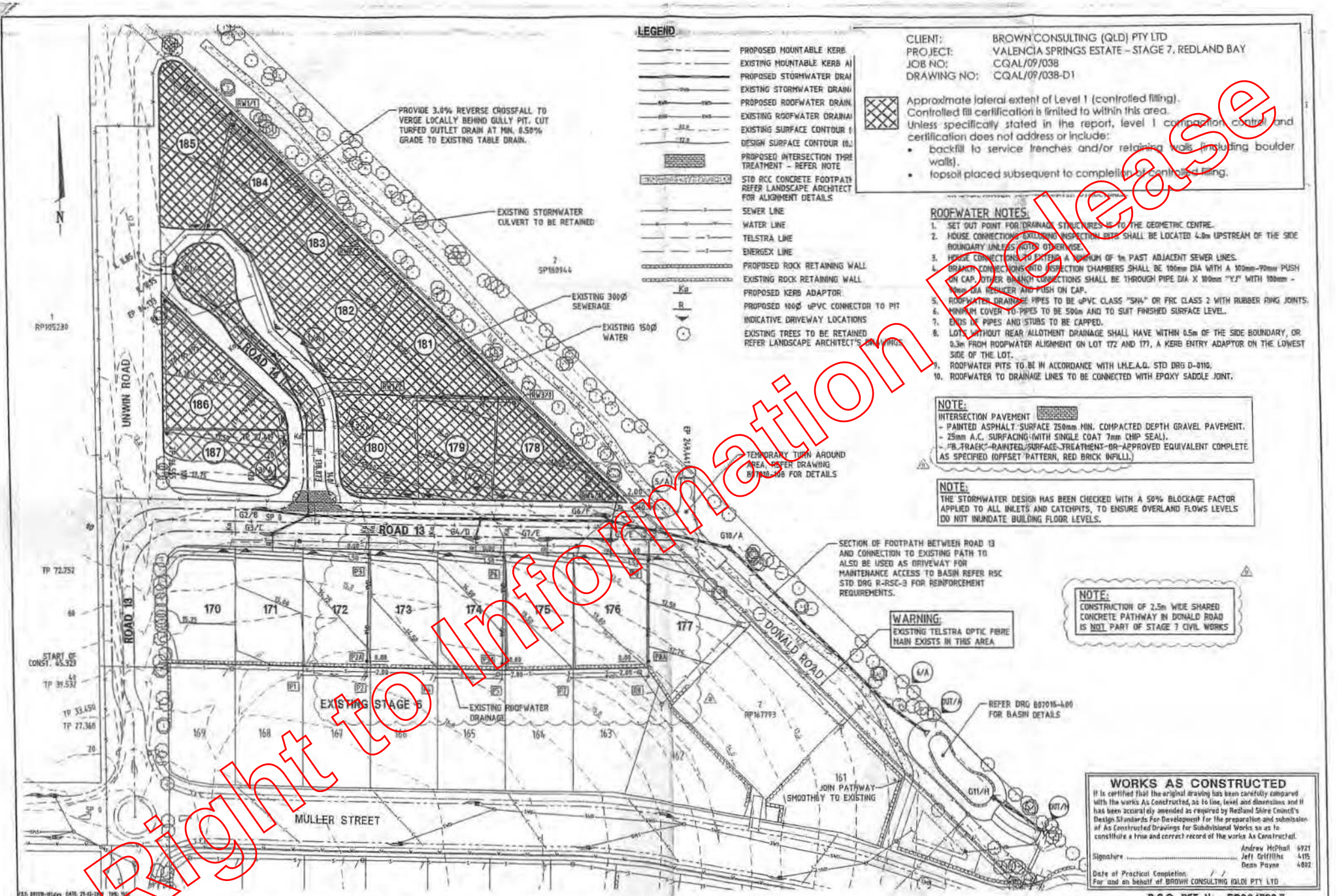

FORM CQA/CF/09G

10 November 2009
Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RE: CERTIFICATE OF CONTROLLED FILLING:
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 180

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 180 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rblh0831jd.doc

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 3233
FAX (07) 3801 3633
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 1735
FAX (07) 5450 1535
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 2955
FAX (07) 5465 2799
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 6882
FAX (07) 5429 6882

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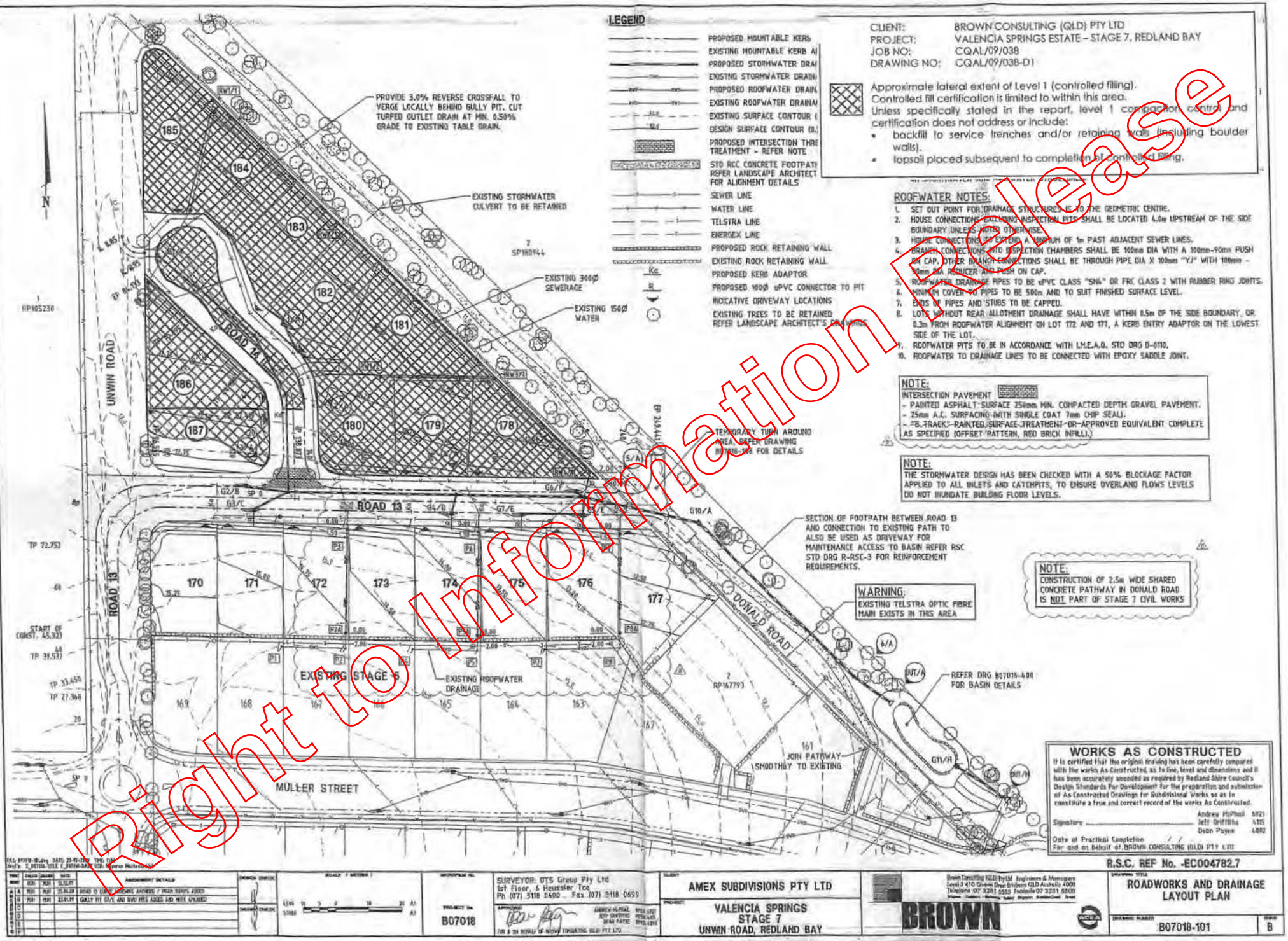

FORM CQA/CF/09G

10 November 2009
Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RE: **CERTIFICATE OF CONTROLLED FILLING:**
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 181

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 181 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rblh0831jd.doc

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 3233
FAX (07) 3801 3633
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 1735
FAX (07) 5450 1535
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 2955
FAX (07) 5465 2799
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688?
FAX (07) 5429 688?

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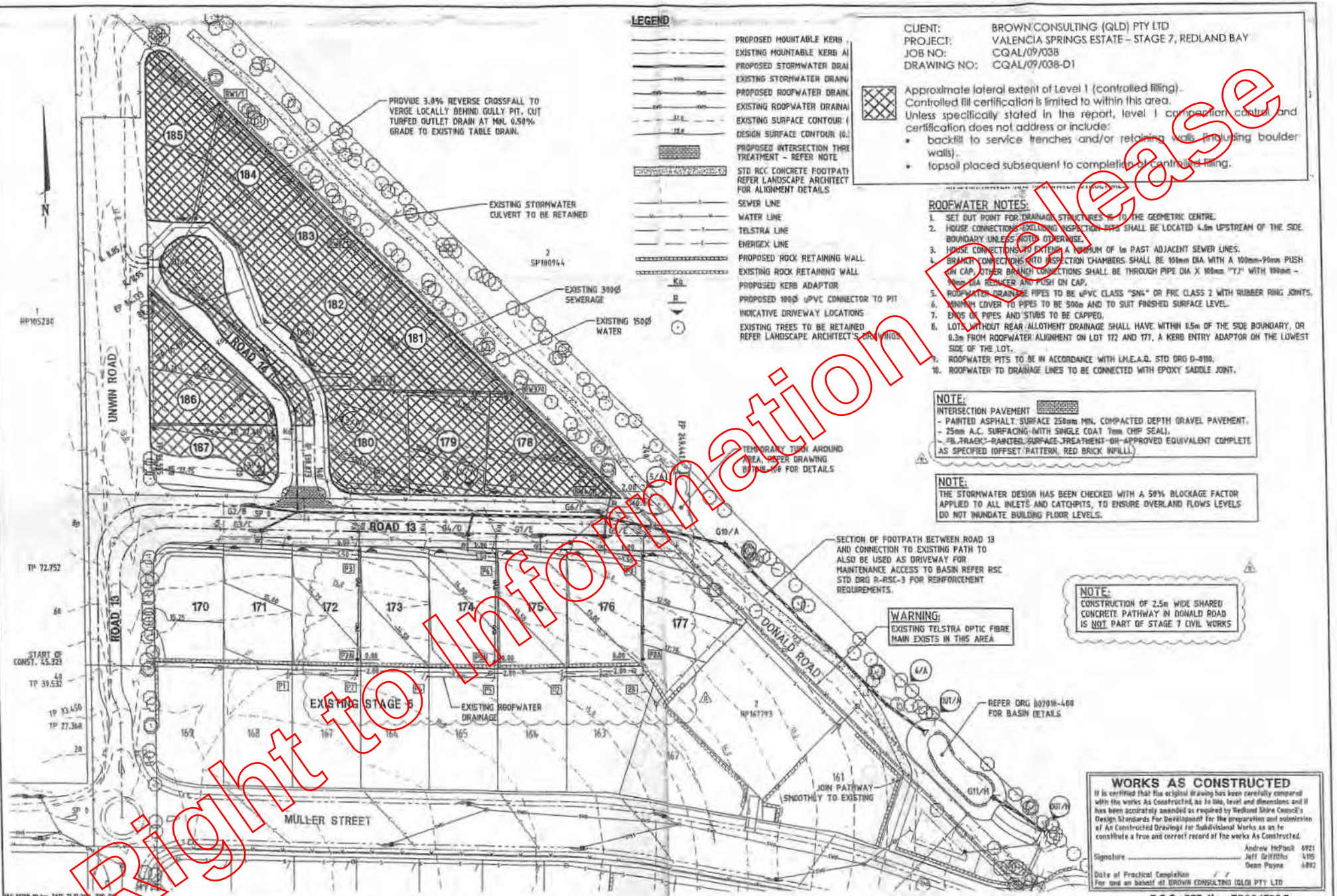

FORM CQA/CF/09G

10 November 2009
Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RE: CERTIFICATE OF CONTROLLED FILLING:
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 182

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 182 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rblh0831jd.doc

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 323
FAX (07) 3801 363
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 173
FAX (07) 5450 153
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 295
FAX (07) 5465 279
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688
FAX (07) 5429 688

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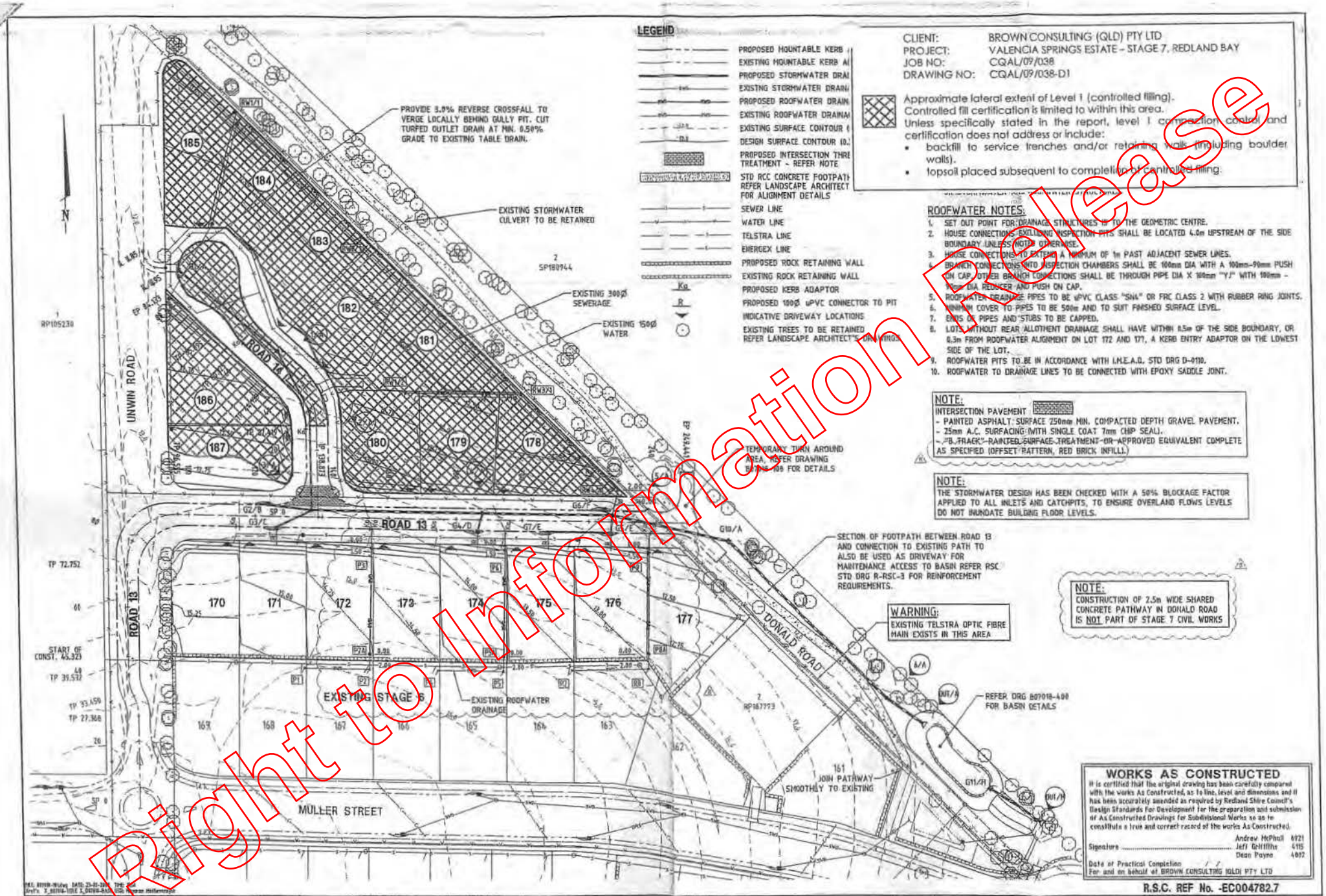


FORM CQA/CF/09G

10 November 2009
Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RE: **CERTIFICATE OF CONTROLLED FILLING:**
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 183

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 183 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rblh0831jd.doc

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

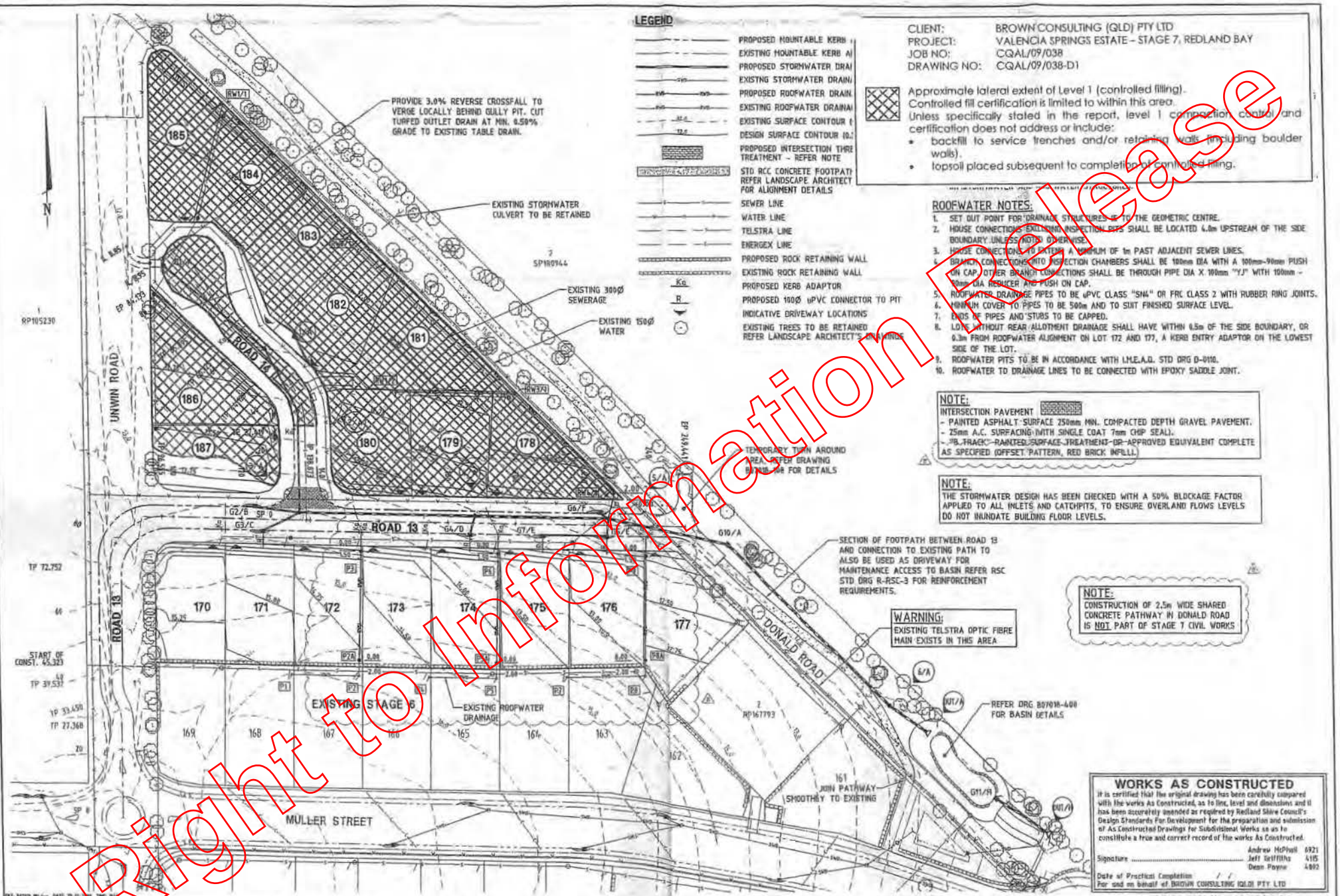
LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 3233
FAX (07) 3801 3633
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 1735
FAX (07) 5450 1535
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 2955
FAX (07) 5465 2795
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 6882
FAX (07) 5429 6882

"SERVING QUEENSLAND SINCE 1993"



FORM CQA/CF/09G

10 November 2009
Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RE: **CERTIFICATE OF CONTROLLED FILLING:**
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 184

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 184 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rblh0831jd.doc

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 3233
FAX (07) 3801 3633
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 173[illegible]
FAX (07) 5450 153[illegible]
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 295[illegible]
FAX (07) 5465 279[illegible]
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688[illegible]
FAX (07) 5429 688[illegible]

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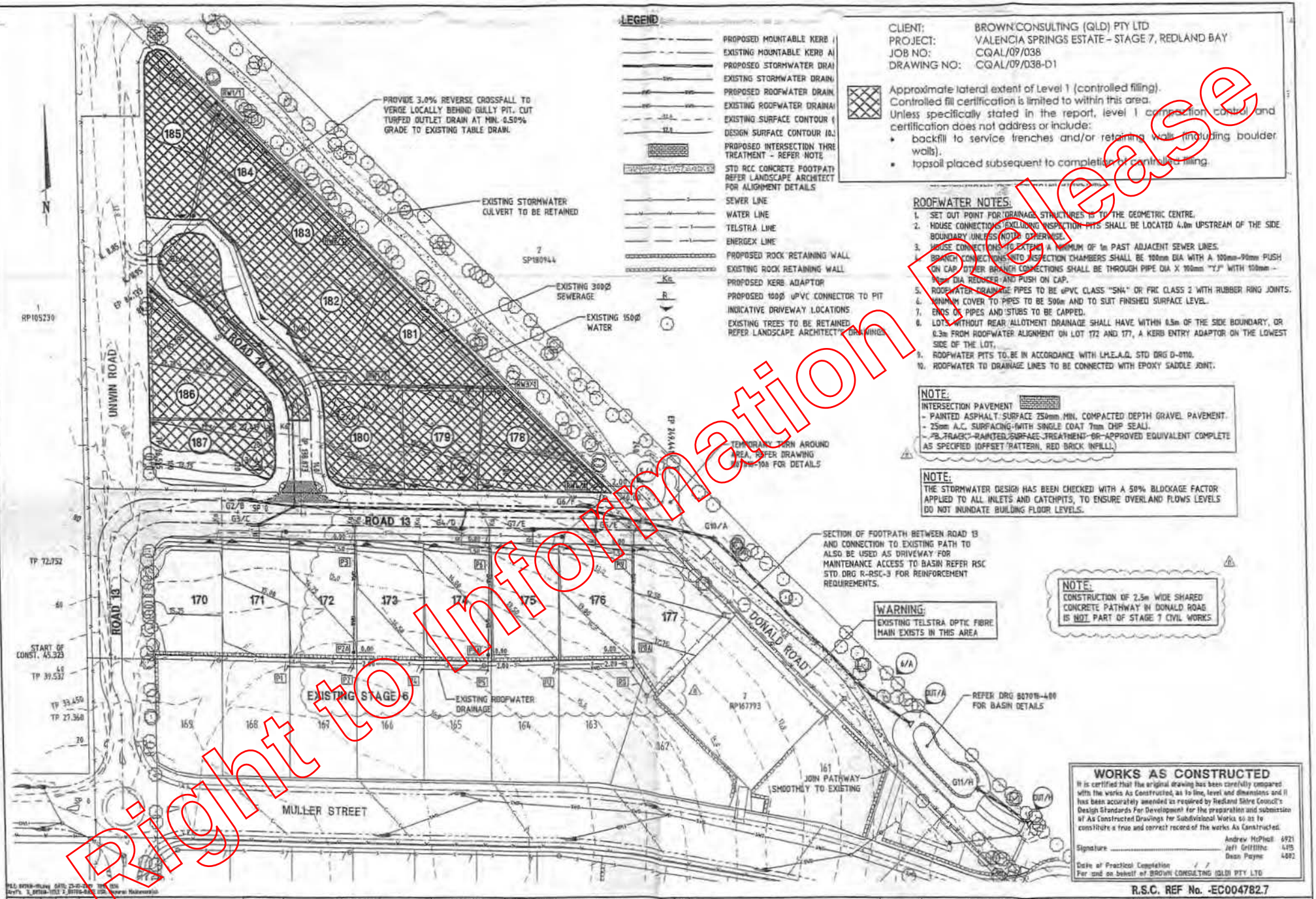

FORM CQA/CF/09G

10 November 2009
Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RE: CERTIFICATE OF CONTROLLED FILLING:
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 185

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 185 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rblh0831jd.doc

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 3233
FAX (07) 3801 3633
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 1735
FAX (07) 5450 1535
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 2955
FAX (07) 5465 2799
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 6882
FAX (07) 5429 6882

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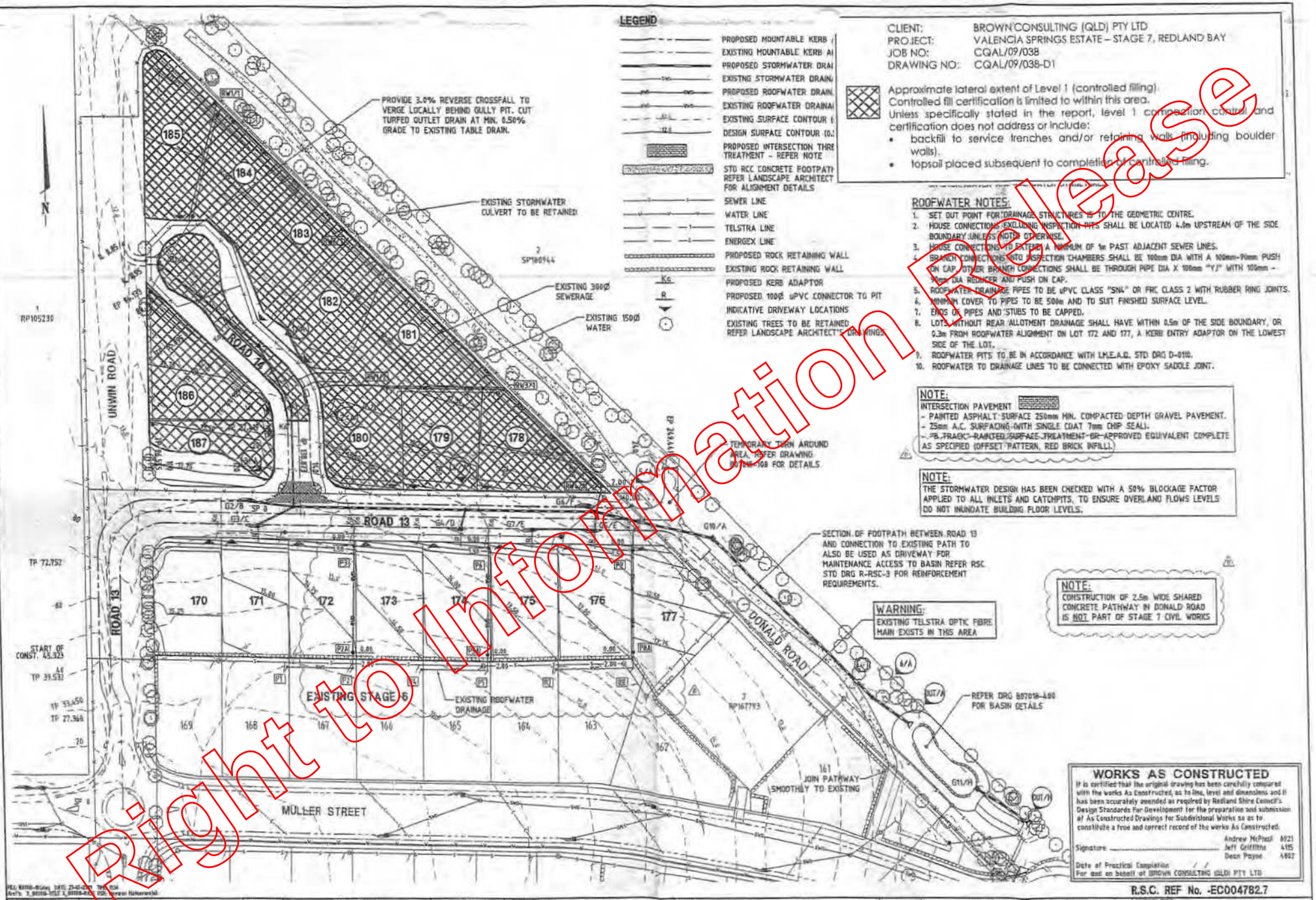

FORM CQA/CF/09G

10 November 2009
Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RE: CERTIFICATE OF CONTROLLED FILLING:
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 186

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 186 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rblh0831jd.doc

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 323
FAX (07) 3801 363
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 173
FAX (07) 5450 153
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 295
FAX (07) 5465 279
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688
FAX (07) 5429 688

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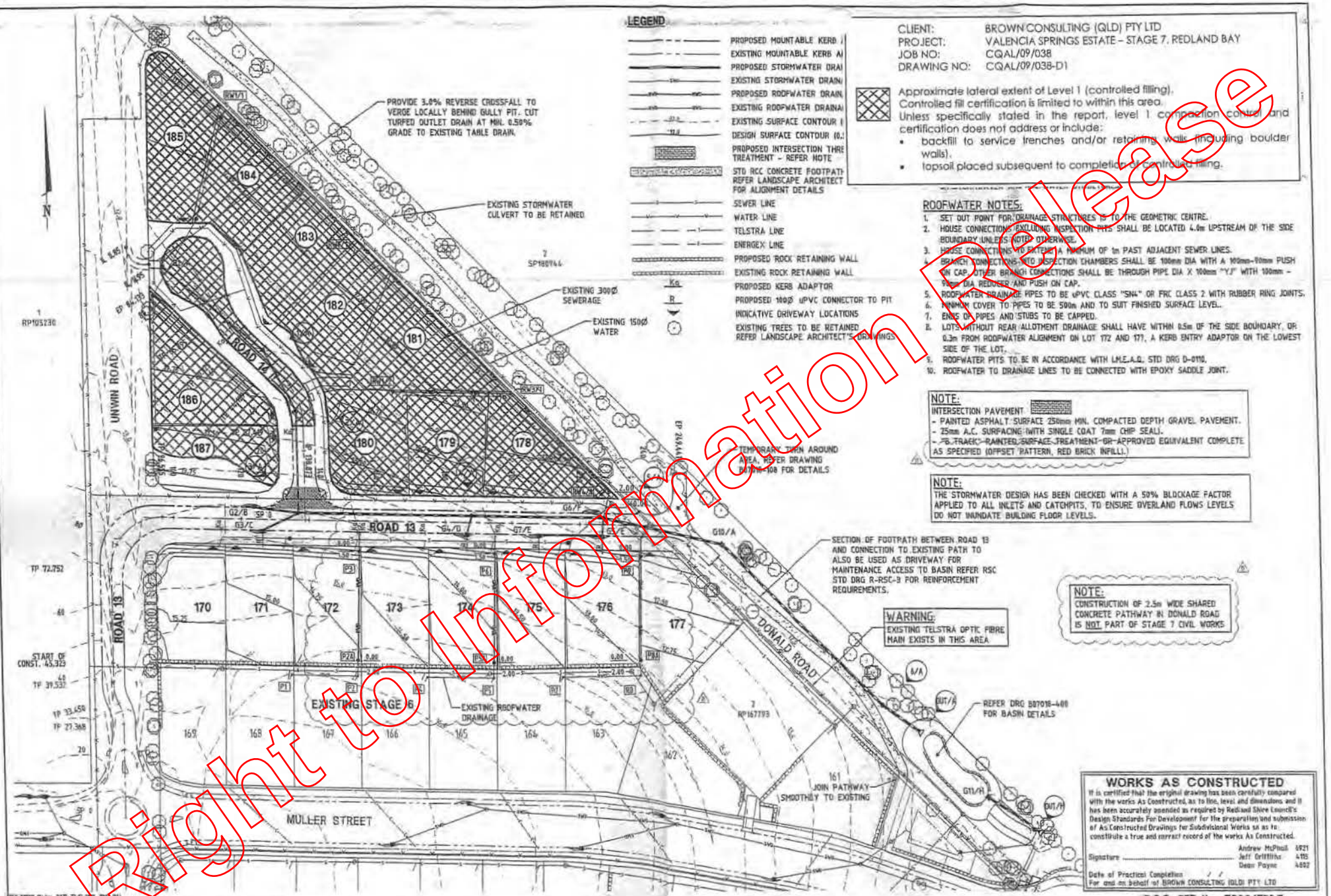

FORM CQA/CF/09G

10 November 2009
Job No. CQAL/09/038

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4001

RE: **CERTIFICATE OF CONTROLLED FILLING:**
VALENCIA SPRINGS ESTATES – STAGE 7, REDLAND BAY
REAL PROPERTY DESCRIPTION:
LOT NO.2 on RP850031

LOT NO. 187

Fill was placed on this lot during the construction of this estate.

Civil Quality Assurance (Qld) Pty Ltd (CQA) was commissioned on this project to provide earthworks inspection and testing services on a Level 1 basis as detailed in clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments". Full details of the inspection and testing program are provided in the CQA report (form CQA/CF/10), Job No. CQAL/09/038 dated 10/11/09.

Based on the test results and site inspections, CQA concludes that the fill foundation to a depth of not less than 150mm and placement of compacted fill on Lot 187 as defined laterally in the attached drawing is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

All fill in the areas defined in the attached drawing, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered to be "Controlled Fill" in accordance with AS 2870 "Residential Slabs and Footings" (Clause 6.4.2 (a)) and AS 3798.

Unless otherwise stated, Level 1 certification does not address any other geotechnical issues which may be relevant to building construction and serviceability.

A full geotechnical site investigation/classification and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel, prior to building when the house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L

Enc. Drawing showing lateral extent of controlled filling
rblh0831jd.doc

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 3233
FAX (07) 3801 3633
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 173[illegible]
FAX (07) 5450 153[illegible]
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 295[illegible]
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laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688[illegible]
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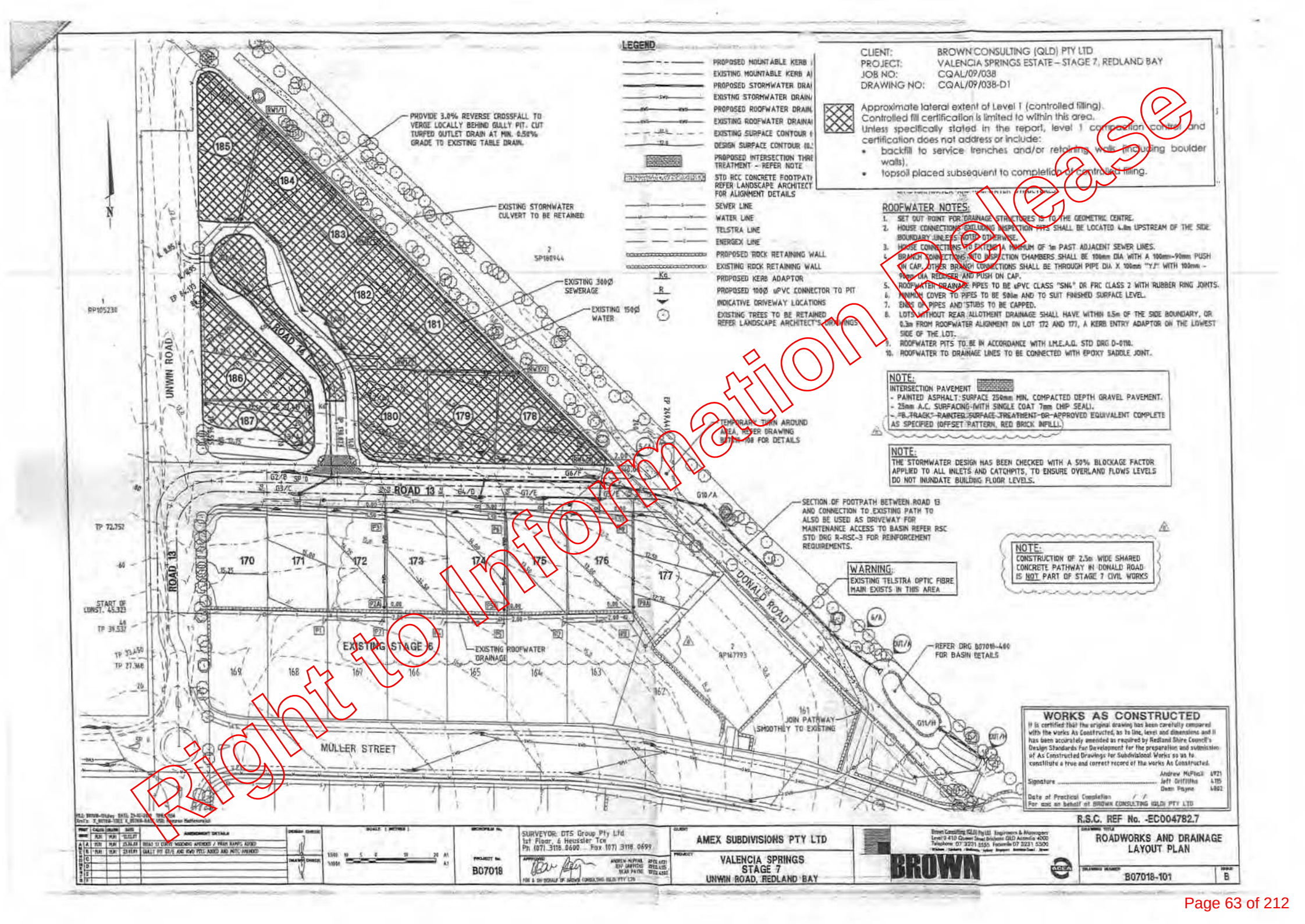

CQA/CF/14

Job No. CQAL/09/038

11 November 2009

COMPLIANCE CONTROL TESTING

PROJECT:	VALENCIA SPRINGS ESTATE – STAGE 7
SITE:	UNWIN STREET, REDLAND BAY
CLIENT:	BROWN CONSULTING (QLD) PTY LTD
SUPERINTENDENT:	BROWN CONSULTING (QLD) PTY LTD
CONTRACTOR:	DEAN ASH CONSTRUCTIONS (QLD) PTY LTD

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

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ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 3233
FAX (07) 3801 3633
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 1735
FAX (07) 5450 1535
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 2955
FAX (07) 5465 2799
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 6882
FAX (07) 5429 6882

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CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.
GEOTECHNICAL CONSULTANTS
1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 10
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 30 September 2009

SAMPLE NUMBER	DL/09/5646	DL/09/5647	DL/09/5648	DL/09/5649
DATE/TIME TESTED	28/9/09, 9.00am	28/9/09, 9.10am	28/9/09, 9.20am	28/9/09, 9.30am
DEPTH OF TEST (mm)	150	150	150	150
DEPTH OF LAYER (mm)	-	-	-	-
LAYER TERMINOLOGY	STF17	STF18	STF19	STF20
TEST LOCATION	MH 30/5-1/1, 7m off 1/1	MH 1/1-2/1, 6m off 1/1	MH 1/1-2/1, 13m off 2/1	MH 2/1-E/1, 5m off 2/1
TEST ELEVATION	0.8m above pipe	0.8m above pipe	0.8m above pipe	0.8m above pipe
SOIL DESCRIPTION	Gravel	Sandy Clay	Sandy Clay	Clayey Sand
OVERSIZE SIEVE (mm)	19.0	19.0	19.0	19.0
OVERSIZE - WET BASIS (%)	-	-	-	-
FIELD MOISTURE CONTENT (%)	8.5	12.5	16.5	9.5
OPTIMUM MOISTURE CONTENT(%)	12.0	14.5	16.5	11.5
MOISTURE VARIATION (%)	-3.5	-1.5	-0.5	-2.0
FIELD WET DENSITY (t/m^3)	2.20	2.08	2.02	2.15
PEAK CONVERTED WET DENSITY (t/m^3)	2.14	2.05	2.08	2.06
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-	-	-	-
HILF DENSITY RATIO / SPEC (%)	**103.0** / **95**	**102.0** / **95**	**97.5** / **95**	**104.0** / **95**
TEST PROCEDURE	Field A.S. 1289 5.8.1 Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1			
TERMINOLOGY LEGEND	(S) Subgrade (LSB) Lower Subbase	(B) Base Course (SB) Subbase Course (F) Fill	(SF) Select Fill (AF) Allotment Fill (STF) Sewer Trench Fill	(EF) Embankment Fill (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
- Test locations were not professionally surveyed therefore recorded locations should be considered as approximate only.

R BENNETT
AUTHORISED SIGNATORY
NATA Accreditation No. 4991
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CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.
GEOTECHNICAL CONSULTANTS
1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 11
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 30 September 2009

SAMPLE NUMBER	DL/09/5650		DL/09/5651		DL/09/5652		DL/09/5653	
DATE/TIME TESTED	28/9/09, 9.40am		28/9/09, 9.50am		28/9/09, 10.00am		28/9/09, 10.10am	
DEPTH OF TEST (mm)	150		150		150		150	
DEPTH OF LAYER (mm)	-		-		-		-	
LAYER TERMINOLOGY	STF21		STF22		STF23		STF24	
TEST LOCATION	MH 30/2A-1/3, 11m off 30/2A		MH 1/3-2/3, 13m off 1/3		MH 2/3-3/3, 9m off 3/3		MH 30/4A-E/2, 8m off E/2	
TEST ELEVATION	0.8m above pipe		0.8m above pipe		0.8m above pipe		0.8m above pipe	
SOIL DESCRIPTION	Sandy Clay		Clayey Sand		Clayey Sand		Clayey Sand	
OVERSIZE SIEVE (mm)	19.0		19.0		19.0		19.0	
OVERSIZE - WET BASIS (%)	-		-		-		-	
FIELD MOISTURE CONTENT (%)	11.5		14.0		11.0		13.5	
OPTIMUM MOISTURE CONTENT(%)	14.5		15.5		14.0		13.0	
MOISTURE VARIATION (%)	-3.0		-2.0		-3.5		1.0	
FIELD WET DENSITY (t/m^3)	2.06		2.11		2.07		2.03	
PEAK CONVERTED WET DENSITY (t/m^3)	2.02		2.05		2.02		2.09	
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-		-		-		-	
HILF DENSITY RATIO / SPEC (%)	**102.0**	**95**	**102.5**	**95**	**103.0**	**95**	**97.5**	**95**

TEST PROCEDURE
Field: A.S. 1289 5.8.1
Laboratory: A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
- Test locations were not professionally surveyed therefore recorded locations should be considered as approximate only.

R BENNETT
AUTHORISED SIGNATORY
NATA Accreditation No. 4991
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CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.

GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S. 1289)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 32
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 10 November 2009

SAMPLE NUMBER	DL/09/6786		DL/09/6787		DL/09/6788			
DATE/TIME TESTED	3/11/09, 9.00am		3/11/09, 9.10am		3/11/09, 9.20am			
DEPTH OF TEST (mm)	150		150		150			
DEPTH OF LAYER (mm)	-		-		-			
LAYER TERMINOLOGY	WMTF50		WMTF51		WMTF52			
TEST LOCATION	Road 13, CH110, 10m left of centre line		Road 13, CH200, 10m left of centre line		Road 14, CH30, 10m right of centre line			
TEST ELEVATION	-		-		-			
SOIL DESCRIPTION	Clayey Silt		Sandy Clay		Sandy Clay			
OVERSIZE SIEVE (mm)	19.0		19.0		19.0			
OVERSIZE - WET BASIS (%)	-		-		-			
FIELD MOISTURE CONTENT (%)	8.0		20.0		11.5			
OPTIMUM MOISTURE CONTENT(%)	11.0		22.0		14.5			
MOISTURE VARIATION (%)	-3.0		-1.5		-3.0			
FIELD WET DENSITY (t/m^3)	1.88		2.00		1.91			
PEAK CONVERTED WET DENSITY (t/m^3)	1.97		2.08		2.01			
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-		-		-			
HILF DENSITY RATIO / SPEC (%)	**95.5**	**95**	**96.5**	**95**	**95.0**	**95**		

TEST PROCEDURE
Field A.S. 1289 5.8.1, 5.3.1
Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade, (LSB) Lower Subbase, (B) Base Course, (SB) Subbase Course, (F) Fill, (SF) Select Fill, (AF) Allotment Fill, (STF) Sewer Trench Fill, (EF) Embankment Fill, (WMTF) Water Main Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
- Test locations were not professionally surveyed therefore recorded locations should be considered as approximate only.

R BENNETT
AUTHORISED SIGNATORY
NATA Accreditation No. 4991
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Job No. CQAL/09/038

27 July 2009

Brown Consulting (Qld) Pty Ltd
PO Box 10349
BRISBANE Qld 4001

CERTIFICATE OF FIELD AND LABORATORY TESTING FOR PAVEMENT THICKNESS DETERMINATION (SOAKED C.B.R.)
PROJECT: **VALENCIA SPRINGS ESTATE – STAGE 7, REDLAND BAY**
JOB DESCRIPTION: Subdivisional Development
DATE SAMPLED: **9/7/09**

1.0 FIELD WORK

This consisted of test bores in the proposed subgrade for the purpose of:

a) Sampling of representative materials for laboratory testing.
b) Visual classification of the materials in accordance with the Unified Soils Classification System.

2.0 LABORATORY TESTING

	TEST PROCEDURE NO.
Moisture/Density Relationship (Standard)	A.S. 1289 5.1.1
California Bearing Ratio	A.S. 1289 6.1.1
Moisture Content of a Soil	A.S. 1289.2.1.1

3.0 LABORATORY TEST RESULTS

Soaked California Bearing Ratio test results are contained in Certificate No. 2 attached.

R BENNETT
CIVIL QUALITY ASSURANCE (Q) P/L

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE T
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 351
FAX (07) 3881 351
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 323
FAX (07) 3801 363
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 173
FAX (07) 5450 153
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
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FAX (07) 5465 279
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688
FAX (07) 5429 688

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.

GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/03B

CALIFORNIA BEARING RATIO TEST REPORT (A.S.)

CLIENT:	BROWN CONSULTING (QLD) PTY LTD	REPORT NO:	2
PROJECT:	VALENCIA SPRINGS ESTATE- STAGE 7, REDLAND BAY	JOB NO:	CQAL/09/038
JOB DESCRIPTION:	RESIDENTIAL SUBDIVISION	DATE:	27 July 2009

Test Procedure	A.S. 1289 6.1.1, 5.1.1 (Standard Compaction) & 2.1.1		
Sample No.	DL/09/3646		
Depth (mm) (Below Design Subgrade)	00-500		
Location	Road 14, CH85		
Date Sampled	9/7/09		
Description of Sample	SUBGRADE: (CI) Sandy CLAY brown		
Max. Laboratory Dry Density (t/m³)	1.79		
Optimum Moisture Content (%)	16.0		
Field Moisture Content (%)	17.2		
Retained 19.0mm (%)	0.0		
+19.0mm Excluded (Yes/No)	N/A		
Moisture Ratio (%) Before Soaking	103.0		
Density Ratio (%) Before Soaking	100.0		
Number of Days Soaked	4		
Surcharge (Kg)	**4.5**		
Moisture Content/Top 30mm (%) After Test	18.3		
Swell After Soaking (%)	1.0		
CBR Penetration (mm)	5.0		
C.B.R VALUE	**9**		

SAMPLE PROCEDURE:
AS 1289 1.2.1 - Clause 6.4

Refer Standard Notes and Performance Warnings attached.
The above results were faxed as preliminary to Brown Consulting (Qld) Pty Ltd & Dean Ash Constructions (Qld) Pty Ltd on 18/7/09.

AUTHORISED SIGNATORY
NATA Accreditation No. 4991

R BENNETT

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CBR STANDARD NOTES AND PERFORMANCE WARNINGS

(A) SAMPLING

Sampling frequency was in accordance with the minimum requirements of the local authority.

Final soil type boundaries (representing the soaked CBR samples) should be established when bulk earthworks is completed and the proposed subgrade exposed.

Unless otherwise instructed, samples are generally recovered from the zone of extreme pavement thickness, i.e. 00 - 500mm below design subgrade level.

Unless otherwise requested by the client, the CBR sampling programme does not address other geotechnical issues, e.g. groundwater/seepage, soft soils etc.

(B) TESTING

Testing was carried out in accordance with A.S. 1289 "Methods of Testing Soils for Engineering Purposes", A.S. 1289 6.1.1.

The test specimen was nominally placed at the Optimum Moisture Content and compacted to the specified density of the subgrade.

In accordance with the test procedure, the test specimen was soaked for a period of four (4) days with a surcharge mass of 4.5kg. This surcharge mass is approximately equivalent to the pressure applied by a pavement thickness of 150mm (A.S. 1289 6.1.1, Note 8).

The minimum pavement thickness should be at least equivalent to the pavement thickness represented by the surcharge mass.

Test method A.S. 1289 6.1.1 allows for any +19.0mm material to be replaced in the test portion by –19.0mm + 4.75mm material. Unless otherwise instructed by our client, +19.0mm material will be excluded from the test portion.

(C) PERFORMANCE WARNINGS

Clayey Soils (Clays, Sandy Clays and Silty Clays)

Clay soils generally have very low permeability and as a result, construction and performance problems associated with wet weather are usually confined to the exposed surface of the subgrade. However, workability problems can occur in poorly drained areas or after prolonged wet periods.

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.

GEOTECHNICAL CONSULTANTS

1/18 LEANNE CRESCENT, LAWNTON, QLD 4501
OFFICE: (07) 3881 3511 FAX: (07) 3881 3513

CQA/M/22A

Job No. CQAL/09/038

Date Completed: 1/7/09

Client: BROWN CONSULTING (QLD) PTY LTD

Location: VALENCIA SPRINGS ESTATE – STAGE 7, REDLAND BAY

SOIL BOUNDARIES

TABLE 1

LAB SAMPLE NO.	LOCATION	PENETRATION (mm)	C.B.R. VALUES	Surcharge (Kg)	SOIL BOUNDARIES
DL/09/3027	Intersection of Roads 13 & 14	5.0	4.5	4.5	Road 13, CH110-CH180
DL/09/3028	Road 13, CH200	5.0	4.5	4.5	Road 13, CH180-END

***NOTE:** Limits for Road 14 will be completed when filling of road is complete.

Notes:

- The subgrade was inspected with all due care and diligence to accurately determine the soil type boundaries however on occasion, construction may indicate soil types differing from those shown in this report. Should this occur, Civil Quality Assurance should be contacted immediately for further advice.
- The above soil boundaries are subject to and dependant upon final subgrade inspection following the completion of all trenching and final trimming.
- This report should be read in conjunction with the Standard CBR Notes issued with CBR reports.

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Job No. CQAL/09/036

26 June 2009

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET QLD 4000

CERTIFICATE OF FIELD AND LABORATORY TESTING FOR PAVEMENT THICKNESS DETERMINATION (SOAKED C.B.R.)
PROJECT: **VALENCIA SPRINGS ESTATE – STAGE 7, REDLAND BAY**
JOB DESCRIPTION: Subdivisional Development
DATE SAMPLED: **18/6/09**

1.0 FIELD WORK

This consisted of test bores in the proposed subgrade for the purpose of:

a) Sampling of representative materials for laboratory testing.
b) Visual classification of the materials in accordance with the Unified Soils Classification System.

2.0 LABORATORY TESTING

	TEST PROCEDURE NO.
Moisture/Density Relationship (Standard)	A.S. 1289 5.1.1
California Bearing Ratio	A.S. 1289 6.1.1
Moisture Content of a Soil	A.S. 1289.2.1.1

3.0 LABORATORY TEST RESULTS

Soaked California Bearing Ratio test results are contained in Certificate No. 1 attached.

pp

G GIBSON
CIVIL QUALITY ASSURANCE (Q) P/L

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE T
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFIC
1/18 LEANNE CRESCENT
PHONE (07) 3881 351
FAX (07) 3881 351
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREE
PHONE (07) 3801 323
FAX (07) 3801 363
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 173
FAX (07) 5450 153
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 295
FAX (07) 5465 279
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688
FAX (07) 5429 688

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.

GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME

OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/03B

CALIFORNIA BEARING RATIO TEST REPORT (A.S.)

CLIENT:	BROWN CONSULTING (QLD) PTY LTD	REPORT NO:	1
PROJECT:	VALENCIA SPRINGS ESTATE 0 STAGE 7, REDLAND BAY	JOB NO:	CQAL/09/086
JOB DESCRIPTION:	RESIDENTIAL SUBDIVISION	DATE:	26 June 2009

Test Procedure	A.S. 1289 6.1.1, 5.1.1 (Standard Compaction) & 2.1.1		
Sample No.	DL/09/3027	DL/09/3028	DL/09/3029
Depth (mm) (Below Design Subgrade)	00-500	00-500	00-500
Location	Intersection of Road 13 & Road 14	Road 13, CH200	Road 14, Centre of Culdesac
Date Sampled	18/6/09	18/6/09	18/6/09
Description of Sample	SUBGRADE: (CH) Sandy CLAY orange brown	SUBGRADE: (CI) Sandy CLAY pale brown	SUBGRADE: (CH) CLAY brown red
Max. Laboratory Dry Density (t/m³)	1.69	1.86	1.43
Optimum Moisture Content (%)	19.5	14.0	29.0
Field Moisture Content (%)	18.5	13.2	36.1
Retained 19.0mm (%)	0.0	0.0	0.0
+19.0mm Excluded (Yes/No)	N/A	N/A	N/A
Moisture Ratio (%) Before Soaking	100.0	99.0	99.0
Density Ratio (%) Before Soaking	98.0	101.0	100.0
Number of Days Soaked	4	4	4
Surcharge (Kg)	**4.5**	**4.5**	**9.0**
Moisture Content/Top 30mm (%) After Test	24.6	16.7	41.1
Swell After Soaking (%)	1.5	1.5	6.0
CBR Penetration (mm)	5.0	5.0	2.5
C.B.R VALUE	**4.5**	**4.5**	**3.5**

SAMPLE PROCEDURE:
AS 1289 1.2.1 - Clause 6.5

Refer Standard Notes and Performance Warnings attached.

The above results were faxed as preliminary to Dean Ash Constructions Pty Ltd & Brown Consulting (Qld) Pty Ltd on 25/6/09.

PP

G GIBSON

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CBR STANDARD NOTES AND PERFORMANCE WARNINGS

(A) SAMPLING

At the time of sampling, earthworks had not been carried out and the proposed subgrade had not been exposed.

Samples were recovered by drilling through the proposed cut and into the subgrade soils.

Sampling frequency was in accordance with the minimum requirements of the local authority.

As the subgrade was not exposed, and could not be viewed at the time of sampling, some of the samples may not be representative of predominant or worst case soil types.

Soil type boundaries (representing the soaked CBR samples) should be established when bulk earthworks is completed and the proposed subgrade is exposed.

Unless otherwise instructed, samples are generally recovered from the zone of extreme pavement thickness, i.e. 00 - 500mm below design subgrade level.

Unless otherwise requested by the client, the CBR sampling programme does not address other geotechnical issues, e.g. groundwater/seepage, soft soils etc.

(B) TESTING

Testing was carried out in accordance with A.S. 1289 "Methods of Testing Soils for Engineering Purposes", A.S. 1289 6.1.1.

The test specimen was nominally placed at the Optimum Moisture Content and compacted to the specified density of the subgrade.

In accordance with the test procedure, the test specimen was soaked for a period of four (4) days with a surcharge mass of 4.5kg. This surcharge mass is approximately equivalent to the pressure applied by a pavement thickness of 150mm (A.S. 1289 6.1.1, Note 8).

The minimum pavement thickness should be at least equivalent to the pavement thickness represented by the surcharge mass.

Test method A.S. 1289 6.1.1 allows for any +19.0mm material to be replaced in the test portion by –19.0mm + 4.75mm material. Unless otherwise instructed by our client, +19.0mm material will be excluded from the test portion.

(C) PERFORMANCE WARNINGS

Clayey Soils (Clays, Sandy Clays and Silty Clays)

Clay soils generally have very low permeability and as a result, construction and performance problems associated with wet weather are usually confined to the exposed surface of the subgrade. However, workability problems can occur in poorly drained areas or after prolonged wet periods.

The C.B.R. value obtained on the laboratory test specimen is generally representative of the material in "the worst case", after four (4) days of continuous soaking. Most clay soils are reactive, to varying extents and swell when exposed to water. As a general rule, increasing swell is proportional to the decreasing C.B.R. value on most clay soils. Dry "baked out" clay subgrades can produce insitu C.B.R. values far in excess of the laboratory Soaked C.B.R. value.

Excessive drying and compaction of clay subgrades can be detrimental to the long term performance to some pavements. Upon wetting up to the "equilibrium moisture" some clay subgrades can swell resulting in deformation and weakening to the pavement.

(D) CONSTRUCTION

Care should be taken when backfilling services (sewer/stormwater etc.) in the pavement area to ensure that materials in the top 500mm of backfill is not of lesser C.B.R. than the C.B.R. representing that section of pavement.

Should additional earthworks of any kind be carried out after the soil boundaries have been established, the boundaries may become invalid and should be re-confirmed.

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.
GEOTECHNICAL CONSULTANTS
1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 10
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 30 September 2009

SAMPLE NUMBER	DL/09/5646		DL/09/5647		DL/09/5648		DL/09/5649	
DATE/TIME TESTED	28/9/09, 9.00am		28/9/09, 9.10am		28/9/09, 9.20am		28/9/09, 9.30am	
DEPTH OF TEST (mm)	150		150		150		150	
DEPTH OF LAYER (mm)	-		-		-		-	
LAYER TERMINOLOGY	STF17		STF18		STF19		STF20	
TEST LOCATION	MH 30/5-1/1, 7m off 1/1		MH 1/1-2/1, 6m off 1/1		MH 1/1-2/1, 13m off 2/1		MH 2/1-E/1, 5m off 2/1	
TEST ELEVATION	0.8m above pipe		0.8m above pipe		0.8m above pipe		0.8m above pipe	
SOIL DESCRIPTION	Gravel		Sandy Clay		Sandy Clay		Clayey Sand	
OVERSIZE SIEVE (mm)	19.0		19.0		19.0		19.0	
OVERSIZE - WET BASIS (%)	-		-		-		-	
FIELD MOISTURE CONTENT (%)	8.5		12.5		16.5		9.5	
OPTIMUM MOISTURE CONTENT(%)	12.0		14.5		16.5		11.5	
MOISTURE VARIATION (%)	-3.5		-1.5		-0.5		-2.0	
FIELD WET DENSITY (t/m^3)	2.20		2.08		2.02		2.15	
PEAK CONVERTED WET DENSITY (t/m^3)	2.14		2.05		2.08		2.06	
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-		-		-		-	
HILF DENSITY RATIO / SPEC (%)	**103.0**	**95**	**102.0**	**95**	**97.5**	**95**	**104.0**	**95**

TEST PROCEDURE
Field: A.S. 1289 5.8.1
Laboratory: A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
- Test locations were not professionally surveyed therefore recorded locations should be considered as approximate only.

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GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 11

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 30 September 2009

SAMPLE NUMBER	DL/09/5650	DL/09/5651	DL/09/5652	DL/09/5653
DATE/TIME TESTED	28/9/09, 9.40am	28/9/09, 9.50am	28/9/09, 10.00am	28/9/09, 10.10am
DEPTH OF TEST (mm)	150	150	150	150
DEPTH OF LAYER (mm)	-	-	-	-
LAYER TERMINOLOGY	STF21	STF22	STF23	STF24
TEST LOCATION	MH 30/2A-1/3, 11m off 30/2A	MH 1/3-2/3, 13m off 1/3	MH 2/3-3/3, 9m off 3/3	MH 30/4A-E/2, 8m off E/2
TEST ELEVATION	0.8m above pipe	0.8m above pipe	0.8m above pipe	0.8m above pipe
SOIL DESCRIPTION	Sandy Clay	Clayey Sand	Clayey Sand	Clayey Sand
OVERSIZE SIEVE (mm)	19.0	19.0	19.0	19.0
OVERSIZE - WET BASIS (%)	-	-	-	-
FIELD MOISTURE CONTENT (%)	11.5	14.0	11.0	13.5
OPTIMUM MOISTURE CONTENT(%)	14.5	15.5	14.0	13.0
MOISTURE VARIATION (%)	-3.0	-2.0	-3.5	1.0
FIELD WET DENSITY (t/m^3)	2.06	2.11	2.07	2.03
PEAK CONVERTED WET DENSITY (t/m^3)	2.02	2.05	2.02	2.09
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)		-	-	-
HILF DENSITY RATIO / SPEC (%)	**102.0** / **95**	**102.5** / **95**	**103.0** / **95**	**97.5** / **95**
TEST PROCEDURE	Field A.S. 1289 5.8.1 Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1			
TERMINOLOGY LEGEND	(S) Subgrade (LSB) Lower Subbase	(B) Base Course (SB) Subbase Course (F) Fill	(SF) Select Fill (AF) Allotment Fill (STF) Sewer Trench Fill	(EF) Embankment Fill (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
- Test locations were not professionally surveyed therefore recorded locations should be considered as approximate only.

R BENNETT
AUTHORISED SIGNATORY
NATA Accreditation No. 4991
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GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129

OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD

REPORT NO: 12

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7

JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION

DATE: 30 September 2009

SAMPLE NUMBER	DL/09/5654		DL/09/5655		DL/09/5656		DL/09/5657	
DATE/TIME TESTED	28/9/09, 10.20am		28/9/09, 10.30am		28/9/09, 10.40am		28/9/09, 10.50am	
DEPTH OF TEST (mm)	150		150		150		150	
DEPTH OF LAYER (mm)	-		-		-		-	
LAYER TERMINOLOGY	SWTF25		SWTF26		SWTF27		SWTF28	
TEST LOCATION	OUT/A-6/A, 6m off 6/A		MH 6/A-G10A, 10m off 6/A		MH 6/A-G10/A, 7m off G10/A		MH G10/A-5/A, 10m off 5/A	
TEST ELEVATION	0.4m above pipe		0.4m above pipe		0.4m above pipe		0.4m above pipe	
SOIL DESCRIPTION	Sandy Clay		Sandy Clay		Sandy Clay		Sandy Clay	
OVERSIZE SIEVE (mm)	19.0		19.0		19.0		19.0	
OVERSIZE - WET BASIS (%)	-		-		-		4.0	
FIELD MOISTURE CONTENT (%)	12.0		9.8		11.0		5.0	
OPTIMUM MOISTURE CONTENT(%)	13.0		11.0		14.0		9.0	
MOISTURE VARIATION (%)	-1.0		-1.5		-3.0		-4.0	
FIELD WET DENSITY (t/m^3)	2.09		1.98		2.12		2.27	
PEAK CONVERTED WET DENSITY (t/m^3)	2.17		2.05		2.06		2.17	
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)			-		-		2.19	
HILF DENSITY RATIO / SPEC (%)	**96.5**	**95**	**96.5**	**95**	**103.0**	**95**	**103.5**	**95**

TEST PROCEDURE

Field A.S. 1289 5.8.1

Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade, (LSB) Lower Subbase, (B) Base Course, (SB) Subbase Course, (F) Fill, (SF) Select Fill, (AF) Allotment Fill, (STF) Sewer Trench Fill, (EF) Embankment Fill, (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
- Test locations were not professionally surveyed therefore recorded locations should be considered as approximate only.

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NATA Accreditation No. 4991

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GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129

OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD

REPORT NO: 13

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7

JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION

DATE: 30 September 2009

SAMPLE NUMBER	DL/09/5658	DL/09/5659					
DATE/TIME TESTED	28/9/09, 11.00am	28/9/09, 11.10am					
DEPTH OF TEST (mm)	150	150					
DEPTH OF LAYER (mm)	-	-					
LAYER TERMINOLOGY	SWTF29	SWTF30					
TEST LOCATION	MH 5/A-G5/E, 3m off G5/E	MH G5/E-G7/E, 7m off G5/E					
TEST ELEVATION	0.4m above pipe	0.4m above pipe					
SOIL DESCRIPTION	Clayey Sand	Sandy Clay					
OVERSIZE SIEVE (mm)	19.0	19.0					
OVERSIZE - WET BASIS (%)	-	-					
FIELD MOISTURE CONTENT (%)	6.0	7.6					
OPTIMUM MOISTURE CONTENT(%)	10.0	9.5					
MOISTURE VARIATION (%)	-4.0	-2.0					
FIELD WET DENSITY (t/m^3)	2.22	2.20					
PEAK CONVERTED WET DENSITY (t/m^3)	2.17	2.18					
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)		-					
HILF DENSITY RATIO / SPEC (%)	**102.5**	**95**	**101.0**	**95**			

TEST PROCEDURE

Field A.S. 1289 5.8.1

Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
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GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129

OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD

REPORT NO: 14

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7

JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION

DATE: 30 September 2009

SAMPLE NUMBER	DL/09/5660	DL/09/5661	DL/09/5662	DL/09/5663
DATE/TIME TESTED	29/9/09, 10.00am	29/9/09, 10.10am	29/9/09, 10.20am	29/9/09, 10.30am
DEPTH OF TEST (mm)	150	150	150	150
DEPTH OF LAYER (mm)	-	-	-	-
LAYER TERMINOLOGY	SWTF31	SWTF32	SWTF33	SWTF34
TEST LOCATION	MH 4/A-3/A, 16m off 4/A	MH 4/A-3/A, 10m off 4/A	MH 4/A-3/A, 15m off 3/A	MH 4/A-G4/D, 3m off 4/A
TEST ELEVATION	0.4m above pipe	0.4m above pipe	0.4m above pipe	0.4m above pipe
SOIL DESCRIPTION	Silty Sand	Silty Sand	Silty Sand	Silty Sand
OVERSIZE SIEVE (mm)	19.0	19.0	19.0	19.0
OVERSIZE - WET BASIS (%)	-	-	-	-
FIELD MOISTURE CONTENT (%)	7.0	7.0	7.5	5.5
OPTIMUM MOISTURE CONTENT(%)	10.5	10.0	10.5	9.5
MOISTURE VARIATION (%)	-3.5	-3.0	-2.5	-4.0
FIELD WET DENSITY (t/m^3)	2.10	2.13	2.10	2.22
PEAK CONVERTED WET DENSITY (t/m^3)	2.17	2.17	2.17	2.14
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-	-	-	-
HILF DENSITY RATIO / SPEC (%)	**97.0** / **95**	**98.5** / **95**	**96.5** / **95**	**104.0** / **95**

TEST PROCEDURE

Field: A.S. 1289 5.8.1

Laboratory: A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
- Test locations were not professionally surveyed therefore recorded locations should be considered as approximate only.

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GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129

OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD

REPORT NO: 15

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7

JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION

DATE: 30 September 2009

SAMPLE NUMBER	DL/09/5664	DL/09/5665					
DATE/TIME TESTED	29/9/09, 10.40am	29/9/09, 10.50am					
DEPTH OF TEST (mm)	150	150					
DEPTH OF LAYER (mm)	-	-					
LAYER TERMINOLOGY	SWTF35	SWTF36					
TEST LOCATION	MH 3/A-G2/B, 3m off 3/A	MH 3/A-G3/C, 4m off 3/A					
TEST ELEVATION	0.4m above pipe	0.4m above pipe					
SOIL DESCRIPTION	Silty Sand	Silty Sand					
OVERSIZE SIEVE (mm)	19.0	19.0					
OVERSIZE - WET BASIS (%)	-	-					
FIELD MOISTURE CONTENT (%)	5.0	6.0					
OPTIMUM MOISTURE CONTENT(%)	7.5	9.5					
MOISTURE VARIATION (%)	-2.5	-3.5					
FIELD WET DENSITY (t/m^3)	2.08	2.09					
PEAK CONVERTED WET DENSITY (t/m^3)	2.13	2.16					
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-	-					
HILF DENSITY RATIO / SPEC (%)	**98.0**	**95**	**97.0**	**95**			

TEST PROCEDURE

Field A.S. 1289 5.8.1

Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
- Test locations were not professionally surveyed therefore recorded locations should be considered as approximate only.

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NATA Accreditation No. 4991

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Job No. CQAL/09/038

30 October 2009

Brown Consulting (Qld) Pty Ltd
PO Box 10349
ADELAIDE STREET Qld 4000

CERTIFICATE OF FIELD AND LABORATORY TESTING FOR PAVEMENT THICKNESS DETERMINATION (SOAKED C.B.R.)
PROJECT: **VALENCIA SPRINGS ESTATE – STAGE 7**
JOB DESCRIPTION: Subdivisional Development
DATE SAMPLED: **25/9/09**

1.0 FIELD WORK

This consisted of test bores in the proposed subgrade for the purpose of:

a) Sampling of representative materials for laboratory testing.
b) Visual classification of the materials in accordance with the Unified Soils Classification System.

2.0 LABORATORY TESTING

	TEST PROCEDURE NO.
Moisture/Density Relationship (Standard)	A.S. 1289 5.1.1
California Bearing Ratio	A.S. 1289 6.1.1
Moisture Content of a Soil	A.S. 1289.2.1.1

3.0 LABORATORY TEST RESULTS

Soaked California Bearing Ratio test results are contained in Certificate No. 16 attached.

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CIVIL QUALITY ASSURANCE (Q) P/L

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 3233
FAX (07) 3801 3633
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 173[illegible]
FAX (07) 5450 153[illegible]
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 295[illegible]
FAX (07) 5465 279[illegible]
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 688[illegible]
FAX (07) 5429 688[illegible]

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Master Builders

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GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME

OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/03B

CALIFORNIA BEARING RATIO TEST REPORT (A.S.)

CLIENT:	BROWN CONSULTING (QLD) PTY LTD	REPORT NO:	16
PROJECT:	VALENCIA SPRINGS ESTATE – STAGE 7	JOB NO:	CQAL/09/038
JOB DESCRIPTION:	RESIDENTIAL SUBDIVISION	DATE:	30 October 2009

Test Procedure	A.S. 1289 6.1.1, 5.1.1 (Standard Compaction) & 2.1.1		
Sample No.	DL/09/5387		
Depth (mm) (Below Design Subgrade)	00-500		
Location	Road 13, CH60		
Date Sampled	25/9/09		
Description of Sample	SUBGRADE: (CI) Sandy CLAY pale brown		
Max. Laboratory Dry Density (t/m³)	2.01		
Optimum Moisture Content (%)	9.5		
Field Moisture Content (%)	8.4		
Retained 19.0mm (%)	0.0		
+19.0mm Excluded (Yes/No)	N/A		
Moisture Ratio (%) Before Soaking	99.0		
Density Ratio (%) Before Soaking	98.5		
Number of Days Soaked	4		
Surcharge (Kg)	**4.5**		
Moisture Content/Top 30mm (%) After Test	11.0		
Swell After Soaking (%)	0.0		
CBR Penetration (mm)	5.0		
C.B.R VALUE	**15**		

SAMPLE PROCEDURE:
AS 1289 1.2.1 - Clause 6.5

Refer Standard Notes and Performance Warnings attached.

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CBR STANDARD NOTES AND PERFORMANCE WARNINGS

(A) SAMPLING

At the time of sampling, earthworks had not been carried out and the proposed subgrade had not been exposed.

Samples were recovered by drilling through the proposed cut and into the subgrade soils.

Sampling frequency was in accordance with the minimum requirements of the local authority.

As the subgrade was not exposed, and could not be viewed at the time of sampling, some of the samples may not be representative of predominant or worst case soil types.

Soil type boundaries (representing the soaked CBR samples) should be established when bulk earthworks is completed and the proposed subgrade is exposed.

Unless otherwise instructed, samples are generally recovered from the zone of extreme pavement thickness, i.e. 00 - 500mm below design subgrade level.

Unless otherwise requested by the client, the CBR sampling programme does not address other geotechnical issues, e.g. groundwater/seepage, soft soils etc.

(B) TESTING

Testing was carried out in accordance with A.S. 1289 "Methods of Testing Soils for Engineering Purposes", A.S. 1289 6.1.1.

The test specimen was nominally placed at the Optimum Moisture Content and to the expected required density of the subgrade.

In accordance with the test procedure, the test specimen was soaked for a period of four (4) days with a surcharge mass of 4.5kg. This surcharge mass is approximately equivalent to the pressure applied by a pavement thickness of 150mm (A.S. 1289 6.1.1, Note 8).

The minimum pavement thickness should be at least equivalent to the pavement thickness represented by the surcharge mass.

Test method A.S. 1289 6.1.1 allows for any +19.0mm material to be replaced in the test portion by –19.0mm + 4.75mm material. Unless otherwise instructed by our client, +19.0mm material will be excluded from the test portion.

(C) PERFORMANCE WARNINGS

Sandy Soils (Sands, Silty Sands and Clayey Sands)

Sandy soils are generally prone to loss of strength, reduced insitu C.B.R. and stability (heaving under load) as the moisture content approaches the standard compaction optimum moisture

content. The condition generally worsens proportionally with increasing moisture content (above the optimum moisture content).

The C.B.R. value obtained on the laboratory test specimen is only representative of the material at the nominated density and moisture content.

Serviceable drainage, both surface and sub-surface (side drains) and uniform conforming density is critical to the sound performance of sandy subgrades. Provided that this is achieved, the subgrade insitu C.B.R. value should approximate the laboratory C.B.R. value for the representative soil types.

Seepage zones are common in sandy soils, particularly following rainfall periods. Wet sandy soils and seepage within the depth zone affected by loading (eg. by construction traffic) can be highly detrimental to the traffickability, workability and performance on subgrades and road pavements.

The permeability of compacted Silty and Clayey Sand subgrades is generally low, ensuring good serviceability provided that the sub-surface drainage is adequate.

(D) CONSTRUCTION

Care should be taken when backfilling services (sewer/stormwater etc.) in the pavement area to ensure that materials in the top 500mm of backfill is not of lesser C.B.R. than the C.B.R. representing that section of pavement.

Should additional earthworks of any kind be carried out after the soil boundaries have been established, the boundaries may become invalid and should be re-confirmed.

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.

GEOTECHNICAL CONSULTANTS

1/18 LEANNE CRESCENT, LAWNTON, QLD 4501

OFFICE: (07) 3881 3511 FAX: (07) 3881 3513

Job No. CQAL/09/038

Date Completed: 25/9/09

Client: BROWN CONSULTING (QLD) PTY LTD

Location: VALENCIA SPRINGS ESTATE – STAGE 7, REDLAND BAY

SOIL BOUNDARIES

TABLE 2

LAB SAMPLE NO.	LOCATION	PENETRATION (mm)	C.B.R. VALUES	Surcharge (Kg)	SOIL BOUNDARIES
DL/09/3027	Intersection of Roads 13 & 14	5.0	4.5	4.5	Road 13, CH110-CH180 Road 14, CH0.0-END
DL/09/3028	Road 13, CH200	5.0	4.5	4.5	Road 13, CH180-END

Notes:

- The subgrade was inspected with all due care and diligence to accurately determine the soil type boundaries however on occasion, construction may indicate soil types differing from those shown in this report. Should this occur, Civil Quality Assurance should be contacted immediately for further advice.
- The above soil boundaries are subject to and dependant upon final subgrade inspection following the completion of all trenching and final trimming.
- This report should be read in conjunction with the Standard CBR Notes issued with CBR reports.

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GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 18

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 15 October 2009

SAMPLE NUMBER	DL/09/5976	DL/09/5977		
DATE/TIME TESTED	2/10/09, 3.30pm	2/10/09, 3.40pm		
DEPTH OF TEST (mm)	150	150		
DEPTH OF LAYER (mm)	-	-		
LAYER TERMINOLOGY	SWTF39	SWTF40		
TEST LOCATION	MH 5/A-G6/F, 1m off 5/A	MH 5/A-4/A, 7m off 5/A		
TEST ELEVATION	0.4m above pipe	0.4m above pipe		
SOIL DESCRIPTION	Sandy Clay	Sandy Clay		
OVERSIZE SIEVE (mm)	19.0	19.0		
OVERSIZE - WET BASIS (%)	-	-		
FIELD MOISTURE CONTENT (%)	10.0	7.5		
OPTIMUM MOISTURE CONTENT(%)	11.5	10.0		
MOISTURE VARIATION (%)	-1.5	-2.5		
FIELD WET DENSITY (t/m^3)	2.23	2.24		
PEAK CONVERTED WET DENSITY (t/m^3)	2.19	2.17		
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-	-		
HILF DENSITY RATIO / SPEC (%)	**102.0** | **95**	**103.0** | **95**		

TEST PROCEDURE
Field A.S. 1289 5.8.1
Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
- Test locations were not professionally surveyed therefore recorded locations should be considered as approximate only.

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1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

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FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 19
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 15 October 2009

SAMPLE NUMBER	DL/09/5978	DL/09/5979	DL/09/5980	DL/09/5981
DATE/TIME TESTED	2/10/09, 9.00am	2/10/09, 9.15am	2/10/09, 9.30am	2/10/09, 9.45am
DEPTH OF TEST (mm)	150	150	150	150
DEPTH OF LAYER (mm)	-	-	-	-
LAYER TERMINOLOGY	S41	S42	S43	S44
TEST LOCATION	Road 13, CH210, 2m right of centre line	Road 13, CH110, 2m left of centre line	Road 14, CH20, centre line	Road 14, CH80, 1m left of centre line
TEST ELEVATION	-	-	-	-
SOIL DESCRIPTION	Sandy Silt	Sandy Silt	Sandy Clay	Sandy Clay
OVERSIZE SIEVE (mm)	19.0	19.0	19.0	19.0
OVERSIZE - WET BASIS (%)	-	-	-	-
FIELD MOISTURE CONTENT (%)	7.5	22.0	16.0	15.0
OPTIMUM MOISTURE CONTENT(%)	11.5	27.0	21.5	16.0
MOISTURE VARIATION (%)	-4.0	-5.5	-5.0	-1.5
FIELD WET DENSITY (t/m^3)	2.18	2.14	2.08	2.07
PEAK CONVERTED WET DENSITY (t/m^3)	2.06	2.05	1.91	2.06
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-	-	-	-
HILF DENSITY RATIO / SPEC (%)	**106.0 / 100**	**104.5 / 100**	**109.0 / 100**	**100.0 / 100**

TEST PROCEDURE
Field A.S. 1289 5.8.1
Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: Brown Consulting (Qld) P/L
DATE: 6/10/09

CONTRACTOR: Dean Ash Constructions
JOB NO: CQA/09/0038

PROJECT: Valencia Springs Estate - Stage 7
WEATHER: Fine

PURPOSE OF VISIT: AS 3798, Level 2 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: Inspection of Cul de Sac Ends - Road 14

SECTIONS READY FOR ~~TESTING~~/INSPECTING: As Above

SAMPLING/TESTING CARRIED OUT: N/A

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (Dean Ash Constructions)

* Please Inspect Cul De Sac Area After Removal Of Overwet Material. (Overwet Due To Water Pooling In Cul De Sac End.)

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (Dean Ash Constructions)

* End Of Cul De Sac Was Inspected. An Approximate Measurement Of Overwet Material Removed Was 13m x 17m x 0.8m ≈ 176.8 m^3

☐ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☑ Please ensure that excessive organic material is removed from incoming fill.

☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑

☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

SIGNED: [signature]

Page: 1 of: 1

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GEOTECHNICAL CONSULTANTS
1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 20
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 15 October 2009

SAMPLE NUMBER	DL/09/5982										
DATE/TIME TESTED	6/10/09, 10.30am										
DEPTH OF TEST (mm)	150										
DEPTH OF LAYER (mm)	-										
LAYER TERMINOLOGY	S/SR45										
TEST LOCATION	Road 14, CH85, 3m right of centre line										
TEST ELEVATION	-										
SOIL DESCRIPTION	Sandy Clay										
OVERSIZE SIEVE (mm)	19.0										
OVERSIZE - WET BASIS (%)	-										
FIELD MOISTURE CONTENT (%)	11.0										
OPTIMUM MOISTURE CONTENT(%)	15.5										
MOISTURE VARIATION (%)	-4.5										
FIELD WET DENSITY (t/m^3)	2.10										
PEAK CONVERTED WET DENSITY (t/m^3)	1.99										
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-										
HILF DENSITY RATIO / SPEC (%)	**105.5**	**100**									

TEST PROCEDURE
Field A.S. 1289 5.8.1
Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade	(B) Base Course	(SF) Select Fill	(EF) Embankment Fill
(LSB) Lower Subbase	(SB) Subbase Course	(AF) Allotment Fill	(SWTF) Stormwater Trench Fill
(S/SR) Subgrade/Subgrade Replacement	(F) Fill	(STF) Sewer Trench Fill	

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 guidelines.
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OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/27B

FIELD DENSITY (RATIO) TEST REPORT (AS)

CLIENT: BROWN CONSULTING (QLD) PTY LTD

REPORT NO: 21

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7

JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION

DATE: 22 October 2009

SAMPLE NUMBER	DL/09/6244	DL/09/6245					
DATE/TIME TESTED	9/10/09, 10.40am	9/10/09, 10.50am					
DEPTH OF TEST (mm)	200	100					
DEPTH OF LAYER (mm)	230	130					
LAYER TERMINOLOGY	LSB1	LSB2					
TEST LOCATION	Road 14, CH85, centre line	Road 14, CH15, 1m right of centre line					
TEST ELEVATION	-	-					
SOIL DESCRIPTION/SOURCE	Road Base Gravel	Road Base Gravel					
OVERSIZE SIEVE (mm)	19.0	19.0					
OVERSIZE – WET BASIS (%)	-	-					
OVERSIZE - DRY BASIS (%)	-	-					
FIELD MOISTURE CONTENT (%)	5.5	6.0					
ASSIGNED OPTIMUM MOISTURE CONTENT (%)	6.5	6.5					
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	6.5	6.5					
MOISTURE VARIATION (%)	-1.0	-0.5					
MOISTURE RATIO (%)	84.5	91.0					
FIELD WET DENSITY (t/m^3)	2.29	2.27					
FIELD DRY DENSITY (t/m^3)	2.15	2.16					
ASSIGNED MAXIMUM DRY DENSITY (t/m^3)	2.28	2.28					
ADJUSTED MAXIMUM DRY DENSITY (t/m^3)	-	-					
M.D.D. & O.M.C. ASSIGNED/DATE	Yes – 1/10/09	Yes – 1/10/09					
ASSIGNED MDD & OMC REPORT NO.	BS25017M	BS25017M					
DENSITY RATIO (%) SPEC	**95.0**	**95**	**95.0**	**95**			

TEST PROCEDURE

Field A.S. 1289 5.8.1

Laboratory A.S. 1289 5.2.1 (Modified Compaction), 5.4.1, 5.4.2, 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 2 Guidelines.
- Test locations were not surveyed therefore recorded locations should be considered as approximate only.
- The depth of layer is not determined by Civil Quality Assurance personnel. This information is obtained from the contractor prior to testing.

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GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME

OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/27B

FIELD DENSITY (RATIO) TEST REPORT (AS)

CLIENT: BROWN CONSULTING (QLD) PTY LTD

REPORT NO: 22

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7

JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION

DATE: 22 October 2009

SAMPLE NUMBER	DL/09/6246	DL/09/6247					
DATE/TIME TESTED	12/10/09, 7.30am	12/10/09, 7.40am					
DEPTH OF TEST (mm)	100	100					
DEPTH OF LAYER (mm)	130	130					
LAYER TERMINOLOGY	LSB3	LSB4					
TEST LOCATION	Road 13, CH210, centre line	Road 13, CH110, 1m right of centre line					
TEST ELEVATION	-	-					
SOIL DESCRIPTION/SOURCE	Road Base Gravel	Road Base Gravel					
OVERSIZE SIEVE (mm)	19.0	19.0					
OVERSIZE – WET BASIS (%)	6.0	-					
OVERSIZE - DRY BASIS (%)	6.0	-					
FIELD MOISTURE CONTENT (%)	5.0	5.5					
ASSIGNED OPTIMUM MOISTURE CONTENT (%)	6.5	6.5					
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	6.0	6.5					
MOISTURE VARIATION (%)	-0.5	-1.0					
MOISTURE RATIO (%)	90.5	84.0					
FIELD WET DENSITY (t/m^3)	2.28	2.29					
FIELD DRY DENSITY (t/m^3)	2.17	2.18					
ASSIGNED MAXIMUM DRY DENSITY (t/m^3)	2.28	2.28					
ADJUSTED MAXIMUM DRY DENSITY (t/m^3)	2.28	-					
M.D.D. & O.M.C. ASSIGNED/DATE	Yes – 1/10/09	Yes – 1/10/09					
ASSIGNED MDD & OMC REPORT NO.	BS25017M	BS25017M					
DENSITY RATIO (%) SPEC	**95.0**	**95**	**95.5**	**95**			

TEST PROCEDURE

Field A.S. 1289 5.8.1

Laboratory A.S. 1289 5.2.1 (Modified Compaction), 5.4.1, 5.4.2, 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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1/10 BABDOYLE STREET, LOGANHOLME
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/27B

FIELD DENSITY (RATIO) TEST REPORT (AS)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 23
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/6238
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 22 October 2009

SAMPLE NUMBER	DL/09/6248	DL/09/6249					
DATE/TIME TESTED	19/10/09, 3.00pm	19/10/09, 3.10pm					
DEPTH OF TEST (mm)	100	100					
DEPTH OF LAYER (mm)	125	125					
LAYER TERMINOLOGY	SB1	SB2					
TEST LOCATION	Road 14, CH80, 2m right of centre line	Road 13, CH210, centre line					
TEST ELEVATION	-	-					
SOIL DESCRIPTION/SOURCE	Road Base Gravel	Road Base Gravel					
OVERSIZE SIEVE (mm)	19.0	19.0					
OVERSIZE – WET BASIS (%)	-	-					
OVERSIZE - DRY BASIS (%)	-	-					
FIELD MOISTURE CONTENT (%)	5.0	5.0					
ASSIGNED OPTIMUM MOISTURE CONTENT (%)	6.5	6.5					
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	6.5	6.5					
MOISTURE VARIATION (%)	-1.5	-1.5					
MOISTURE RATIO (%)	76.0	75.5					
FIELD WET DENSITY (t/m^3)	2.30	2.28					
FIELD DRY DENSITY (t/m^3)	2.20	2.18					
ASSIGNED MAXIMUM DRY DENSITY (t/m^3)	2.25	2.25					
ADJUSTED MAXIMUM DRY DENSITY (t/m^3)	-	-					
M.D.D. & O.M.C. ASSIGNED/DATE	Yes – 8/10/09	Yes – 8/10/09					
ASSIGNED MDD & OMC REPORT NO.	BS23013M	BS23013M					
DENSITY RATIO (%) SPEC	**98.0**	**95**	**96.5**	**95**			

TEST PROCEDURE
Field A.S. 1289 5.8.1
Laboratory A.S. 1289 5.2.1 (Modified Compaction), 5.4.1, 5.4.2, 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.
GEOTECHNICAL CONSULTANTS
1/10 BABDOYLE STREET, LOGANHOLME
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/27B

FIELD DENSITY (RATIO) TEST REPORT (AS)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 26
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 27 October 2009

SAMPLE NUMBER	DL/09/6436	DL/09/6437					
DATE/TIME TESTED	23/10/09, 3.00pm	23/10/09, 3.10pm					
DEPTH OF TEST (mm)	100	100					
DEPTH OF LAYER (mm)	125	125					
LAYER TERMINOLOGY	SB3	SB4					
TEST LOCATION	Road 14, CH10, centre line	Road 13, CH110, centre line					
TEST ELEVATION	-	-					
SOIL DESCRIPTION/SOURCE	Road Base Gravel	Road Base Gravel					
OVERSIZE SIEVE (mm)	19.0	19.0					
OVERSIZE – WET BASIS (%)	-						
OVERSIZE - DRY BASIS (%)	-						
FIELD MOISTURE CONTENT (%)	3.5	3.5					
ASSIGNED OPTIMUM MOISTURE CONTENT (%)	6.5	6.5					
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	6.5	6.5					
MOISTURE VARIATION (%)	-3.0	-3.0					
MOISTURE RATIO (%)	55.0	52.5					
FIELD WET DENSITY (t/m^3)	2.25	2.26					
FIELD DRY DENSITY (t/m^3)	2.17	2.18					
ASSIGNED MAXIMUM DRY DENSITY (t/m^3)	2.25	2.25					
ADJUSTED MAXIMUM DRY DENSITY (t/m^3)	2.25	2.25					
M.D.D. & O.M.C. ASSIGNED/DATE	Yes – 8/10/09	Yes – 8/10/09					
ASSIGNED MDD & OMC REPORT NO.	BS23013M	BS23013M					
DENSITY RATIO (%) SPEC	**96.5**	**95**	**97.0**	**95**			

TEST PROCEDURE
Field A.S. 1289 5.8.1
Laboratory A.S. 1289 5.2.1 (Modified Compaction), 5.4.1, 5.4.2, 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/12D

QUALITY OF PAVEMENT MATERIALS TEST REPORT

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 27
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7, REDLAND BAY
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 30 October 2009

Laboratory Sample No.		DL/09/6582	DL/09/6583	Redland Shire Council
Description		Lower Subbase	Lower Subbase	MRS 2.5
Location		Road 13, CH70	Road 14, CH20	
Date Sampled		9/10/09	9/10/09	
Particle Size Distribution Q103A			PERCENT PASSING	
37.50mm		100	100	
19.00mm		97	98	
9.50mm		79	80	
4.75mm		55	58	
2.36mm		34	37	
0.425mm		14	18	
0.075mm		9.3	12	
Grading		'C'	'C'	B,C,D,E
Atterberg Limits Liquid Limit (5 Points) % Q104A		28.2	28.4	Max: 40
Plastic Limit % Q105		20.6	20.0	-
Plasticity Index % Q105		7.6	8.4	Max: 14
Linear Shrinkage % Q106		3.0	4.4	Max: 7.5
Weighted Plasticity Index		108	151	-
Linear Shrinkage x % of whole sample passing the AS 0.425mm sieve		43	79	-
Dust Ratio Passing 0.075mm÷0.425mm		0.65	0.66	-
Soaked C.B.R. (D.M.R.) Q113C & Q110B Maximum Laboratory Dry Density t/m^3		2.219	2.189	
Optimum Moisture Content %		6.7	7.5	
Dry Density Ratio (%)	Nominated	95.0	95.0	
	Achieved	93.7	96.5	
Moisture Content % Before Soak	Nominated	6.7	7.5	
	Achieved	6.6	7.6	
Moisture Content % after Penetration	Entire Depth	8.1	8.1	
	Top 40mm	8.7	8.3	
Test Condition (Soaked/Unsoaked)		Soaked	Soaked	
No. of Days Soaked		4	4	
Swell After Soaking (%)		-0.5	-1.0	
Soaked C.B.R. Value @ 2.5mm		**48**	**16**	
Soaked C.B.R. Value @ 5.0mm		**50**	**32**	
CBR VALUE		**50**	**32**	MIN: 15

SAMPLE PROCEDURE: AS1289 1.2.1 Clause 6.4

Samples taken from compacted pavement

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OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/12D

QUALITY OF PAVEMENT MATERIALS TEST REPORT

CLIENT: BROWN CONSULTING (QLD) PTY LTD

REPORT NO: 28

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7, REDLAND BAY

JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION

DATE: 30 October 2009

Laboratory Sample No.			DL/09/6584	DL/09/6585	Redland Shire Council
Description			Subbase	Subbase	MRS 2.4
Location			Road 13, CH120	Road 14, CH80	
Date Sampled			19/10/09	19/10/09	
Particle Size Distribution	Q103A			PERCENT PASSING	
37.50mm			100	100	
19.00mm			99	98	
9.50mm			84	86	
4.75mm			66	64	
2.36mm			50	46	
0.425mm			25	24	
0.075mm			17	16	
Grading			'C'	'C'	B,C,D
Atterberg Limits Liquid Limit (5 Points) %		Q104A	26.0	26.2	Max: 35
Plastic Limit	%	Q105	19.6	20.2	-
Plasticity Index	%	Q105	6.4	6.0	Max: 12
Linear Shrinkage	%	Q106	3.0	2.8	Max: 6.5
Weighted Plasticity Index			157	129	Max: 360
Linear Shrinkage x % of whole sample passing the AS 0.425mm sieve			74	60	Max: 195
Dust Ratio Passing 0.075mm÷0.425mm			0.35	0.38	-
Soaked C.B.R. (D.M.R.) Q113C & Q110B Maximum Laboratory Dry Density t/m^3			2.258	2.256	
Optimum Moisture Content %			6.3	6.3	
Dry Density Ratio (%)	Nominated		95.0	95.0	
	Achieved		95.7	96.0	
Moisture Content % Before Soak	Nominated		6.3	6.3	
	Achieved		6.4	6.4	
Moisture Content % after Penetration	Entire Depth		6.5	6.7	
	Top 40mm		7.2	6.5	
Test Condition (Soaked/Unsoaked)			Soaked	Soaked	
No. of Days Soaked			4	4	
Swell After Soaking (%)			-0.5	-0.5	
Soaked C.B.R. Value @ 2.5mm			**40**	**36**	
Soaked C.B.R. Value @ 5.0mm			**78**	**76**	
CBR VALUE			**78**	**76**	MIN: 35

SAMPLE PROCEDURE: AS1289 1.2.1 Clause 6.4

Samples taken from compacted pavement

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OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/01D

FIELD DENSITY (RATIO) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD

REPORT NO: 29

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7

JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION

DATE: 4 November 2009

SAMPLE NUMBER	DL/09/6586								
DATE/TIME TESTED	28/10/09, 8.00am								
DEPTH OF TEST (mm)	100								
DEPTH OF LAYER (mm)	125								
LAYER TERMINOLOGY	B1								
TEST LOCATION	Road 13, CH200, centre line								
TEST ELEVATION	-								
SOIL DESCRIPTION	Road Base Gravel								
OVERSIZE SIEVE (mm)	19.0								
OVERSIZE - WET BASIS (%)	-								
OVERSIZE - DRY BASIS (%)	-								
FIELD MOISTURE CONTENT (%)	4.5								
OPTIMUM MOISTURE CONTENT(%)	6.5								
MOISTURE VARIATION (%)	-2.0								
MOISTURE RATIO (%)	70.5								
FIELD WET DENSITY (t/m^3)	2.33								
FIELD DRY DENSITY (t/m^3)	2.26								
MAXIMUM DRY DENSITY (t/m^3)									
M.D.D. SAMPLE NO.	DL/09/6586								
M.D.D. NO. OF POINTS	4								
DENSITY RATIO (%) /SPEC	**99.0**	**98**							

TEST PROCEDURE

Field: A.S. 1289 5.8.1

Laboratory: A.S. 1289 5.2.1 (Modified Compaction), 5.4.1, 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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GEOTECHNICAL CONSULTANTS
1/10 BABDOYLE STREET, LOGANHOLME
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/27B

FIELD DENSITY (RATIO) TEST REPORT (AS)

CLIENT: BROWN CONSULTING (QLD) PTY LTD — REPORT NO: 30

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7 — JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION — DATE: 4 November 2009

SAMPLE NUMBER	DL/09/6587	DL/09/6588	DL/09/6589
DATE/TIME TESTED	28/10/09, 8.10am	28/10/09, 8.20am	28/10/09, 8.30am
DEPTH OF TEST (mm)	100	100	100
DEPTH OF LAYER (mm)	125	125	125
LAYER TERMINOLOGY	B2	B3	B4
TEST LOCATION	Road 13, CH100, 1m right of centre line	Road 14, CH85, 1m left of centre line	Road 14, CH25, centre line
TEST ELEVATION	-	-	-
SOIL DESCRIPTION/SOURCE	Road Base Gravel	Road Base Gravel	Road Base Gravel
OVERSIZE SIEVE (mm)	19.0	19.0	19.0
OVERSIZE – WET BASIS (%)	-	-	-
OVERSIZE - DRY BASIS (%)	-	-	-
FIELD MOISTURE CONTENT (%)	4.5	5.0	5.0
ASSIGNED OPTIMUM MOISTURE CONTENT (%)	6.0	6.0	6.0
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	6.0	6.0	6.0
MOISTURE VARIATION (%)	-1.5	-1.0	-1.0
MOISTURE RATIO (%)	77.0	83.0	80.0
FIELD WET DENSITY (t/m^3)	2.34	2.42	2.34
FIELD DRY DENSITY (t/m^3)	2.24	2.30	2.23
ASSIGNED MAXIMUM DRY DENSITY (t/m^3)	2.28	2.28	2.28
ADJUSTED MAXIMUM DRY DENSITY (t/m^3)	2.28	2.28	2.28
M.D.D. & O.M.C. ASSIGNED/DATE	Yes – 29/10/09	Yes – 29/10/09	Yes – 29/10/09
ASSIGNED MDD & OMC REPORT NO.	BS21015M	BS21015M	BS21015M
DENSITY RATIO (%) SPEC	**98.5** **98**	**101.0** **98**	**98.0** **98**
TEST PROCEDURE	Field: A.S. 1289 5.8.1 Laboratory: A.S. 1289 5.2.1 (Modified Compaction), 5.4.1, 5.4.2, 2.1.1		
TERMINOLOGY LEGEND	(S) Subgrade; (LSB) Lower Subbase	(B) Base Course; (SB) Subbase Course; (F) Fill	(SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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GEOTECHNICAL CONSULTANTS

1/10 BABDOYLE STREET, LOGANHOLME

OFFICE: (07) 3801 3233 FAX: (07) 3801 3633

CQA/R/16A

QUALITY OF PAVEMENT MATERIALS TEST REPORT

CLIENT: BROWN CONSULTING (QLD) PTY LTD

REPORT NO: 31

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7

JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION

DATE: 4 November 2009

Laboratory Sample No.	DL/09/6590	DL/09/6591	Redland Shire Council
Description	Base	Base	MRS 2.2
Location	Road 13, CH70	Road 14, CH30	
Date Sampled	20/10/09	20/10/09	
Particle Size Distribution Q103A		PERCENT PASSING	
37.50mm	100	100	
19.00mm	98	97	
9.50mm	82	77	
4.75mm	60	56	
2.36mm	43	40	
0.425mm	23	21	
0.075mm	10.7	9.9	
Grading	'C'	'C'	B,C,D
Atterberg Limits Liquid Limit (5 Points) (%) Q104A	22.4	22.4	Max: 25
Plastic Limit (%) Q105	16.6	18.0	-
Plasticity Index (%) Q105	5.8	4.4	Max: 6
Linear Shrinkage (%) Q106	3.0	3.0	Max: 3.5
PI % x Percent Passing 0.425mm Sieve	134	137	Max: 150
Linear Shrinkage % x Percent Passing 0.425mm Sieve	69	64	Max: 85
Dust Ratio Passing 0.075mm÷0.425mm	0.46	0.46	0.30-0.65
Soaked C.B.R. (A.S.) A.S. 1289 6.1.1 & 5.2.1 Maximum Laboratory Dry Density(t/m^3)	2.19	2.20	
Optimum Moisture Content (%)	7.0	7.0	
Retained 19.0mm (%)	3.0	2.5	
+19.0mm Excluded (Yes/No)	Yes	Yes	
Moisture Ratio Before Soaking (%)	100.0	99.0	
Density Ratio Before Soaking (%)	99.0	99.0	
Moisture Content After Soaking – Top 30mm (%)	6.4	7.0	
Swell After Soaking (%)	0.0	0.0	
C.B.R. Penetration (mm)	**5.0**	**5.0**	
C.B.R. VALUE	**135**	**90**	MIN: 60

SAMPLE PROCEDURE: AS 1289 1.2.1 Clause 6.2

Samples taken from compacted pavement

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1/10 BABDOYLE STREET, LOGANHOLME, QLD 4129
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT:	BROWN CONSULTING (QLD) PTY LTD	REPORT NO:	32
PROJECT:	VALENCIA SPRINGS ESTATE – STAGE 7	JOB NO:	CQAL/09/038
JOB DESCRIPTION:	RESIDENTIAL SUBDIVISION	DATE:	10 November 2009

SAMPLE NUMBER	DL/09/6786	DL/09/6787	DL/09/6788	
DATE/TIME TESTED	3/11/09, 9.00am	3/11/09, 9.10am	3/11/09, 9.20am	
DEPTH OF TEST (mm)	150	150	150	
DEPTH OF LAYER (mm)	-	-	-	
LAYER TERMINOLOGY	WMTF50	WMTF51	WMTF52	
TEST LOCATION	Road 13, CH110, 10m left of centre line	Road 13, CH200, 10m left of centre line	Road 14, CH30, 10m right of centre line	
TEST ELEVATION	-	-	-	
SOIL DESCRIPTION	Clayey Silt	Sandy Clay	Sandy Clay	
OVERSIZE SIEVE (mm)	19.0	19.0	19.0	
OVERSIZE - WET BASIS (%)	-	-	-	
FIELD MOISTURE CONTENT (%)	8.0	20.0	11.5	
OPTIMUM MOISTURE CONTENT(%)	11.0	22.0	14.5	
MOISTURE VARIATION (%)	-3.0	-1.5	-3.0	
FIELD WET DENSITY (t/m^3)	1.88	2.00	1.91	
PEAK CONVERTED WET DENSITY (t/m^3)	1.97	2.08	2.01	
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-	-	-	
HILF DENSITY RATIO / SPEC (%)	**95.5** / **95**	**96.5** / **95**	**95.0** / **95**	

TEST PROCEDURE

Field A.S. 1289 5.8.1, 5.3.1

Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade, (LSB) Lower Subbase, (B) Base Course, (SB) Subbase Course, (F) Fill, (SF) Select Fill, (AF) Allotment Fill, (STF) Sewer Trench Fill, (EF) Embankment Fill, (WMTF) Water Main Trench Fill

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"VALENCIA SPRINGS ESTATE"

REDLAND BAY

STAGE 7

FOR AMEX SUBDIVISIONS PTY. LTD.

DRAWING INDEX

ROADWORKS AND DRAINAGE

SEWERAGE RETICULATION

WATER RETICULTATION

STORMWATER QUALITY MANAGEMENT

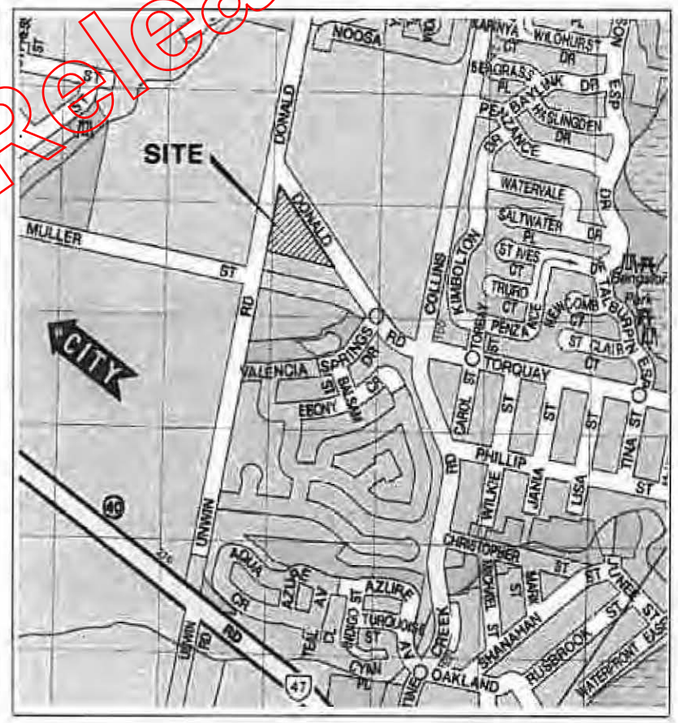
NO. OF LOTS = 18
AREA OF SITE = 1.82 Ha

RP DESCRIPTION
PART OF LOT 2 ON RP 850031
PARISH OF REDLAND
COUNTY OF STANLEY

DATUM LEVEL
P.S.M. 154629
RL 16.86 AND
CORNER OF BALSAM STREET
AND EBONY CRESCENT

CONSTRUCTION HOLD POINT
PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY LEVELS OF ALL EXISTING CROSSINGS AND CONNECTION POINTS.

CONSTRUCTION HOLD POINT
ONCE THE BASE OF MANHOLES, INSPECTION PITS, GULLIES AND FIELD INLETS FOR STORMWATER DRAINAGE AND SEWER RETICULATION HAVE BEEN POURED, FURTHER CONSTRUCTION SHALL NOT PROCEED UNTIL THE SUPERINTENDENT AND OR ENGINEER HAVE INSPECTED THE WORKS FOR FINISHED LEVELS AND APPROVED CONSTRUCTION TO CONTINUE.



LOCALITY PLAN
NTS
UBD. MAP 246. REF. N.7.

WORKS AS CONSTRUCTED
It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature .....
Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

FILE B07018-100.dwg DATE 30-07-2010 TIME 14:21
Xref's X_B07018-TITLE USR: anthea taylor

* The original issue or last amendment of this drawing contained the original signature.

R.S.C. REF No. -EC004782.7

ISSUE STATUS	PRINT CHECK	CALCS	DRAWN	DATE	AMENDMENT DETAILS
		MJH	MJH	12.12.07	
A		MJH	MJH	25.06.08	SIGNS AND LINEMARKING PLAN ADDED
B		MJH	MJH	25.08.09	DRG 116 & 117 ADDED
C		AH	KD	26.07.10	AS CONSTRUCTED
D					
E					
F					

DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
MICROFILM No.
PROJECT No. B07018

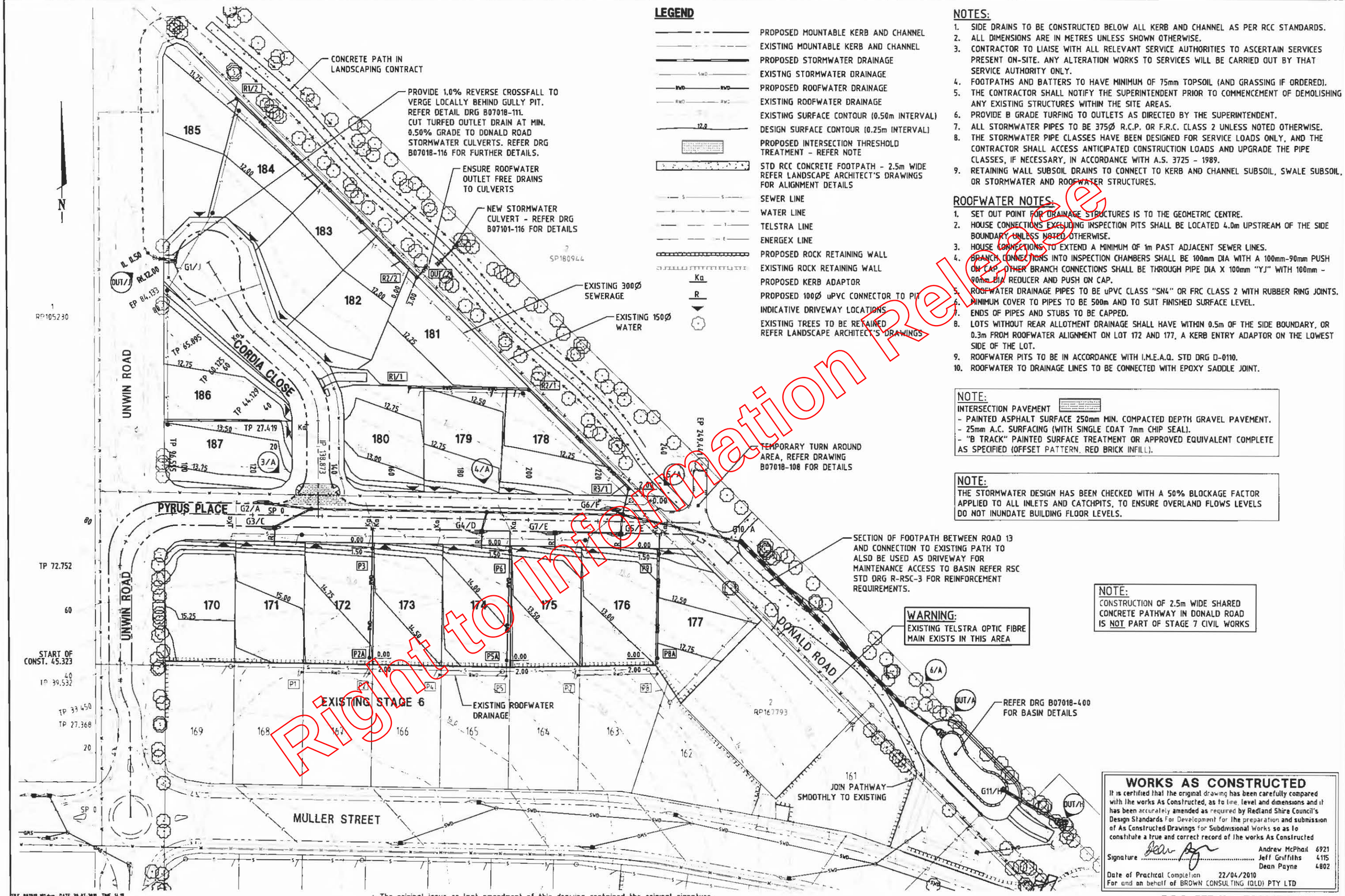
SURVEYOR DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE* ANDREW McPHAIL RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

BROWN
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Cairns Melbourne Sydney Singapore Sunshine Coast Bristol

DRAWING TITLE: DRAWING INDEX AND LOCALITY PLAN
DRAWING NUMBER: B07018-100
ISSUE: C



LEGEND

- PROPOSED MOUNTABLE KERB AND CHANNEL
- EXISTING MOUNTABLE KERB AND CHANNEL
- PROPOSED STORMWATER DRAINAGE
- EXISTNG STORMWATER DRAINAGE
- PROPOSED ROOFWATER DRAINAGE
- EXISTING ROOFWATER DRAINAGE
- EXISTING SURFACE CONTOUR (0.50m INTERVAL)
- DESIGN SURFACE CONTOUR (0.25m INTERVAL)
- PROPOSED INTERSECTION THRESHOLD TREATMENT - REFER NOTE
- STD RCC CONCRETE FOOTPATH - 2.5m WIDE REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR ALIGNMENT DETAILS
- SEWER LINE
- WATER LINE
- TELSTRA LINE
- ENERGEX LINE
- PROPOSED ROCK RETAINING WALL
- EXISTING ROCK RETAINING WALL
- PROPOSED KERB ADAPTOR
- PROPOSED 100Ø uPVC CONNECTOR TO PIT
- INDICATIVE DRIVEWAY LOCATIONS
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS

NOTES:

1. SIDE DRAINS TO BE CONSTRUCTED BELOW ALL KERB AND CHANNEL AS PER RCC STANDARDS.
2. ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE.
3. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE. ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY.
4. FOOTPATHS AND BATTERS TO HAVE MINIMUM OF 75mm TOPSOIL (AND GRASSING IF ORDERED).
5. THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
6. PROVIDE B GRADE TURFING TO OUTLETS AS DIRECTED BY THE SUPERINTENDENT.
7. ALL STORMWATER PIPES TO BE 375Ø R.C.P. OR F.R.C. CLASS 2 UNLESS NOTED OTHERWISE.
8. THE STORMWATER PIPE CLASSES HAVE BEEN DESIGNED FOR SERVICE LOADS ONLY, AND THE CONTRACTOR SHALL ACCESS ANTICIPATED CONSTRUCTION LOADS AND UPGRADE THE PIPE CLASSES, IF NECESSARY, IN ACCORDANCE WITH A.S. 3725 - 1989.
9. RETAINING WALL SUBSOIL DRAINS TO CONNECT TO KERB AND CHANNEL SUBSOIL, SWALE SUBSOIL, OR STORMWATER AND ROOFWATER STRUCTURES.

ROOFWATER NOTES:

1. SET OUT POINT FOR DRAINAGE STRUCTURES IS TO THE GEOMETRIC CENTRE.
2. HOUSE CONNECTIONS EXCLUDING INSPECTION PITS SHALL BE LOCATED 4.0m UPSTREAM OF THE SIDE BOUNDARY UNLESS NOTED OTHERWISE.
3. HOUSE CONNECTIONS TO EXTEND A MINIMUM OF 1m PAST ADJACENT SEWER LINES.
4. BRANCH CONNECTIONS INTO INSPECTION CHAMBERS SHALL BE 100mm DIA WITH A 100mm-90mm PUSH ON CAP. OTHER BRANCH CONNECTIONS SHALL BE THROUGH PIPE DIA X 100mm "YJ" WITH 100mm - 90mm DIA REDUCER AND PUSH ON CAP.
5. ROOFWATER DRAINAGE PIPES TO BE uPVC CLASS "SN4" OR FRC CLASS 2 WITH RUBBER RING JOINTS.
6. MINIMUM COVER TO PIPES TO BE 500m AND TO SUIT FINISHED SURFACE LEVEL.
7. ENDS OF PIPES AND STUBS TO BE CAPPED.
8. LOTS WITHOUT REAR ALLOTMENT DRAINAGE SHALL HAVE WITHIN 0.5m OF THE SIDE BOUNDARY, OR 0.3m FROM ROOFWATER ALIGNMENT ON LOT 172 AND 177, A KERB ENTRY ADAPTOR ON THE LOWEST SIDE OF THE LOT.
9. ROOFWATER PITS TO BE IN ACCORDANCE WITH I.M.E.A.Q. STD DRG D-0110.
10. ROOFWATER TO DRAINAGE LINES TO BE CONNECTED WITH EPOXY SADDLE JOINT.

NOTE:
INTERSECTION PAVEMENT
- PAINTED ASPHALT SURFACE 250mm MIN. COMPACTED DEPTH GRAVEL PAVEMENT.
- 25mm A.C. SURFACING (WITH SINGLE COAT 7mm CHIP SEAL).
- "B TRACK" PAINTED SURFACE TREATMENT OR APPROVED EQUIVALENT COMPLETE AS SPECIFIED (OFFSET PATTERN, RED BRICK INFILL).

NOTE:
THE STORMWATER DESIGN HAS BEEN CHECKED WITH A 50% BLOCKAGE FACTOR APPLIED TO ALL INLETS AND CATCHPITS, TO ENSURE OVERLAND FLOWS LEVELS DO NOT INUNDATE BUILDING FLOOR LEVELS.

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature .....
Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-101.dwg DATE 30-07-2010 TIME 14:18
Xref's X_B07018-TITLE X_B07018-BASE USR: nathan taylor

PRINT CHECK	CAD/CD	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	ROAD 12 CURVE WIDENING AMENDED / PRAM RAMPS ADDED
C	MJH	MJH	23.01.09	GULLY PIT G7/E AND RWD PITS ADDED AND NOTE AMENDED
D	MJH	MJH	15.06.09	SWD LINE A AMENDED
E	MJH	TL	25.08.09	SWD / RWD AMENDED
F	AK	KD	28.07.10	CONCRETE PATH NOTE ADDED / ROCK PITCHING ADDED
G	AK	KD	30.07.10	AS CONSTRUCTED

DESIGN CHECK
DRAWN CHECK
SCALE (METRES) 1:500 1:1000 10 5 0 10 20 A1 A3

MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
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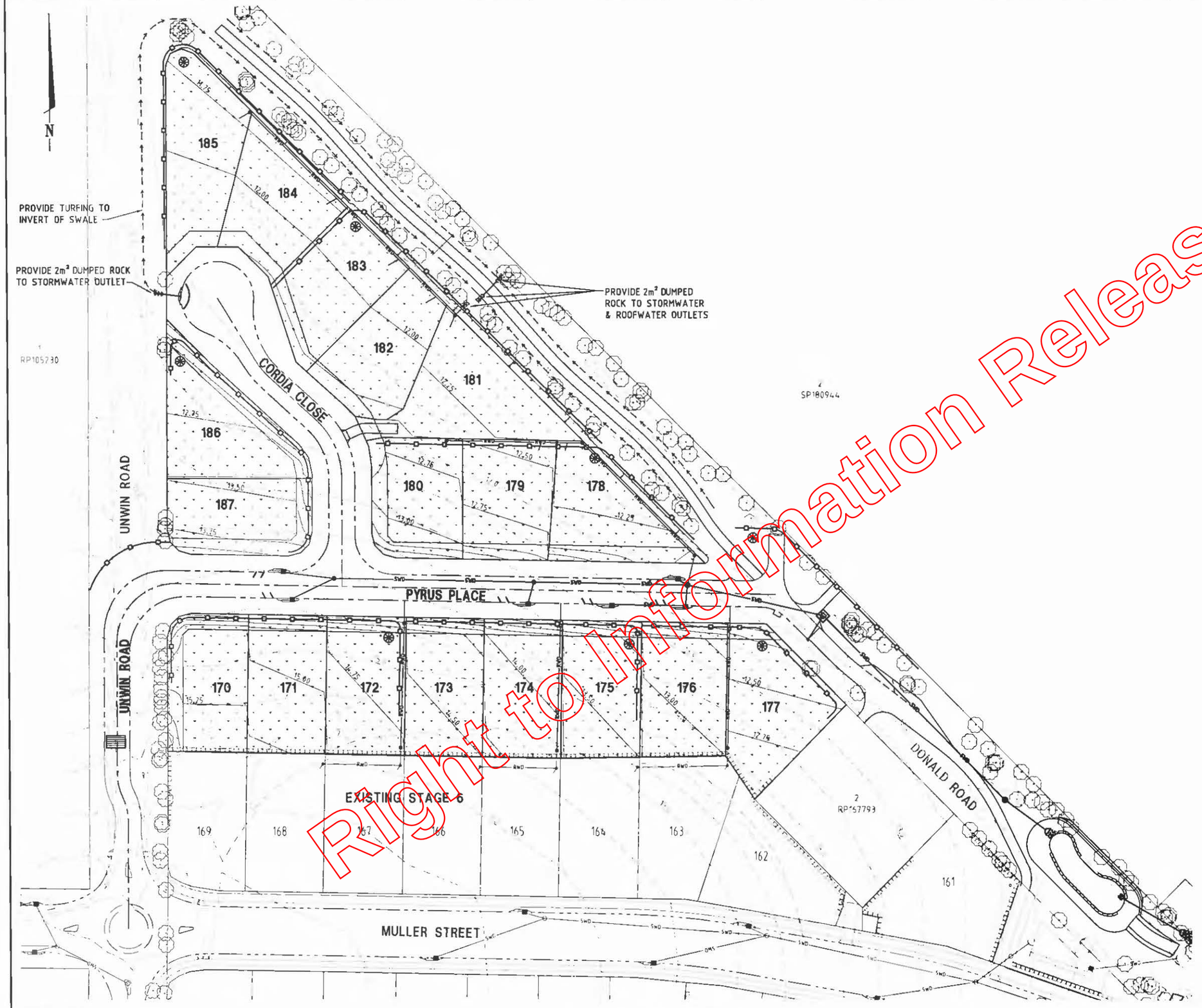
CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (Qld) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Brunei

DRAWING TITLE: ROADWORKS AND DRAINAGE LAYOUT PLAN
DRAWING NUMBER: B07018-101
ISSUE: F

* The original issue or last amendment of this drawing contained the original signature.



LEGEND

- SEDIMENT FENCE (OR AS DIRECTED BY SITE ENGINEER)
- KERB INLET PROTECTION (SAG GULLIES)
- KERB INLET PROTECTION (GULLIES ON GRADE)
- FIELD INLET PROTECTION
- EARTHWORKS AREAS TO BE TOP SOILED AND GRASS SEEDED
- TEMPORARY ENTRY/EXIT DEVICE - REFER DETAIL
- 12.0 PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS

NOTES:

1. REFER DRG B07018-103 FOR NOTES AND DETAILS.
2. PROVIDE 'GRADE B' TURFING WITH RETURNS TO:
   - FULL VERGE BETWEEN KERB AND LOT BOUNDARY.
   - 2 STRIPS BEHIND DRIVEWAYS AND PATHWAYS
   - AND TO TOTAL WIDTH OF SWALES.

REFER DRG B07018-103 FOR TYPICAL DETAIL.

⊛ PROVIDE 'SPILL THROUGH WEIR' IN SEDIMENT FENCE. 'SPILL THROUGH WEIR' TO BE GENERALLY IN ACCORDANCE WITH SILT FENCE DETAIL WITH GEOTEXTILE FABRIC TO BE WRAPPED AROUND STAR PICKET PLACED HORIZONTAL APPROX 400mm ABOVE FINISHED SURFACE

WORKS AS CONSTRUCTED

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Signature .....

Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-102.dwg DATE 30-07-2010 TIME 14:10
Xref's X_B07018-TITLE X_B07018-BASE USR nathan taylor

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ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	TURFING NOTE AMENDED
C	MJH	MJH	23.09.09	RSP ADDED TO NEW GULLY
D	MJH	MJH	25.36.09	RWD / SWD AMENDED
E	MJH	TL	02.08.09	STONE PITCHING NOTE AMENDED
F	AK	KD	28.07.10	AS CONSTRUCTED

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

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UNWIN ROAD, REDLAND BAY

Brown Consulting (Qld) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bowen
BROWN

DRAWING TITLE: EROSION AND SEDIMENT CONTROL LAYOUT PLAN

DRAWING NUMBER: B07018-102

ISSUE: F

EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO CONTROL & MINIMISE EROSION AND DOWNSTREAM SEDIMENTATION DURING ALL STAGES OF CONSTRUCTION INCLUDING THE MAINTENANCE PERIOD
2. ALL PERIMETER BANK/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET
3. IT ALL TIMES THE CONTRACTOR SHALL MONITOR THE PREVAILING WEATHER CONDITIONS AND PROTECT ANY DOWNSTREAM CONSTRUCTION AND GULLY INLETS.
4. INLETS SHALL HAVE SILT PROTECTION IN ACCORDANCE WITH KERB INLET PROTECTION DETAIL AT LOCATIONS SHOWN OR AS DIRECTED BY THE SUPERINTENDENT.
5. THE EXTENT OF GRASSING SHALL BE DETERMINED BY THE SUPERINTENDENT AND SHALL BE SEEDED, AS SPECIFIED, WITHIN SEVEN DAYS OF FINAL TRIMMING.
6. CONSTRUCT WASH DOWN BAY OR SHAKE DOWN AT ENTRY/EXIT TO COUNCIL STANDARDS AND TO THE SATISFACTION OF COUNCIL'S LICENSING AND COMPLIANCE OFFICER
7. CLEARING OF SITE AND STOCKPILE SITE TO BE DETERMINED ON SITE BY SUPERINTENDENT AND IS TO BE CLEAR OF ANY WATER COURSE.
8. WHERE POSSIBLE PROVIDE CUT-OFF DRAINS TO DIVERT CLEAN WATER FROM UNDISTURBED CATCHMENT
9. PROVIDE 2 TURF STRIPS OVER SEWER/ROOFWATER LINES WHERE ADJACENT TO EXISTING PROPERTIES.
10. ALL SEDIMENT FENCES TO BE INSTALLED TO THE SATISFACTION OF COUNCIL'S LICENSING AND COMPLIANCE OFFICER.
11. ALL OPEN ENDED PIPEWORK LOCATED IN OPEN TRENCHES AND INCOMPLETE PITS ARE TO BE CAPPED WITH SUITABLE FILTER CLOTH AT THE END OF EACH DAYS' WORK AND IMMEDIATELY PRIOR TO STORMS.
12. ALL MATERIALS TRACKED OR SEDIMENT WASHED ONTO COUNCIL'S ROAD FROM THE DEVELOPMENT ARE TO BROOMED UP AND COLLECTED.
13. ALL TEMPORARY EROSION AND SEDIMENT CONTROL (ESC) MEASURES ARE TO BE MAINTAINED AND FULLY OPERATIONAL DURING THE MAINTENANCE PERIOD, AND ARE TO BE REMOVED AFTER THE SATISFACTORY COMPLETION OF AN "OFF MAINTENANCE" INSPECTION AND PRIOR TO FORMAL ACCEPTANCE BY COUNCIL.
14. NO OBSTRUCTIONS SHALL BE PLACED ON COUNCIL'S PUBLIC ROADS OR GULLY PITS FOR SAFETY REASONS
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH COUNCIL'S REQUIREMENTS IN RELATION TO GRASS STRIKE AND GRASS COVERAGE RATES AT THE ON AND OFF MAINTENANCE INSPECTIONS
16. NOTWITHSTANDING THE DESIGN SHOWN ON THE DRAWINGS THE CONTRACTOR IS RESPONSIBLE TO IMPLEMENT SEDIMENT CONTROL DEVICES USING BEST PRACTICES AS NECESSARY TO MINIMISE THE QUANTITY OF SEDIMENT LEAVING THE SITE.
17. SOME VARIATIONS TO THE SPECIFIED CONSTRUCTION SEQUENCE MAY BE NECESSARY IN CERTAIN AREAS TO FACILITATE CONSTRUCTION. WHERE THIS IS THE CASE, ANY VARIATION MUST BE APPROVED BY THE SUPERINTENDENT PRIOR TO IMPLEMENTATION.

SEDIMENT MANAGEMENT PROGRAM:

1 CLEARING
- SEDIMENT FENCES TO BE CONSTRUCTED AS INDICATED OR REQUIRED
- EXISTING GRASSED AREAS TO REMAIN WHERE POSSIBLE.
- SHAKE DOWN/WASH DOWN BAY AT ENTRY/EXIT POINT AS REQUIRED BY SUPERINTENDENT
- REFER ALSO TO VEGETATION MANAGEMENT PLAN
- SUPERINTENDENT TO CONFIRM EXTENT OF CLEARING TO CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS

2 EARTHWORKS
- SEDIMENT FENCES AND DIVERSION DRAINS TO BE CONSTRUCTED AS INDICATED OR REQUIRED.

3. SEWER/ROOFWATER/STORMWATER/ SERVICES
- EXCAVATED MATERIAL TO BE PLACED ON HIGH SIDE OF TRENCH AND TO PROTECT PIPE WORK AND DIRECT SURFACE RUNOFF AWAY FROM EXCAVATIONS.
- TOPSOIL AND GRASS SEED AREAS IN ALLOTMENTS IMMEDIATELY AFTER COMPLETING THE SEWER AND ROOFWATER DRAINAGE CONSTRUCTION AND TURF OVER TRENCHES WHERE ADJACENT TO EXISTING PROPERTIES

4. STOCKPILE
- SEDIMENT FENCE TO BE ERECTED 5m FROM TOE OF BATTER ON LOW SIDE OF STOCKPILE
- CUT OFF DRAIN ON HIGH SIDE TO DIRECT SURFACE RUNOFF AROUND STOCKPILE.

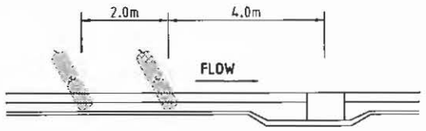
5. ROADWORKS
- SEDIMENT FENCES TO ALLOTMENTS TO BE ERECTED
- KERB INLET PROTECTION TO BE PROVIDED TO ALL GULLIES UNLESS NOTED OTHERWISE
- TURF FILTER STRIPS BEHIND KERB AND CHANNEL

6. ALLOTMENTS
- MULCH, TOPSOIL AND SEED ALLOTMENTS AS DIRECTED.
- SEDIMENT FENCES TO ALLOTMENTS TO BE ERECTED.
- COVERS TO GULLY GRATES TO BE REMOVED IF THE SUPERINTENDENT INDICATES THE GRASS STRIKE IS SUFFICIENT

7. MAINTENANCE PERIOD
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED:
  - AT LEAST DAILY (WHEN WORK IS OCCURRING ON SITE) OR WEEKLY (WHEN WORK IS NOT OCCURRING ON SITE)
  - WITHIN 24 HOURS OF EXPECTED RAIN; AND
  - WITHIN 18 HOURS OF A RAINFALL EVENT
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED THE SAME DAY WHEN THE CAPACITY OF THE EROSION AND SEDIMENT CONTROL MEASURE FALLS BELOW 75%.
- ANY REPAIRS TO EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE EFFECTED IMMEDIATELY. SEDIMENT AFTER RAIN IS TO BE CLEANED FROM STREETS AND ALLOTMENTS IMMEDIATELY AND CORRECTIVE ACTION TAKEN TO AVOID A RE-OCCURRENCE OF THE FAILURE.

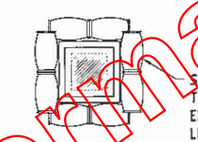
CONSTRUCTION SEQUENCE:

A. CONSTRUCT ENTRY AND EXIT POINTS TOGETHER WITH SHAKE DOWN DEVICE
B. ERECT SEDIMENT FENCES ALONG DOWNSTREAM ADJACENT PROPERTY BOUNDARIES AS DIRECTED.
C. CLEARING, GRUBBING AND STRIPPING OF THE SITES EARTHWORKS AREAS.
D UNDERTAKE EARTHWORKS OPERATIONS CONSTRUCT BIO RETENTION BASIN, EXCLUDING FILTER MATERIAL.
E. CONSTRUCT ALL UNDERGROUND HYDRAULIC SERVICES ENSURING STORMWATER DRAINS REMAIN CAPPED DURING CONSTRUCTION.
F PLACE SEDIMENT FENCES AT BOUNDARIES ADJACENT TO ROADWAYS WHERE LOT SLOPES TOWARDS ROAD
G TOPSOIL AND SEED ALL LOTS FOLLOWING PROGRESSIVE COMPLETION OF KERB AND CHANNEL.
H. ON COMPLETION OF WORKS AND 70% GRASS COVER AND APPROVAL BY COUNCIL, SEDIMENT CONTROL DEVICES TO BE REMOVED.
I. COMPLETE BIO RETENTION BASIN FILTER MEDIA TO THE SUPERINTENDENTS DIRECTIONS.



GULLIES ON GRADE
NTS

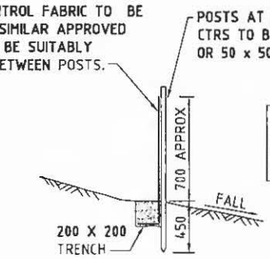
SAG GULLIES
NTS



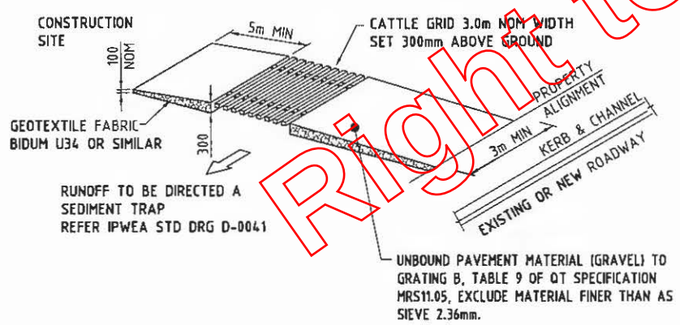
SAND BAG PROTECTION (SAND BAGS TO BE EMBEDDED 50mm, AND ARE TO EXTEND 150mm ABOVE THE INVERT LEVEL OF INLET)

FIELD INLET
NTS

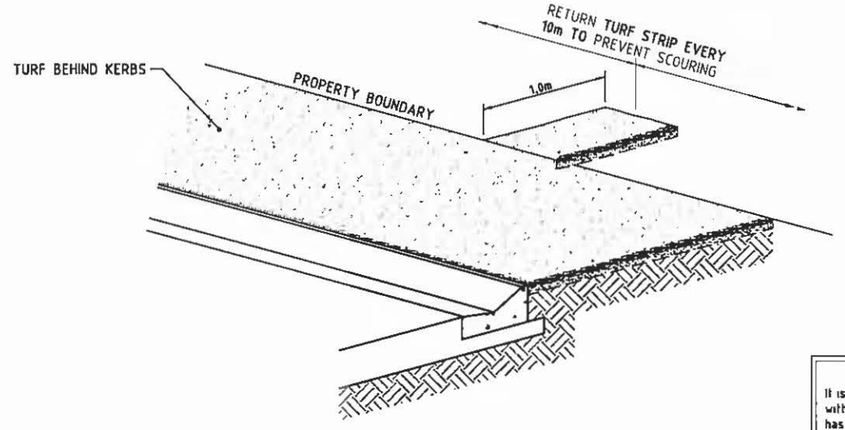
SANDBAGS AT GULLIES
TO BE PROVIDED AT ALL GULLIES



SEDIMENT FENCE DETAIL
N.T.S.



TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP
NTS



KERBSIDE TURF STRIP
N.T.S.

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

* The original issue or last amendment of this drawing contained the original signature.

R.S.C. REF No. -EC004782.7

FILE: B07018-103.dwg DATE: 30-07-2018 TIME: 14:18
Xref's: X_B07018-TITLE USR: nathan taylor

ISSUED	PART	CALCS	DRAWN	DATE	AMENDMENT DETAILS
		MJH	MJH	12.12.07	
	A	MJH	MJH	25.06.08	TURF DETAIL AMENDED
	B	AM	KD	26.07.18	AS CONSTRUCTED
	C				
	D				
	E				
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DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
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APPROVED D PAYNE*
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UNWIN ROAD, REDLAND BAY

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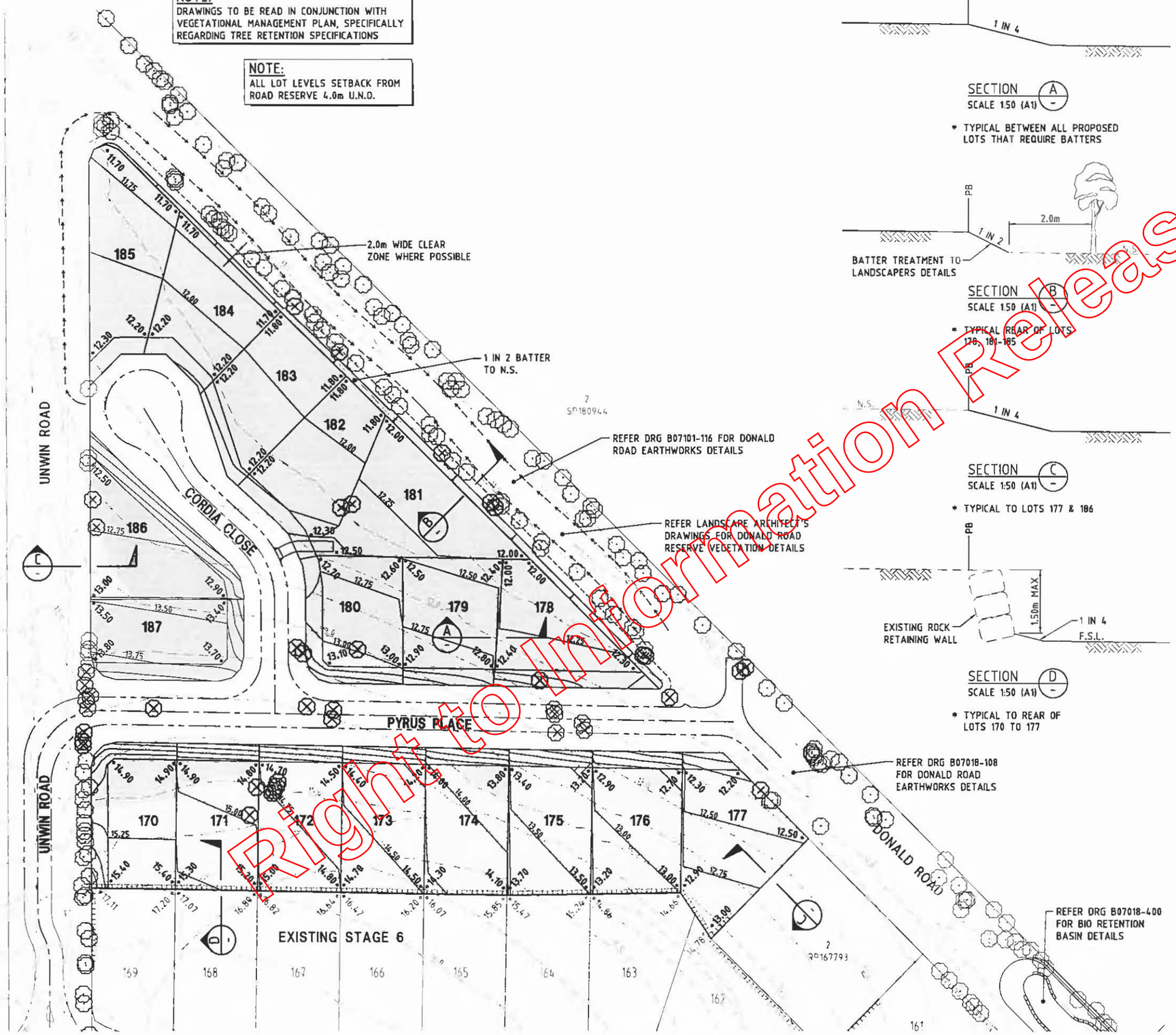
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Busselton Coast Bris...

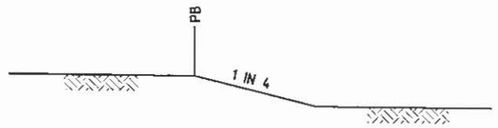
DRAWING TITLE: EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

DRAWING NUMBER: B07018-103
ISSUE: B

NOTE:
DRAWINGS TO BE READ IN CONJUNCTION WITH VEGETATIONAL MANAGEMENT PLAN, SPECIFICALLY REGARDING TREE RETENTION SPECIFICATIONS

NOTE:
ALL LOT LEVELS SETBACK FROM ROAD RESERVE 4.0m U.N.O.





SECTION A
SCALE 1:50 (A1)

* TYPICAL BETWEEN ALL PROPOSED LOTS THAT REQUIRE BATTERS

SECTION B
SCALE 1:50 (A1)

* TYPICAL REAR OF LOTS 178, 181-185

SECTION C
SCALE 1:50 (A1)

* TYPICAL TO LOTS 177 & 186

SECTION D
SCALE 1:50 (A1)

* TYPICAL TO REAR OF LOTS 170 TO 177

LEGEND

- 12.00 — PROPOSED FINISHED SURFACE LEVEL
- 12.0 — PROPOSED SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING SURFACE CONTOURS (0.50m INTERVAL)
- PROPOSED ROCK RETAINING WALL
- EXISTING ROCK RETAINING WALL
- AREA OF CUT
- AREA OF FILL
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS
- EXISTING TREES TO BE REMOVED REFER LANDSCAPE ARCHITECT'S DRAWINGS

EARTHWORKS NOTES:

1. NOTWITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE CROSS SECTIONS, THE ACTUAL LIMITS SHALL BE DETERMINED ON-SITE BY THE ENGINEER DURING CONSTRUCTION AND SIMILARLY THE FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE ENGINEER DURING CONSTRUCTION
2. SUBGRADE TEST RESULTS TO BE FORWARDED TO SUPERVISING ENGINEER FOR DETERMINATION OF BOX DEPTHS PRIOR TO EXCAVATION. TESTS SHALL INCLUDE SOAKED CBR AND/OR OTHER TESTS AS REQUESTED BY THE SUPERVISING ENGINEER.
3. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY.
4. ALL FILL IS TO BE COMPACTED IN ACCORDANCE WITH R.C.C. GUIDELINES AND SPECIFICATIONS UNLESS NOTED OTHERWISE
5. THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
6. ALL DRAINAGE STRUCTURES TO BE PRESERVED FROM THE EFFECTS OF STRUCTURAL LOADING GENERATED BY THE EARTHWORKS.

FAUNA MANAGEMENT NOTES:

1. AT LEAST 14 DAYS BEFORE COMMENCEMENT OF ANY VEGETATION REMOVAL, DEWATERING OR EARTHWORKS, THE DEVELOPER MUST APPOINT AN ACCREDITED WILDLIFE SPOTTER TO EXAMINE THE SITE FOR WILDLIFE HABITAT, AND TO SUPERVISE CLEARING OPERATIONS.
2. PRIOR TO THE PRE-START MEETING, THE SPOTTER SHOULD PROVIDE COUNCIL WITH A PLAN INDICATING THE BROARD RANGE OF FAUNA EXPECTED ON THE SITE, THE PROPOSED METHOD OF OPERATION, AND ANY EXPECTED CONSTRAINTS.
3. DURING CLEARING OPERATIONS, THE CLEARING CONTRACTOR MUST
   - LIAISE WITH THE ON-SITE SPOTTER; AND
   - ENSURE THAT EACH TREE OR OTHER FEATURE IDENTIFIED BY THE SPOTTER AS BEING A RISK TO WILDLIFE IF FELLED, DISTRUBED OR DEWATERED, IS NOT DAMAGED OR DISTURBED UNTIL THE SPOTTER ADVISES THAT IT IS APPROPRIATE TO DO SO.
4. BEFORE COMMENCEMENT OF AND DURING CLEARING OPERATIONS, IT IS THE RESPONSIBILITY OF THE SPOTTER TO:
   - BE PRESENT AT THE SITE OF CLEARING, DEWATERING, AND OTHER OPERATIONS;
   - IDENTIFY ANY TREE OR FEATURE WITH WILDLIFE PRESENT, AS WELL AS ANY TREE THAT HAS A CROWN WHICH IS INTERMESHED OR OVERLAPPING WITH SUCH A TREE;
   - ADVISE THE CONTRACTOR OF THE PRECISE LOACTION OF EACH SUCH TREE OR OTHER FEATURE.

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

FILE: B07018-104.dwg DATE: 30-07-2010 TIME: 14:18
Xref's: X_B07018-TITLE X_B07018-BASE USR: matthew taylor

* The original issue or last amendment of this drawing contained the original signature.

R.S.C. REF No. -EC004782.7

PRINT HERE	CHECK	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.09	EXISTING TREE SURVEY UPDATED
C	MJH	MJH	23.09.09	LOT 177 LEVELS, SECTION B AMENDED & SANDSTONE WALL DETAIL REMOVED
D	MJH	MJH	25.08.09	DONALD ROAD EARTHWORKS
E	AM	KD	28.07.10	AS CONTRUCTED
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Cardwell Melbourne Sydney Singapore Sunshine Coast Townsville
BROWN

DRAWING TITLE: BULK EARTHWORKS LAYOUT PLAN

DRAWING NUMBER: B07018-104 ISSUE: D

PRELIMINARY PAVEMENT DESIGN

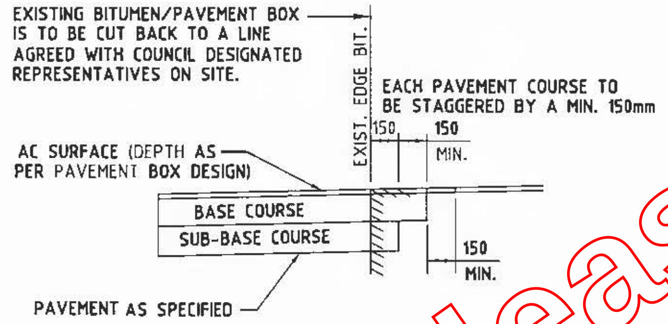
ROAD	TRAFFIC ESA'S	ROAD CLASS	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BOX (MM)
ROAD 13	5×10^4	A	25 #	125	125	-	280

NOTE:
PRELIMINARY PAVEMENT DESIGNS HAVE BEEN BASED ON MINIMUM REQUIREMENTS. ACTUAL PAVEMENT DESIGNS WILL BE BASED ON TEST RESULTS TAKEN AFTER STRIPPING HAS BEEN COMPLETED.

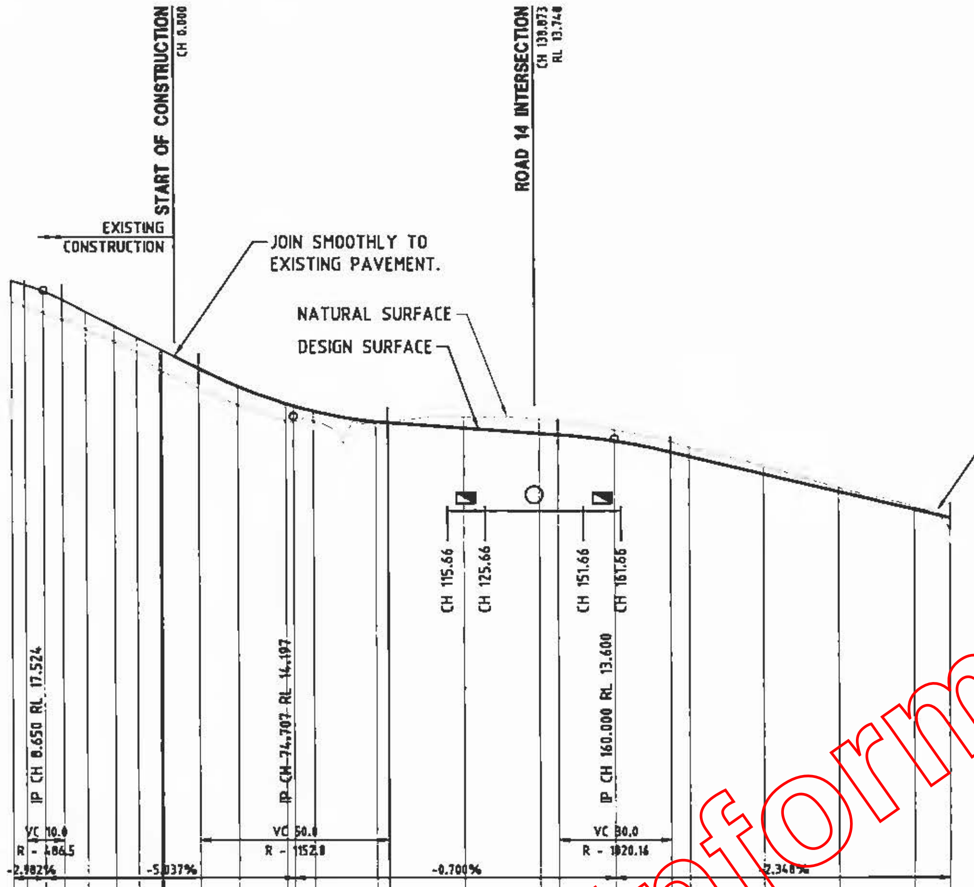
A 7mm SINGLE COAT 'CHIP SEAL' IS TO BE PLACED UNDER AC SURFACING ON ALL ROADS. (RCC REQUIRMENT) REFER TO RCC STANDARDS FOR SPRAY RATES.

AS CONSTRUCTED PAVEMENT DESIGN

ROAD	EXTENT	TRAFFIC ESA'S	ROAD CLASS	CHIP SEAL	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BOX (MM)
PYRUS ROAD	40 - 90	5×10^4	A	5	25	125	125	-	280
PYRUS ROAD	90 - 125	5×10^4	A	5	25	125	125	130	410
PYRUS ROAD	125 - 150	5×10^4	A	5	25	125	125	230	510
PYRUS ROAD	150 - END	5×10^4	A	5	25	125	125	130	410



JOIN TO EXISTING PAVEMENT DETAIL
N.T.S.



○ PAVEMENT BOX DEPTH TO BE INCREASED BY 100mm OVER AND ABOVE THAT OF THE DESIGN PAVEMENT BOX DEPTH.

◪ PAVEMENT BOX DEPTH TO TAPER OVER 10.0m.

CHAINAGE	NATURAL SURFACE	DESIGN SURFACE	RHS LIP LEVEL	LHS LIP LEVEL	CUT\FILL
0.000	17.214	17.782	17.692	17.692	-0.568
3.650	17.103	17.673	17.583	17.583	-0.570
8.650	16.936	17.498	17.408	17.408	-0.562
13.650	16.763	17.272	17.182	17.182	-0.509
20.000	16.496	16.952	16.862	16.862	-0.456
27.36[illegible]	16.172	16.581	16.491	16.491	-0.410
33.450	15.895	16.275	16.185	16.185	-0.379
39.53[illegible]	15.397	15.969	15.879	15.879	-0.571
40.000	15.379	15.945	15.855	15.855	-0.566
49.707	14.945	15.456	15.366	15.366	-0.511
60.000	14.501	14.984	14.894	14.894	-0.483
72.752	14.060	14.526	14.430	14.436	-0.466
74.707	14.024	14.468	14.365	14.378	-0.444
80.000	14.056	14.328	14.212	14.238	-0.272
96.555	14.008	14.048	13.952	13.958	-0.040
99.707	14.044	14.022	13.932	13.932	0.022
100.000	14.048	14.020	13.930	13.930	0.028
120.000	14.179	13.880	13.790	13.790	0.299
140.000	14.116	13.740	13.650	✻	0.376
145.000	14.057	13.705	13.615	✻	0.352
160.000	13.829	13.538	13.448	13.448	0.291
175.000	13.517	13.248	13.158	13.158	0.269
180.000	13.375	13.130	13.040	13.040	0.244
200.000	12.870	12.661	12.571	12.571	0.209
220.000	12.292	12.191	12.101	12.101	0.100
240.000	11.795	11.722	11.632		0.074
249.441	11.207	11.500			-0.293

ALIGNMENT DETAILS: R13 L6.082m; R13 L6.082m; R15 L23.803m

✻ REFER INTERSECTION DETAILS FOR LIP LEVELS

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature .... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

* The original issue or last amendment of this drawing contained the original signature.

FILE B07018-105.dwg DATE 30-07-2010 TIME 14.31
Xref's X_B07018-TITLE X_B07018-ROADS USR nathan taylor

AMDT	CALCD	DRAWN	DATE	AMENDMENT DETAILS
ISSUE	MJH	MJH	12.12.07	
A	MJH	MJH	23.01.09	PAVEMENT BOX DEPTH DETAILS AMENDED
B	AN	KD	28.07.10	AS CONSTRUCTED
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:1000 A1 / 1:2000 A3 HORIZONTAL (10 0 10 20 30 40 50)
1:100 A1 / 1:200 A3 VERTICAL (2 1 0 2 4)

MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

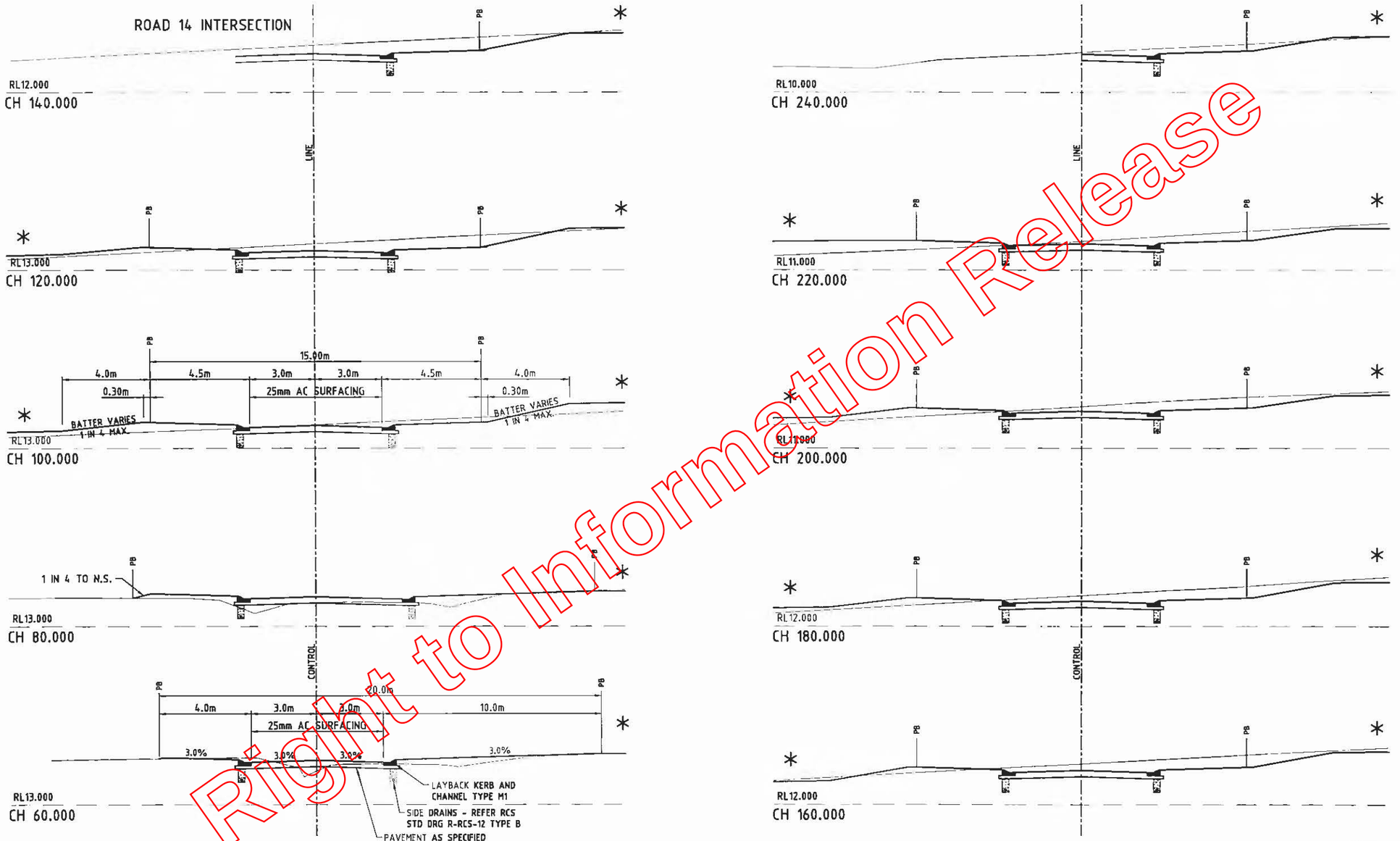
CLIENT
AMEX SUBDIVISIONS PTY LTD

PROJECT
VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN

DRAWING TITLE
PYRUS PLACE
LONGITUDINAL SECTION

DRAWING NUMBER B07018-105
ISSUE B



* REFER B05018-104 FOR FINISHED SURFACE LEVELS

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

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R.S.C. REF No. -EC004782.7

FILE: B07018-106.dwg DATE: 30-07-2010 TIME: 14:19
Xref's: X_B07018-TITLE X_B07018-ROADS USR: nathan taylor

PRINT CHECK		CALCS	DRAWN	DATE	AMENDMENT DETAILS
AMENDMENTS	A	AM	KD	28.07.10	AS CONSTRUCTED
	B				
	C				
	D				
	E				
	F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:100 1 0 1 2 3 4 5 A1
1:200 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR. DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT AMEX SUBDIVISIONS PTY LTD

PROJECT VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bruce
BROWN

DRAWING TITLE
PYRUS PLACE
CROSS SECTIONS

DRAWING NUMBER B07018-106

ISSUE A

PRELIMINARY PAVEMENT DESIGN

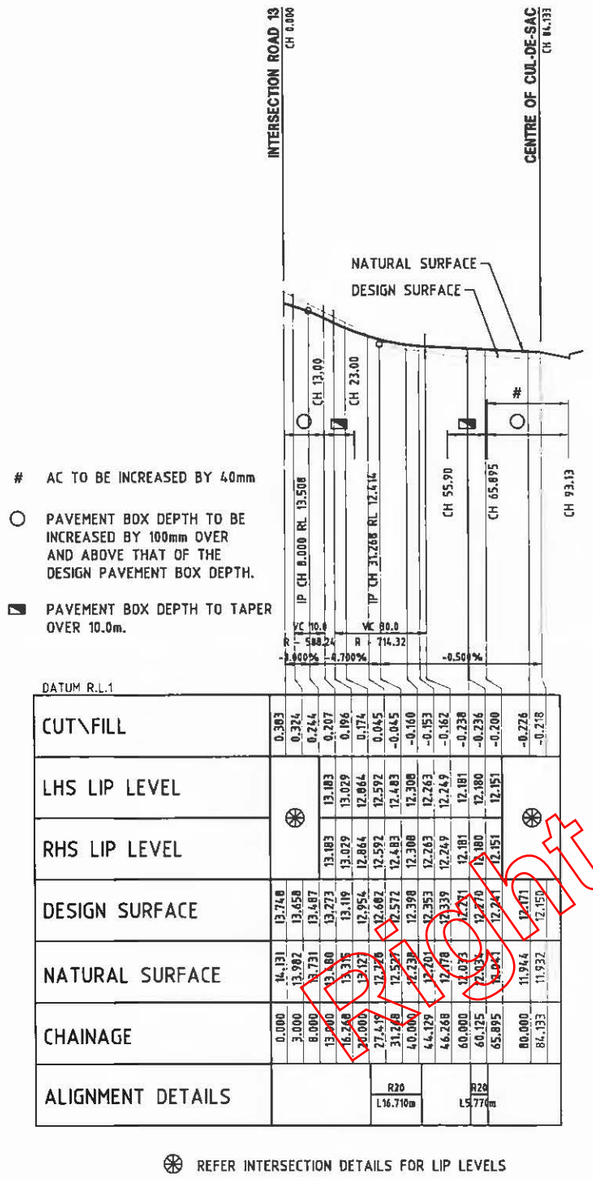
ROAD	TRAFFIC ESA'S	ROAD CLASS	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BOX (MM)
ROAD 14	5×10^4	A	25 #	125	125	-	280

NOTE.
PRELIMINARY PAVEMENT DESIGNS HAVE BEEN BASED ON MINIMUM REQUIREMENTS. ACTUAL PAVEMENT DESIGNS WILL BE BASED ON TEST RESULTS TAKEN AFTER STRIPPING HAS BEEN COMPLETED.

A 7mm SINGLE COAT 'CHIP SEAL' IS TO BE PLACED UNDER AC SURFACING ON ALL ROADS. (RCC REQUIRMENT) REFER TO RCC STANDARDS FOR SPRAY RATES.

AS CONSTRUCTED PAVEMENT DESIGN

ROAD	EXTENT	TRAFFIC ESA'S	ROAD CLASS	CHIP SEAL	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BOX (MM)
CORDIA CLOSE	START - 10	5×10^4	A	5	25	125	125	230	510
CORDIA CLOSE	10 - 65.895	5×10^4	A	5	25	125	125	130	410
CORDIA CLOSE	65.895 - END	5×10^4	A	5	25	125	125	230	525

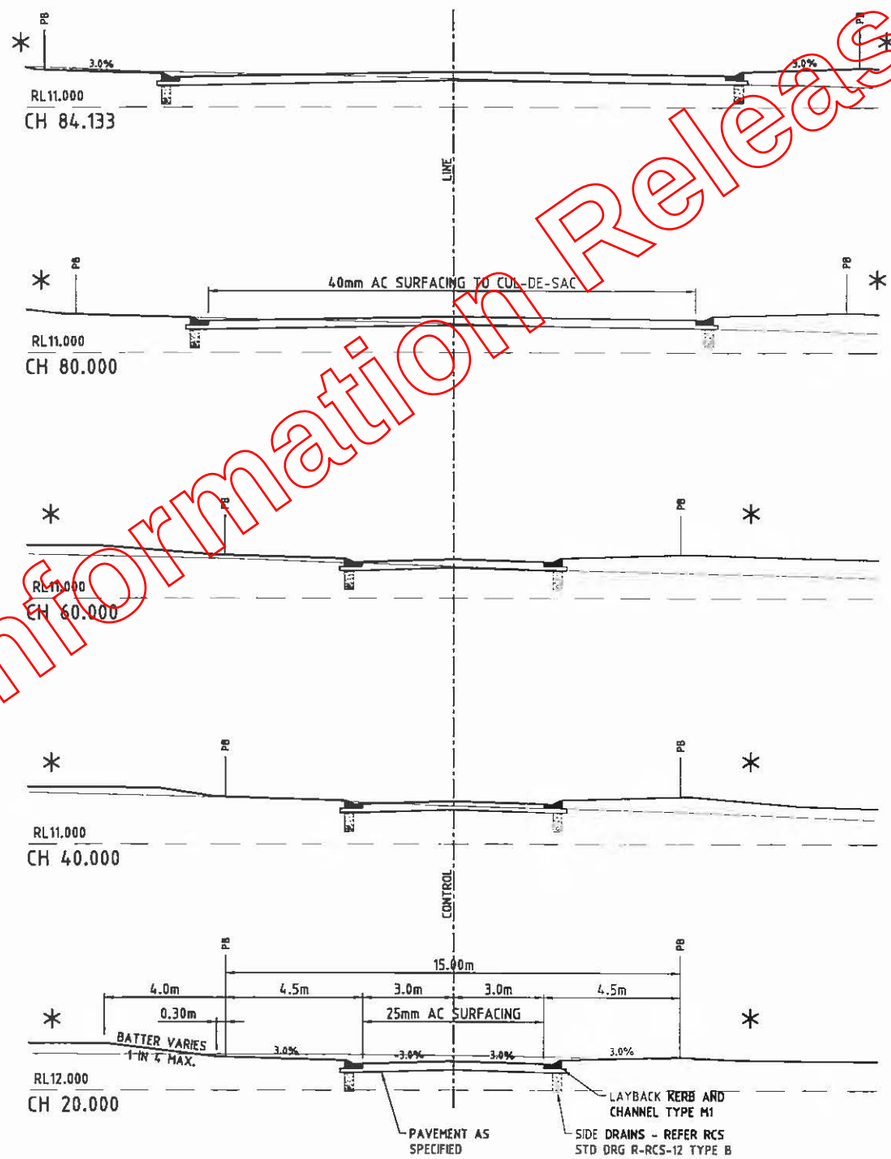


AC TO BE INCREASED BY 40mm

○ PAVEMENT BOX DEPTH TO BE INCREASED BY 100mm OVER AND ABOVE THAT OF THE DESIGN PAVEMENT BOX DEPTH.

▬ PAVEMENT BOX DEPTH TO TAPER OVER 10.0m.

⊛ REFER INTERSECTION DETAILS FOR LIP LEVELS



✳ REFER B07018-104 FOR FINISHED SURFACE LEVELS

WORKS AS CONSTRUCTED
It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed
Signature .....
Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802
Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

* The original issue or last amendment of this drawing contained the original signature.

FILE B07018-107.dwg DATE 30-07-2010 TIME 14:19
Xref's: X_B07018-TITLE X_B07018-ROADS USR nathan taylor

PRINT	CALCS	DRAWN	DATE	AMENDMENT DETAILS
		MJH	MJH	12.12.07
A	A	MJH	MJH	25.06.08 PAVEMENT AND AC DEPTHS AMENDED IN CUL-DE-SAC
B	B	MJH	MJH	23.01.09 PAVEMENT BOX DEPTH DETAILS AND CHAINAGES AMENDED
C	C	AM	KD	28.07.10 AS CONTRUCTED
D	D			
E	E			
F	F			

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:1000 1:2000 HORIZONTAL 10 0 10 20 30 40 50 A1 A3
1:100 1:200 VERTICAL 2 1 0 2 4 A1 A3

MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT AMEX SUBDIVISIONS PTY LTD

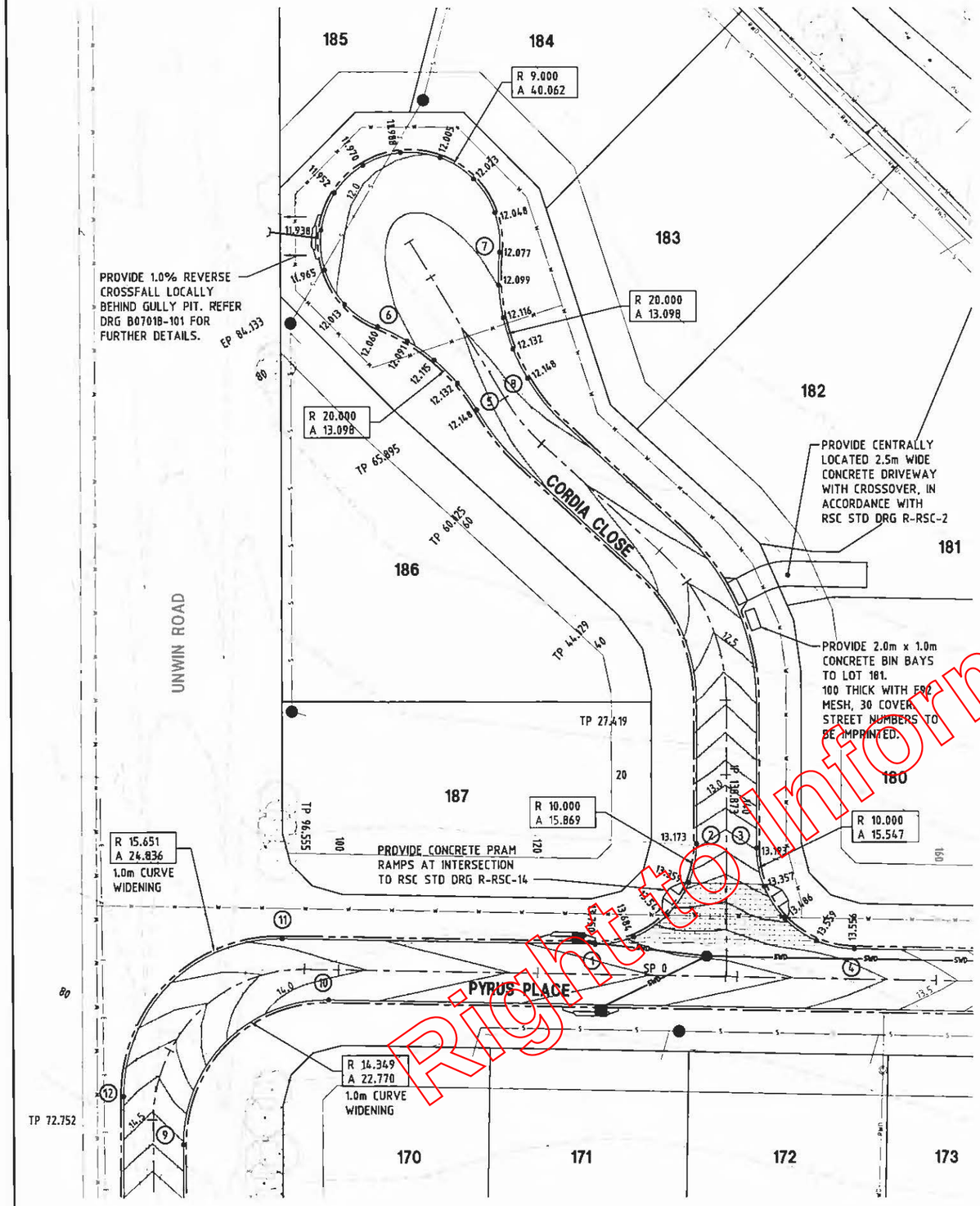
PROJECT VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Wangaratta Sunshine Coast Bristol

DRAWING TITLE
CORDIA CLOSE LONGITUDINAL SECTION AND CROSS SECTIONS

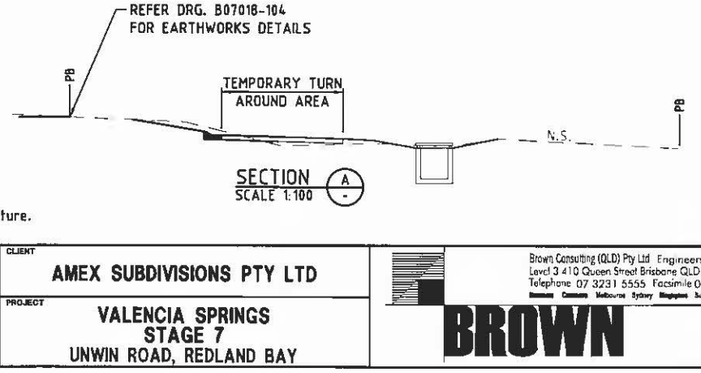
DRAWING NUMBER B07018-107

ISSUE C



LEGEND

- PROPOSED MOUNTABLE KERB AND CHANNEL
- EXISTING MOUNTABLE KERB AND CHANNEL
- LINE MARKING
- PROPOSED STORMWATER DRAINAGE
- PROPOSED ROOFWATER DRAINAGE
- EXISTING SURFACE CONTOUR
- DESIGN SURFACE CONTOUR
- PROPOSED AREA OF PAINTED SURFACE TREATMENT REFER DRG. B07018-101 FOR DETAILS
- STD RCC CONCRETE FOOTPATH - 2.5m WIDE REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR ALIGNMENT DETAILS
- PROPOSED ROCK WALL
- SEWER LINE
- WATER LINE
- TELSTRA LINE
- ENERGEX LINE
- SWALE DRAIN
- INDICATIVE DRIVEWAY LOCATIONS



WORKS AS CONSTRUCTED

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Signature .....
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Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

ISSUE	CALC	DRAWN	DATE	AMENDMENT DETAILS
G	MJH	BG	26.07.10	AS CONSTRUCTED
F	AK	TL	14.11.09	MINOR AMENDMENTS
E	AK	TL	12.10.09	PARKING PROVISION, SPOON DRAIN & BIN BAYS ADDED
D	MJH	TL	02.09.09	BANANA BARS ADDED ON PATHWAY
C	MJH	MJH	25.08.09	RWD / SWD AMENDED
B	MJH	MJH	23.01.09	LOT 177 / TURNHEAD EARTHWORKS DETAILS AND LEGEND AMENDED
A	MJH	MJH	25.06.08	CURVE WIDENING AMENDED / PRAM RAMPS / TURNHEAD DETAILS AMENDED

FILE: B07018-108.dwg DATE: 30-07-2010 TIME: 14.19
Xref's: X_B07018-TITLE X_B07018-BASE USR: matthew hayter

* The original issue or last amendment of this drawing contained the original signature.

DESIGN CHECK
DRAWN CHECK
SCALE (METRES) 1:250 1:500 0 5 10 A1 A3
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

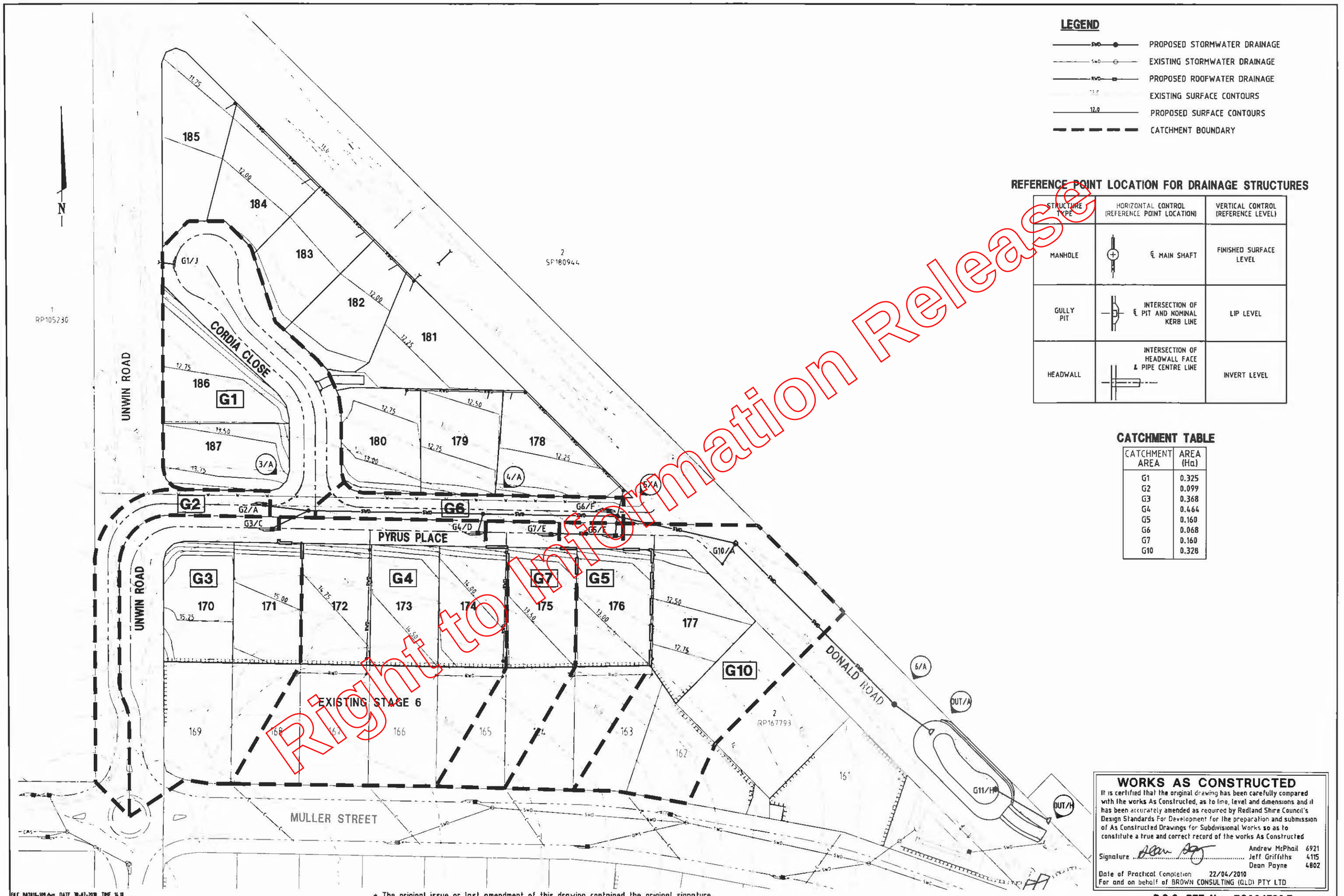
CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Kingscliff Sunshine Coast Bowral

DRAWING TITLE: INTERSECTION DETAILS LAYOUT PLAN

DRAWING NUMBER: B07018-108
ISSUE: G



LEGEND

- PROPOSED STORMWATER DRAINAGE
- EXISTING STORMWATER DRAINAGE
- PROPOSED ROOFWATER DRAINAGE
- EXISTING SURFACE CONTOURS
- PROPOSED SURFACE CONTOURS
- CATCHMENT BOUNDARY

REFERENCE POINT LOCATION FOR DRAINAGE STRUCTURES

STRUCTURE TYPE	HORIZONTAL CONTROL (REFERENCE POINT LOCATION)	VERTICAL CONTROL (REFERENCE LEVEL)
MANHOLE	℄ MAIN SHAFT	FINISHED SURFACE LEVEL
GULLY PIT	INTERSECTION OF ℄ PIT AND NOMINAL KERB LINE	LIP LEVEL
HEADWALL	INTERSECTION OF HEADWALL FACE & PIPE CENTRE LINE	INVERT LEVEL

CATCHMENT TABLE

CATCHMENT AREA	AREA (Ha)
G1	0.325
G2	0.099
G3	0.368
G4	0.464
G5	0.160
G6	0.068
G7	0.160
G10	0.328

WORKS AS CONSTRUCTED

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Signature .....

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Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010

For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-109.dwg DATE: 30-07-2010 TIME: 14:18
Xref's: X_B07018-TITLE X_B07018-BASE USR: nathan taylor

* The original issue or last amendment of this drawing contained the original signature.

PRINT ISSUE	CHECKED	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	SWD AMENDED
C	MJH	MJH	23.01.09	CATCHMENT G7 AND MANHOLE NO 4/A ADDED
D	MJH	MJH	25.08.09	RWD / SWD AMENDED
E	AH	KD	28.07.10	AS CONTRUCTED
F				

DESIGN CHECK

DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol

DRAWING TITLE: STORMWATER DRAINAGE CATCHMENT PLAN

DRAWING NUMBER: B07018-109

D

STRUCTURE NAME	G2/A	3/A	4/A	5/A	G10/A	6/A	OUT/A
STRUCTURE DESCRIPTION	STD RSC TYPE 'A' GULLY	2.4m Lintel:Type 'S':1:30	STD RSC MANHOLE 1050mm DIAMETER	STD RSC MANHOLE 1050mm DIAMETER	STD RSC MANHOLE 1050mm DIAMETER	900x900mm IPWEAQ TYPE 1 LETTERBOX GRATE OVER 1500mm DIA MANHOLE	STD RSC MANHOLE 1500mM DIAMETER	OUTLET
PIPE SIZEmm (Class)		375(2)	375(2)	375(2)	450(4)	525(2) x 2	600(2)	
PIPE GRADE %		1.06%	1.44%	1.66%	1.16%	0.24%	0.23%	
PIPE SLOPE 1 in X		94.34	69.25	60.31	86.20	424.52	433.33	
FULL PIPE FLOW VELOCITY (m/s)		0.24	0.64	1.25	1.63	0.71	1.09	
PART FULL FLOW VELOCITY (m/s)		1.13	1.74	2.12				
		DATUM RL -5.0						
WATER LEVEL IN STRUCTURE	12.863	12.704	12.008	11.565	11.112	10.999	10.810	
HYDRAULIC GRADE LEVEL	12.863	12.832 12.703	12.682 12.008	11.899 11.565	11.396 11.103	11.064 10.981	10.842 10.810	
PIPE FLOW (Cumecs)		0.026	0.070	0.138	0.259	0.319	0.319	
DEPTH TO INVERT		1.282 1.367	1.387 1.344	1.364 1.077	1.146 0.809	0.838 1.153	1.174 0.800	
INVERT LEVEL OF DRAIN		12.693 12.355	12.315 11.588	11.450 10.908	10.865 10.452	10.395 10.240	10.955 10.865	
DESIGN SURFACE LEVEL	13.748	13.745	12.995	12.000	11.500	12.085	11.000	
SETOUT	E140.386	N7158.408 E153.247	N7156.895 E204.163	N7155.954 E243.642	N7155.228 E278.002	N7147.423 E324.709	N7100.926 E335.185	N693.355
RUNNING CHAINAGE	0.000	13.000 13.000	50.900 63.900	39.200 103.100	35.600 138.700	65.800 204.500	13.000 217.500	

LINE A

* The original issue or last amendment of this drawing contained the original signature.

ISSUE	CHECK	DRAWN	DATE	AMENDMENT DETAILS
G	MJH	BG	27.07.10	AS CONSTRUCTED
A	MJH	MJH	21.05.08	STRUCTURE 6/A AMENDED
B	MJH	MJH	25.06.08	SWD LONGS AMENDED
C	MJH	MJH	23.01.09	SWD LONG AMENDED, STRUCTURE 6/A DETAILS DELETED
D	MJH	MJH	15.04.09	SWD LINE A AMENDED
E	MJH	MJH	25.08.09	SWD AMENDED
F	MJH	TL	02.10.09	PIPE CLASS

FILE: B07018-110.dwg DATE: 26-07-2010 TIME: 14.23
Xref's: X_B07018-TITLE X_B07018-SWD USR: nathan taylor

DESIGN CHECK

DRAWN CHECK

SCALE (METRES)
1:1000 10 0 10 20 30 40 50 A1
1:2000 A3 HORIZONTAL
1:100 2 1 0 2 4 A1
1:200 A3 VERTICAL

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bowen

BROWN

DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 1 OF 2

DRAWING NUMBER: B07018-110

ISSUE: G

WORKS AS CONSTRUCTED

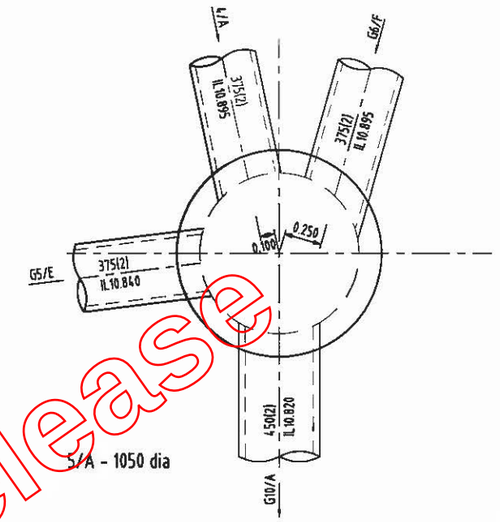
It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

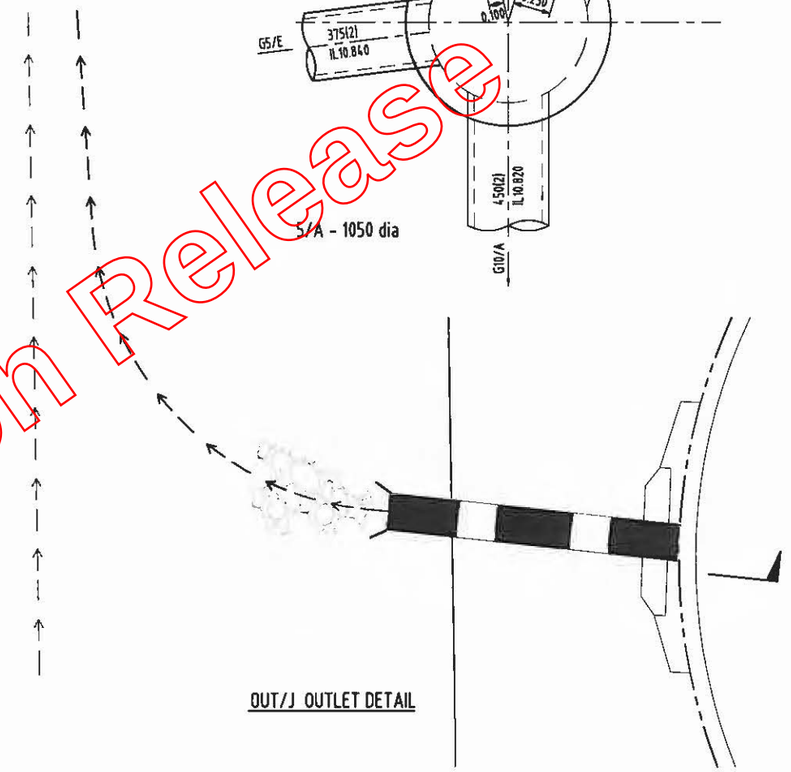
Signature .....
Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

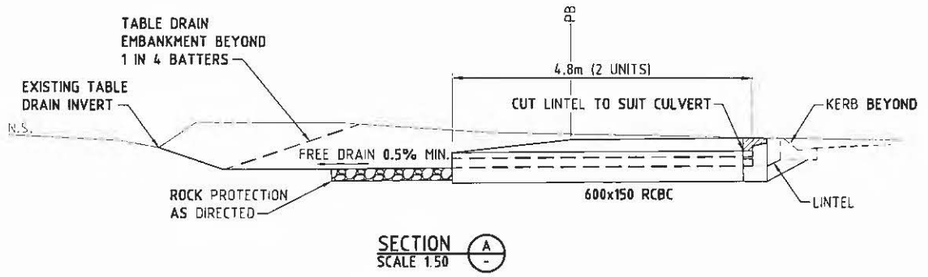
Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

STRUCTURE NAME	G3/C	3/A	G4/D	4/A	G7/E	G5/E	5/A	G6/F	5/A	G11/H	OUT/H	G1/J	OUT/J
STRUCTURE DESCRIPTION	STD RSC TYPE 'A' GULLY	2.4m Lintel,Type 'S';1:30 STD RSC MANHOLE 1050mm DIAMETER	STD RSC TYPE 'A' GULLY	2.4m Lintel,Type 'S';1:30 STD RSC MANHOLE 1050mm DIAMETER	STD RSC TYPE 'A' GULLY	150mm SEWER	2.4m Lintel,Type 'S';1:30 STD RSC MANHOLE 1050mm DIAMETER	STD RSC TYPE 'A' GULLY	2.4m Lintel,Type 'S';1:30 STD RSC MANHOLE 1050mm DIAMETER	FIELD INLET 900x900mm INCEAD TYPE 1 WITH LETTERBOX GRATE	OUTLET	STD RSC SMALL LINTEL CUT TO SUIT CULVERT - REFER DETAIL	OUTLET
PIPE SIZEmm (Class)	375(2)		375(2)		375(2)	375(2)		375(2)		375(2) x 2		600 x 150 (RCBC)	
PIPE GRADE %	1.04%		1.41%		0.98%	0.52%		2.48%		0.42%		0.24%	
PIPE SLOPE 1 in X	96.00		70.93		102.16	192.31		40.26		238.75		407.69	
FULL PIPE FLOW VELOCITY (m/s)	0.48		0.66		0.43	0.73		0.21		0.86		0.67	
PART FULL FLOW VELOCITY (m/s)	1.39									1.24		1.05	
WATER LEVEL IN STRUCTURE	12.936	12.704	12.207	12.008	11.718	11.640	11.565	11.583	11.565	10.653	10.275	11.838	11.650
HYDRAULIC GRADE LEVEL	12.936	12.820 12.703 12.682	12.207	12.017 12.008 11.899	11.718	11.642 11.628 11.576 11.565 11.396		11.583	11.565 11.396	10.653	10.355 10.275	11.838	11.680 11.650
PIPE FLOW (Cumecs)		0.053		0.073		0.047	0.080		0.023		0.189		0.060
DEPTH TO INVERT	1.278	1.367	1.270	1.344	1.290	1.436	1.056 1.126	1.047	1.071	0.520	0.600	0.393	0.500
INVERT LEVEL OF DRAIN		12.465 12.340		11.668 11.574		11.420 10.955			10.947 10.870		9.908 9.828		11.560 11.567
DESIGN SURFACE LEVEL	13.748	13.728	12.865	12.905	12.375	11.942	12.900	11.995	12.900	10.952	10.580	11.905	12.000
SETOUT	E142.662 N751.815	E153.247 N756.895	E202.652	N750.706 E204.163 N755.954	E224.081	N750.310 E242.931 N749.962	E243.442 N755.228	E241.052	N756.547 E243.442 N755.228	E355.800	N674.479 E369.484 N667.682	E114.553	N828.366 E109.790 N828.957
RUNNING CHAINAGE	0.000	12.000 12.000	0.000	6.100 6.100	0.000	18.900 18.900	5.800 24.700	0.000	3.100 3.100	0.000	19.100 19.100	0.000	5.300 5.300
LINE	C		D		E			F		H		J	







WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

PRINT ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	21.05.08	STRUCTURE OUT/A AMENDED
C	MJH	MJH	25.06.09	SWD LONGS AMENDED
D	MJH	MJH	23.09.09	SWD LONGS AMENDED, STRUCTURE OUT/A DETAIL DELETED
E	MJH	MJH	15.06.09	SWD LINE A AMENDED
F	MJH	MJH	25.08.09	SWD AMENDED
G	MJH	BG	27.07.10	AS CONSTRUCTED

FILE B0701B-111.dwg DATE: 30-07-2010 TIME 14.23
Xref's X_B0701B-TITLE X_B0701B-SWD USR: nathan taylor

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:1000 10 0 10 20 30 40 50 A1
1:2000 A3
HORIZONTAL
1:100 2 1 0 2 4 A1
1:200 A3
VERTICAL

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
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FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bhopal

BROWN

DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 2 OF 2

DRAWING NUMBER B07018-111

ISSUE G

* The original issue or last amendment of this drawing contained the original signature.

LOCATION					TIME			SUB-CATCHMENT RUNOFF						INLET DESIGN									DRAIN DESIGN																		HEADLOSSES					PART FULL				DESIGN LEVELS							
DESIGN ARI	STRUCTURE No	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT	SUB-CATCHMENT TIME OF CONC	RAINFALL INTENSITY	10yr RUNOFF CO-EFFICIENT	CO-EFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF (C x A)	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW ROAD CAPACITY	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C x A)	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS (CLASS)	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE CHART No	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	V2/2g	Ku	hu	Kl	hl	Kw	hw	Sf	hf		Vp	OBVERT LEVELS	DRAIN SECTION H.G.L.	UPSTREAM H.G.L.	LAT. H.G.L.	W.S.E.	SURFACE OR K&C INVERT LEVEL	STRUCTURE No.
yrs					%	min	mm/h			ha	ha	ha	l/s	l/s	%	l/s		l/s	l/s		min	mm/h	ha	l/s	l/s	l/s	l/s	m	%	mm	m/s	min																									
2 100	G2/A	G2/A to 3/A	G2			5.00 5.00	151 305	0.88 0.88	0.75 1.00	0.160 0.160	0.015 0.100	0.015 0.100	31 85	31 FLOW WIDTH/DEPTH 1.64/0.44m DOWNSTREAM 0.454m	0.70	152	1	26	5	G6/F	5.00 5.00	151 305	0.015 0.100	85	2531	59 (Pipe flow + Grate flow)	26	12.950	1.00	375(2)	0.24 (1.59)	0.22		Qg 0.026 Cg 0.026 De 315 CHART 32 Ve2/2gDe 0.81 H/De Kg safe flow 12.84 and flow 7.45	0.003	10.64	0.031			10.64	0.031	0.02	0.043	0.097	1.19	12.832 12.702	12.832 12.703	12.863		12.863	13.739	G2/A
2 100	G3/C	G3/C to 3/A	G3			13.00 13.00	184 213	0.77 0.77	0.65 0.92	0.360 0.360	0.234 0.331	0.234 0.331	68 196	68 FLOW WIDTH/DEPTH 2.10/0.3m DOWNSTREAM 0.979m	0.70	152	1	53	15	G4/D	13.00 13.00	184 213	0.234 0.331	196	2531	143 (Pipe flow + Grate flow)	53	11.741	1.00	375(2)	0.48 (1.59)	0.20		Qg 0.053 Cg 0.053 De 375 CHART 32 Ve2/2gDe 0.83 H/De Kg safe flow 9.91 and flow 7.08	0.012	9.91	0.116			9.91	0.116	0.09	0.071	0.142	1.39	12.820 12.702	12.829 12.703	12.936		12.936	13.723	G3/C
2 100	3/A	3/A to 4/A	G2 G3														16				13.20 13.20	183 211	0.309 0.431	253	2531	182 (Pipe flow + Sum upstream flows)	70	50.925	1.50	375(2)	0.64 (1.94)	0.85		Qa 0.070 De 375 Routine 2.15 Junc Pipes G2/A and G3/C Ve1 0.361 Ve2 0.475	0.021	0.17	0.021			1.85 Eq Qa 4.35 Angle 16 Flow 0.070 CHART 5 Qu/Qa1 1.2 alpha 0 K'w 0.24 Ku 0.44 WSE 0.543 Ku 0.97 Kw 1.85	0.022	0.16	0.002	0.148	1.74	12.682 11.919	12.682 12.008	12.743		12.704	13.694	3/A
2 100	G4/D	G4/D to 4/A	G4			13.00 13.00	184 213	0.77 0.77	0.65 0.92	0.460 0.460	0.299 0.423	0.299 0.423	86 258	181 FLOW WIDTH/DEPTH 1.95/0.4m DOWNSTREAM 0.999m	2.30	276	1	73	28	G7/E	13.00 13.00	184 213	0.299 0.423	258	3088	177 (Pipe flow + Grate flow)	73	5.461	1.00	375(2)	0.66 (1.59)	0.09		Qg 0.073 Cg 0.073 De 375 CHART 32 Ve2/2gDe 0.86 H/De Kg safe flow 8.55 and flow 6.35	0.028	8.55	0.098			8.55	0.098	0.17	0.009			11.973 11.919	12.017 12.008	12.297		12.297	12.868	G4/D
2 100	4/A	4/A to 5/A	G2 G3 G4														16				14.05 14.05	180 296	0.608 0.854	489	3088	350 (Pipe flow + Sum upstream flows)	138	39.286	1.60	375(2)	1.25 (2.00)	0.52		Qa 0.138 De 375 Routine 2.1 Combined pipes in new case Junc Pipes 3/A and G4/D Ve1 0.877 Ve2 0.896	0.044	1.37	0.163			1.37 Eq Qa 5.30 Angle 14 Flow 0.138 CHART 5 Qu/Qa1 1.4 alpha 0 K'w 0.05 Yu 0.63 WSE 0.68 Ku 0.97 Kw 0.98 Interpolated Kw= 1.37 Kw= 1.37	0.109	0.62	0.245	0.295	2.12	11.899 11.270	11.899 11.565	12.048		12.048	12.888	4/A
2 100	G7/E	G7/E to G5/E	G7			13.00 13.00	184 213	0.77 0.77	0.65 0.92	0.160 0.160	0.104 0.147	0.104 0.147	38 87	58 FLOW WIDTH/DEPTH 1.46/0.4m DOWNSTREAM 0.934m	2.30	276	1	47	11	G5/E	13.00 13.00	184 213	0.104 0.147	87	3088	40 (Pipe flow + Grate flow)	47	18.853	1.00	375(2)	0.43 (1.59)	0.31		Qg 0.047 Cg 0.047 De 375 CHART 32 Ve2/2gDe 0.83 H/De Kg safe flow 8.15 and flow 5.84	0.009	8.15	0.076			8.15	0.076	0.07	0.014			11.458 11.269	11.642 11.628	11.718		11.718	12.365	G7/E
2 100	G5/E	G5/E to 5/A	G7 G5			13.00 13.00	184 213	0.77 0.77	0.65 0.92	0.160 0.160	0.104 0.147	0.104 0.147	38 87	41 FLOW WIDTH/DEPTH 1.23/0.4m DOWNSTREAM 0.953m	2.30	276	1	34	7		13.31 13.31	181 291	0.208 0.294	172	3088	92 (Pipe flow + Sum upstream flows)	80	5.291	0.50	375(2)	0.73 (1.12)	0.09		Qa 0.154 Ca 0.080 De 375 Angle 8.05 Chart 4.3 S/De 2.5 chart Qu/De 1.00 K0 1.92 K0 2.12 Qu/De 0.58 Cg 0.80 K 2.10 S/De 2.5 K0 1.92 K0 2.12 K 2.10 S/De 1.5 K0 1.92 K0 5 2.12 K 2.10 S/De 2.0 K0 2.04 K0 5 1.92 K 1.93 S/De 2.5 K0 2.44 K0 5 2.40 K 2.40	0.027	1.91	0.052			2.36 Interp val for S/De 2.06 Kw 2.36 CHART G6 S/De 2.5 K0 1.92 K0 5 1.71 K 1.72 S/De 2.0 K0 2.04 K0 5 1.92 K 1.93 Interp val for S/De 2.06 Ku 1.91	0.064	0.21	0.011			11.241 11.295	11.574 11.565	11.628		11.640	11.922	G5/E
2 100	G6/F	G6/F to 5/A	G6			5.00 5.00	151 305	0.88 0.88	0.75 1.00	0.070 0.070	0.053 0.070	0.053 0.070	22 59	27 FLOW WIDTH/DEPTH 0.97/0.4m DOWNSTREAM 0.161m	2.30	276	1	23	4		5.00 5.00	151 305	0.053 0.070	59	3088	34 (Pipe flow + Grate flow)	23	2.739	1.00	375(2)	0.21 (1.59)	0.45		Qg 0.023 Cg 0.023 De 375 CHART 32 Ve2/2gDe 0.81 H/De Kg safe flow 7.79 and flow 5.58	0.002	7.79	0.018			7.79	0.018	0.02	0.040			11.297 11.270	11.565 11.565	11.583		11.583	11.969	G6/F
2 100	5/A	5/A to G10/A	G2 G3 G4 G7 G5 G6			14.57 14.57	99 293	0.889 1.231	717	3088	483 Additional Flow 0.038 connect Pipe flow + Sum upstream flows	259	35.439	1.60	450(2)	5.84 (11.85)	0.36		Qa 0.259 De 450 Routine 2.2 Junc Pipes G6/F and 4/A Ve1 0.137 Ve2 1.240 Eq Qa 4.13 Angle 170 Flow 0.152 Routine 2.1 Combined pipes in new case Junc Pipes	0.135	1.25	0.169			1.25 Eqn G6/F & 4/A and G5/E Ve1 1.135 Ve2 0.651 Eq Qa 5.43 Angle 14 Flow 0.229 CHART 5 Qu/Qa1 2.1 alpha 0 K'w 0.05 Yu 0.99 WSE 0.11 Ku 0.81 Kw 0.83 Interpolated Kw= 1.25 Kw= 1.25	0.169	0.83	0.793			11.270 10.851	11.296 11.103	11.565		11.566	11.966	5/A
2 100	G10/A	G10/A to 6/A	G2 G3 G4 G7 G5 G6 G10			13.00 13.00	184 213	0.77 0.77	0.65 0.92	0.320 0.320	0.208 0.294	0.208 0.294	68 174	68 FLOW WIDTH/DEPTH 2.43m	0.00	267	295.2	68	0		14.93 14.93	98 281	1.877 1.565	874	0	555 (Pipe flow + Sum upstream flows)	319	85.995	0.75	525(2) x 2	0.71 (1.00)	1.10		Qg 0.868 Cg 0.319 De 742 Angle 33 Chart 36 S/De 2.5 chart Du/De 0.61 K0 1.07 K0 5 1.68 Du/De 0.87 Cg 0.85 K 1.35 S/De 2.0 K0 1.23 K0 5 1.82 K 1.52 S/De 1.5 K0 1.53 K0 5 2.05 K 1.77	0.026	1.50	0.039			1.86 Interp val for S/De 2.31 Kw 1.86 CHART 35 S/De 2.0 K0 1.08 K0 5 1.62 K 1.35 S/De 1.5 K0 1.16 K0 5 1.88 K 1.45 Interp val for S/De 2.31 Ku 1.50	0.043	0.13	0.083			10.946 10.781	11.064 10.981	11.182		11.112	11.250	G10/A
2 100	6/A	6/A to OUT/A	G2 G3 G4 G7 G5 G6 G10														16				16.83 16.83	95 195	1.077 1.565	548	2139	539 (Pipe flow + Sum upstream flows)	379	12.925	0.29	600(2)	1.09 (0.98)	0.20			0.061	2.38	0.139			2.68	0.157	0.25	0.032			10.836 10.810	10.842 10.810	10.981		10.999	11.490	6/A
2 100	G11/H	G11/H to OUT/H	G11			5.00 5.00	151 305	0.88 0.88	0.75 1.00	0.001 0.001	0.001 0.001	0.001 0.001	0 1	0 FLOW WIDTH/DEPTH 0.34/0.1m	0.00	267	295.2	0	0		16.00 16.00	95 195	0.001 0.001	1	0	0 (Pipe flow set by user)	189	36.000	0.50	375(2) x 2	0.86 (1.12)	0.27		Qg 0.189 Cg 0.189 De 539 CHART 32 Ve2/2gDe 0.90 H/De Kg safe flow 7.91 and flow 5.93	0.038	7.91	0.298			7.91	0.298	0.29	0.047	0.245	1.24	10.355 10.275	10.355 10.275	10.653		10.653	10.580	G11/H
2 100	G1/J	G1/J to OUT/J	G1			13.00 13.00	184 213	0.77 0.77	0.65 0.92	0.320 0.320	0.208 0.294	0.208 0.294	68 174	68 FLOW WIDTH/DEPTH 0.78/0.4m	0.00	202	175.89	68	0		13.00 13.00	184 213	0.208 0.294	174	0	174 (Pipe flow + Sum upstream flows)	60	4.800	0.62	600 x 150 (RCB(C))	0.67 (0.93)	0.08		Qg 0.060 Cg 0.060 De 248 CHART 32 Ve2/2gDe 0.95 H/De Kg safe flow 6.91 and flow 5.45	0.023	6.91	0.158			6.91	0.158	0.32	0.015	0.095	1.05	11.688 11.650	11.688 11.650	11.838		11.838	11.923	G1/J

CALCULATIONS TABLE

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

* The original issue or last amendment of this drawing contained the original signature.

FILE: B07018-112.dwg DATE: 30-07-2010 TIME: 14.23
Xref's: X_B07018-TITLE X_B07018-SWD USR: mathew taylor

PRINT INDEX	CHECK	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	SWD AMENDED
C	MJH	MJH	23.01.09	SWD AMENDED
D	MJH	MJH	15.06.09	SWD LINE A AMENDED
E	MJH	MJH	25.08.09	SWD AMENDED
F	AN	KD	28.07.10	AS CONTRUCTED

AMENDMENTS

DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

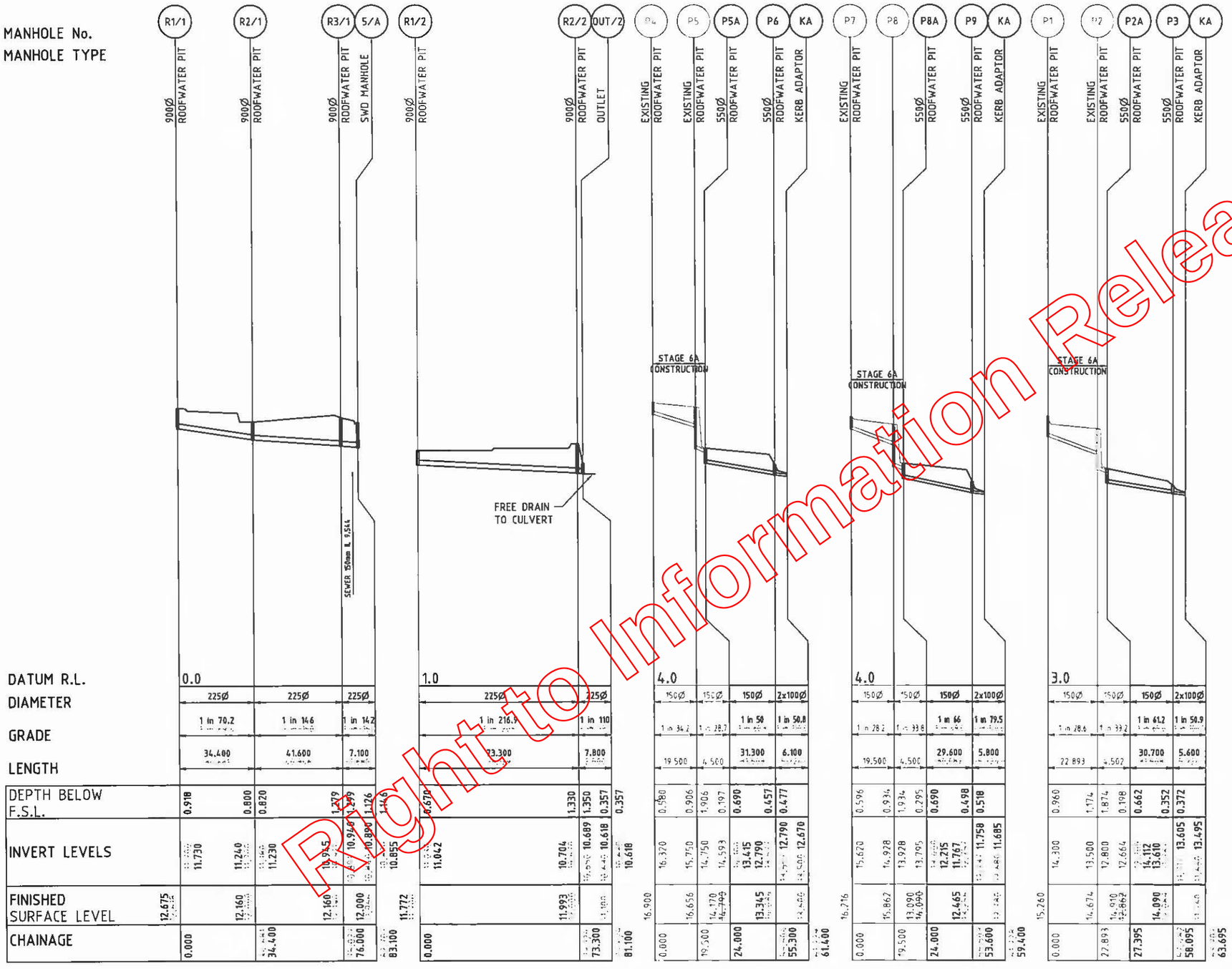
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Townsville Central Ground

DRAWING TITLE: STORMWATER DRAINAGE CALCULATIONS TABLE

DRAWING NUMBER: B07018-112

ISSUE: E



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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

* The original issue or last amendment of this drawing contained the original signature.

FILE B07018-113.dwg DATE 30-07-2010 TIME 14.23
Xref's X_B07018-TITLE X_B07018-SWD USR: eathan.taylor

PRINT ISSUE		CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	A	MJH	MJH	12.12.07	
B	B	MJH	MJH	23.01.09	RWD PITS ADDED AND NO'S AMENDED
C	C	MJH	MJH	15.06.09	SWD LINE A AMENDED
D	D	MJH	MJH	25.08.09	RWD AMENDED
E	E	MJH	BG	27.07.10	AS CONSTRUCTED
F	F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:1000 10 0 10 20 30 40 50 A1
1:2000 A3
HORIZONTAL
1:100 2 1 0 2 4 A1
1:200 A3
VERTICAL

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
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DEAN PAYNE RPEQ 4802
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CLIENT AMEX SUBDIVISIONS PTY LTD

PROJECT VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

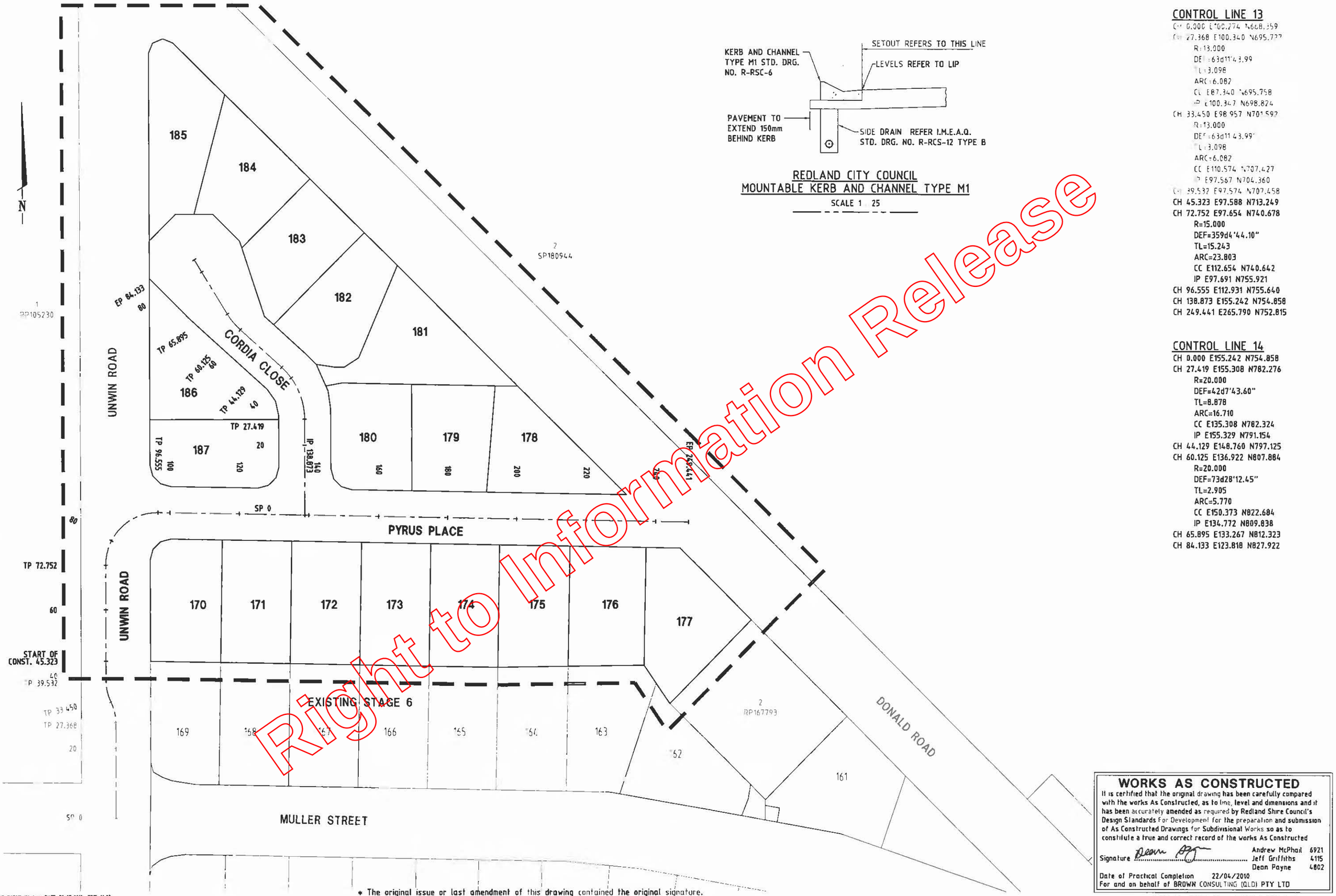
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Brunei

BROWN

DRAWING TITLE ROOFWATER DRAINAGE LONGITUDINAL SECTIONS

DRAWING NUMBER B07018-113

ISSUE D



REDLAND CITY COUNCIL
MOUNTABLE KERB AND CHANNEL TYPE M1

SCALE 1 : 25

CONTROL LINE 13

CH 0.000 E100.274 N668.359
CH 27.368 E100.340 N695.727
R=13.000
DEF=63d11'43.99"
TL=3.098
ARC=6.082
CC E87.340 N695.758
IP E100.347 N698.824
CH 33.450 E98.957 N701.592
R=13.000
DEF=63d11'43.99"
TL=3.098
ARC=6.082
CC E110.574 N707.427
IP E97.567 N704.360
CH 39.532 E97.574 N707.458
CH 45.323 E97.588 N713.249
CH 72.752 E97.654 N740.678
R=15.000
DEF=359d4'44.10"
TL=15.243
ARC=23.803
CC E112.654 N740.642
IP E97.691 N755.921
CH 96.555 E112.931 N755.640
CH 138.873 E155.242 N754.858
CH 249.441 E265.790 N752.815

CONTROL LINE 14

CH 0.000 E155.242 N754.858
CH 27.419 E155.308 N782.276
R=20.000
DEF=42d7'43.60"
TL=8.878
ARC=16.710
CC E135.308 N782.324
IP E155.329 N791.154
CH 44.129 E148.760 N797.125
CH 60.125 E136.922 N807.884
R=20.000
DEF=73d28'12.45"
TL=2.905
ARC=5.770
CC E150.373 N822.684
IP E134.772 N809.838
CH 65.895 E133.267 N812.323
CH 84.133 E123.818 N827.922

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

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R.S.C. REF No. -EC004782.7

FILE: B07018-114.dwg DATE: 30-07-2010 TIME: 14:23
Xref's: X_B07018-TITLE X_B07018-BASE USR: nathan taylor

PRINT ISSUE	CHECKED	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	AK	KD	28.07.10	AS CONSTRUCTED
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

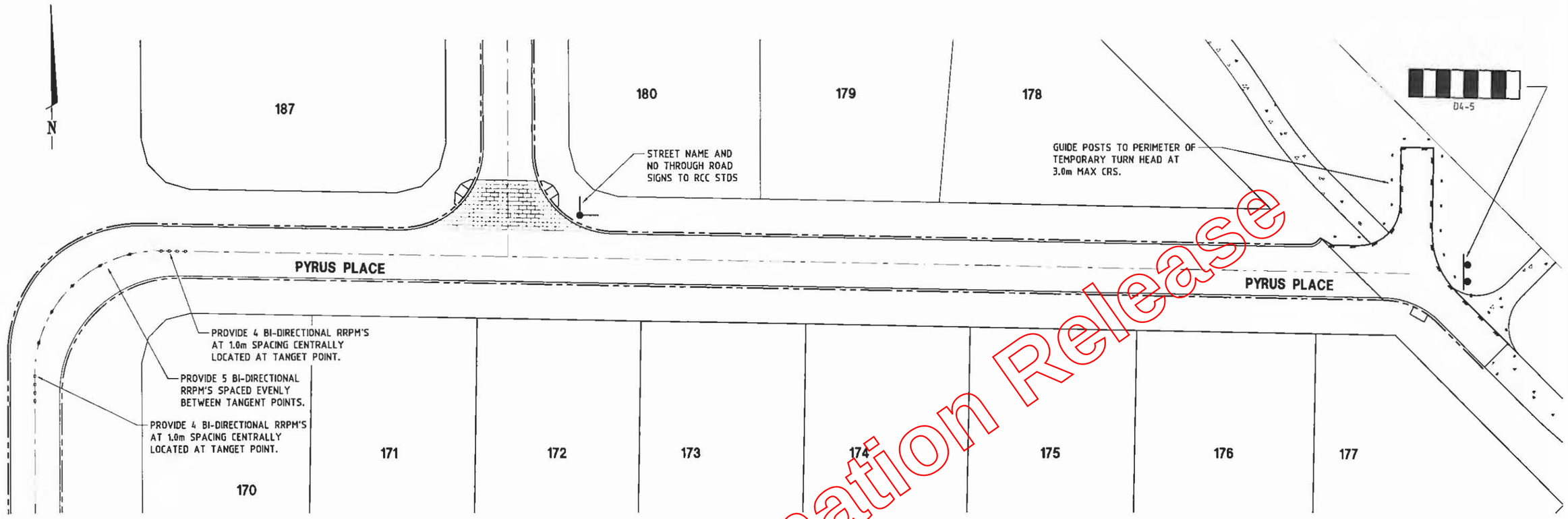
PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bhutan

DRAWING TITLE: SURVEY SETOUT LAYOUT PLAN

DRAWING NUMBER: B07018-114

ISSUE: A



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Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

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F&E. B07018-115.dwg DATE 30-07-2010 TIME 14:23
Xref's: X_B07018-TITLE X_B07018-BASE USR: nathan taylor

PRINT ISSUED		CHECK	DRAWN	DATE	AMENDMENT DETAILS
AMENDMENTS	A	MJH	MJH	25.06.09	
	B	MJH	MJH	23.09.09	NO THROUGH ROAD AND HAZARD SIGNS ADDED
	C	AN	KC	28.07.10	AS CONSTRUCTED
	D				
	E				
	F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:250 1:500 5 0 5 10 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

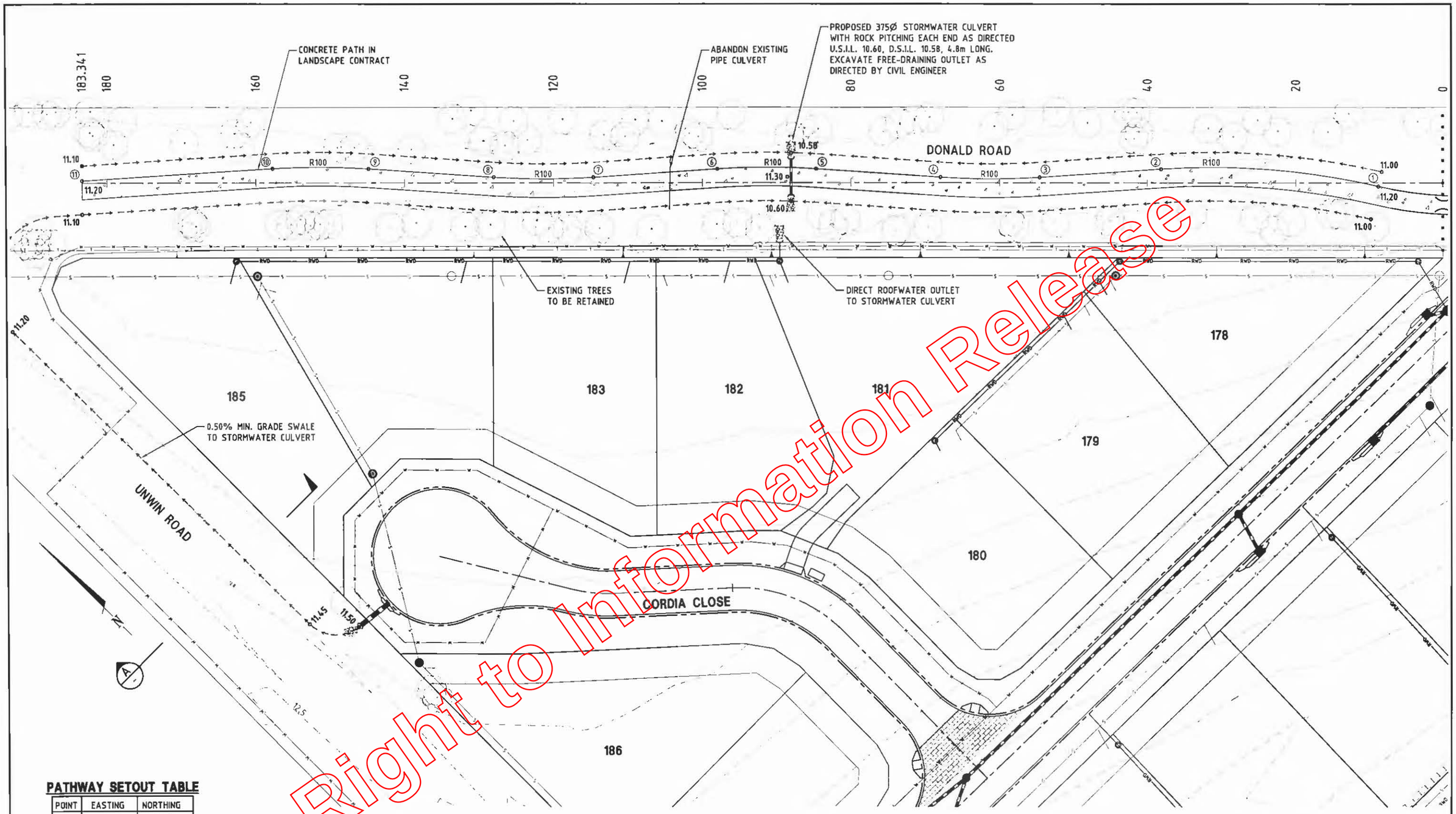
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Brunei

BROWN

DRAWING TITLE: SIGNS AND LINEMARKING LAYOUT PLAN

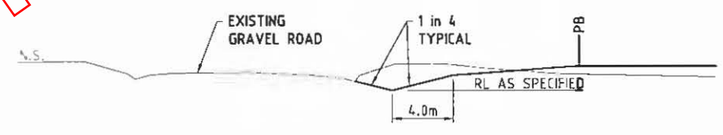
DRAWING NUMBER: B07018-115

ISSUE: B



PATHWAY SETOUT TABLE

POINT	EASTING	NORTHING
1	248.475	773.622
2	229.329	795.962
3	216.862	806.821
4	207.433	816.207
5	196.386	828.775
6	186.958	838.161
7	174.340	849.152
8	164.912	858.538
9	153.724	871.266
10	144.614	880.373
11	125.345	897.302



SECTION A
SCALE 1:100

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Signature .....

Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

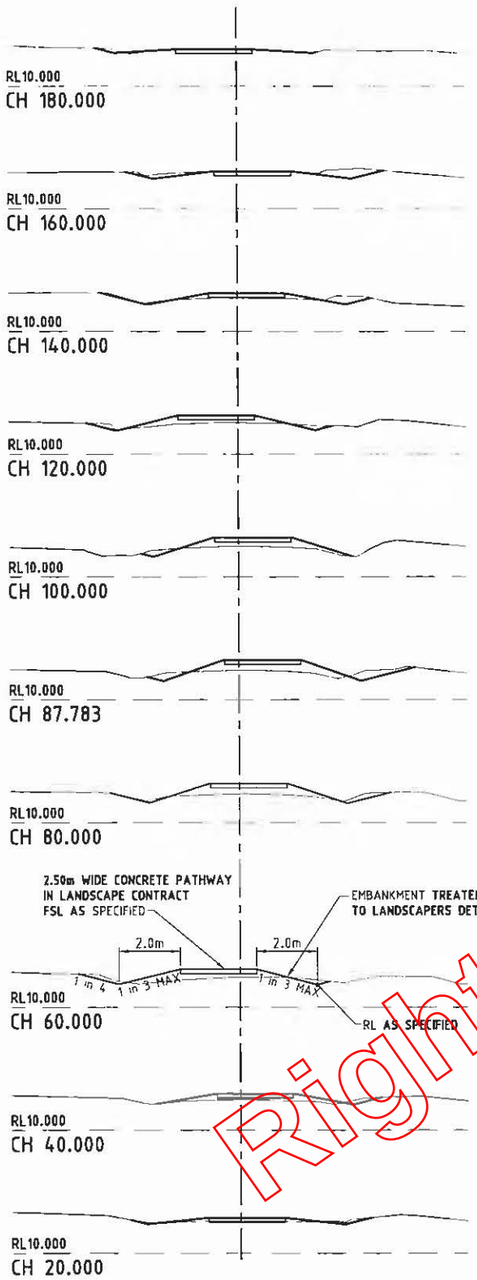
Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

F:\E. B07018-116.dwg DATE 30-07-2010 TIME 14:23
Xref's: X_B07018-TITLE X_B07018-BASE USER: nathan.taylor

ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MH	MH	30.08.09	
B	MH	TL	02.09.09	NOTES AMENDED
C	AM	KD	28.07.10	AS CONSTRUCTED
D				
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
1:250 1:500 5 0 5 10 A1 A3
MICROFILM No.
PROJECT No. B07018
SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
CLIENT AMEX SUBDIVISIONS PTY LTD
PROJECT VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN
DRAWING TITLE DONALD ROAD PATHWAY EARTHWORKS LAYOUT PLAN
DRAWING NUMBER B07018-116
ISSUE B



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Jeff Griffiths 4115
Dean Payne 4802

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R.S.C. REF No. -EC004782.7

FILE: B07018-117.dwg DATE: 30-07-2010 TIME: 14:23
Xref's: X_B07018-TITLE X_B07018-BASE USR: nathan taylor

PRINT CHECK		CALCS	DRAWN	DATE	AMENDMENT DETAILS
AMENDMENTS	A	MJH	MJH	30.06.09	
	B	MJH	TL	07.09.09	NOTES AMENDED
	C	AN	KD	26.07.10	AS CONSTRUCTED
	D				
	E				
	F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:250 1:500 5 0 5 10 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
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CLIENT AMEX SUBDIVISIONS PTY LTD

PROJECT VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Cardiff Melbourne Sydney Singapore Sunshine Coast Bristol
BROWN

DRAWING TITLE
DONALD ROAD PATHWAY
CROSS SECTIONS

DRAWING NUMBER B07018-117

SHEET SIZE B

MANHOLE No.	30/5	1/1	2/1	E/1	30/4A	E/2	30/2A	1/3	2/3	3/3
MANHOLE TYPE/DROP										
MANHOLE COVER										
JUNCTION LINE NO.										
JUNCTION DROP TYPES										

M.H. TYPE LEGEND

1 - Ø1050 MANHOLE

2 - Ø1500 MANHOLE

M.H. COVER LEGEND

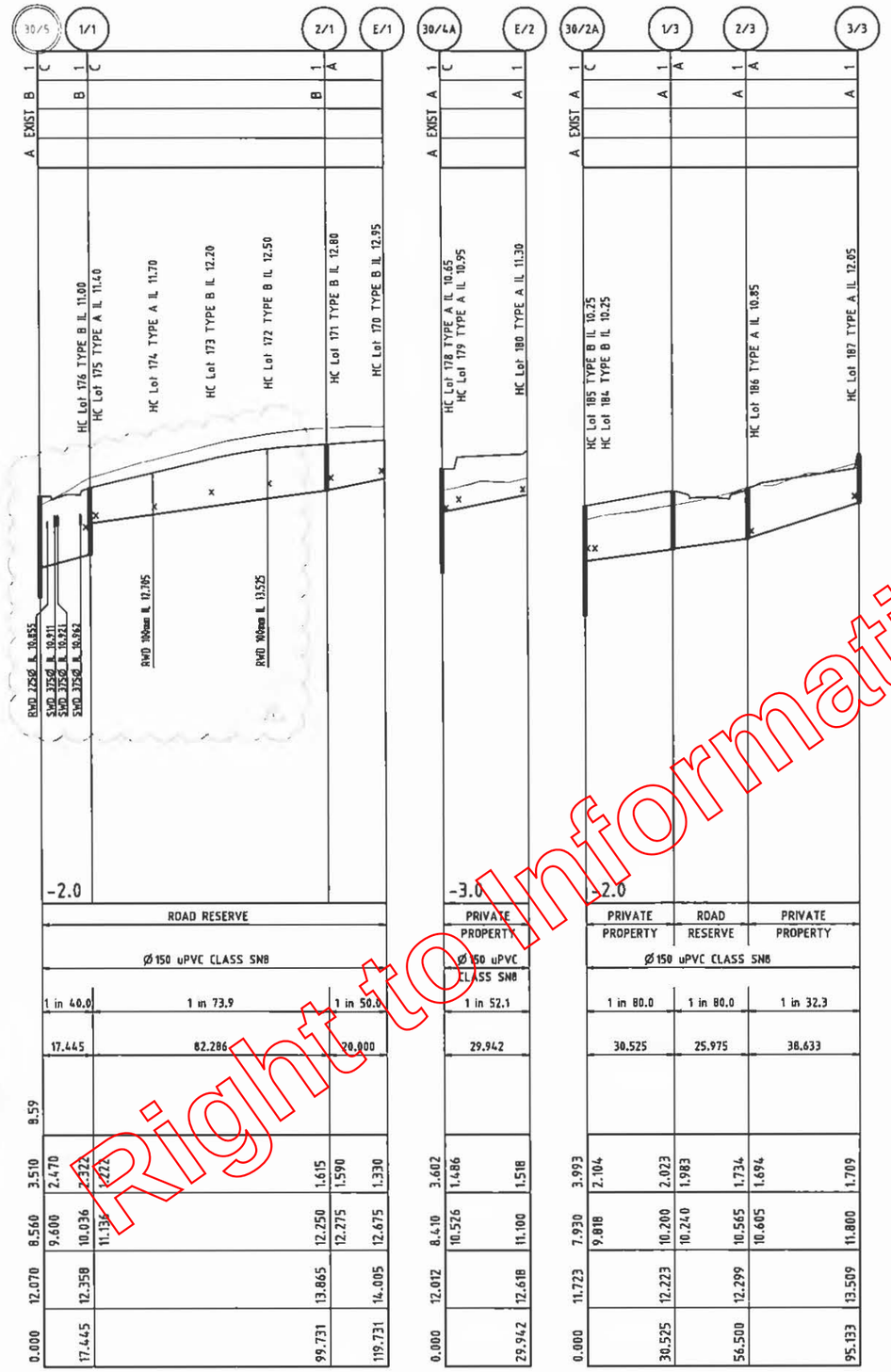
A - CIRCULAR CAST IRON - CONCRETE FILLED

B - CIRCULAR CAST IRON - CLASS D

C - CIRCULAR CONCRETE CLASS B

NOTES:

1. REFER TO IPWEAQ STD. DRG. S-0020 AND S-0021 FOR MH INLET DROP TYPES.
2. REFER TO IPWEAQ STD. DRG. S-0030 FOR HOUSE CONNECTION BRANCH TYPES.



Datum R.L.										
STREET ETC.		ROAD RESERVE			PRIVATE PROPERTY		PRIVATE PROPERTY	ROAD RESERVE	PRIVATE PROPERTY	
DIAMETER		Ø150 uPVC CLASS SN8			Ø150 uPVC CLASS SN8		Ø150 uPVC CLASS SN8			
GRADE		1 in 40.0	1 in 73.9	1 in 50.0	1 in 52.1		1 in 80.0	1 in 80.0	1 in 32.3	
LENGTH		17.445	82.286	20.000	29.942		30.525	25.975	38.633	
JUNCTION INVERT LEVEL	8.59									
DEPTH BELOW F.S.L.	3.510	2.470	2.322	1.615	1.486	1.518	2.104	2.023	1.983	1.734	1.694	1.709
INVERT LEVELS	8.560	9.600	10.036	11.136	12.250	12.275	10.526	11.100	9.818	10.200	10.240	10.565	10.605	11.800
FINISHED SURFACE LEVEL	12.070	12.358		13.865	14.005		12.012	12.618	11.723	12.223		12.299		13.509
CHAINAGE	0.000	17.445		99.731	119.731		0.000	29.942	0.000	30.525		56.500		95.133
LINE NUMBER		1			2			3		

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Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-201.dwg DATE: 30-07-2010 TIME: 14:35
Xref's: X_B07018-TITLE USR: nathan taylor

ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	M.H	M.H	12.12.07	
B	M.H	M.H	25.06.08	LOT 176 HC / COVER TYPES / STRUCTURE NAMES AMENDED
C	A.L	M.H	20.02.09	PIPE LENGTH AMENDED
D	M.H	M.H	25.08.09	RWD / SWD AMENDED
E				
F				

DESIGN CHECK

DRAWN CHECK

SCALE (METRES)
1:1000 10 0 10 20 30 40 50 A1
1:2000 HORIZONTAL A3
1:100 2 1 0 2 4 A1
1:200 VERTICAL A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT AMEX SUBDIVISIONS PTY LTD

PROJECT VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

BROWN

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Adelaide Canberra Melbourne Sydney Singapore Sunshine Coast Bristol

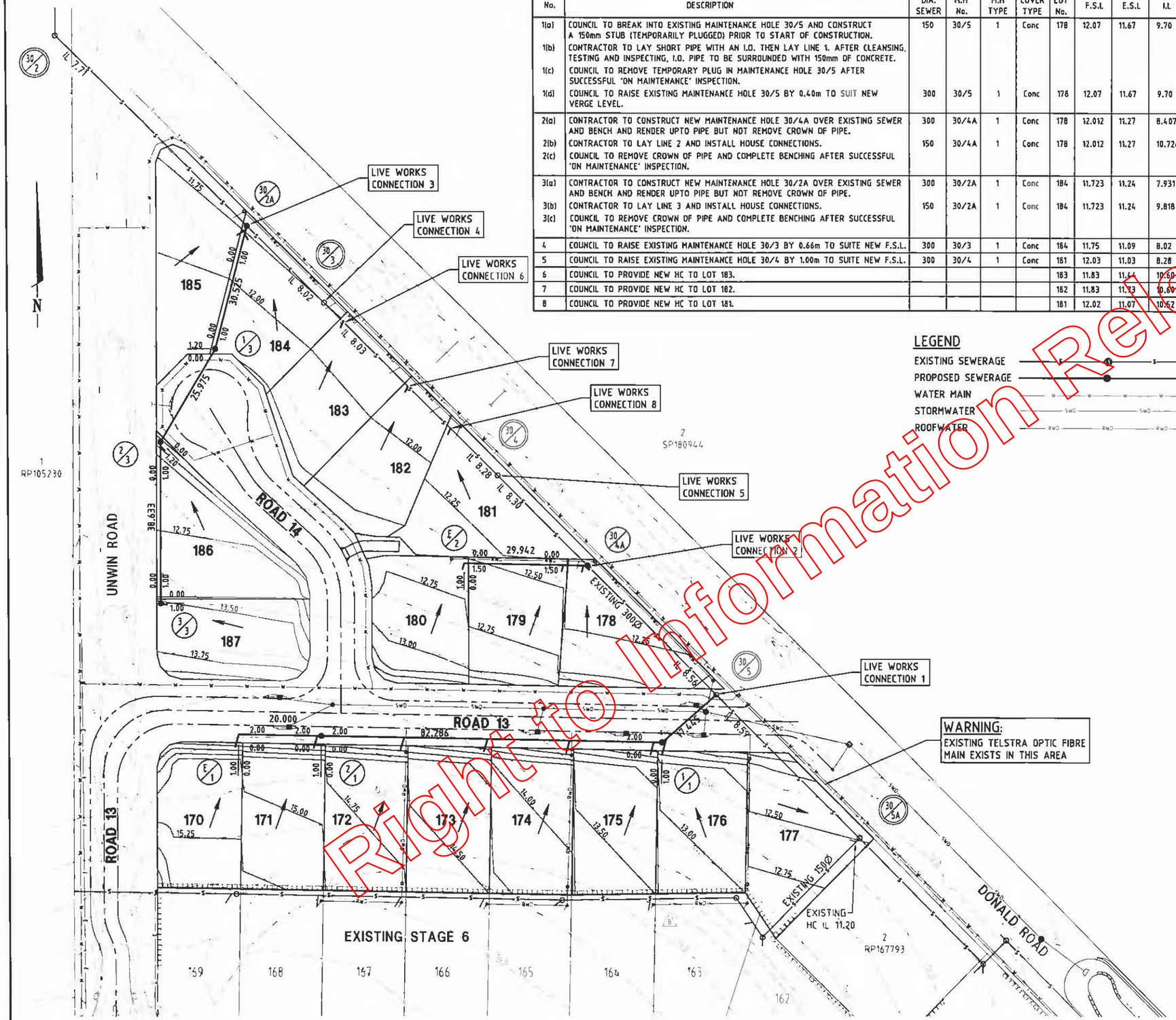
DRAWING TITLE
SEWERAGE RETICULATION
LONGITUDINAL SECTION

DRAWING NUMBER B07018-201

ISSUE C

R.C.C. & CONTRACTOR LIVE SEWER WORKS

No.	DESCRIPTION	DIA. SEWER	M.H No.	M.H TYPE	COVER TYPE	LOT No.	F.S.L	E.S.L	I.L	DEPTH
1(a)	COUNCIL TO BREAK INTO EXISTING MAINTENANCE HOLE 30/5 AND CONSTRUCT A 150mm STUB (TEMPORARILY PLUGGED) PRIOR TO START OF CONSTRUCTION.	150	30/5	1	Conc	178	12.07	11.67	9.70	2.37
1(b)	CONTRACTOR TO LAY SHORT PIPE WITH AN I.O. THEN LAY LINE 1. AFTER CLEANSING, TESTING AND INSPECTING, I.O. PIPE TO BE SURROUNDED WITH 150mm OF CONCRETE.									
1(c)	COUNCIL TO REMOVE TEMPORARY PLUG IN MAINTENANCE HOLE 30/5 AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.									
1(d)	COUNCIL TO RAISE EXISTING MAINTENANCE HOLE 30/5 BY 0.40m TO SUIT NEW VERGE LEVEL.	300	30/5	1	Conc	178	12.07	11.67	9.70	2.37
2(a)	CONTRACTOR TO CONSTRUCT NEW MAINTENANCE HOLE 30/4A OVER EXISTING SEWER AND BENCH AND RENDER UPTO PIPE BUT NOT REMOVE CROWN OF PIPE.	300	30/4A	1	Conc	178	12.012	11.27	8.407	3.605
2(b)	CONTRACTOR TO LAY LINE 2 AND INSTALL HOUSE CONNECTIONS.	150	30/4A	1	Conc	178	12.012	11.27	10.726	1.286
2(c)	COUNCIL TO REMOVE CROWN OF PIPE AND COMPLETE BENCHING AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.									
3(a)	CONTRACTOR TO CONSTRUCT NEW MAINTENANCE HOLE 30/2A OVER EXISTING SEWER AND BENCH AND RENDER UPTO PIPE BUT NOT REMOVE CROWN OF PIPE.	300	30/2A	1	Conc	184	11.723	11.24	7.931	3.792
3(b)	CONTRACTOR TO LAY LINE 3 AND INSTALL HOUSE CONNECTIONS.	150	30/2A	1	Conc	184	11.723	11.24	9.818	2.105
3(c)	COUNCIL TO REMOVE CROWN OF PIPE AND COMPLETE BENCHING AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.									
4	COUNCIL TO RAISE EXISTING MAINTENANCE HOLE 30/3 BY 0.66m TO SUITE NEW F.S.L.	300	30/3	1	Conc	184	11.75	11.09	8.02	3.73
5	COUNCIL TO RAISE EXISTING MAINTENANCE HOLE 30/4 BY 1.00m TO SUITE NEW F.S.L.	300	30/4	1	Conc	181	12.03	11.03	8.28	3.75
6	COUNCIL TO PROVIDE NEW HC TO LOT 183.					183	11.83	11.44	10.60	1.23
7	COUNCIL TO PROVIDE NEW HC TO LOT 182.					182	11.83	11.13	10.69	1.14
8	COUNCIL TO PROVIDE NEW HC TO LOT 181.					181	12.02	11.07	10.52	1.50



LEGEND

EXISTING SEWERAGE
PROPOSED SEWERAGE
WATER MAIN
STORMWATER
ROOFWATER

NOTES:

1. THE CONTRACTOR SHALL VERIFY FINISHED SURFACE LEVELS AND CONFIRM EXISTING LEVELS WHERE NEW WORK JOINS TO EXISTING BEFORE CONSTRUCTION OF SEWERS AND HOUSE CONNECTIONS.

2. ALL SEWER DRAINLINES SHALL BE CONSTRUCTED USING ONE OF THE FOLLOWING APPROVED PIPE TYPES, THE CLASS OF THE RESPECTIVE DRAINLINE BEING DEPENDENT UPON ITS DEPTH AND LOCATION.
- uPVC CLASS SH OR CLASS SEH
- DUCTILE IRON HEAVY CONCRETE LINED CLASS K9 WITH POLYTHENE SLEEVING;
- VITRIFIED CLAY,
- HOBAS G.R.P.,
- F.R.C. (NOT TO BE USED DOWNSTREAM OF PUMPED SEWERAGE);
- 'ULTRA -RIB' uPVC SEWER PIPES (SUBJECT TO A SITE BY SITE APPROVAL).

3. HOUSE CONNECTION BRANCHES SHALL BE LOCATED GENERALLY 1.0m-1.2m UPSTREAM OF THE ALLOTMENT BOUNDARY AND WHERE APPLICABLE THE HOUSE CONNECTION SHALL EXTEND A MINIMUM OF 1.0m BEYOND THE PROPERTY BOUNDARY. THE HOUSE CONNECTION SHALL BE LOCATED AT THE LOWEST PART OF THE ALLOTMENT AND AT SUFFICIENT DEPTH TO SERVICE THE WHOLE ALLOTMENT.

4. SEWER DRAINLINES SHALL BE BACKFILLED AND BEDDED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. S-0090 Rev A.

5. BEDDING AND BACKFILLING OF SEWER TRENCHES BENEATH ROADWAYS SHALL BE COMPACTED IN ACCORDANCE WITH IMEAQ Std.Dwg.No.W-0040 Rev A (ROADWAYS AND QT SHOULDERS).

6. COMPACTION TEST RESULTS/ CERTIFICATES SHALL BE SUPPLIED TO THE SUPERINTENDENT FOR SUBMISSION TO COUNCIL, IN ORDER TO DEMONSTRATE THAT THE SEWER TRENCHES HAVE BEEN COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS OF AUSTRALIAN STANDARD AS1289. TESTING FREQUENCY SHALL BE 1 TEST EVERY 50 METRES OF EVERY ALTERNATIVE LAYER OF THE TRENCH BACKFILL.

7. SEWER HOUSE CONNECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. S-0030 Rev A.

8. SEWER HOUSE CONNECTION BRANCHES SHALL NOT EXCEED 3.0 METRES IN HEIGHT. WHERE THE DEPTH FROM THE INVERT OF THE HOUSE CONNECTION BRANCH EXCEEDS 2.1 METRES ONE OF THE FOLLOWING MATERIALS SHALL BE USED IN LIEU OF uPVC:
- DUCTILE IRON WITH FUSION BONDED EPOXIES COATING FOR THE SLOPE JUNCTION AND ADJOINING BEND.
- JOINT COMMITTEE APPROVED GLASS REINFORCED PLASTIC DROP SEWER JUNCTIONS.

9. ALL SEWER HOUSE CONNECTIONS SHOWN ARE THE HIGHEST POSSIBLE TO SERVICE THE RESPECTIVE ALLOTMENT(S), SHOULD THE CONTRACTOR CONSTRUCT THE CONNECTIONS TO A HIGHER LEVEL, THE COSTS ASSOCIATED WITH THE LOWERING OF THE CONNECTION(S) SHALL BE BOURN BY THE CONTRACTOR.

10. O.B's TO FINISH 1.0m INSIDE ALLOTMENT BOUNDARIES, 1.0 METRE AWAY FROM ROOFWATER LINES WHICHEVER IS THE FURTHER.

11. SEWER MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH IMEAQ Std. Dwg. No 'S S-0020 Rev A, S-0021 Rev A, S-0024 Rev A.

12. SEWER MANHOLE COVERS AND FRAMES SHALL BE CONSTRUCTED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. S-0025 Rev A AND S-0026 Rev A.

13. STEP IRONS SHALL NOT BE CONSTRUCTED WITHIN SEWER MANHOLES.

14. WHERE SEWER MANHOLES ARE IN EXCESS OF 3.0 METRES IN DEPTH, THE WALL THICKNESS SHALL BE INCREASED TO 225mm AND THE BASE SLAB SHALL BE INCREASED IN DEPTH TO 300mm(MIN). WHERE THE DEPTH OF SEWER MANHOLES EXCEEDS 6.0 METRES, SAID MANHOLES WILL NEED TO BE DESIGNED (CERTIFIED) BY A STRUCTURAL ENGINEER.

15. ALL WORK ASSOCIATED WITH LIVE SEWERS OR MANHOLES ARE TO BE CARRIED OUT BY THE LOCAL AUTHORITY AT THE DEVELOPER'S COST UNLESS NOTED OTHERWISE.

16. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT LOCAL AUTHORITY STANDARDS AND DRAWINGS.

17. THE CONTRACTOR IS TO VERIFY LOCATIONS OF EXISTING SERVICES WITH THE RELEVANT AUTHORITIES BEFORE COMMENCING CONSTRUCTION.

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature .....
Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

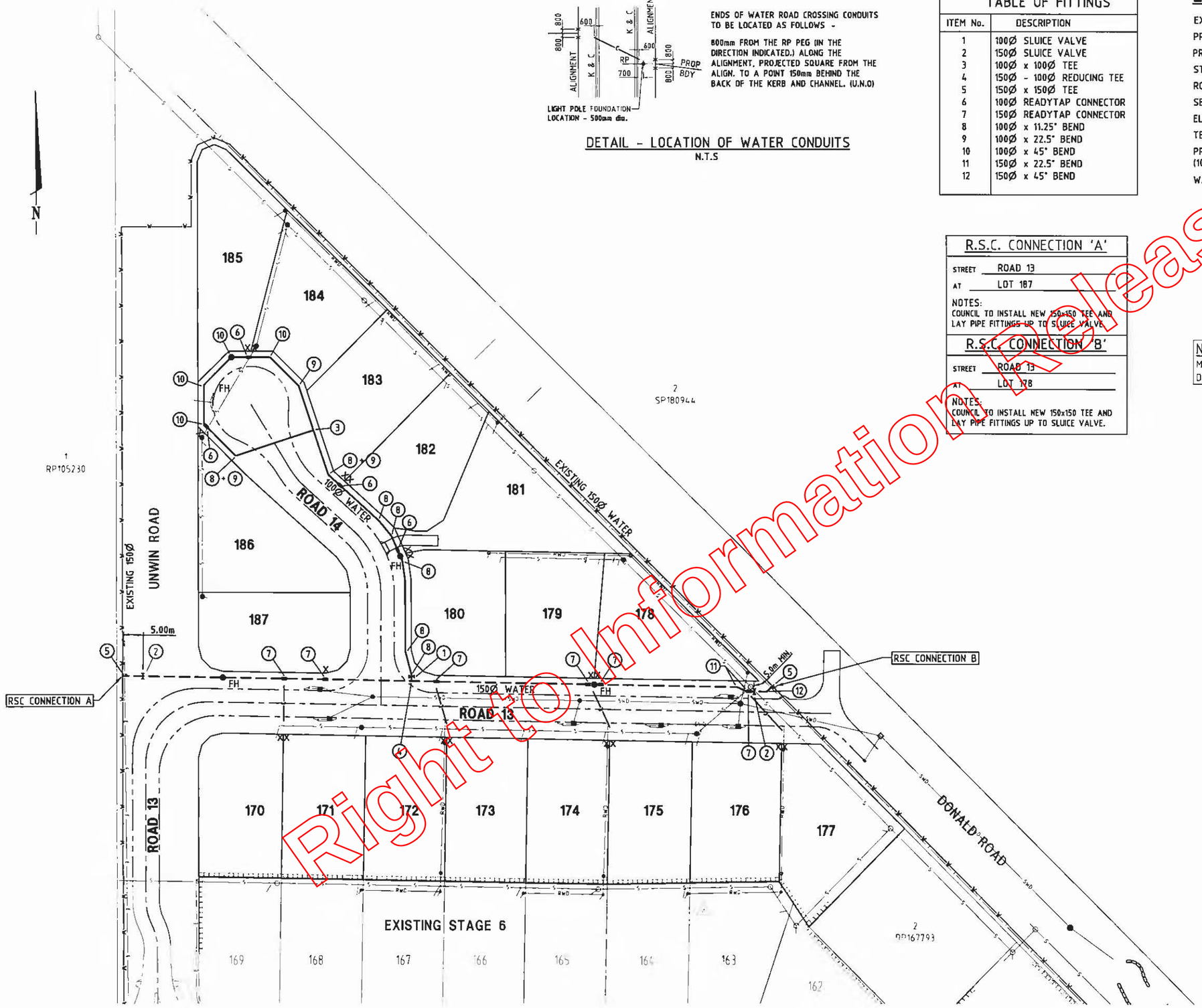
R.S.C. REF No. -EC004782.7

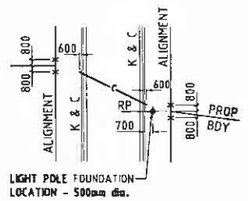
* The original issue or last amendment of this drawing contained the original signature.

FILE: B07018-200.dwg DATE: 30-07-2010 TIME: 14:26
Xref's: X_B07018-TITLE X_B07018-BASE USR: nathan taylor

ISSUE	CHECKED	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	LOT 176 HC MOVED
C	MJH	MJH	23.01.09	GULLY PIT ADDED, LOT 177 EWORKS, PIPE LENGTH AND NOTES AMENDED
D	MJH	MJH	25.08.09	RWD / SWD LAYOUT AMENDED - NO CHANGE TO SEWER
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3
MICROFILM No.
PROJECT No. B07018
SURVEYOR DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
CLIENT AMEX SUBDIVISIONS PTY LTD
PROJECT VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN
DRAWING TITLE SEWERAGE RETICULATION LAYOUT PLAN
DRAWING NUMBER B07018-200
ISSUE C





ENDS OF WATER ROAD CROSSING CONDUITS TO BE LOCATED AS FOLLOWS -

800mm FROM THE RP PEG (IN THE DIRECTION INDICATED.) ALONG THE ALIGNMENT, PROJECTED SQUARE FROM THE ALIGN. TO A POINT 150mm BEHIND THE BACK OF THE KERB AND CHANNEL. (U.N.O)

DETAIL - LOCATION OF WATER CONDUITS
N.T.S

TABLE OF FITTINGS

ITEM No.	DESCRIPTION
1	100Ø SLUICE VALVE
2	150Ø SLUICE VALVE
3	100Ø x 100Ø TEE
4	150Ø - 100Ø REDUCING TEE
5	150Ø x 150Ø TEE
6	100Ø READYTAP CONNECTOR
7	150Ø READYTAP CONNECTOR
8	100Ø x 11.25° BEND
9	100Ø x 22.5° BEND
10	100Ø x 45° BEND
11	150Ø x 22.5° BEND
12	150Ø x 45° BEND

R.S.C. CONNECTION 'A'
STREET ROAD 13
AT LOT 187
NOTES:
COUNCIL TO INSTALL NEW 150x150 TEE AND LAY PIPE FITTINGS UP TO SLUICE VALVE

R.S.C. CONNECTION 'B'
STREET ROAD 13
AT LOT 178
NOTES:
COUNCIL TO INSTALL NEW 150x150 TEE AND LAY PIPE FITTINGS UP TO SLUICE VALVE.

LEGEND
EXISTING WATER MAIN
PROPOSED WATER MAIN 100Ø
PROPOSED WATER MAIN 150Ø
STORMWATER
ROOFWATER
SEWERAGE
ELECTRICITY
TELSTRA
PROPOSED WATER CONDUITS (100 DIA.UPVC CLASS 12)
WATER SERVICE POINT OF ENTRY

SYMBOLS
SLUICE VALVE
DEAD END
FIRE HYDRANT
REDUCER

NOTE:
MAINS TO BE LAID IN 1.5m ALIGNMENT UNLESS OTHERWISE DIRECTED BY THE SUPERINTENDENT.

WORKS AS CONSTRUCTED
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Signature ..... Andrew McPhail 6921, Jeff Griffiths 4115, Dean Payne 4802

Date of Practical Completion 22/04/2010

For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

* The original issue or last amendment of this drawing contained the original signature.

FILE: B07018-300.dwg DATE: 30-07-2010 TIME: 14:27
Xref's: X_B07018-TITLE X_B07018-BASE USR: nathan taylor

PRINT BLOCK	CHECK	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	23.01.08	GULLY PIT ADDED
C	MJH	MJH	25.08.09	RWD / SWD LAYOUT AMENDED - NO CHANGE TO WATER
D				
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES) 1:500 10 5 0 10 20 A1, 1:1000 A3
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE* ANDREW McPHAIL RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Cairns Melbourne Sydney Singapore Sunshine Coast Brunei

DRAWING TITLE: WATER RETICULATION LAYOUT PLAN
DRAWING NUMBER: B07018-300
ISSUE: B

WATER RETICULATION NOTATIONS

1. WATER SERVICE CONNECTIONS TO EXISTING WATERMAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH RSC Std. Dwg. No. W-RSC-3 Rev C.

2. WATER SERVICE CONNECTIONS TO NEW WATERMAINS SHALL INCORPORATE THE USE OF 'READY TAP FITTINGS', REFER TO RSC Std. Dwg. No. W-RSC-4 Rev A.

3. THRUST BLOCKS SHALL BE PROVIDED TO ALL BENDS (HORIZONTAL AND VERTICAL); TEES; REDUCERS; DEAD ENDS; VALVES; etc REFER IMEAQ Std. No. W-0041 Rev A.

4. ALL WATERMAINS SHALL BE BEDDED AND BACKFILLED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. W-0040 REV A.

5. BLUE RRPM's SHALL BE PLACED, ALONG THE ROADWAY CENTRELINE, OPPOSITE ALL HYDRANTS.

6. YELLOW RRPM's SHALL BE PLACED, ALONG THE ROADWAY CENTRELINE, OPPOSITE ALL VALVES.

7. ALL FIRE HYDRANTS SHALL BE LOCATED OPPOSITE COMMON PROPERTY BOUNDARIES, UNLESS SPECIFICALLY NOTED OTHERWISE.

8. ALL SLUICE VALVES SHALL BE LOCATED OPPOSITE THE FIRST TRUNCATION OF THE LOT THEY FRONT, UNLESS SPECIFICALLY NOTED OTHERWISE.

9. ALL WATERMAINS SHALL BE LOCATED WHOLLY WITHIN THE DESIGNATED WATERMAIN CORRIDOR. COUNCIL RESERVES THE RIGHT TO REQUEST THE CONTRACTOR TO RECONSTRUCT THOSE PORTIONS OF THE WATERMAIN, WHICH ARE CONSTRUCTED OUTSIDE OF THE DESIGNATED CORRIDOR(S).

10. HYDRANTS AND VALVES, INCLUDING MARKER POSTS COMPLETE, SHALL BE INSTALLED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. W-0060 Rev A AND W-0061 Rev A.

11. THE CONTRACTOR SHALL ENSURE THAT A WATERSERVICE, INCLUDING THE PROVISION OF AN ABOVE GROUND METER, IS PROVIDED TO EACH ALLOTMENT.

12. WATERMAINS TO BE LOCATED ON AN ALIGNMENT OF 1.5 METRES OFF THE PROPERTY BOUNDARY UNLESS NOTED OTHERWISE.

13. ALL LIVE CONNECTION WORKS SHALL BE COMPLETED BY COUNCIL AT THE DEVELOPERS EXPENSE.

PIPES, FITTINGS & VALVES

1. ALL C.I. FITTINGS SHALL BE TO A.S. 2544 WITH SOCKET ENDS DESIGNED FOR USE WITH P.V.C. OR DUCTILE IRON PIPES AS APPLICABLE AND SHALL BE 'LIGHT' CEMENT LINED.

2. PRESSURE PIPES USED FOR WATER SUPPLY INSTALLATIONS SHALL BE RUBBER RING JOINTED PIPES AND SHALL BE EITHER uPVC CLASS 16 (HARDIE IPLEX 'BLUE BRUTE' OR SIMILAR APPROVED) OR DUCTILE IRON CEMENT LINED CLASS K9 PIPES TO A.S. 2280.

3. PIPES MUST BE AC/DUCTILE IRON OD COMPATIBLE. OTHER TYPES AND CLASSES OF PIPE SHALL NOT BE INSTALLED.

4. CAST IRON GATE (SLUICE) VALVES ARE TO CONFORM TO A.S. 2638.

5. ALL VALVES AND HYDRANTS SHALL BE COATED INTERNALLY AND EXTERNALLY WITH A FUSION BONDED EPOXY.

6. ALL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL GRADE 316.

7. VALVES AND FITTINGS SHALL BE LOCATED ON FOOTPATH.

8. BENDS SHALL BE USED WHERE ANGLES EXCEED THE MANUFACTURER'S RECOMMENDED MINIMUM RADIUS FOR LAYING PIPES ON CURVES.

9. THE SERVICES INTO EACH OF THE PROPOSED ALLOTMENTS SHALL BE ON AN 0.5m ALIGNMENT, 0.2m INTO THE ALLOTMENT, AND AT LEAST 0.45m METRES BELOW THE FINISHED SURFACE LEVEL.

10. THE CONTRACTOR SHALL INSTALL WATER METERS TO EACH WATER SERVICE PROVIDED IN THE DEVELOPMENT. THE WATER METERS SHALL BE SUPPLIED BY COUNCIL TO THE CONTRACTOR AT APPROVED RATES, AND THE WATER SERVICE, INCLUDING METERS, SHALL BE INSTALLED IN ACCORDANCE WITH THE RELEVANT COUNCIL STANDARDS.

11. THE MINIMUM DISTANCE BETWEEN TWO ADJACENT READYTAP CONNECTORS SHOULD BE 600mm.

SERVICE CONDUITS

1. SERVICE CONDUITS 100Ø TO BE INSTALLED UNDER THE ROADWORKS CONTRACT SHALL BE LOCATED AT 0.8m DOWNHILL FROM THE LINE DIVIDING ALLOTMENTS SO AS NOT TO CONFLICT WITH ELECTRICAL AUTHORITY POLES AND SHALL BE INSTALLED TO DETAILS SHOWN ON R.S.C. STD. DWG. R-RSC-13.

2. WHERE THE UNDERGROUND POWER IS BEING INSTALLED CONDUITS MAY, IN CERTAIN CASES, BE PLACED 1.0m UPHILL FROM THE LINE DIVIDING ALLOTMENTS SO AS NOT TO CONFLICT WITH POWER SUPPLY CONDUITS. IN THESE INSTANCES, CHANGES OF CONDUIT LOCATIONS WILL BE SHOWN ON THE DRAWINGS.

3. SERVICE CONDUIT MARKERS MUST BE LOCATED DIRECTLY ABOVE CONDUITS.

4. SERVICE CONDUIT SHOULD BE EXTENDED 300mm PAST THE FOOTPATH.

NOTE

SHOULD THESE MAINS BE INSTALLED BY OTHERS, THEN COUNCIL (ONLY) SHALL MAKE ANY CONNECTIONS TO EXISTING MAINS THAT ARE REQUIRED AND ALL COSTS INCURRED BY COUNCIL SHALL BE CHARGED DIRECTLY TO THE SUBDIVIDER. SIMILARLY SHOULD EXISTING MAINS NEED LOWERING, HYDRANTS OR VALVES RAISED OR RELOCATED, THEN THIS WORK SHALL BE CARRIED OUT ONLY BY COUNCIL AT THE DEVELOPERS EXPENSE.

NOTE:

ALL WATER AND SEWER CONSTRUCTION WORK UNDERTAKEN BY THE CONTRACTOR IS TO COMPLY WITH THE REQUIREMENTS OF THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT 1995. CONTACT YOUR NEAREST OFFICE OF THE DIVISION OF ACCIDENT PREVENTION FOR INFORMATION.
Phone NORTH (07) 3247 9478. SOUTH (07) 3896 3368

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

* The original issue or last amendment of this drawing contained the original signature.

FILE B07018-301.dwg DATE 30-07-2010 TIME 14.27
Xref's: X_B07018-TITLE USR: mathea taylor

ISSUE	CALCD	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B				
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:500 1:1000 10 5 0 10 20 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Brunei
BROWN

DRAWING TITLE: WATER RETICULATION NOTES

DRAWING NUMBER: B07018-301

ISSUE

NOTE:
REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR BASIN VEGETATION DETAILS

BASIN DETAILS:
BASE SURFACE LEVEL - RL 10.20
BASE SURFACE AREA - 150m² MIN.
TOP OF BATTER LEVEL - RL 11.00 MIN.
PONDING VOLUME - 110m³ MIN.
PONDING DEPTH - 0.60m
SPILLWAY RL - 10.80
SPILLWAY WIDTH - 3.0m

SETOUT

POINT	EASTING	NORTHING
1	348.374	673.313
2	354.019	678.983
3	353.278	679.720
4	350.446	681.128
5	347.615	682.536
6	344.761	685.377
7	342.069	690.227
8	336.449	688.240
9	338.242	684.568
10	341.139	680.516

LEGEND

- PROPOSED STORMWATER DRAINAGE
- EXISTING SURFACE CONTOUR
- STD RCC CONCRETE FOOTPATH - 2.5m WIDE REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR ALIGNMENT DETAILS
- SEWER LINE
- WATER LINE
- TELSTRA LINE
- ENERGEX LINE
- ROCK PROTECTION
- CLEAN OUT IO

N

600Ø
IL 10.20
OUT/A
PROVIDE 5m² DUMPED ROCK PROTECTION TO OUTLET. EXTENDED AS DIRECTED
MIN. TOP OF EMBANKMENT RL 11.00. PROVIDE 0.50m WIDE BUND WHERE NECESSARY
CLEAN OUT IO WITH CONCRETE SURROUNDING
1 in 4 MAX
R3.0
R10.0
1 in 8
FILTER AREA MIN. 20m²
R15.0
R5.0
R5.0
1 in 4 MAX
FALL 1%
1 in 4 MAX
FALL 1%
R4.0
FILTER MIDEA SUBSOIL DRAINAGE PIPE
G11/H. 900x900mm PIT WITH LETTER BOX GRATE (IPWEAQ TYPE 1). TOP OF PIT RL 10.50 IL 9.98
IL 9.98
2 X 375Ø
3.0m WIDE SWALE - 1 IN 6 SIDES TO LANDSCAPE ARCHITECTS DETAILS
RELIEF SPILLWAY REFER TO DETAIL
RL 10.80
PROVIDE 5m² GROUTED STONE PITCHING ROCK PROTECTION TO OUTLET AS DIRECTED
OUT/H
IL 9.90
MIN 0.5% FALL
11.0
EXISTING WATER
EXISTING SEWER LINE
11.5
SAFETY HANDRAIL ABOVE ENDWALL
- STAGE 6 BIO RETENTION BASIN -

1 IN 4 MAX BATTERS
RL 11.0 MIN.
SLOPE 1 IN 3 MAX
WL 10.80
1% FALL
IL 10.20
IL 9.55
SMALL ROCK WALL 0.50m HIGH MAX (TYPICAL)
N.S

SECTION A
SCALE 1:100 (A1)

0.5m
WIDTH 3.0m
0.5m
1 IN 6
SPILLWAY RL 10.80
1 IN 6
TOP OF BANK RL AS SPECIFIED
0.40m
200W x 300H CONCRETE (N32) WEIR. SL 81 MESH CENTRAL

RELIEF SPILLWAY
SCALE 1:100 (A1)

1.0m
0.40m
0.15m
0.10m
FILTER MEDIA (COARSE SAND 0.70mm)
BIDUM A12 OR EQUIVALENT
TRANSITION LAYER (COARSE SAND 2mm)
GRAVEL DRAINAGE LAYER (5mm AGGREGATE NO FINES)
100Ø SLOTTED PIPE DRAIN

TYPICAL FILTER MEDIA SECTION
SCALE 1:10 (A1)

NOTE:
BIO FILTRATION BASIN FILTER MEDIA IS TO BE INSTALLED AFTER JOB COMPLETION OF THE WORKS TO THE SUPERINTENDENT'S DIRECTIONS.

G	AN	TL	16.11.09	G11/H PIT RELOCATED
H	AN	KD	29.07.10	AS CONSTRUCTED

FILE: B07018-400.dwg DATE: 30-07-2010 TIME: 14:26
Xref's: X_B07018-TITLE X_B07018-BASE USR: melissa taylor

PART	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	M.H	M.H	12.12.07	
B	M.H	M.H	25.06.08	GENERAL AMENDMENTS
C	M.H	M.H	23.01.09	BASIN DETAILS AMENDED
D	M.H	TL	15.07.09	BASIN DISCHARGE AMENDED
E	AN	TL	05.08.09	MINOR AMENDMENTS
F	M.H	M.H	28.08.09	BASIN LEVEL RAISED - NOTES, SECTIONS AND DETAILS AMENDED
	M.H	TL	02.09.09	NOTES AMENDED

AMENDMENTS

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:100 1 0 1 2 3 4 5 A1
1:200 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED D PAYNE*
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT
AMEX SUBDIVISIONS PTY LTD

PROJECT
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STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Bangalore Sunshine Coast Shorne

DRAWING TITLE
BIO RETENTION BASIN
LAYOUT PLAN AND DETAILS

DRAWING NUMBER B07018-400
ISSUE H

* The original issue or last amendment of this drawing contained the original signature.

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion 22/04/2010
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

Redland City Council
ABN 86 058 929 428

Cnr Bloomfield & Middle Sts.
Cleveland Qld 4163

PO Box 21,
Cleveland Qld 4163

Telephone 07 3829 8999
Facsimile 07 3829 8765

Email rcc@redland.qld.gov.au
www.redland.qld.gov.au

17 February 2010

Your Ref: B07018
Our Ref: NQ
File No: EC004782.7
Contact: Land Development Unit

Brown Consulting (Qld) Pty Ltd
Po Box 10349
BRISBANE ADELAIDE STREET QLD 4000

AMENDED Approved Plans

Dear Sir/ Madam

Description:	**Operational Works – 18 Lots**
Application Reference No:	***EC004782.7***
Legal Description:	**Lot 101 SP 167774**
Address:	**41 Donald Road Redland Bay QLD 4165**

The following plans are to supersede the Civil Engineering Works Approved Plans as referred to in the Decision Notice for Operational Works dated 05/09/2008.

Brown Consulting Drawing No's B070718-100B, /101E, /102D, /103A, /104C, /105, /106, /107A, /108D, /109C, /110F, /111F, /112D, /113C, /114, /115, /116A, /117A, /200C, /201C, /300B, /301, /400F

Should you have any queries regarding this matter please do not hesitate to contact the Council's Land Development Unit on phone 07 3829 8784.

Yours faithfully

FOR Richard Braithwaite
Senior Engineering Officer
Land Development

(As discussed with [redacted] confirmed only 1 hr required to Browns. Appvd sets only on file & hanging) J.

"VALENCIA SPRINGS ESTATE"
REDLAND BAY
STAGE 7
FOR AMEX SUBDIVISIONS PTY. LTD.

Redland City Council
Operational Works Approval
17 FEB 2010
Refer Development Permit for Conditions of Approval
Signature

DRAWING INDEX

ROADWORKS AND DRAINAGE

B07018-100 DRAWING INDEX AND LOCALITY PLAN
B07018-101 ROADWORKS AND DRAINAGE LAYOUT PLAN
B07018-102 EROSION AND SEDIMENT CONTROL PLAN
B07018-103 EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
B07018-104 BULK EARTHWORKS LAYOUT PLAN
B07018-105 ROAD 13 LONGITUDINAL SECTION
B07018-106 ROAD 13 CROSS SECTIONS
B07018-107 ROAD 14 LONGITUDINAL SECTION AND CROSS SECTIONS
B07018-108 INTERSECTION DETAILS SHEET
B07018-109 STORMWATER DRAINAGE CATCHMENT PLAN
B07018-110 STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 1 OF 2
B07018-111 STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 2 OF 2
B07018-112 STORMWATER DRAINAGE CALCULATIONS TABLE
B07018-113 ROOFWATER DRAINAGE LONGITUDINAL SECTIONS
B07018-114 SURVEY SETOUT AND LAYOUT PLAN
B07018-115 SIGNS AND LINEMARKING LAYOUT PLAN
B07018-116 DONALD ROAD PATHWAY EARTHWORKS LAYOUT PLAN
B07018-117 DONALD ROAD PATHWAY CROSS SECTIONS

SEWERAGE RETICULATION

B07018-200 SEWERAGE RETICULATION LAYOUT PLAN
B07018-201 SEWERAGE RETICULATION LONGITUDINAL SECTIONS

WATER RETICULTATION

B07018-300 WATER RETICULATION LAYOUT PLAN
B07018-301 WATER RETICULATION NOTES

STORMWATER QUALITY MANAGEMENT

B07018-400 BIO RETENTION BASIN LAYOUT PLAN AND DETAILS

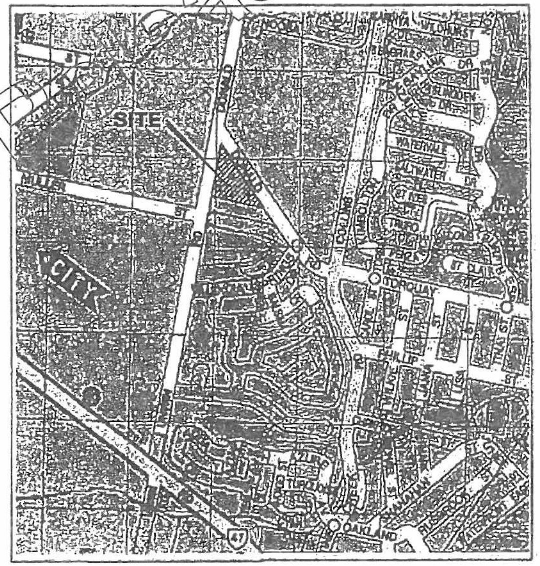
NO. OF LOTS = 18
AREA OF SITE = 1.82 Ha

RP DESCRIPTION
PART OF LOT 2 ON RP 850031
PARISH OF REDLAND
COUNTY OF STANLEY

DATUM LEVEL
P.S.M. 154627
RL 16.88 AHD
CORNER OF BALSAM STREET
AND EBONY CRESCENT

CONSTRUCTION HOLD POINT
PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY LEVELS OF ALL EXISTING CROSSINGS AND CONNECTION POINTS.

CONSTRUCTION HOLD POINT
ONCE THE BASE OF MANHOLES, INSPECTION PITS, GULLIES AND FIELD INLETS FOR STORMWATER DRAINAGE AND SEWER RETICULATION HAVE BEEN POURED, FURTHER CONSTRUCTION SHALL NOT PROCEED UNTIL THE SUPERINTENDENT AND OR ENGINEER HAVE INSPECTED THE WORKS FOR FINISHED LEVELS AND APPROVED CONSTRUCTION TO CONTINUE.



LOCALITY PLAN
NTS
UBD. MAP 246. REF. H.7.

Redland City Council
Operational Works Approval
14 SEP 2010
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WORKS AS CONSTRUCTED
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Signature .... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4302

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

ISSUE	AMENDED	CHECKED	DATE	AMENDMENT DETAILS
	RJH	RJH	13.12.07	
A	HJH	RJK	25.06.08	SIGNS AND LINEMARKING PLAN ADDED
B	HJH	HJK	25.11.09	DWG 16 & 17 ADDED
C				
D				
E				
F				

DESIGN CHECK / DRAWN CHECK — SCALE (METRES)

PROJECT No. B07018

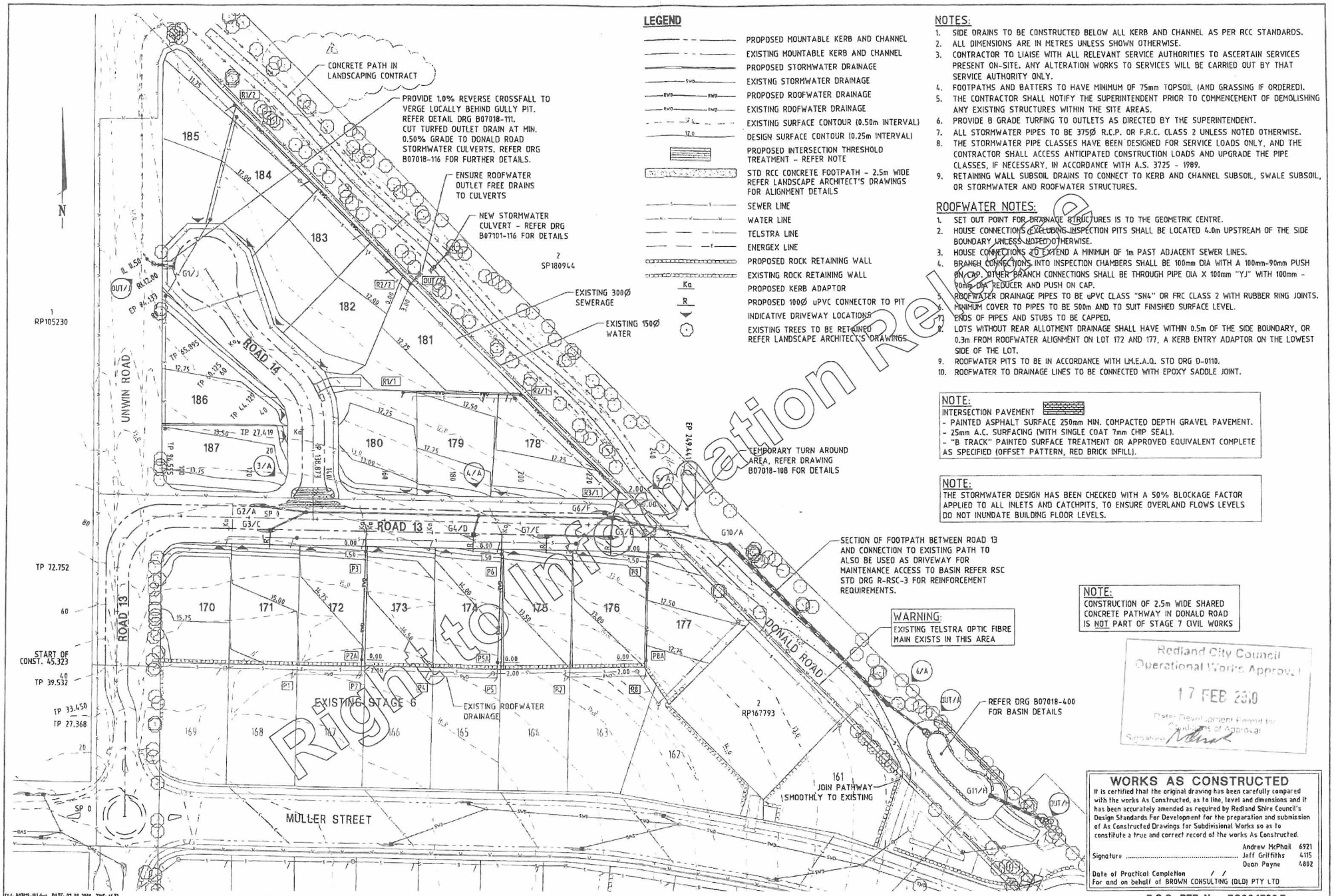
SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED — Andrew McPhail RPEQ 6921, Jeff Griffiths RPEQ 4115, Dean Payne RPEQ 4302
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
BROWN

DRAWING TITLE: DRAWING INDEX AND LOCALITY PLAN
DRAWING NUMBER: B07018-100 ISSUE: B



NOTES:

1. SIDE DRAINS TO BE CONSTRUCTED BELOW ALL KERB AND CHANNEL AS PER RCC STANDARDS.
2. ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE.
3. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE. ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY.
4. FOOTPATHS AND BATTERS TO HAVE MINIMUM OF 75mm TOPSOIL (AND GRASSING IF ORDERED).
5. THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
6. PROVIDE B GRADE TURFING TO OUTLETS AS DIRECTED BY THE SUPERINTENDENT.
7. ALL STORMWATER PIPES TO BE 375Ø R.C.P. OR F.R.C. CLASS 2 UNLESS NOTED OTHERWISE.
8. THE STORMWATER PIPE CLASSES HAVE BEEN DESIGNED FOR SERVICE LOADS ONLY, AND THE CONTRACTOR SHALL ACCESS ANTICIPATED CONSTRUCTION LOADS AND UPGRADE THE PIPE CLASSES, IF NECESSARY, IN ACCORDANCE WITH A.S. 3725 - 1989.
9. RETAINING WALL SUBSOIL DRAINS TO CONNECT TO KERB AND CHANNEL SUBSOIL, SWALE SUBSOIL, OR STORMWATER AND ROOFWATER STRUCTURES.

ROOFWATER NOTES:

1. SET OUT POINT FOR DRAINAGE STRUCTURES IS TO THE GEOMETRIC CENTRE.
2. HOUSE CONNECTIONS (EXCLUDING INSPECTION PITS SHALL BE LOCATED 4.0m UPSTREAM OF THE SIDE BOUNDARY UNLESS NOTED OTHERWISE.
3. HOUSE CONNECTIONS TO EXTEND A MINIMUM OF 1m PAST ADJACENT SEWER LINES.
4. BRANCH CONNECTIONS INTO INSPECTION CHAMBERS SHALL BE 100mm DIA WITH A 100mm-90mm PUSH ON CAP. OTHER BRANCH CONNECTIONS SHALL BE THROUGH PIPE DIA X 100mm "YJ" WITH 100mm - 90mm DIA REDUCER AND PUSH ON CAP.
5. ROOFWATER DRAINAGE PIPES TO BE uPVC CLASS "SN4" OR FRC CLASS 2 WITH RUBBER RING JOINTS.
6. MINIMUM COVER TO PIPES TO BE 500m AND TO SUIT FINISHED SURFACE LEVEL.
7. ENDS OF PIPES AND STUBS TO BE CAPPED.
8. LOTS WITHOUT REAR ALLOTMENT DRAINAGE SHALL HAVE WITHIN 0.5m OF THE SIDE BOUNDARY, OR 0.3m FROM ROOFWATER ALIGNMENT ON LOT 172 AND 177, A KERB ENTRY ADAPTOR ON THE LOWEST SIDE OF THE LOT.
9. ROOFWATER PITS TO BE IN ACCORDANCE WITH LM.E.A.Q. STD DRG D-0110.
10. ROOFWATER TO DRAINAGE LINES TO BE CONNECTED WITH EPOXY SADDLE JOINT.

NOTE:
INTERSECTION PAVEMENT
- PAINTED ASPHALT SURFACE 250mm MIN. COMPACTED DEPTH GRAVEL PAVEMENT.
- 25mm A.C. SURFACING (WITH SINGLE COAT 7mm CHIP SEAL).
- "B TRACK" PAINTED SURFACE TREATMENT OR APPROVED EQUIVALENT COMPLETE AS SPECIFIED (OFFSET PATTERN, RED BRICK INFILL).

NOTE:
THE STORMWATER DESIGN HAS BEEN CHECKED WITH A 50% BLOCKAGE FACTOR APPLIED TO ALL INLETS AND CATCHPITS, TO ENSURE OVERLAND FLOWS LEVELS DO NOT INUNDATE BUILDING FLOOR LEVELS.

NOTE:
CONSTRUCTION OF 2.5m WIDE SHARED CONCRETE PATHWAY IN DONALD ROAD IS NOT PART OF STAGE 7 CIVIL WORKS

Redland City Council
Operational Works Approval
17 FEB 2010
Date Development Permit for Operational Works of Approval
Signature

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Andrew McPhail 6921
Signature ..... Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-101.dwg DATE: 02-09-2009 TIME: 14:33
Xrefs: X_B07018-TITLE X_B07018-BASE USR: Mark Hastings

FIRST ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	M.H	M.H	12.12.07	
B	M.H	M.H	25.04.08	ROAD 13 CURVE WIDENING AMENDED / REAR RAMPS ADDED
C	M.H	M.H	23.04.09	GULLY PIT G7/E AND KWD PITS ADDED AND NOTE AMENDED
D	M.H	M.H	15.06.09	SWD LINE A AMENDED
E	M.H	M.H	25.08.09	SWD / KWD AMENDED
F	M.H	TL	02.09.09	CONCRETE PATH NOTE ADDED / ROCK PITCHING ADDED

DESIGN CHECK
DRAWN CHECK
SCALE 1 METRE(S) 1:500 1:1000 10 5 0 10 20 A1 A3
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED ANDREW McPHAIL RPEQ 6921 JEFF GRIFFITHS RPEQ 4115 DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol
BROWN

DRAWING TITLE: ROADWORKS AND DRAWING LAYOUT PLAN
DRAWING NUMBER: B07018-101
ISSUE: E

LEGEND

- SEDIMENT FENCE (OR AS DIRECTED BY SITE ENGINEER)
- KERB INLET PROTECTION (SAG GULLIES)
- KERB INLET PROTECTION (GULLIES ON GRADE)
- FIELD INLET PROTECTION
- EARTHWORKS AREAS TO BE TOP SOILED AND GRASS SEEDED
- TEMPORARY ENTRY/EXIT DEVICE - REFER DETAIL
- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS

NOTES:

1. REFER DRG B07018-103 FOR NOTES AND DETAILS.
2. PROVIDE 'GRADE B' TURFING WITH RETURNS TO:
   - FULL VERGE BETWEEN KERB AND LOT BOUNDARY.
   - 2 STRIPS BEHIND DRIVEWAYS AND PATHWAYS
   - AND TO TOTAL WIDTH OF SWALES.

REFER DRG B07018-103 FOR TYPICAL DETAIL.

⊛ PROVIDE 'SPILL THROUGH WEIR' IN SEDIMENT FENCE 'SPILL THROUGH WEIR' TO BE GENERALLY IN ACCORDANCE WITH SILT FENCE DETAIL WITH GEOTEXTILE FABRIC TO BE WRAPPED AROUND STAR PICKET PLACED HORIZONTAL APPROX 400mm ABOVE FINISHED SURFACE

NOTED BY RCC 17/2/10

WORKS AS CONSTRUCTED

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Andrew McPhail 6921
Signature ..... Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

F:\J_B07018-102.dwg DATE: 02-09-2009 TYPE: 1636
Xref's: X_B07018-TITLE X_B07018-BASE (ISR Mark Hastings

PRINT RANGE	CHECK	DRAWN	DATE	AMENDMENT DETAILS
	MJH	MJH	12.12.07	
A	MJH	MJH	25.06.09	TURFING NOTE AMENDED
B	MJH	MJH	23.07.09	RP ADDED TO NEW GALLY
C	MJH	MJH	25.08.09	DWG / SWD AMENDED
D	MJH	TL	02.09.09	STONE PITCHING NOTE AMENDED
E				
F				

DESIGN CHECK
DRAWING CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED Dean Payne
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

BROWN

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3221 5555 Facsimile 07 3221 5500

DRAWING TITLE: EROSION AND SEDIMENT CONTROL LAYOUT PLAN

DRAWING NUMBER: B07018-102 ISSUE: D

EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO CONTROL & MINIMISE EROSION AND DOWNSTREAM SEDIMENTATION DURING ALL STAGES OF CONSTRUCTION INCLUDING THE MAINTENANCE PERIOD.
2. ALL PERIMETER BANK/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
3. IT ALL TIMES THE CONTRACTOR SHALL MONITOR THE PREVAILING WEATHER CONDITIONS AND PROTECT ANY DOWNSTREAM CONSTRUCTION AND GULLY INLETS.
4. INLETS SHALL HAVE SILT PROTECTION IN ACCORDANCE WITH KERB INLET PROTECTION DETAIL AT LOCATIONS SHOWN OR AS DIRECTED BY THE SUPERINTENDENT.
5. THE EXTENT OF GRASSING SHALL BE DETERMINED BY THE SUPERINTENDENT AND SHALL BE SEEDED, AS SPECIFIED, WITHIN SEVEN DAYS OF FINAL TRIMMING.
6. CONSTRUCT WASH DOWN BAY OR SHAKE DOWN AT ENTRY/EXIT TO COUNCIL STANDARDS AND TO THE SATISFACTION OF COUNCIL'S LICENSING AND COMPLIANCE OFFICER.
7. CLEARING OF SITE AND STOCKPILE SITE TO BE DETERMINED ON SITE BY SUPERINTENDENT AND IS TO BE CLEAR OF ANY WATER COURSE.
8. WHERE POSSIBLE PROVIDE CUT-OFF DRAINS TO DIVERT CLEAN WATER FROM UNDISTURBED CATCHMENT.
9. PROVIDE 2 TURF STRIPS OVER SEWER/ROOFWATER LINES WHERE ADJACENT TO EXISTING PROPERTIES.
10. ALL SEDIMENT FENCES TO BE INSTALLED TO THE SATISFACTION OF COUNCIL'S LICENSING AND COMPLIANCE OFFICER.
11. ALL OPEN ENDED PIPEWORK LOCATED IN OPEN TRENCHES AND INCOMPLETE PITS ARE TO BE CAPPED WITH SUITABLE FILTER CLOTH AT THE END OF EACH DAYS' WORK AND IMMEDIATELY PRIOR TO STORMS.
12. ALL MATERIALS TRACKED OR SEDIMENT WASHED ONTO COUNCIL'S ROAD FROM THE DEVELOPMENT ARE TO BROOMED UP AND COLLECTED.
13. ALL TEMPORARY EROSION AND SEDIMENT CONTROL (ESC) MEASURES ARE TO BE MAINTAINED AND FULLY OPERATIONAL DURING THE MAINTENANCE PERIOD, AND ARE TO BE REMOVED AFTER THE SATISFACTORY COMPLETION OF AN "OFF MAINTENANCE" INSPECTION AND PRIOR TO FORMAL ACCEPTANCE BY COUNCIL.
14. NO OBSTRUCTIONS SHALL BE PLACED ON COUNCIL'S PUBLIC ROADS OR GULLY PITS FOR SAFETY REASONS
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH COUNCIL'S REQUIREMENTS IN RELATION TO GRASS STRIKE AND GRASS COVERAGE RATES AT THE ON AND OFF MAINTENANCE INSPECTIONS
16. NOTWITHSTANDING THE DESIGN SHOWN ON THE DRAWINGS THE CONTRACTOR IS RESPONSIBLE TO IMPLEMENT SEDIMENT CONTROL DEVICES USING BEST PRACTICES AS NECESSARY TO MINIMISE THE QUANTITY OF SEDIMENT LEAVING THE SITE.
17. SOME VARIATIONS TO THE SPECIFIED CONSTRUCTION SEQUENCE MAY BE NECESSARY IN CERTAIN AREAS TO FACILITATE CONSTRUCTION. WHERE THIS IS THE CASE, ANY VARIATION MUST BE APPROVED BY THE SUPERINTENDENT PRIOR TO IMPLEMENTATION.

SEDIMENT MANAGEMENT PROGRAM:

1. CLEARING
- SEDIMENT FENCES TO BE CONSTRUCTED AS INDICATED OR REQUIRED.
- EXISTING GRASSED AREAS TO REMAIN WHERE POSSIBLE.
- SHAKE DOWN/WASH DOWN BAY AT ENTRY/EXIT POINT AS REQUIRED BY SUPERINTENDENT.
- REFER ALSO TO VEGETATION MANAGEMENT PLAN
- SUPERINTENDENT TO CONFIRM EXTENT OF CLEARING TO CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS

2. EARTHWORKS
- SEDIMENT FENCES AND DIVERSION DRAINS TO BE CONSTRUCTED AS INDICATED OR REQUIRED.

3. SEWER/ROOFWATER/STORMWATER/ SERVICES
- EXCAVATED MATERIAL TO BE PLACED ON HIGH SIDE OF TRENCH AND TO PROTECT PIPE WORK AND DIRECT SURFACE RUNOFF AWAY FROM EXCAVATIONS.
- TOPSOIL AND GRASS SEED AREAS IN ALLOTMENTS IMMEDIATELY AFTER COMPLETING THE SEWER AND ROOFWATER DRAINAGE CONSTRUCTION AND TURF OVER TRENCHES WHERE ADJACENT TO EXISTING PROPERTIES.

4. STOCKPILE
- SEDIMENT FENCE TO BE ERECTED 5m FROM TOE OF BATTER ON LOW SIDE OF STOCKPILE.
- CUT OFF DRAIN ON HIGH SIDE TO DIRECT SURFACE RUNOFF AROUND STOCKPILE.

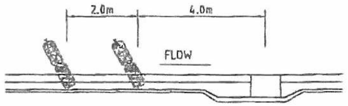
5. ROADWORKS
- SEDIMENT FENCES TO ALLOTMENTS TO BE ERECTED.
- KERB INLET PROTECTION TO BE PROVIDED TO ALL GULLIES UNLESS NOTED OTHERWISE.
- TURF FILTER STRIPS BEHIND KERB AND CHANNEL.

6. ALLOTMENTS
- MULCH, TOPSOIL AND SEED ALLOTMENTS AS DIRECTED.
- SEDIMENT FENCES TO ALLOTMENTS TO BE ERECTED.
- COVERS TO GULLY GRATES TO BE REMOVED IF THE SUPERINTENDENT INDICATES THE GRASS STRIKE IS SUFFICIENT.

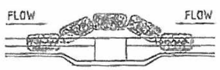
7. MAINTENANCE PERIOD
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED:
  - AT LEAST DAILY (WHEN WORK IS OCCURRING ON SITE) OR WEEKLY (WHEN WORK IS NOT OCCURRING ON SITE)
  - WITHIN 24 HOURS OF EXPECTED RAIN; AND
  - WITHIN 18 HOURS OF A RAINFALL EVENT
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED THE SAME DAY WHEN THE CAPACITY OF THE EROSION AND SEDIMENT CONTROL MEASURE FALLS BELOW 75%.
- ANY REPAIRS TO EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE EFFECTED IMMEDIATELY. SEDIMENT AFTER RAIN IS TO BE CLEANED FROM STREETS AND ALLOTMENTS IMMEDIATELY AND CORRECTIVE ACTION TAKEN TO AVOID A RE-OCCURRENCE OF THE FAILURE.

CONSTRUCTION SEQUENCE:

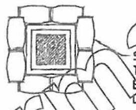
A. CONSTRUCT ENTRY AND EXIT POINTS TOGETHER WITH SHAKE DOWN DEVICE.
B. ERECT SEDIMENT FENCES ALONG DOWNSTREAM ADJACENT PROPERTY BOUNDARIES AS DIRECTED.
C. CLEARING, GRUBBING AND STRIPPING OF THE SITES EARTHWORKS AREAS.
D. UNDERTAKE EARTHWORKS OPERATIONS. CONSTRUCT BIO RETENTION BASIN, EXCLUDING FILTER MATERIAL.
E. CONSTRUCT ALL UNDERGROUND HYDRAULIC SERVICES ENSURING STORMWATER DRAINS REMAIN CAPPED DURING CONSTRUCTION.
F. PLACE SEDIMENT FENCES AT BOUNDARIES ADJACENT TO ROADWAYS WHERE LOT SLOPES TOWARDS ROAD.
G. TOPSOIL AND SEED ALL LOTS FOLLOWING PROGRESSIVE COMPLETION OF KERB AND CHANNEL.
H. ON COMPLETION OF WORKS AND 70% GRASS COVER AND APPROVAL BY COUNCIL, SEDIMENT CONTROL DEVICES TO BE REMOVED.
I. COMPLETE BIO RENTENTION BASIN FILTER MEDIA TO THE SUPERINTENDENTS DIRECTIONS.



GULLIES ON GRADE
NTS

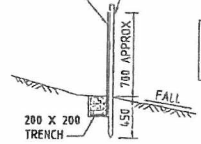


SAG GULLIES
NTS



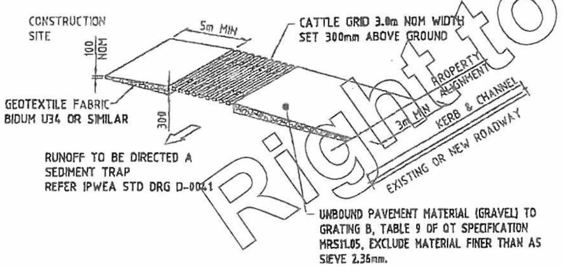
FIELD INLET
NTS

SANDBAGS AT GULLIES
TO BE PROVIDED AT ALL GULLIES

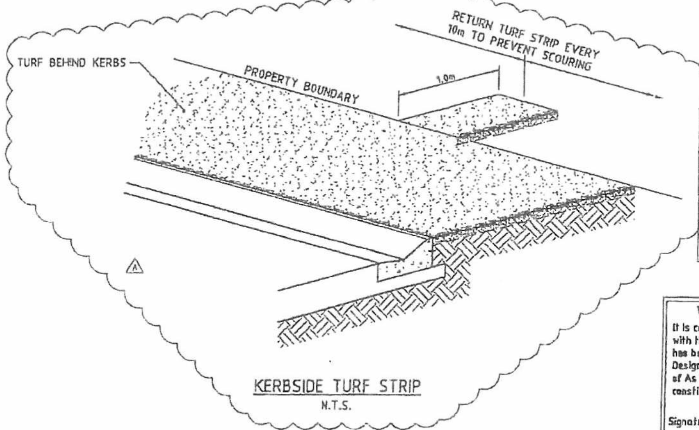


SEDIMENT FENCE DETAIL
N.T.S.

NOTED BY RCC
17/2/10



TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP
NTS



KERBSIDE TURF STRIP
N.T.S.

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature ....

WORKS AS CONSTRUCTED
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Signature .... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: BO7018-103.dwg DATE: 25-06-2008 TIME: 13:19
Xref's: X_BO7018-TITLE (ISP) mark hastings

PRINT ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	MJH	MJH	12.12.07	
A	MJH	MJH	25.06.09	TURF DETAIL AMENDED
B				
C				
D				
E				
F				

DESIGN CHECK / DRAWN CHECK · SCALE : METRES : · PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED: ANDREW McPHAIL RPEQ 6921 / JEFF GRIFFITHS RPEQ 4115 / DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

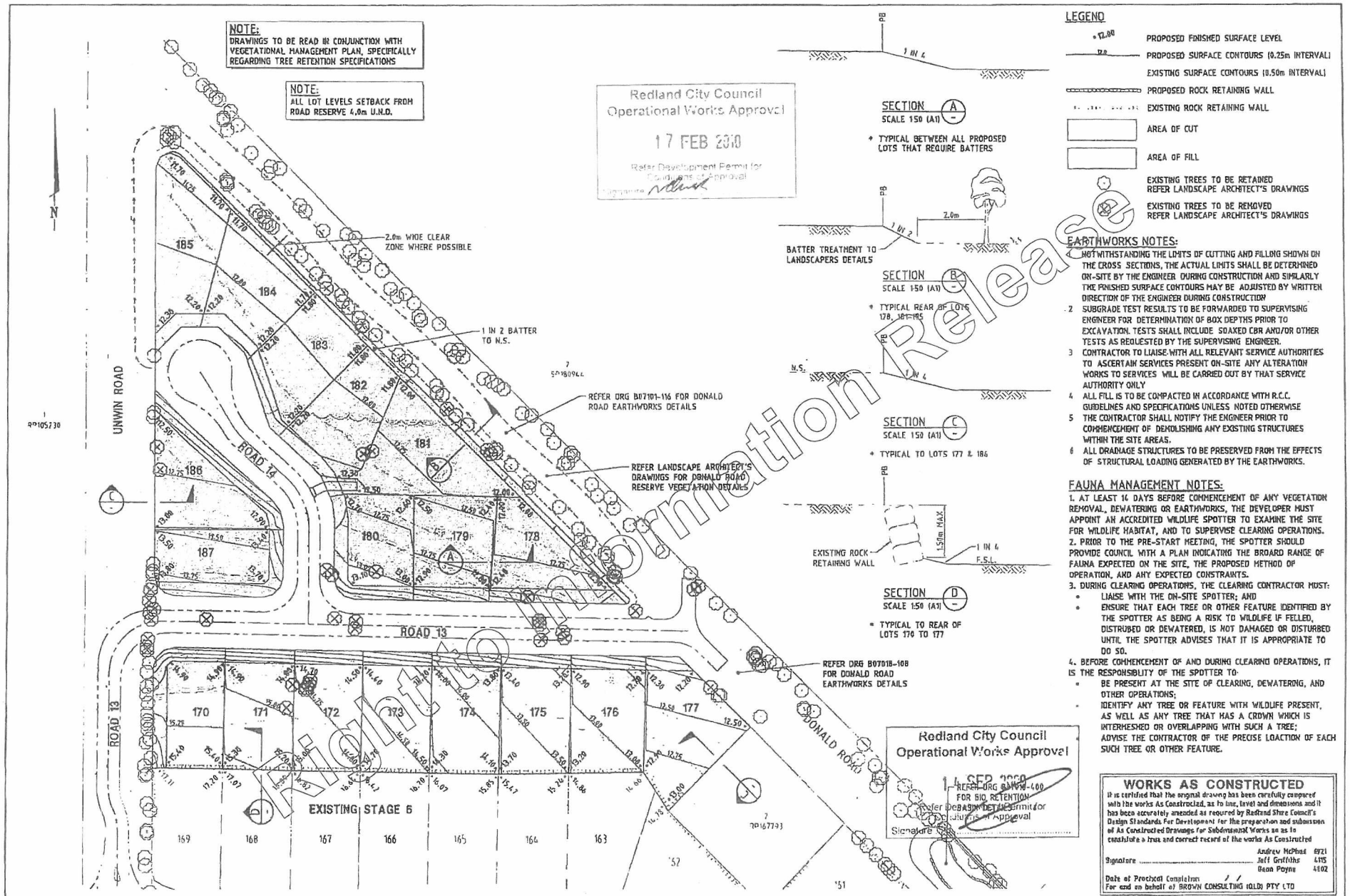
PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

BROWN

DRAWING TITLE: EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

DRAWING NUMBER: B07018-103 · ISSUE: A



LEGEND

- PROPOSED FINISHED SURFACE LEVEL
- PROPOSED SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING SURFACE CONTOURS (0.50m INTERVAL)
- PROPOSED ROCK RETAINING WALL
- EXISTING ROCK RETAINING WALL
- AREA OF CUT
- AREA OF FILL
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS
- EXISTING TREES TO BE REMOVED REFER LANDSCAPE ARCHITECT'S DRAWINGS

EARTHWORKS NOTES:

1. NOTWITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE CROSS SECTIONS, THE ACTUAL LIMITS SHALL BE DETERMINED ON-SITE BY THE ENGINEER DURING CONSTRUCTION AND SIMILARLY THE FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE ENGINEER DURING CONSTRUCTION
2. SUBGRADE TEST RESULTS TO BE FORWARDED TO SUPERVISING ENGINEER FOR DETERMINATION OF BOX DEPTHS PRIOR TO EXCAVATION. TESTS SHALL INCLUDE SOAKED CBR AND/OR OTHER TESTS AS REQUESTED BY THE SUPERVISING ENGINEER.
3. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY
4. ALL FILL IS TO BE COMPACTED IN ACCORDANCE WITH R.C.C. GUIDELINES AND SPECIFICATIONS UNLESS NOTED OTHERWISE
5. THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
6. ALL DRAINAGE STRUCTURES TO BE PRESERVED FROM THE EFFECTS OF STRUCTURAL LOADING GENERATED BY THE EARTHWORKS.

FAUNA MANAGEMENT NOTES:

1. AT LEAST 14 DAYS BEFORE COMMENCEMENT OF ANY VEGETATION REMOVAL, DEWATERING OR EARTHWORKS, THE DEVELOPER MUST APPOINT AN ACCREDITED WILDLIFE SPOTTER TO EXAMINE THE SITE FOR WILDLIFE HABITAT, AND TO SUPERVISE CLEARING OPERATIONS.
2. PRIOR TO THE PRE-START MEETING, THE SPOTTER SHOULD PROVIDE COUNCIL WITH A PLAN INDICATING THE BROARD RANGE OF FAUNA EXPECTED ON THE SITE, THE PROPOSED METHOD OF OPERATION, AND ANY EXPECTED CONSTRAINTS.
3. DURING CLEARING OPERATIONS, THE CLEARING CONTRACTOR MUST:
   - LIAISE WITH THE ON-SITE SPOTTER; AND
   - ENSURE THAT EACH TREE OR OTHER FEATURE IDENTIFIED BY THE SPOTTER AS BEING A RISK TO WILDLIFE IF FELLED, DISTRUBED OR DEWATERED, IS NOT DAMAGED OR DISTURBED UNTIL THE SPOTTER ADVISES THAT IT IS APPROPRIATE TO DO SO.
4. BEFORE COMMENCEMENT OF AND DURING CLEARING OPERATIONS, IT IS THE RESPONSIBILITY OF THE SPOTTER TO:
   - BE PRESENT AT THE SITE OF CLEARING, DEWATERING, AND OTHER OPERATIONS;
   - IDENTIFY ANY TREE OR FEATURE WITH WILDLIFE PRESENT, AS WELL AS ANY TREE THAT HAS A CROWN WHICH IS INTERMESHED OR OVERLAPPING WITH SUCH A TREE; ADVISE THE CONTRACTOR OF THE PRECISE LOACTION OF EACH SUCH TREE OR OTHER FEATURE.

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Andrew McPhee 6921
Jeff Griffiths 4115
Dean Payne 4102

Signature .....

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

ISSUE	CHKD	ISSUED	DATE	AMENDMENT DETAILS
A	RJH	RJH	12.12.07	
B	RJH	RJH	25.06.08	EXISTING TREE SURVEY UPDATED
C	RJH	RJH	13.01.09	LOT 177 LEVELS, SECTION B AMENDED & SANDSTONE WALL DETAIL REMOVED
D	RJH	RJH	25.08.09	DONALD ROAD EARTHWORKS
E				
F				

DESIGN/CHECK
DRAWN/CHECKED
SCALE 1 METRE(S)
1:500 10 5 0 10 20 A1
1:1000 A3

MCU/RAL No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW MCPHEE RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4102
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT
AMEX SUBDIVISIONS PTY LTD

PROJECT
VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3221 5535 Facsimile 07 3221 5500
Adelaide Gladstone Melbourne Sydney Singapore Gold Coast Bowen

BROWN

DRAWING TITLE
BULK EARTHWORKS LAYOUT PLAN

DRAWING NUMBER
B07018-104

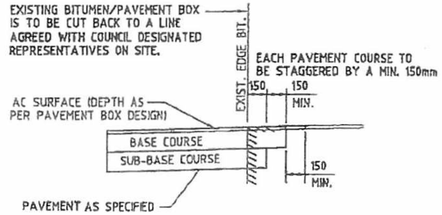
SCALE
C

PRELIMINARY PAVEMENT DESIGN

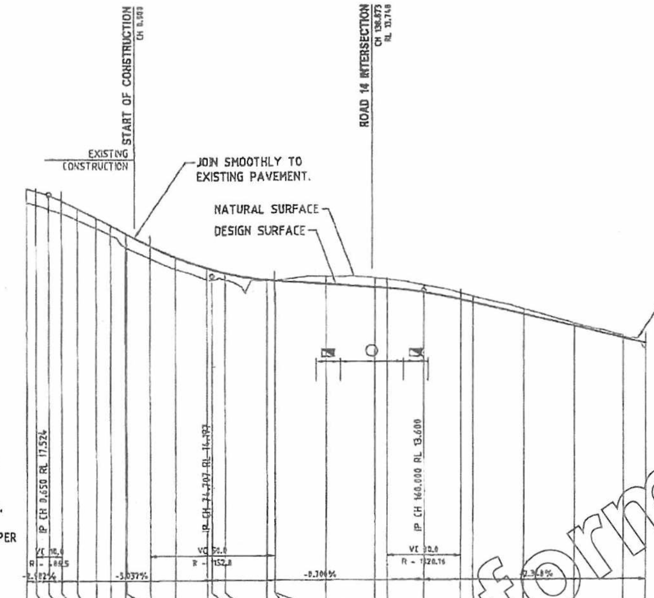
ROAD	TRAFFIC ESA'S	ROAD CLASS	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BOX (MM)
ROAD 13	5 x 10⁶	A	25 #	125	125	-	280

NOTE:
PRELIMINARY PAVEMENT DESIGNS HAVE BEEN BASED ON MINIMUM REQUIREMENTS. ACTUAL PAVEMENT DESIGNS WILL BE BASED ON TEST RESULTS TAKEN AFTER STRIPPING HAS BEEN COMPLETED.

A 7mm SINGLE COAT 'CHIP SEAL' IS TO BE PLACED UNDER AC SURFACING ON ALL ROADS. (RSC REQUIRMENT) REFER TO RSC STANDARDS FOR SPRAY RATES.



JOIN TO EXISTING PAVEMENT DETAIL
N.T.S.



○ PAVEMENT BOX DEPTH TO BE INCREASED BY 100mm OVER AND ABOVE THAT OF THE DESIGN PAVEMENT BOX DEPTH.

▭ PAVEMENT BOX DEPTH TO TAPER OVER 10.0m.

DATUM R.L.1

CHAINAGE	CUT\FILL	LHS LIP LEVEL	RHS LIP LEVEL	DESIGN SURFACE	NATURAL SURFACE
0.002	-0.568	17.692	17.692	17.782	17.214
3.650	-0.570	17.583	17.583	17.673	17.103
8.650	-0.562	17.408	17.408	17.498	16.936
13.650	-0.509	17.182	17.182	17.272	16.763
20.000	-0.456	16.862	16.862	16.952	16.494
27.158	-0.410	16.491	16.491	16.581	16.172
33.650	-0.379	16.185	16.185	16.275	15.895
39.532	-0.571	15.879	15.879	15.969	15.397
40.000	-0.566	15.855	15.855	15.945	15.379
49.707	-0.511	15.366	15.366	15.456	14.945
60.000	-0.483	14.894	14.894	14.984	14.501
72.732	-0.466	14.436	14.430	14.526	14.060
74.707	-0.444	14.378	14.365	14.468	14.024
80.000	-0.272	14.230	14.212	14.320	14.056
96.555	-0.040	13.958	13.952	14.048	14.009
99.707	0.022	13.932	13.932	14.022	14.044
100.000	0.028	13.930	13.930	14.020	14.048
120.000	0.299	13.790	13.790	13.880	14.179
140.000	0.376	⊛	13.650	13.740	14.116
145.000	0.352		13.615	13.705	14.057
160.000	0.291	13.448	13.448	13.538	13.829
175.000	0.269	13.158	13.158	13.248	13.517
180.000	0.244	13.040	13.040	13.130	13.375
200.000	0.209	12.571	12.571	12.661	12.870
220.000	0.100	12.101	12.101	12.191	12.292
240.000	0.074		11.632	11.722	11.795
249.441	-0.293			11.500	11.207

ALIGNMENT DETAILS: R13 L6.082m; R13 L6.087m; R15 L23.803m

⊛ REFER INTERSECTION DETAILS FOR LIP LEVELS

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature ......

WORKS AS CONSTRUCTED
It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed.

Signature .... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-105.dwg DATE: 12-12-2007 TIME: 08:35
Xref's: X_B07018-TITLE X_B07018-ROADS USR: mark hastings

PRINT ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	HJH	HJH	12.12.07	
A				
B				
C				
D				
E				
F				

DESIGN CHECK / DRAWN CHECK

SCALE (METRES): 1:1000 A1 / 1:2000 A3 — 10 0 10 20 30 40 50 — HORIZONTAL; 1:100 A1 / 1:200 A3 — 2 1 0 2 4 — VERTICAL

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED: ANDREW McPHAIL RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

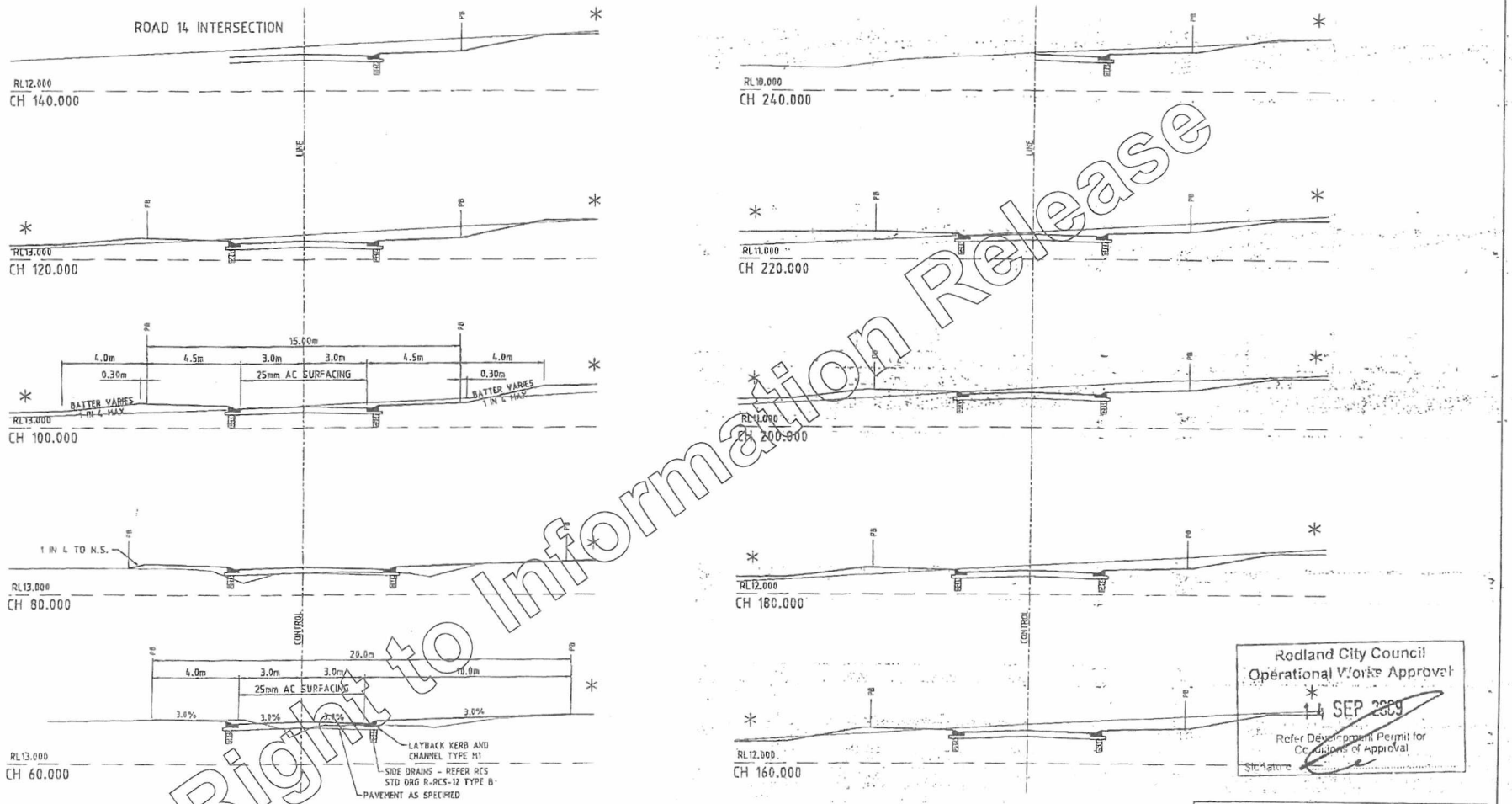
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

BROWN

DRAWING TITLE: ROAD 13
LONGITUDINAL SECTION

DRAWING NUMBER: B07018-105

ISSUE



Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature

* REFER B05018-104 FOR FINISHED SURFACE LEVELS

WORKS AS CONSTRUCTED

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Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

PRINT ISSUE	CALCS (INITIAL)	DRAWING (INITIAL)	DATE	AMENDMENT DETAILS
A	KJH	KJH	12.10.07	
B				
C				
D				
E				
F				

DESIGN CHECK
DRAWING CHECK

SCALE 1 METRE(S)
1:100 1:200 0 1 2 3 4 5 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (Qld) Pty Ltd Engineers & Managers
Level 3 410 Queens Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Toowoomba Sydney Singapore Sunshine Coast Ballarat

BROWN

DRAWING TITLE: ROAD 13 CROSS SECTIONS

DRAWING NUMBER: B07018-106

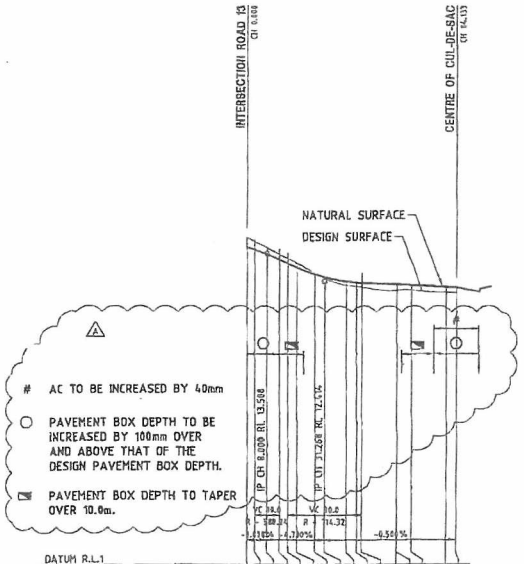
ISSUE:

PRELIMINARY PAVEMENT DESIGN

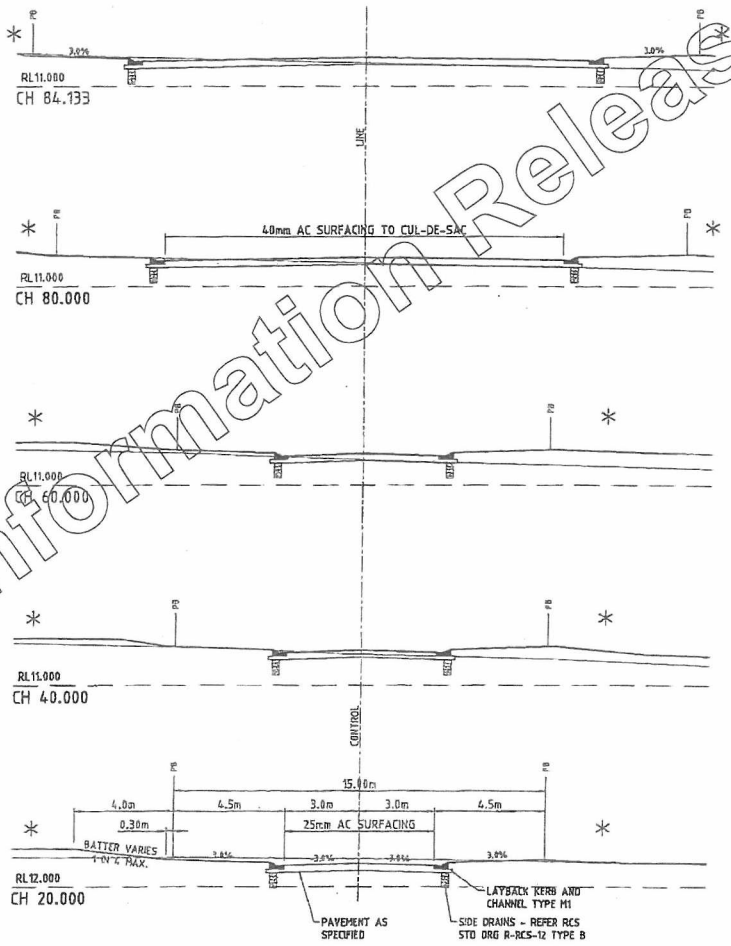
ROAD	TRAFFIC ESA'S	ROAD CLASS	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BOX (MM)
ROAD 14	5×10^6	A	25 #	125	125	-	280

NOTE:
PRELIMINARY PAVEMENT DESIGNS HAVE BEEN BASED ON MINIMUM REQUIREMENTS. ACTUAL PAVEMENT DESIGNS WILL BE BASED ON TEST RESULTS TAKEN AFTER STRIPPING HAS BEEN COMPLETED.

A 7mm SINGLE COAT 'CHIP SEAL' IS TO BE PLACED UNDER AC SURFACING ON ALL ROADS. (RSC REQUIRMENT) REFER TO RSC STANDARDS FOR SPRAY RATES.



⊛ REFER INTERSECTION DETAILS FOR LIP LEVELS



* REFER B07018-104 FOR FINISHED SURFACE LEVELS

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4882
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-107.dwg DATE: 25-11-2009 TIME: 11:44
XRefs: Y_B1726-TITLE Y_B0718-ROADS ESR mark hastings

PART	CHECKED	DRAWN	DATE	AMENDMENT DETAILS
A	KM	KM	12.12.07	
B	KM	KM	25.06.08	PAVEMENT AND AC DEPTHS AMENDED IN CUL-DE-SAC
C				
D				
E				
F				

DESIGN CHECK:
DRAWN CHECK:

SCALE (METRES)
1:1000 HORIZONTAL
1:200 VERTICAL
A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4882

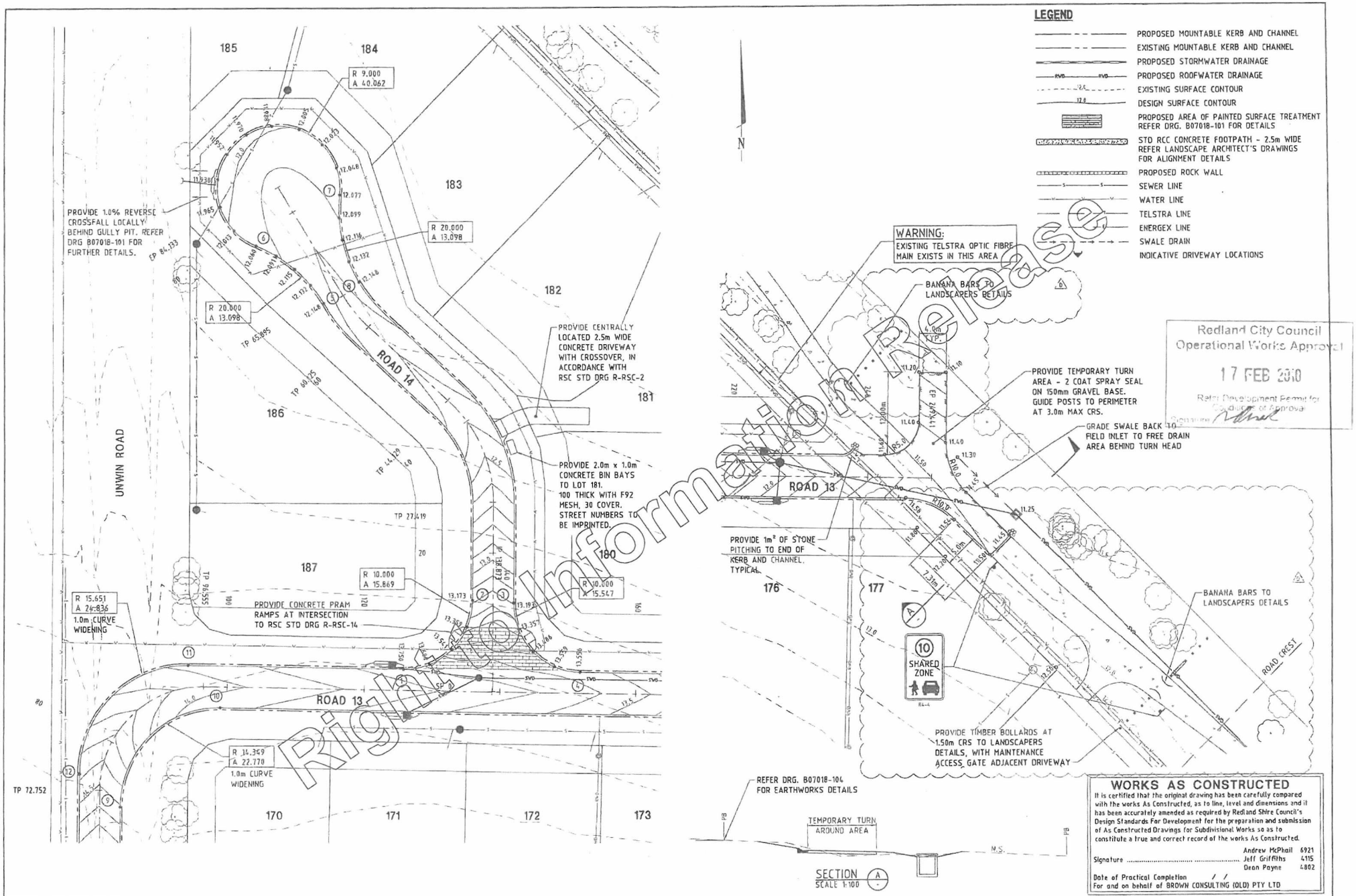
CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol
BROWN

DRAWING TITLE: ROAD 14
LONGITUDINAL SECTION AND CROSS SECTIONS

DRAWING NUMBER: B07018-107
ISSUE: A



FILE: B07018-108.dwg DATE: 03-09-2009 TIME: 10:35
Xrefs: X_B07018-TITLE X_B07018-BASE USR: Ivan Lynch

PART	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	CURVE WIDENING AMENDED / PRAM RAMPS / TURNHEAD DETAILS AMENDED
C	MJH	MJH	23.01.09	LOT 177 / TURNHEAD EARTHWORKS DETAILS AND LEGEND AMENDED
D	MJH	MJH	25.08.09	RWD /_SWD AMENDED
E	MJH	TL	02.09.09	BANANA BARS ADDED ON PATHWAY
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
1:250 1:500
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

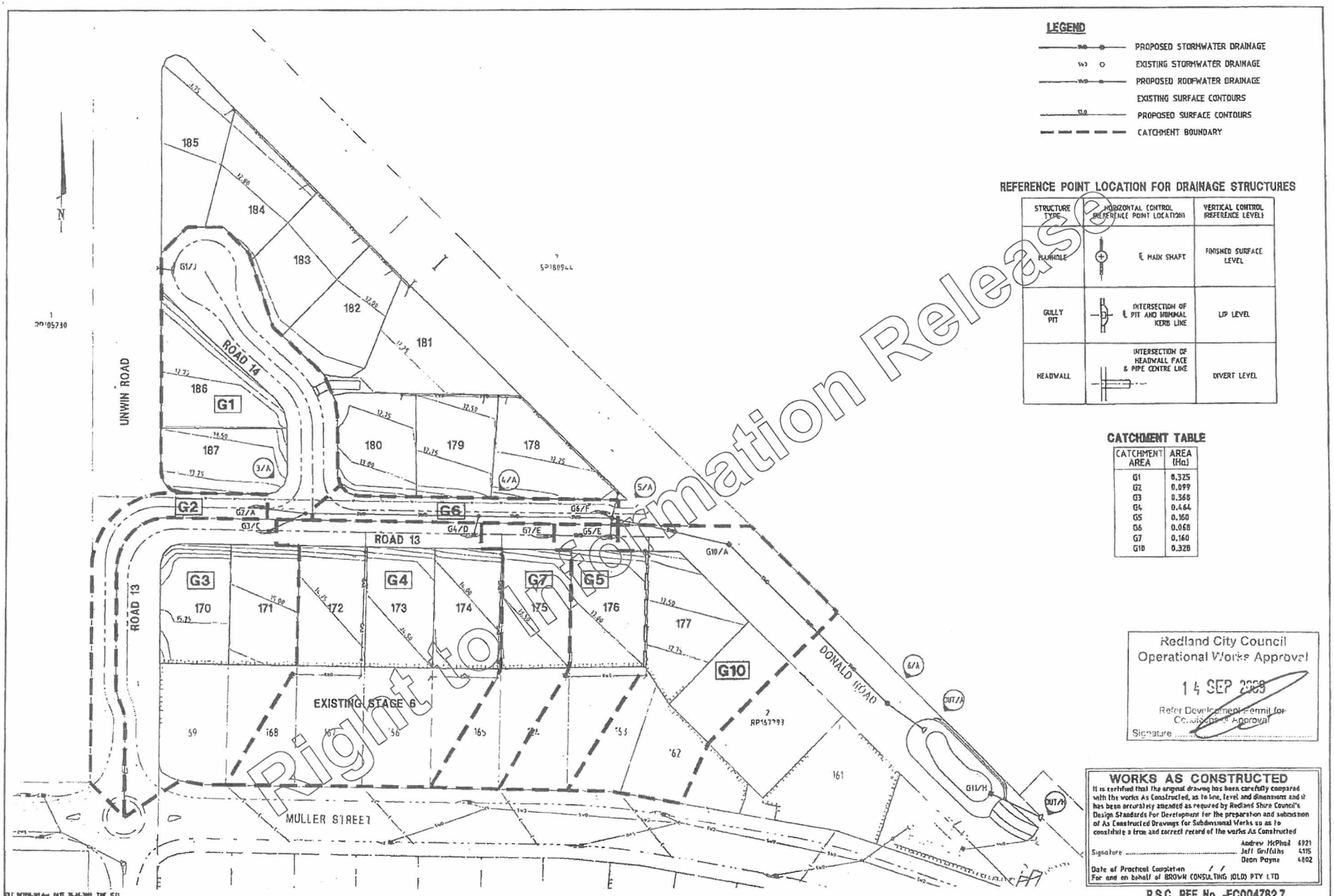
CLIENT: AMEX SUBDIVISIONS PTY LTD

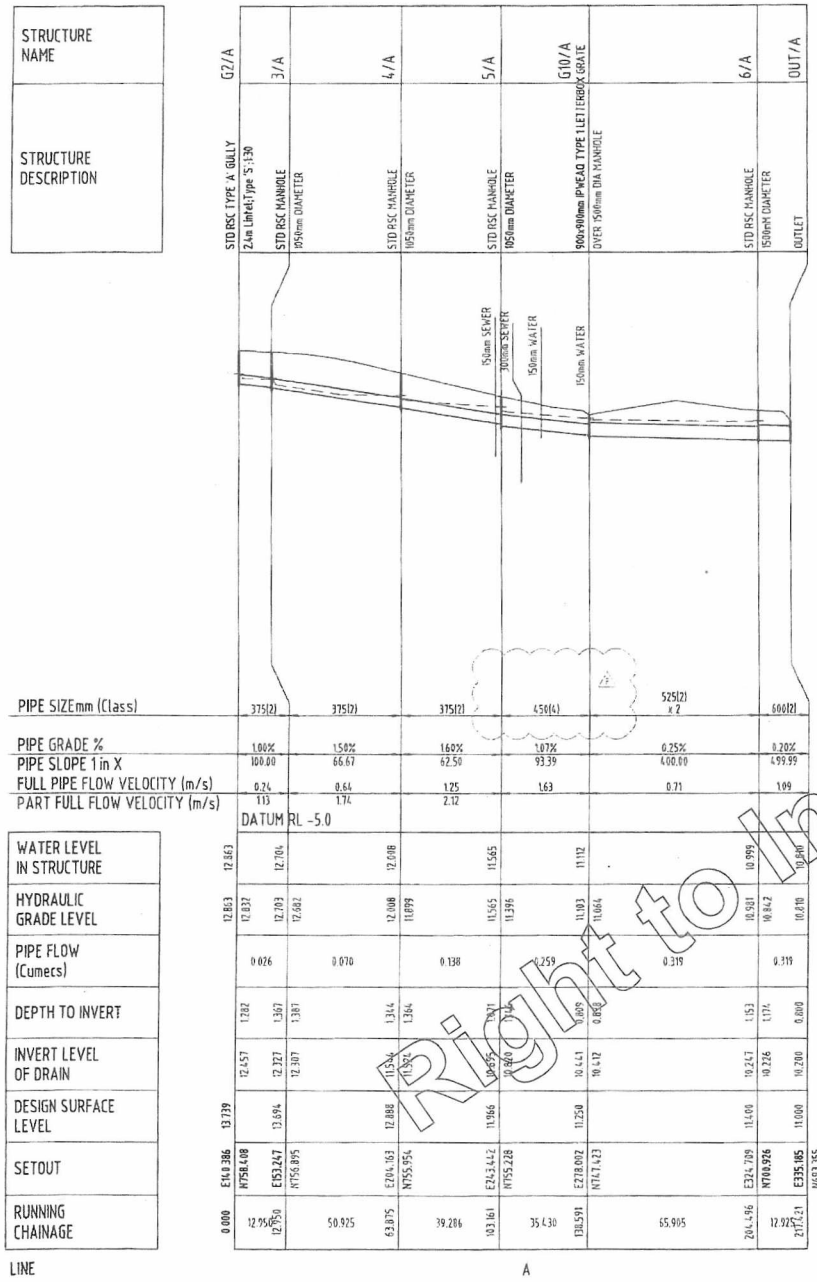
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bowen

DRAWING TITLE: INTERSECTION DETAILS LAYOUT PLAN

DRAWING NUMBER: B07018-108 ISSUE: D





Redland City Council
Operational Works Approval
17 FEB 2010
Refer Development Permit for Conditions of Approval
Signature

WORKS AS CONSTRUCTED

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Andrew McPhail 6921
Signature ..... Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

PRINT DATE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	21.05.08	STRUCTURE A/A AMENDED
B	MJH	MJH	25.06.08	SWD LOWES AMENDED
C	MJH	MJH	23.09.08	SWD LOWS AMENDED, STRUCTURE A/A DETAILS DELETED
D	MJH	MJH	15.04.09	SWD LINE A AMENDED
E	MJH	MJH	15.08.09	SWD AMENDED
F	MJH	TL	02.09.09	PIPE CLASS

FILE: B07018-110.dwg DATE: 02-09-2009 TIME: 14.41
Xref's: X_B07018-TITLE X_B07018-SWD USR: Ian Lynch

DESIGN CHECK BP
DRAWN CHECK CB

SCALE 1 METRE 1
1:1000 1:2000 HORIZONTAL
1:100 1:200 VERTICAL
A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802

CLIENT AMEX SUBDIVISIONS PTY LTD

PROJECT VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

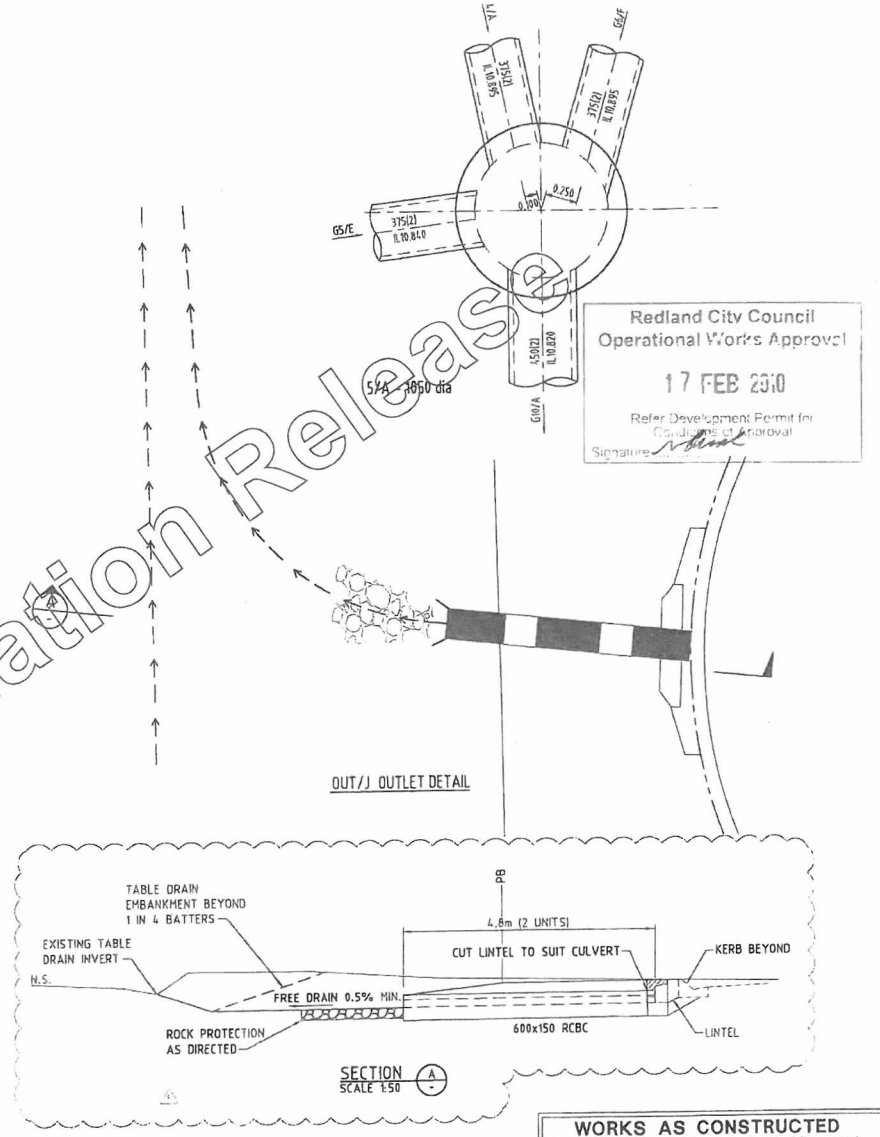
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Mumbai

BROWN

DRAWING TITLE
STORMWATER DRAINAGE
LONGITUDINAL SECTIONS
SHEET 1 OF 2

DRAWING NUMBER B07018-110 ISSUE F

	C	D	E	F	H	J
STRUCTURE NAME	G3/B	G4/D	G7/E	G6/F	G11/H	G1/J
	3/A	4/A	G5/E	5/A	OUT/H	OUT/J
STRUCTURE DESCRIPTION	STD RSC TYPE 'A' GULLY 2.4m Lintel Type 'S' 1:30 STD RSC MANHOLE 1050mm DIAMETER	STD RSC TYPE 'A' GULLY 2.4m Lintel Type 'S' 1:30 STD RSC MANHOLE 1050mm DIAMETER	STD RSC TYPE 'A' GULLY 2.4m Lintel Type 'S' 1:30 STD RSC MANHOLE 1050mm DIAMETER	STD RSC TYPE 'A' GULLY 2.4m Lintel Type 'S' 1:30 STD RSC MANHOLE 1050mm DIAMETER	FIELD INLET 900x900mm HEAD TYPE 1 WITH LETTERBOX GRATE OUTLET	STD RSC SMALL LINTEL CUT TO SUIT CULVERT - REFER DETAIL OUTLET
PIPE SIZEmm (Class)	375(2)	375(2)	375(2) 375(2)	375(2)	375(2) x 2	600 x 150 RCBC
PIPE GRADE %	1.00%	1.00%	1.00% 0.50%	1.00%	0.50%	0.67%
PIPE SLOPE 1 in X	100.00	100.00	100.00 200.00	100.00	200.00	150.00
FULL PIPE FLOW VELOCITY (m/s)	0.68	0.66	0.83 0.73	0.21	0.85	0.67
PART FULL FLOW VELOCITY (m/s)	1.39				1.74	1.05
WATER LEVEL IN STRUCTURE	12.936	12.287	11.718	11.583	10.653	11.838
HYDRAULIC GRADE LEVEL	12.936 12.820	12.287 12.817	11.718 11.642	11.583 11.465	10.653 10.355	11.838 11.680
PIPE FLOW (Cumecs)	0.053	0.073	0.047 0.080	0.023	0.189	0.060
DEPTH TO INVERT	1.278	1.270	1.196 1.196	1.047	0.520	0.393
INVERT LEVEL OF DRAIN	12.445 11.542	11.588 11.544	11.075 10.886	10.922	9.980	11.530
DESIGN SURFACE LEVEL	13.723	12.868	12.365 11.922	11.969	10.500	11.923
SETOUT	E142.662 N751.815 E153.247 N756.895	E202.652 N750.706 E204.163 N755.954	E224.481 N750.339 E242.931 N749.962 E243.442 N755.228	E241.052 N756.547 E243.442 N755.228	E355.600 N674.479 E369.484 N667.682	E416.553 N828.366 E409.390 N828.957
RUNNING CHAINAGE	0.000 11.741 11.741	0.000 5.461 5.461	0.000 18.853 18.853 5.291 24.144	0.000 2.730 2.730	0.000 16.000 16.000	0.000 4.800 4.800
LINE	C	D	E	F	H	J



Redland City Council
Operational Works Approval
17 FEB 2010
Refer Development Permit for Conditions of Approval
Signature

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-111.dwg DATE: 02-09-2009 TIME: 14:42
Xrefs: X_B07018-TITLE X_B07018-SVD USR: Tom Lynch

PART	DATE	DRAWN	DATE	AMENDMENT DETAILS
	MJH	MJH	12.12.07	
A	MJH	MJH	21.05.08	STRUCTURE OUT/A AMENDED
B	MJH	MJH	25.06.08	SVD LOWER AMENDED
C	MJH	MJH	23.09.09	SVD LOWER AMENDED, STRUCTURE OUT/A DETAIL DELETED
D	MJH	MJH	15.06.09	SVD LINE A AMENDED
E	MJH	MJH	25.08.09	SVD AMENDED
F	MJH	TL	02.09.09	ROCK PROTECTION ADDED TO DETAIL

DESIGN CHECK: CB
DRAWN CHECK: MB

SCALE (METRES)
1:1000 1:2000 HORIZONTAL 10 0 10 20 30 40 50 A1 A3
1:100 1:200 VERTICAL 2 1 0 2 4 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
ANDREW MCPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Australia Coast Bowen

BROWN

DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 2 OF 2

DRAWING NUMBER: B07018-111

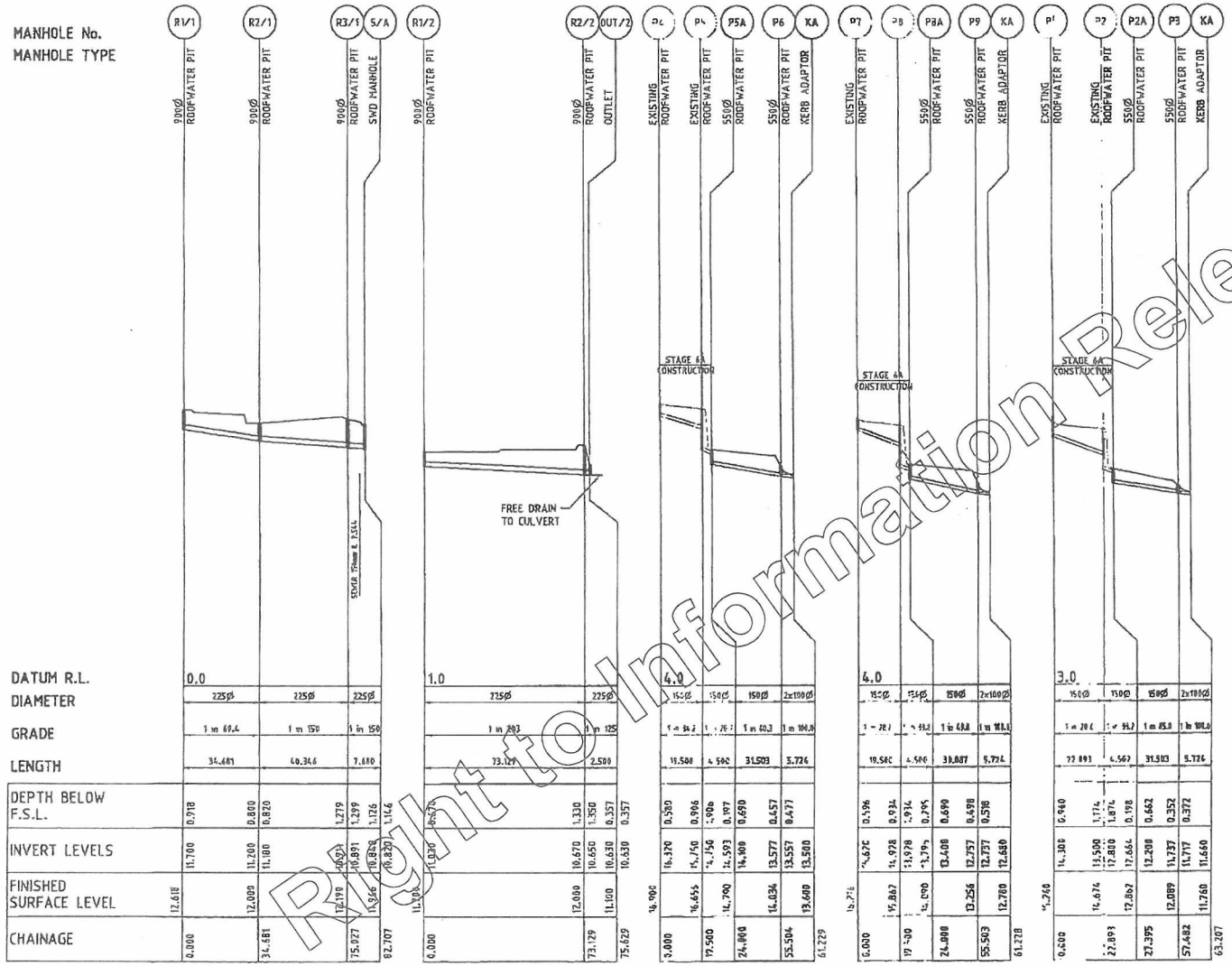
ISSUE: F

CALCULATIONS TABLE

R.S.C. REF No. -EC004782.7

ISSUE	DRAWN	CHECKED	DATE	AMENDMENT DETAILS
A	JKH	RJH	10.12.07	
B	JKH	RJH	25.06.08	SWD AMENDED
C	JKH	RJH	22.09.08	SWD AMENDED
D	JKH	RJH	15.06.09	SWD LINE & AMENDED
E	JKH	RJH	25.08.09	SWD AMENDED

DESIGN CHECK
DRAWN CHECK
SCALE 1 METRE 1
MICROFILM No.
PROJECT No. B07018
SURVEYOR: DTS Group Pty Ltd, 1st Floor, 6 Haussler Tce, Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED: ANDREW MCPHAIL RPEQ 6821; JEFF GRIFFITHS RPEQ 6135; DEAN PAYNE RPEQ 6802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7, UNWIN ROAD, REDLAND BAY
Brown Consulting (QLD) Pty Ltd Engineers & Managers, Level 3 410 Queen Street Brisbane QLD Australia 4000, Telephone 07 3221 5555 Facsimile 07 3221 5600, Melbourne Canberra Melbourne Sydney Singapore Sunshine Coast Darwin
DRAWING TITLE: STORMWATER DRAINAGE CALCULATIONS TABLE
DRAWING NUMBER: B07018-112
ISSUE: D



Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Andrew McPhail 6923
Jeff Griffiths 4115
Dean Payne 4802

Signature .....
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

ISSUE	CALC	DRAWN	DATE	AMENDMENT DETAILS
A	RJH	KJH	13.11.07	
B	RJH	RJH	23.11.07	SWD PITS ADDED AND PITS AMENDED
C	RJH	RJH	15.04.09	SWD LINE & AMENDED
D	RJH	RJH	29.04.09	SWD AMENDED

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

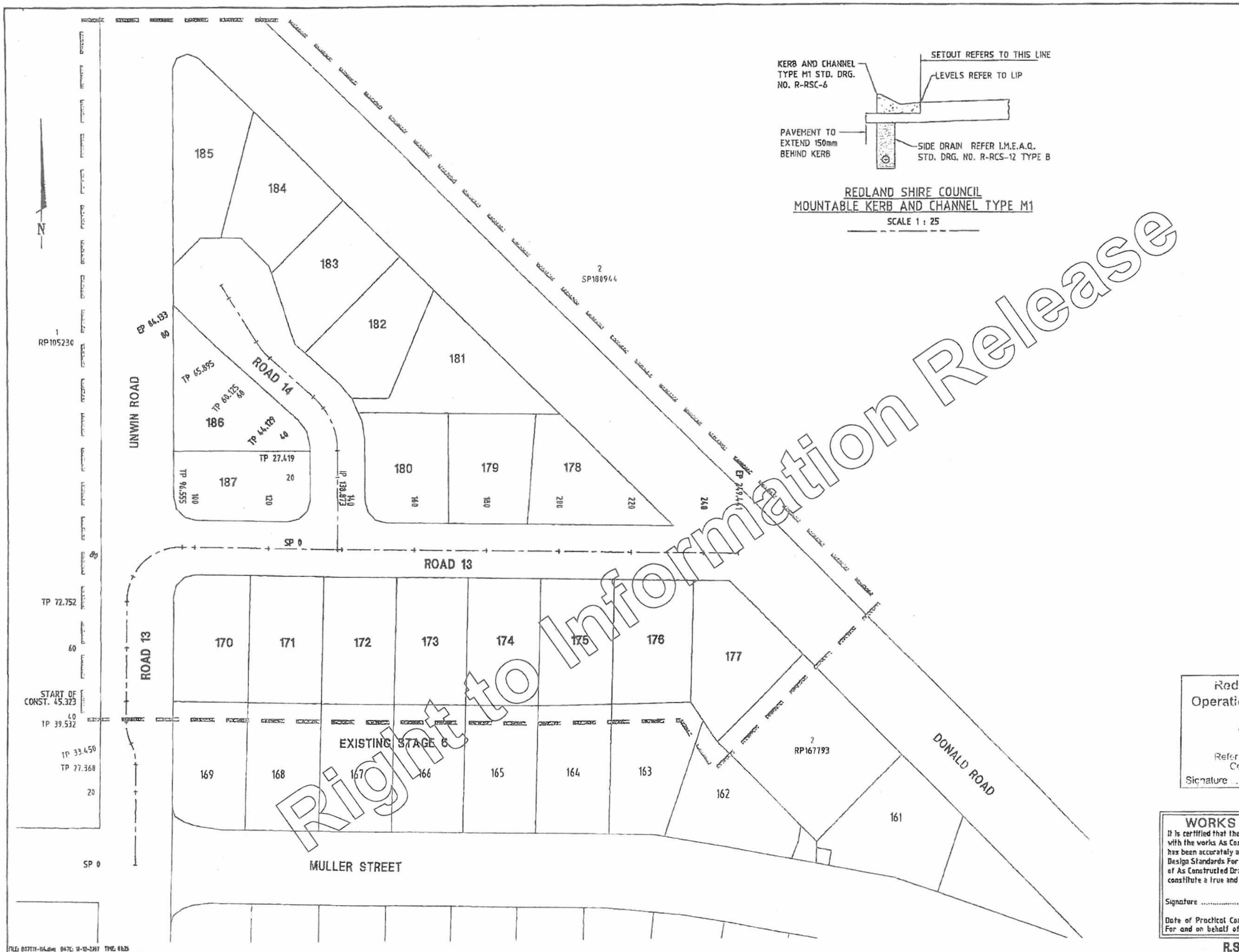
BROWN

DRAWING TITLE: ROOFWATER DRAINAGE LONGITUDINAL SECTIONS

DRAWING NUMBER: B07018-113

SCALE: C

JOB NUMBER: B07018



CONTROL LINE 13

CH 0.000 E100.274 N668.359
CH 27.368 E100.340 N695.727
R=13.000
DEF=63d11'43.99"
TL=3.098
ARC=6.082
CC E87.340 N695.758
IP E100.347 N698.824
CH 33.450 E98.957 N701.592
R=13.000
DEF=63d11'43.99"
TL=3.098
ARC=6.082
CC E110.574 N707.427
IP E97.567 N704.360
CH 39.532 E97.574 N707.458
CH 45.323 E97.588 N713.249
CH 72.752 E97.654 N740.678
R=15.000
DEF=359d4'44.10"
TL=15.243
ARC=23.803
CC E112.654 N740.642
IP E97.691 N755.921
CH 96.555 E112.931 N755.640
CH 138.873 E155.242 N754.858
CH 249.441 E265.790 N752.815

CONTROL LINE 14

CH 0.000 E155.242 N754.858
CH 27.419 E155.308 N782.276
R=20.000
DEF=42d7'43.60"
TL=8.878
ARC=16.710
CC E135.308 N782.324
IP E155.329 N791.154
CH 44.129 E148.760 N797.125
CH 60.125 E136.922 N807.884
R=20.000
DEF=73d28'12.45"
TL=2.905
ARC=5.770
CC E150.373 N822.684
IP E134.772 N809.838
CH 65.895 E133.267 N812.323
CH 84.133 E123.818 N827.922

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval*
Signature ....

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed.

Signature .... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-114.dwg DATE: 18-12-2007 TIME: 01:25
Xref's: X_B07018-TITLE X_B07018-BASE USR: mark bustings

FIRST ISSUE	CHECK	DRAWN	DATE	AMENDMENT DETAILS
	MJS	MJH	12.12.07	
A				
B				
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES) 1:500 10 5 0 10 20 A1 / 1:1000 A3

MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

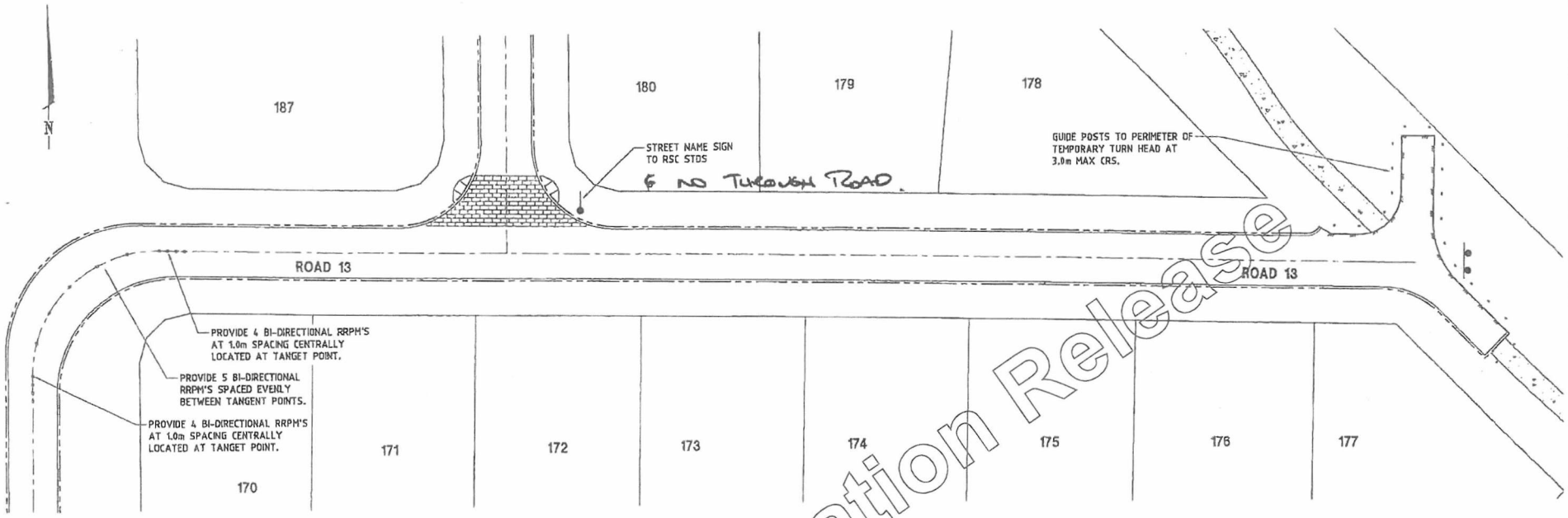
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500

BROWN

DRAWING TITLE: SURVEY SETOUT LAYOUT PLAN

DRAWING NUMBER: B07018-114

ISSUE:



Redland City Council
Operational Works Approval

14 SEP 2020

Refer Development Permit for Conditions of Approval

Signature .....

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

PLE: B07018-115.dwg DATE: 15-09-2019 TIME: 13:21
Xrefs: X_MATCH-TITLE X_MATCH-BASE USD: mark hastings

PART	CHKD	DRAWN	DATE	AMENDMENT DETAILS
A				
B				
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE 1 METRE 1
1:250 1:500 5 0 5 10 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802

CLIENT AMEX SUBDIVISIONS PTY LTD

PROJECT VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

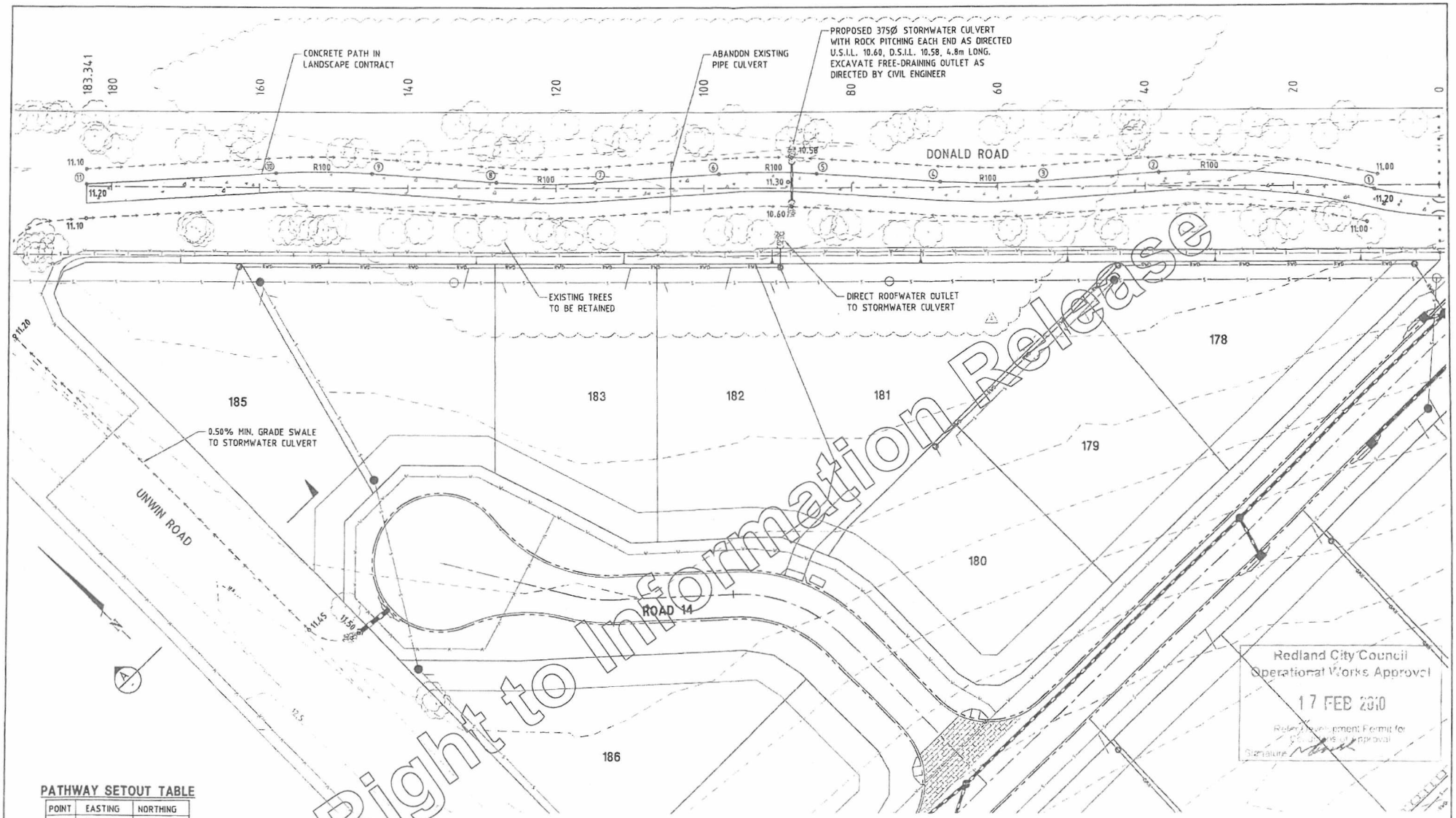
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Auckland Cairns Brunei

BROWN

DRAWING TITLE
SIGNS AND LINEMARKING
LAYOUT PLAN

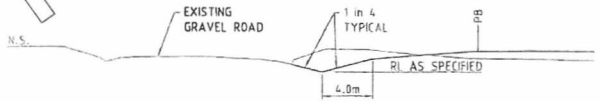
DRAWING NUMBER B07018-115

ISSUE



PATHWAY SETOUT TABLE

POINT	EASTING	NORTHING
1	248.475	773.622
2	229.329	795.962
3	216.862	806.821
4	207.433	816.207
5	196.386	828.775
6	186.958	838.161
7	174.340	849.152
8	164.912	858.538
9	153.724	871.266
10	144.614	880.373
11	125.345	897.302



SECTION A
SCALE 1:100

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed.

Signature .....
Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-116.dwg DATE: 02-09-2009 TIME: 16:36
Xref's: X_B07018-TITLE X_B07018-BASE USR: Mark Hastings

PRINT ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	16.08.09	
B	MJH	TL	02.09.09	NOTES AMENDED

DESIGN CHECK: GB
DRAWN CHECK: GB

SCALE (METRES)
1750 1500 5 0 5 10 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW MCPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

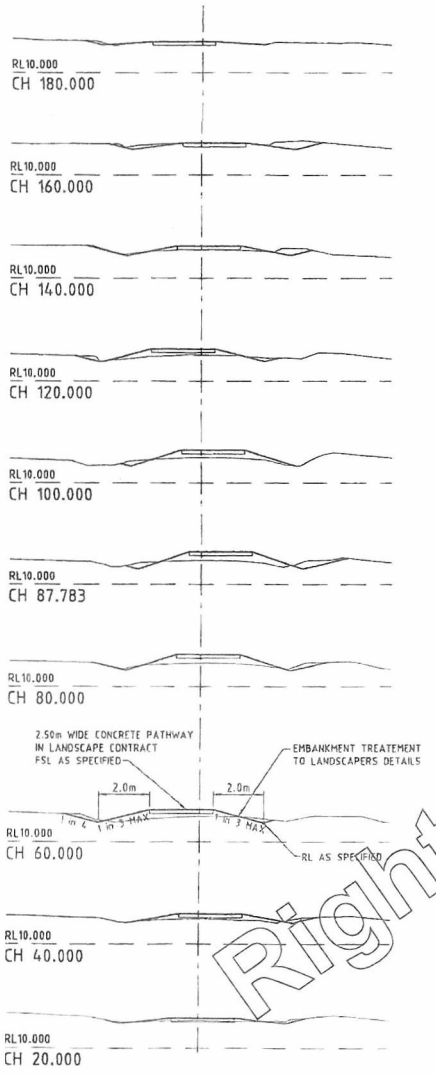
PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol

BROWN

DRAWING TITLE: DONALD ROAD PATHWAY EARTHWORKS LAYOUT PLAN

DRAWING NUMBER: B07018-116
ISSUE: A



Redland City Council
Operational Works Approval
17 FEB 2010
Refer Development Permit for
Conditions of Approval
Signature

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion / /

For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-117.dwg DATE: 02-09-2009 TIME: 16:42
Xrefs: X_B4719-TITLE X_B4719-BASE USR: Pan Lynch

PRINT ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	NJH	30.08.09	
B	MJH	TL	07.09.09	NOTES AMENDED
C				
D				
E				
F				

AMENDMENT DETAILS

DESIGN CHECK

DRAWN CHECK

SCALE 1 METRE(S)

1:250 5 0 5 10 A1
1:500 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol

BROWN

ACHEA

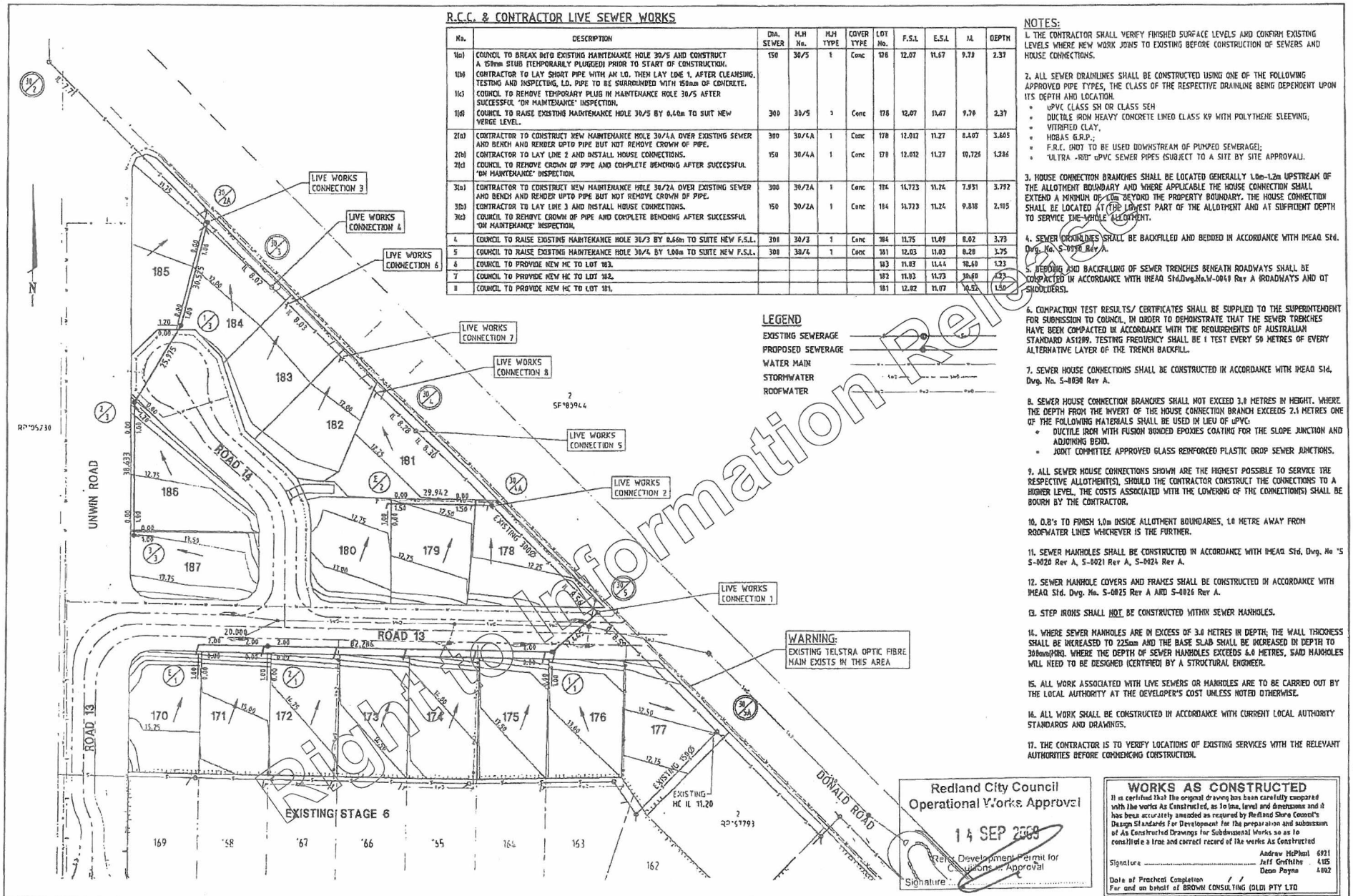
DRAWING TITLE: DONALD ROAD PATHWAY CROSS SECTIONS

DRAWING NUMBER: B07018-117

ISSUE: A

R.C.C. & CONTRACTOR LIVE SEWER WORKS

No.	DESCRIPTION	DIA. SEWER	M.H No.	M.H TYPE	COVER TYPE	LOT No.	F.S.L	E.S.L	M	DEPTH
1(a)	COUNCIL TO BREAK INTO EXISTING MAINTENANCE HOLE 30/5 AND CONSTRUCT A 150mm STUB (TEMPORARILY PLUGGED) PRIOR TO START OF CONSTRUCTION.	150	30/5	1	Conc	176	12.07	11.67	9.78	2.37
1(b)	CONTRACTOR TO LAY SHORT PIPE WITH AN I.O. THEN LAY LINE 1, AFTER CLEANSING, TESTING AND INSPECTING, I.O. PIPE TO BE SURROUNDED WITH 150mm OF CONCRETE.									
1(c)	COUNCIL TO REMOVE TEMPORARY PLUG IN MAINTENANCE HOLE 30/5 AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.									
1(d)	COUNCIL TO RAISE EXISTING MAINTENANCE HOLE 30/5 BY 0.40m TO SUIT NEW VERGE LEVEL.	300	30/5	1	Conc	176	12.07	11.67	9.78	2.37
2(a)	CONTRACTOR TO CONSTRUCT NEW MAINTENANCE HOLE 30/4A OVER EXISTING SEWER AND BENCH AND RENDER UPTO PIPE BUT NOT REMOVE CROWN OF PIPE.	300	30/4A	1	Conc	178	12.012	11.27	8.407	3.605
2(b)	CONTRACTOR TO LAY LINE 2 AND INSTALL HOUSE CONNECTIONS.	150	30/4A	1	Conc	178	12.012	11.27	10.726	1.286
2(c)	COUNCIL TO REMOVE CROWN OF PIPE AND COMPLETE BENCHING AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.									
3(a)	CONTRACTOR TO CONSTRUCT NEW MAINTENANCE HOLE 30/2A OVER EXISTING SEWER AND BENCH AND RENDER UPTO PIPE BUT NOT REMOVE CROWN OF PIPE.	300	30/2A	1	Conc	184	14.723	11.24	7.931	3.792
3(b)	CONTRACTOR TO LAY LINE 3 AND INSTALL HOUSE CONNECTIONS.	150	30/2A	1	Conc	184	14.723	11.24	9.818	2.105
3(c)	COUNCIL TO REMOVE CROWN OF PIPE AND COMPLETE BENCHING AFTER SUCCESSFUL 'ON MAINTENANCE' INSPECTION.									
4	COUNCIL TO RAISE EXISTING MAINTENANCE HOLE 30/3 BY 0.60m TO SUITE NEW F.S.L.	300	30/3	1	Conc	184	13.75	11.09	8.02	3.73
5	COUNCIL TO RAISE EXISTING MAINTENANCE HOLE 30/4 BY 1.00m TO SUITE NEW F.S.L.	300	30/4	1	Conc	181	12.03	11.03	8.28	3.75
6	COUNCIL TO PROVIDE NEW MC TO LOT 183.					183	11.83	11.44	10.68	1.23
7	COUNCIL TO PROVIDE NEW MC TO LOT 182.					182	11.83	11.73	10.68	1.23
8	COUNCIL TO PROVIDE NEW MC TO LOT 181.					181	12.02	11.07	10.52	1.50



LEGEND

EXISTING SEWERAGE
PROPOSED SEWERAGE
WATER MAIN
STORMWATER
ROOFWATER

WARNING:
EXISTING TELSTRA OPTIC FIBRE MAIN EXISTS IN THIS AREA

NOTES:

1. THE CONTRACTOR SHALL VERIFY FINISHED SURFACE LEVELS AND CONFIRM EXISTING LEVELS WHERE NEW WORK JOINS TO EXISTING BEFORE CONSTRUCTION OF SEWERS AND HOUSE CONNECTIONS.

2. ALL SEWER DRAINLINES SHALL BE CONSTRUCTED USING ONE OF THE FOLLOWING APPROVED PIPE TYPES, THE CLASS OF THE RESPECTIVE DRAINLINE BEING DEPENDENT UPON ITS DEPTH AND LOCATION.
   - uPVC CLASS SH OR CLASS SEH
   - DUCTILE IRON HEAVY CONCRETE LINED CLASS K9 WITH POLYTHENE SLEEVING;
   - VITRIFIED CLAY,
   - HOBAS G.R.P.;
   - F.R.C. (NOT TO BE USED DOWNSTREAM OF PUMPED SEWERAGE);
   - 'ULTRA -RIB' uPVC SEWER PIPES (SUBJECT TO A SITE BY SITE APPROVAL).

3. HOUSE CONNECTION BRANCHES SHALL BE LOCATED GENERALLY 1.0m-1.2m UPSTREAM OF THE ALLOTMENT BOUNDARY AND WHERE APPLICABLE THE HOUSE CONNECTION SHALL EXTEND A MINIMUM OF 1.0m BEYOND THE PROPERTY BOUNDARY. THE HOUSE CONNECTION SHALL BE LOCATED AT THE LOWEST PART OF THE ALLOTMENT AND AT SUFFICIENT DEPTH TO SERVICE THE WHOLE ALLOTMENT.

4. SEWER DRAINLINES SHALL BE BACKFILLED AND BEDDED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. S-0030 Rev A.

5. BEDDING AND BACKFILLING OF SEWER TRENCHES BENEATH ROADWAYS SHALL BE COMPACTED IN ACCORDANCE WITH IMEAQ Std.Dwg.No.W-0040 Rev A (ROADWAYS AND OT SHOULDERS).

6. COMPACTION TEST RESULTS/ CERTIFICATES SHALL BE SUPPLIED TO THE SUPERINTENDENT FOR SUBMISSION TO COUNCIL, IN ORDER TO DEMONSTRATE THAT THE SEWER TRENCHES HAVE BEEN COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS OF AUSTRALIAN STANDARD AS1289. TESTING FREQUENCY SHALL BE 1 TEST EVERY 50 METRES OF EVERY ALTERNATIVE LAYER OF THE TRENCH BACKFILL.

7. SEWER HOUSE CONNECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. S-0030 Rev A.

8. SEWER HOUSE CONNECTION BRANCHES SHALL NOT EXCEED 3.0 METRES IN HEIGHT. WHERE THE DEPTH FROM THE INVERT OF THE HOUSE CONNECTION BRANCH EXCEEDS 2.4 METRES ONE OF THE FOLLOWING MATERIALS SHALL BE USED IN LIEU OF uPVC:
   - DUCTILE IRON WITH FUSION BONDED EPOXIES COATING FOR THE SLOPE JUNCTION AND ADJOINING BEND.
   - JOINT COMMITTEE APPROVED GLASS REINFORCED PLASTIC DROP SEWER JUNCTIONS.

9. ALL SEWER HOUSE CONNECTIONS SHOWN ARE THE HIGHEST POSSIBLE TO SERVICE THE RESPECTIVE ALLOTMENT(S), SHOULD THE CONTRACTOR CONSTRUCT THE CONNECTIONS TO A HIGHER LEVEL, THE COSTS ASSOCIATED WITH THE LOWERING OF THE CONNECTION(S) SHALL BE BOURN BY THE CONTRACTOR.

10. O.B's TO FINISH 1.0m INSIDE ALLOTMENT BOUNDARIES, 1.0 METRE AWAY FROM ROOFWATER LINES WHICHEVER IS THE FURTHER.

11. SEWER MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH IMEAQ Std. Dwg. No 'S S-0020 Rev A, S-0021 Rev A, S-0024 Rev A.

12. SEWER MANHOLE COVERS AND FRAMES SHALL BE CONSTRUCTED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. S-0025 Rev A AND S-0026 Rev A.

13. STEP IRONS SHALL NOT BE CONSTRUCTED WITHIN SEWER MANHOLES.

14. WHERE SEWER MANHOLES ARE IN EXCESS OF 3.0 METRES IN DEPTH; THE WALL THICKNESS SHALL BE INCREASED TO 225mm AND THE BASE SLAB SHALL BE INCREASED IN DEPTH TO 300mm(MIN). WHERE THE DEPTH OF SEWER MANHOLES EXCEEDS 6.0 METRES, SAID MANHOLES WILL NEED TO BE DESIGNED (CERTIFIED) BY A STRUCTURAL ENGINEER.

15. ALL WORK ASSOCIATED WITH LIVE SEWERS OR MANHOLES ARE TO BE CARRIED OUT BY THE LOCAL AUTHORITY AT THE DEVELOPER'S COST UNLESS NOTED OTHERWISE.

16. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT LOCAL AUTHORITY STANDARDS AND DRAWINGS.

17. THE CONTRACTOR IS TO VERIFY LOCATIONS OF EXISTING SERVICES WITH THE RELEVANT AUTHORITIES BEFORE COMMENCING CONSTRUCTION.

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

ISSUE	QUALIFIED	PASSED	DATE	AMENDMENT DETAILS
A	RJH	RJH	15.04.08	
B	RJH	RJH	23.04.08	LOT 176 MC MOVED
C	RJH	RJH	25.06.09	LOT 177 ADDED, LOT 177 CHAINAGE, PIPE LENGTH AND NODES AMENDED
D				
E				
F				

DESIGN CHECK
DRAWN

SCALE 1 METRES 1
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

Approved ANDREW MCPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3221 6588 Facsimile 07 3221 5500
Brisbane Canberra Melbourne Sydney Singapore Auckland Darwin

BROWN

DRAWING TITLE: SEWERAGE RETICULATION LAYOUT PLAN

DRAWING NUMBER: B07018-200 ISSUE: C

MANHOLE No.	
MANHOLE TYPE/DROP	
MANHOLE COVER	
JUNCTION LINE NO.	
JUNCTION DROP TYPES	

M.H. TYPE LEGEND

1 - Ø1050 MANHOLE

2 - Ø1500 MANHOLE

M.H. COVER LEGEND

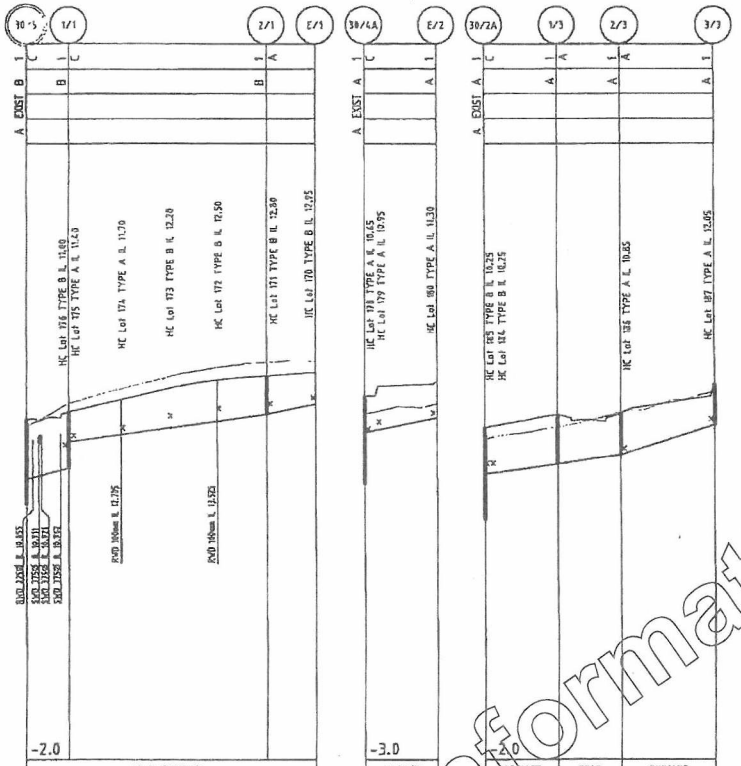
A - CIRCULAR CAST IRON - CONCRETE FILLED

B - CIRCULAR CAST IRON - CLASS D

C - CIRCULAR CONCRETE CLASS B

NOTES:

1. REFER TO IPWEAQ STD. DRG. S-0020 AND S-0021 FOR MH INLET DROP TYPES.
2. REFER TO IPWEAQ STD. DRG. S-0030 FOR HOUSE CONNECTION BRANCH TYPES.



LINE NUMBER 1 2 3

Redland City Council
Operational Works Approval
14 SEP 2018
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards for Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature ..... Andrew McPhail 6721
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

ISSUE	CALCS	DRAWN	ISSUED
	MJH	MJH	12.10.07
A	BBR	MJH	25.06.08
B	AL	MH	29.07.21
C	MJH	MJH	25.08.21
D			
E			
F			

AMENDMENT DETAILS
A: LOT 196 NC / COVER TYPES / STRUCTURE NAMES AMENDED
B: PIPE LENGTH AMENDED
C: RCP 300 & 450 AMENDED

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:1000 10 0 10 20 30 40 50 A1
1:2000 HORIZONTAL A3
1:500 2 1 0 2 4 A1
1:200 VERTICAL A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3188 6600 Fax (07) 3188 0699

APPROVED ANDREW McPHAIL RPEQ 6121
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT AMEX SUBDIVISIONS PTY LTD

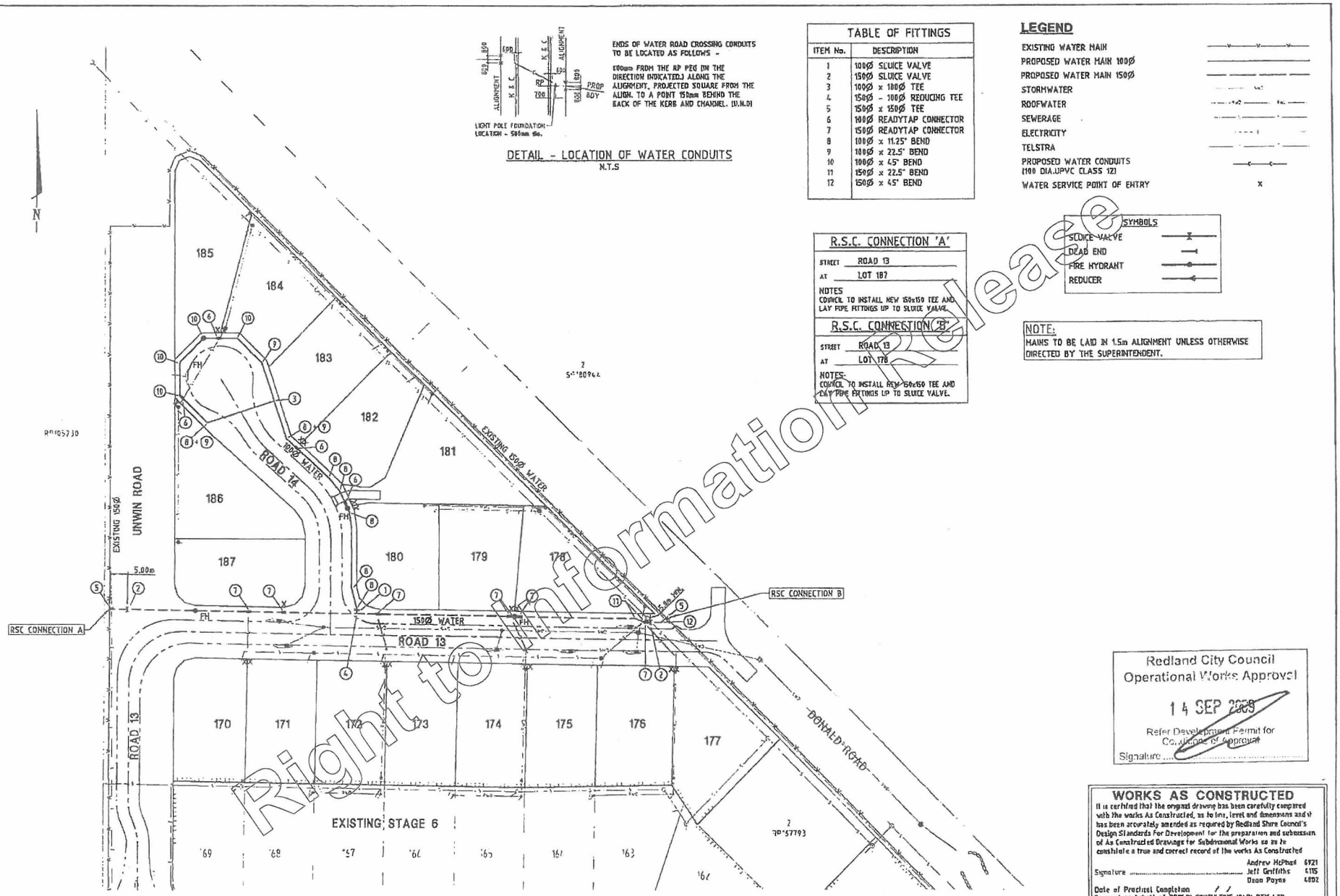
PROJECT VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3221 5555 Facsimile 07 3221 5500
Brisbane Gladstone Melbourne Sydney Singapore Hong Kong Brunei

BROWN

DRAWING TITLE SEWERAGE RETICULATION LONGITUDINAL SECTION

DRAWING NUMBER B07018-201 ISSUE C



ENDS OF WATER ROAD CROSSING CONDUITS TO BE LOCATED AS FOLLOWS -

600mm FROM THE RP PEG (IN THE DIRECTION INDICATED) ALONG THE ALIGNMENT, PROJECTED SQUARE FROM THE ALIGN. TO A POINT 150mm BEHIND THE BACK OF THE KERB AND CHANNEL. (U.N.O)

DETAIL - LOCATION OF WATER CONDUITS
N.T.S

TABLE OF FITTINGS	
ITEM No.	DESCRIPTION
1	100Ø SLUICE VALVE
2	150Ø SLUICE VALVE
3	100Ø x 100Ø TEE
4	150Ø - 100Ø REDUCING TEE
5	150Ø x 150Ø TEE
6	100Ø READYTAP CONNECTOR
7	150Ø READYTAP CONNECTOR
8	100Ø x 11.25° BEND
9	100Ø x 22.5° BEND
10	100Ø x 45° BEND
11	150Ø x 22.5° BEND
12	150Ø x 45° BEND

LEGEND

- EXISTING WATER MAIN
- PROPOSED WATER MAIN 100Ø
- PROPOSED WATER MAIN 150Ø
- STORMWATER
- ROOFWATER
- SEWERAGE
- ELECTRICITY
- TELSTRA
- PROPOSED WATER CONDUITS (100 DIA.UPVC CLASS 12)
- WATER SERVICE POINT OF ENTRY

SYMBOLS
- SLUICE VALVE
- DEAD END
- FIRE HYDRANT
- REDUCER

R.S.C. CONNECTION 'A'

STREET ROAD 13
AT LOT 187

NOTES
COUNCIL TO INSTALL NEW 150x150 TEE AND LAY PIPE FITTINGS UP TO SLUICE VALVE.

R.S.C. CONNECTION 'B'

STREET ROAD 13
AT LOT 178

NOTES
COUNCIL TO INSTALL NEW 150x150 TEE AND LAY PIPE FITTINGS UP TO SLUICE VALVE.

NOTE:
MAINS TO BE LAID IN 1.5m ALIGNMENT UNLESS OTHERWISE DIRECTED BY THE SUPERINTENDENT.

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Andrew McPhail 6921
Signature ..... Jeff Griffiths 6115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

ISSUE	CHKD	ORIG	DATE	AMENDMENT RECORD
A	KJH	KJH	13.11.08	ISSUE AS ADCD
B	KJH	KJH	25.06.09	RWD / SWD LAYOUT AMENDED - NO CHANGE TO WATER

DESIGN CHECK
DRAWN CHECK

SCALE 1:1000 (1:500 @ A3)

PROGRAM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW MCPHAIL RPEQ 6921
JOSH GRIFFITHS RPEQ 6115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 8555 Facsimile 07 3231 8500

BROWN

DRAWING TITLE: WATER RETICULATION LAYOUT PLAN

DRAWING NUMBER: B07018-300

ISSUE: B

WATER RETICULATION NOTATIONS

1. WATER SERVICE CONNECTIONS TO EXISTING WATERMAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH RSC Std. Dwg. No. W-RSC-3 Rev C.

2. WATER SERVICE CONNECTIONS TO NEW WATERMAINS SHALL INCORPORATE THE USE OF 'READY TAP FITTINGS', REFER TO RSC Std. Dwg. No. W-RSC-4 Rev A.

3. THRUST BLOCKS SHALL BE PROVIDED TO ALL BENDS (HORIZONTAL AND VERTICAL); TEES; REDUCERS; DEAD ENDS; VALVES; etc REFER IMEAQ Std. No. W-0041 Rev A.

4. ALL WATERMAINS SHALL BE BEDDED AND BACKFILLED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. W-0040 REV A.

5. BLUE RRPM's SHALL BE PLACED, ALONG THE ROADWAY CENTRELINE, OPPOSITE ALL HYDRANTS.

6. YELLOW RRPM's SHALL BE PLACED, ALONG THE ROADWAY CENTRELINE, OPPOSITE ALL VALVES.

7. ALL FIRE HYDRANTS SHALL BE LOCATED OPPOSITE COMMON PROPERTY BOUNDARIES, UNLESS SPECIFICALLY NOTED OTHERWISE.

8. ALL SLUICE VALVES SHALL BE LOCATED OPPOSITE THE FIRST TRUNCATION OF THE LOT THEY FRONT, UNLESS SPECIFICALLY NOTED OTHERWISE.

9. ALL WATERMAINS SHALL BE LOCATED WHOLLY WITHIN THE DESIGNATED WATERMAIN CORRIDOR. COUNCIL RESERVES THE RIGHT TO REQUEST THE CONTRACTOR TO RECONSTRUCT THOSE PORTIONS OF THE WATERMAIN, WHICH ARE CONSTRUCTED OUTSIDE OF THE DESIGNATED CORRIDOR(S).

10. HYDRANTS AND VALVES, INCLUDING MARKER POSTS COMPLETE, SHALL BE INSTALLED IN ACCORDANCE WITH IMEAQ Std. Dwg. No. W-0060 Rev A AND W-0061 Rev A.

11. THE CONTRACTOR SHALL ENSURE THAT A WATERSERVICE, INCLUDING THE PROVISION OF AN ABOVE GROUND METER, IS PROVIDED TO EACH ALLOTMENT.

12. WATERMAINS TO BE LOCATED ON AN ALIGNMENT OF 1.5 METRES OFF THE PROPERTY BOUNDARY UNLESS NOTED OTHERWISE.

13. ALL LIVE CONNECTION WORKS SHALL BE COMPLETED BY COUNCIL AT THE DEVELOPERS EXPENSE.

PIPES, FITTINGS & VALVES

1. ALL C.I. FITTINGS SHALL BE TO A.S. 2544 WITH SOCKET ENDS DESIGNED FOR USE WITH P.V.C. OR DUCTILE IRON PIPES AS APPLICABLE AND SHALL BE 'LIGHT' CEMENT LINED.

2. PRESSURE PIPES USED FOR WATER SUPPLY INSTALLATIONS SHALL BE RUBBER RING JOINTED PIPES AND SHALL BE EITHER uPVC CLASS 16 (HARDIE IPLEX 'BLUE BRUTE' OR SIMILAR APPROVED) OR DUCTILE IRON CEMENT LINED CLASS K9 PIPES TO A.S. 2280.

3. PIPES MUST BE AC/DUCTILE IRON OD COMPATIBLE. OTHER TYPES AND CLASSES OF PIPE SHALL NOT BE INSTALLED.

4. CAST IRON GATE (SLUICE) VALVES ARE TO CONFORM TO A.S. 2638.

5. ALL VALVES AND HYDRANTS SHALL BE COATED INTERNALLY AND EXTERNALLY WITH A FUSION BONDED EPOXY.

6. ALL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL GRADE 316.

7. VALVES AND FITTINGS SHALL BE LOCATED ON FOOTPATH.

8. BENDS SHALL BE USED WHERE ANGLES EXCEED THE MANUFACTURER'S RECOMMENDED MINIMUM RADIUS FOR LAYING PIPES ON CURVES.

9. THE SERVICES INTO EACH OF THE PROPOSED ALLOTMENTS SHALL BE ON AN 0.5m ALIGNMENT, 0.2m INTO THE ALLOTMENT, AND AT LEAST 0.45m METRES BELOW THE FINISHED SURFACE LEVEL.

10. THE CONTRACTOR SHALL INSTALL WATER METERS TO EACH WATER SERVICE PROVIDED IN THE DEVELOPMENT. THE WATER METERS SHALL BE SUPPLIED BY COUNCIL TO THE CONTRACTOR AT APPROVED RATES, AND THE WATER SERVICE, INCLUDING METERS, SHALL BE INSTALLED IN ACCORDANCE WITH THE RELEVANT COUNCIL STANDARDS.

11. THE MINIMUM DISTANCE BETWEEN TWO ADJACENT READYTAP CONNECTORS SHOULD BE 600mm.

SERVICE CONDUITS

1. SERVICE CONDUITS 100Ø TO BE INSTALLED UNDER THE ROADWORKS CONTRACT SHALL BE LOCATED AT 0.8m DOWNHILL FROM THE LINE DIVIDING ALLOTMENTS SO AS NOT TO CONFLICT WITH ELECTRICAL AUTHORITY POLES AND SHALL BE INSTALLED TO DETAILS SHOWN ON R.S.C. STD. DWG. R-RSC-13.

2. WHERE THE UNDERGROUND POWER IS BEING INSTALLED CONDUITS MAY, IN CERTAIN CASES, BE PLACED 1.0m UPHILL FROM THE LINE DIVIDING ALLOTMENTS SO AS NOT TO CONFLICT WITH POWER SUPPLY CONDUITS. IN THESE INSTANCES, CHANGES OF CONDUIT LOCATIONS WILL BE SHOWN ON THE DRAWINGS.

3. SERVICE CONDUIT MARKERS MUST BE LOCATED DIRECTLY ABOVE CONDUITS.

4. SERVICE CONDUIT SHOULD BE EXTENDED 300mm PAST THE FOOTPATH.

NOTE

SHOULD THESE MAINS BE INSTALLED BY OTHERS, THEN COUNCIL (ONLY) SHALL MAKE ANY CONNECTIONS TO EXISTING MAINS THAT ARE REQUIRED AND ALL COSTS INCURRED BY COUNCIL SHALL BE CHARGED DIRECTLY TO THE SUBDIVIDER. SIMILARLY SHOULD EXISTING MAINS NEED LOWERING, HYDRANTS OR VALVES RAISED OR RELOCATED, THEN THIS WORK SHALL BE CARRIED OUT ONLY BY COUNCIL AT THE DEVELOPERS EXPENSE.

NOTE:

ALL WATER AND SEWER CONSTRUCTION WORK UNDERTAKEN BY THE CONTRACTOR IS TO COMPLY WITH THE REQUIREMENTS OF THE QUEENSLAND WORKPLACE HEALTH AND SAFETY ACT 1995. CONTACT YOUR NEAREST OFFICE OF THE DIVISION OF ACCIDENT PREVENTION FOR INFORMATION.
Phone: NORTH (07) 3247 9478, SOUTH (07) 3896 3368

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed.

Signature ..... Andrew McPhail 6921, Jeff Griffiths 4115, Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-301.dwg DATE: 18-12-2007 TIME: 08:26
Xrefs: X_B07018-TITLE USR: mark hastings

PRINT ISSUE	CAD ED	DRAWN	DATE	AMENDMENT DETAILS
A				
B				
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.
PROJECT No. B07018

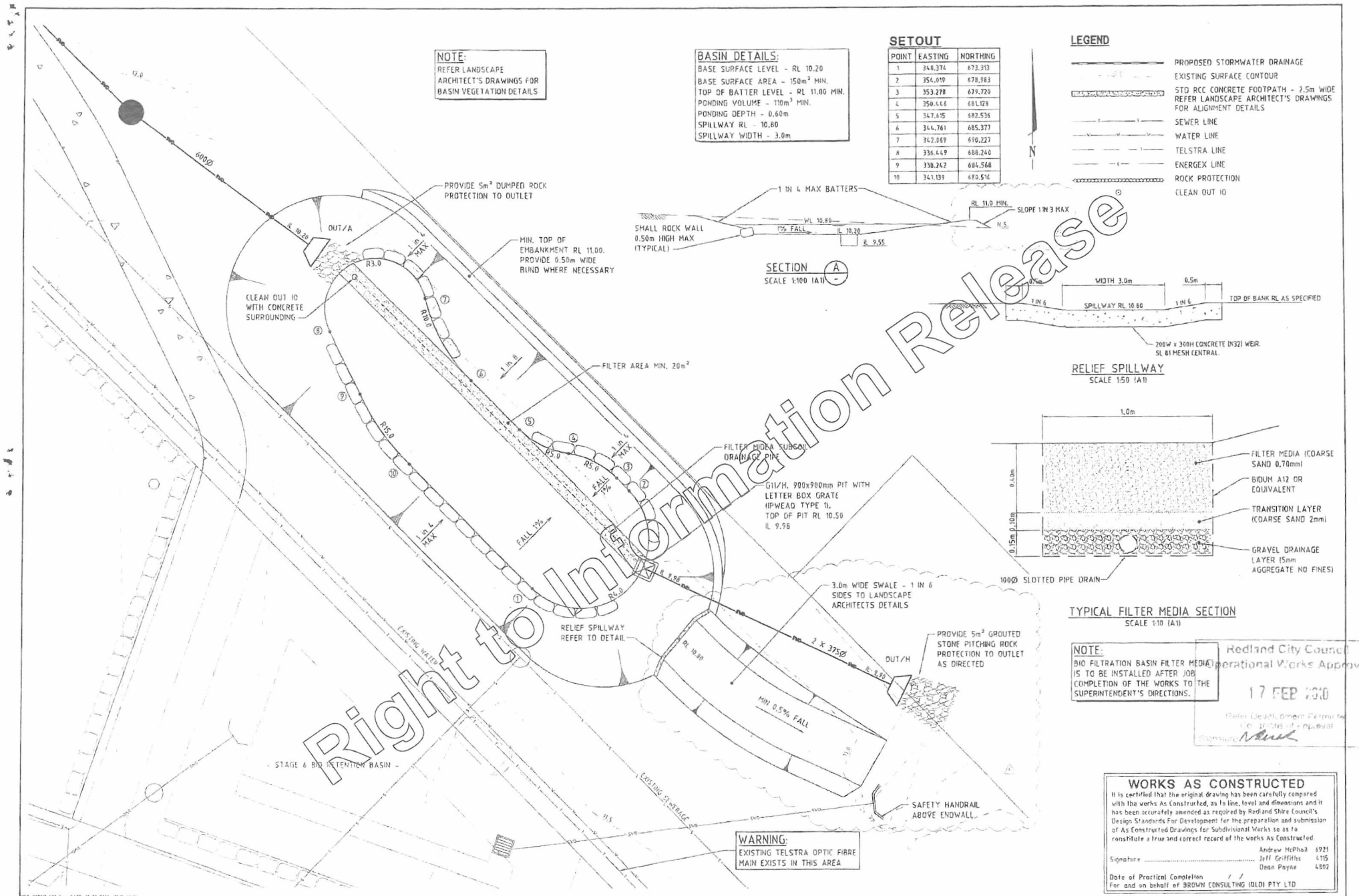
SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW McPHAIL RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7, UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3221 5555 Facsimile 07 3221 5500
Brisbane Canberra Melbourne Sydney Singapore Kuwait City Dubai

DRAWING TITLE: WATER RETICULATION NOTES
DRAWING NUMBER: B07018-301
ISSUE:



ISSUE	CHECK	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	25.06.08	GENERAL AMENDMENTS
B	MJH	MJH	23.03.09	BASIN DETAILS AMENDED
C	MJH	TL	15.07.09	BASIN DISCHARGE AMENDED
D	AH	TL	05.08.09	MINOR AMENDMENTS
E	MJH	MJH	28.08.09	BASIN LEVEL RAISED - NOTES, SECTIONS AND DETAILS AMENDED
F	MJH	TL	02.09.09	NOTES AMENDED

DESIGN CHECK: DB
DRAWN CHECK: A
SCALE: 1 METRE @ 1:100 / 1:200
MICROFILM No.
PROJECT No. B07018
SURVEYOR: DTS Group Pty Ltd, 1st Floor, 6 Heussler Tce, Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED: ANDREW McPHAIL RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7, UNWIN ROAD, REDLAND BAY
Brown Consulting (QLD) Pty Ltd Engineers & Managers, Level 3 410 Queen Street Brisbane QLD Australia 4000, Telephone 07 3731 5555 Facsimile 07 3731 5500, Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol
BROWN
DRAWING TITLE: BIO RETENTION BASIN LAYOUT PLAN AND DETAILS
DRAWING NUMBER: B07018-400
ISSUE: F

From: [redacted]@brownconsulting.com.au]
[redacted]@brownconsulting.com.au]
Sent: Friday, 30 July 2010 4:35 PM
To: Nathan Lee
Subject: Valencia Springs Estate, Stage 7 - as constructed plans

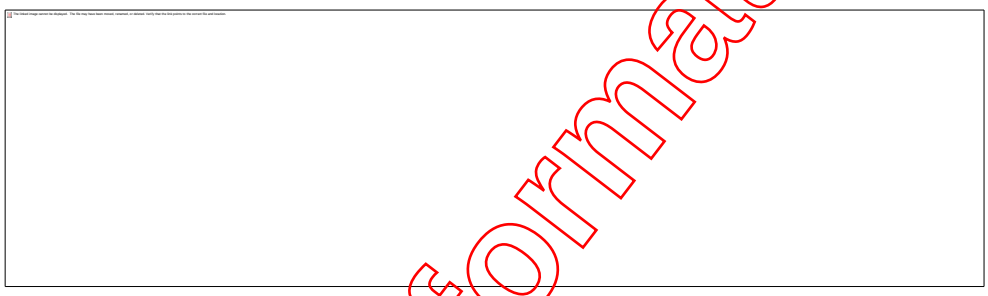
Nathan,

Please find attached a copy of the final survey as constructed plans for the abovementioned development.

A full set of hard copy plans will be posted to Council for your records.

Regards,

[redacted] | Engineer - Urban Development
Brown Consulting (Qld) Pty Ltd
Level 6, 199 Grey Street, South Brisbane, Queensland, 4101
PO Box 10349, Adelaide Street, Brisbane, Queensland, 4000
P 07 3895 3444 **F** 07 3895 3400
E [redacted]
W www.brownconsulting.com.au



CQA/CF/10
Issue J

Job No. CQAL/09/038

10 November 2009

REPORT ON LEVEL 1

EARTHWORKS INSPECTION AND TESTING

PROJECT:	VALENCIA SPRINGS ESTATE – STAGE 7 REDLAND BAY
REAL PROPERTY DESCRIPTION:	PART OF LOT 2 ON RP850031 PARISH OF REDLAND COUNTY OF STANLEY
PRINCIPAL CLIENT:	BROWN CONSULTING (QLD) PTY LTD
SUPERINTENDENT:	BROWN CONSULTING (QLD) PTY LTD
CONTRACTOR:	DEAN ASH CONSTRUCTIONS (QLD) PTY LTD

CIVIL QUALITY ASSURANCE (QLD) PTY LTD
ABN 52 058 855 431

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALL CORRESPONDENCE TO
PO BOX 370
LAWNTON, QLD, 4501

LAWNTON – HEAD OFFICE
1/18 LEANNE CRESCENT
PHONE (07) 3881 3511
FAX (07) 3881 3513
lawnton@cqa.com.au

LOGANHOLME OFFICE
10/10 BABDOYLE STREET
PHONE (07) 3801 3233
FAX (07) 3801 3633
logan@cqa.com.au

KUNDA PARK OFFICE
2/74 ENTERPRISE STREET
PHONE (07) 5450 1735
FAX (07) 5450 1535
kunda@cqa.com.au

LAIDLEY OFFICE
43 VAUX STREET
PHONE (07) 5465 2955
FAX (07) 5465 2799
laidley@cqa.com.au

MALENY OFFICE
154 ENGLE ROAD
PHONE (07) 5429 6882
FAX (07) 5429 6882

"SERVING QUEENSLAND SINCE 1993"

TABLE OF CONTENTS

Appendices

1.0 INTRODUCTION

1.1 General

This report presents results and documentation for the compaction control, inspection and testing programme on earthworks for the proposed subdivision, Valencia Springs Estate – Stage 7 located at Unwin Road, Redland Bay.

Civil Quality Assurance (Qld.) Pty. Ltd. (CQA) was commissioned by Mr Andrew Ngo of Brown Consulting (Qld) Pty Ltd to provide earthworks inspection and testing services on a 'Level 1' basis in accordance with clause 8.2 of AS 3798-2007 "Guidelines on earthworks for commercial and residential developments".

The purpose of the Level 1 commission and of this report is to provide a statement of compliance with the specification for the earthworks elements of the project.

The testing and inspection programme was carried out in general compliance with AS 3798, the project specification and local authority testing frequency requirements as appropriate.

The report references the following Australian Standards:

- AS 3798-2007 "Guidelines on earthworks for commercial and residential developments"
- AS 1289-2000 "Method of testing soils for engineering purposes"
- AS 2870-1996 "Residential slabs and footings"

1.2 The Development

The development comprises a 18 lot residential subdivision and associated infrastructure including pavements, sewer, watermain and stormwater reticulation.

2.0 WORKS AND SPECIFICATIONS

The earthworks generally comprised:

- Filling of Lots 178-187
- Filling of Road 14, CH30-END

The earthworks specification as provided, for which Level 1 certification is required, is as follows:

• Road Embankment fill	-	≥ 0. 3 m below subgrade	95% Standard
	-	< 0. 3 m below subgrade	100% Standard
• Allotment fill			95% Standard

3.0 FILL FOUNDATION

The stripped surfaces of proposed fill areas were inspected, tined and proof rolled prior to placement of fill. In general, the proof rolling was carried out with the equipment used to compact the fill.

Compliance of the fill foundation and approval to commence filling was on the basis of:

- adequate removal of topsoil and organics
- soundness (minimum deflection) under proof rolling
- satisfactory exposure of natural ground and/or previously placed fill which had been approved by the superintendent

In order to comply with the above criteria, it was necessary to remove unsound materials from the following areas.

- Saturated sand from lots 182-186 was removed to a firm clay base
- Road 14, CH30-END Saturated sand was removed to a firm clay base

All inspection details are provided in the "Daily Site Visit Report" sheets in Appendix B.

The approximate lateral extent of stripping and filling is shown on drawings in Appendix C.

4.0 COMPLIANCE TESTING

4.1 Reference Density

As required by AS 3798, for unprocessed materials, a laboratory reference density test was carried out for each field density test. The Hilf Density method (AS 1289 5.7.1) was adopted for the laboratory reference test.

4.2 Field Density Test Locations

All test locations were selected by the geotechnical inspection and testing authority, (CQA). The locations were selected at random and staggered across the fill areas. Generally a three dimensional location was obtained for each field density test (e.g. from two allotment boundaries and a reduced level derived from AHD). However test locations were not professionally surveyed and therefore should be considered as approximate only. Test locations are described on the Field Density Test Reports presented in Appendix A.

4.3 Field Density Test Results

All field density tests carried out on structural filling on this project between 12/6/09 and 16/10/09 meet the minimum specification requirements of 95% Standard Compaction (AS 1289 5.8.1, 5.7.1 & 2.1.1).

Areas represented by failed tests (if applicable) were re-compacted and re-tested prior to placement of additional filling. Detailed test results are provided in field density test reports presented in Appendix A.

5.0 FILL CERTIFICATION

a) The fill foundation was inspected and tested and was considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification to a depth of not less than 150mm.

b) Based on the test results and site inspections, CQA concludes that the placement of structural fill on Lots 178-187 & Road 14, CH30-END as laterally defined in Appendix C is considered to comply with the requirements of Table 5.1 of AS 3798 and the project specification.

c) All fill in the areas defined above, placed within the time frame of our inspection and testing programme between 12/6/09 and 16/10/09 is considered as "Controlled Fill" in accordance with AS 2870 (Clause 6.4.2(a)) and AS 3798.

6.0 LIMITATIONS

Unless otherwise stated in this report, Level 1 inspection, testing and certification does not address or include the following:

- slope stability
- reactive soils
- soft natural soils and/or pre-existing (uncontrolled) fill on the site outside of the controlled fill area
- soils which may be contaminated with toxic substances
- backfill to service trenches and/or retaining (including boulder) walls subsequent to the controlled fill commission or when not included in the level 1 commission
- site drainage
- topsoil placed subsequent to completion of controlled filling

Certification of Level 1 controlled fill within the area defined in Appendix C, assumes that all filling within this area during the time of our commission took place with our knowledge. Any fill placed outside the nominated earthwork operation periods without our knowledge is therefore not certified as controlled fill.

The purchaser, site investigator, engineer and builder should be aware of the possibility of unstable natural soils, services and pre-existing uncontrolled fill occurring on parts of the site other than the immediate areas of controlled fill placed in the current operation (as defined in Appendix C) between 12/6/09 and 16/10/09.

A full geotechnical site investigation and foundation design for the specific ground conditions should be carried out by suitably qualified and experienced personnel on each lot, prior to building when house type and location is known. This service can be provided if required, by contacting Civil Quality Assurance (Qld.) Pty. Ltd. on 07 - 3881 3511.

R BENNETT
for and on behalf of
CIVIL QUALITY ASSURANCE (Q) P/L
rbln0830jd.doc

APPENDIX A

Test Reports

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD.
GEOTECHNICAL CONSULTANTS
1/10 BABDOYLE STREET, LOGANHOLME
OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21B

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 3
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7, REDLAND BAY
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 31 July 2009

SAMPLE NUMBER	DL/09/3718	DL/09/3719	DL/09/3720	
DATE/TIME TESTED	6/7/09, 8.00am	6/7/09, 8.15am	6/7/09, 8.30am	
DEPTH OF TEST (mm)	150	150	150	
DEPTH OF LAYER (mm)	-	-	-	
LAYER TERMINOLOGY	EF1	EF2	EF3	
TEST LOCATION	Road 14, CH50, 1m right of centre line	Road 14, CH55, 2m left of centre line	Road 14, CH60, 2m right of centre line	
TEST ELEVATION	0.7m below pavement level	0.7m below pavement level	0.7m below pavement level	
SOIL DESCRIPTION	Clayey Sand	Sandy Clay	Sandy Clay	
OVERSIZE SIEVE (mm)	19.0	19.0	19.0	
OVERSIZE - WET BASIS (%)	-	-	-	
FIELD MOISTURE CONTENT (%)	13.5	16.5	12.0	
OPTIMUM MOISTURE CONTENT(%)	15.5	16.5	12.5	
MOISTURE VARIATION (%)	-2.0	0.0	-0.5	
FIELD WET DENSITY (t/m^3)	2.04	2.03	2.04	
PEAK CONVERTED WET DENSITY (t/m^3)	2.08	2.10	2.09	
HILF DENSITY RATIO / SPEC (%)	**98.5** 95	**96.5** 95	**97.5** 95	

TEST PROCEDURE
Field A.S. 1289 5.8.1
Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

- Field testing and selection of test locations carried out in general accordance with AS 3798 Level 1 guidelines
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GEOTECHNICAL CONSULTANTS

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OFFICE: (07) 3801 3233 FAX: (07) 3801 3633.

CQA/R/21B

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD — REPORT NO: 4

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7, REDLAND BAY — JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION — DATE: 31 July 2009

SAMPLE NUMBER	DL/09/3721	DL/09/3722		
DATE/TIME TESTED	7/7/09, 2.00pm	7/7/09, 2.10pm		
DEPTH OF TEST (mm)	150	150		
DEPTH OF LAYER (mm)	-	-		
LAYER TERMINOLOGY	EF4	EF5		
TEST LOCATION	Road 14, CH70, 1m left of centre line	Road 14, CH80, 1m right of centre line		
TEST ELEVATION	0.3m below pavement level	0.3m below pavement level		
SOIL DESCRIPTION	Sandy Clay	Sandy Clay		
OVERSIZE SIEVE (mm)	19.0	19.0		
OVERSIZE - WET BASIS (%)	-	-		
FIELD MOISTURE CONTENT (%)	20.0	20.5		
OPTIMUM MOISTURE CONTENT(%)	20.5	22.0		
MOISTURE VARIATION (%)	0.0	-1.5		
FIELD WET DENSITY (t/m^3)	2.00	1.99		
PEAK CONVERTED WET DENSITY (t/m^3)	2.07	1.97		
HILF DENSITY RATIO / SPEC (%)	**96.5** **95**	**101.0** **95**		

TEST PROCEDURE

Field A.S. 1289 5.8.1

Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT:	BROWN CONSULTING (QLD) PTY LTD	REPORT NO:	5
PROJECT:	VALENCIA SPRINGS ESTATE – STAGE 7	JOB NO:	CQAL/09/038
JOB DESCRIPTION:	RESIDENTIAL SUBDIVISON	DATE:	7 August 2009

SAMPLE NUMBER	DL/09/4054	DL/09/4055	DL/09/4056
DATE/TIME TESTED	10/7/09, 2.00pm	10/7/09, 2.10pm	10/7/09, 2.20pm
DEPTH OF TEST (mm)	150	150	150
DEPTH OF LAYER (mm)	-	-	-
LAYER TERMINOLOGY	AF6	AF7	AF8
TEST LOCATION	Lot 185, 11m off South, 3m off East boundaries	Lot 184, 13m off South, 6m off West boundaries	Lot 183, 5m off South, 2m off West boundaries
TEST ELEVATION	RL: 11.90	RL: 11.85	RL: 11.95
SOIL DESCRIPTION	Silty Clay	Silty Clay	Silty Clay
OVERSIZE SIEVE (mm)	19.0	19.0	19.0
OVERSIZE - WET BASIS (%)	-	-	-
FIELD MOISTURE CONTENT (%)	15.0	14.0	16.5
OPTIMUM MOISTURE CONTENT(%)	12.5	13.0	16.0
MOISTURE VARIATION (%)	3.0	1.0	0.5
FIELD WET DENSITY (t/m^3)	2.05	2.09	2.01
PEAK CONVERTED WET DENSITY (t/m^3)	2.16	2.16	2.12
HILF DENSITY RATIO / SPEC (%)	**95.0** **95**	**97.0** **95**	**95.0** **95**

TEST PROCEDURE	Field A.S. 1289 5.8.1 Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1
TERMINOLOGY LEGEND	(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 6
PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038
JOB DESCRIPTION: RESIDENTIAL SUBDIVISON
DATE: 7 August 2009

SAMPLE NUMBER	DL/09/4057	DL/09/4058					
DATE/TIME TESTED	16/7/09, 2.00pm	16/7/09, 2.10pm					
DEPTH OF TEST (mm)	150	150					
DEPTH OF LAYER (mm)	-	-					
LAYER TERMINOLOGY	AF9	AF10					
TEST LOCATION	Lot 180, 6m off South, 4m off East boundaries	Lot 179, 7m off South, 6m off West boundaries					
TEST ELEVATION	RL: 12.50	RL: 12.40					
SOIL DESCRIPTION	Silty Clay	Silty Clay					
OVERSIZE SIEVE (mm)	19.0	19.0					
OVERSIZE - WET BASIS (%)	-	-					
FIELD MOISTURE CONTENT (%)	17.5	16.0					
OPTIMUM MOISTURE CONTENT(%)	16.5	15.5					
MOISTURE VARIATION (%)	1.0	0.5					
FIELD WET DENSITY (t/m^3)	2.01	2.06					
PEAK CONVERTED WET DENSITY (t/m^3)	2.11	2.13					
HILF DENSITY RATIO / SPEC (%)	**95.5**	**95**	**97.0**	**95**			

TEST PROCEDURE
Field A.S. 1289 5.8.1
Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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CQA/R/21B

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT:	BROWN CONSULTING (QLD) PTY LTD	REPORT NO:	7A
PROJECT:	VALENCIA SPRINGS ESTATE – STAGE 7	JOB NO:	CQAL/09/038
JOB DESCRIPTION:	RESIDENTIAL SUBDIVISON	DATE:	7 August 2009

SAMPLE NUMBER	DL/09/4059	DL/09/4060		
DATE/TIME TESTED	17/7/09, 12.00pm	17/7/09, 12.10pm		
DEPTH OF TEST (mm)	150	150		
DEPTH OF LAYER (mm)	-	-		
LAYER TERMINOLOGY	AF11	AF12		
TEST LOCATION	Lot 181, 4m off back, 3m off right boundaries	Lot 178, 8m off South, 4m off West boundaries		
TEST ELEVATION	RL: 12.00	RL: 11.95		
SOIL DESCRIPTION	Silty Clay	Clay		
OVERSIZE SIEVE (mm)	19.0	19.0		
OVERSIZE - WET BASIS (%)	-			
FIELD MOISTURE CONTENT (%)	14.5	14.5		
OPTIMUM MOISTURE CONTENT(%)	14.0	14.5		
MOISTURE VARIATION (%)	1.0	0.0		
FIELD WET DENSITY (t/m^3)	2.08	2.08		
PEAK CONVERTED WET DENSITY (t/m^3)	2.16	2.05		
HILF DENSITY RATIO / SPEC (%)	**96.5** / **95**	**101.0** / **95**		

TEST PROCEDURE	Field	A.S. 1289 5.8.1		
	Laboratory	A.S. 1289 5.7.1 (Standard Compaction), 2.1.1		
TERMINOLOGY LEGEND	(S) Subgrade (LSB) Lower Subbase	(B) Base Course (SB) Subbase Course (F) Fill	(SF) Select Fill (AF) Allotment Fill (STF) Sewer Trench Fill	(EF) Embankment Fill (SWTF) Stormwater Trench Fill

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FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 8

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 13 August 2009

SAMPLE NUMBER	DL/09/4269	DL/09/4270		
DATE/TIME TESTED	24/7/09, 11.30am	24/7/09, 11.40am		
DEPTH OF TEST (mm)	150	150		
DEPTH OF LAYER (mm)	-	-		
LAYER TERMINOLOGY	AF13	AF14		
TEST LOCATION	Lot 181, 4m off back, 12m off right boundaries	Lot 182, 5m off back, 6m off left boundaries		
TEST ELEVATION	RL: 11.80	RL: 11.90		
SOIL DESCRIPTION	Silty Clay	Silty Clay		
OVERSIZE SIEVE (mm)	19.0	19.0		
OVERSIZE - WET BASIS (%)	-	-		
FIELD MOISTURE CONTENT (%)	15.5	15.5		
OPTIMUM MOISTURE CONTENT(%)	15.5	16.0		
MOISTURE VARIATION (%)	-0.5	-0.5		
FIELD WET DENSITY (t/m^3)	2.07	2.09		
PEAK CONVERTED WET DENSITY (t/m^3)	2.13	2.12		
HILF DENSITY RATIO / SPEC (%)	**97.0** **95**	**98.5** **95**		

TEST PROCEDURE
Field A.S. 1289 5.8.1
Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 9

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 13 August 2009

SAMPLE NUMBER	DL/09/4271	DL/09/4272		
DATE/TIME TESTED	28/7/09, 2.00pm	28/7/09, 2.10pm		
DEPTH OF TEST (mm)	150	150		
DEPTH OF LAYER (mm)	-	-		
LAYER TERMINOLOGY	AF15	AF16		
TEST LOCATION	Lot 180, 6m off North, 3m off East boundaries	Lot 183, 10m off back, 4m off right boundaries		
TEST ELEVATION	RL: 12.40	RL: 12.01		
SOIL DESCRIPTION	Silty Clay	Silty Clay		
OVERSIZE SIEVE (mm)	19.0	19.0		
OVERSIZE - WET BASIS (%)	-	-		
FIELD MOISTURE CONTENT (%)	16.5	13.5		
OPTIMUM MOISTURE CONTENT(%)	17.0	14.0		
MOISTURE VARIATION (%)	-0.5	-0.5		
FIELD WET DENSITY (t/m^3)	2.16	2.05		
PEAK CONVERTED WET DENSITY (t/m^3)	2.12	2.14		
HILF DENSITY RATIO / SPEC (%)	**102.5** / **95**	**96.0** / **95**		

TEST PROCEDURE
Field A.S. 1289 5.8.1
Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND
(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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CQA/R/21C

FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT: BROWN CONSULTING (QLD) PTY LTD
REPORT NO: 17

PROJECT: VALENCIA SPRINGS ESTATE – STAGE 7
JOB NO: CQAL/09/038

JOB DESCRIPTION: RESIDENTIAL SUBDIVISION
DATE: 15 October 2009

SAMPLE NUMBER	DL/09/5974		DL/09/5975					
DATE/TIME TESTED	2/10/09, 8.00am		2/10/09, 8.15am					
DEPTH OF TEST (mm)	150		150					
DEPTH OF LAYER (mm)	-		-					
LAYER TERMINOLOGY	AF37		AF38					
TEST LOCATION	Lot 187, 5m off North, 9m off East boundaries		Lot 187, 7m off North, 13m off West boundaries					
TEST ELEVATION	RL: 13.40		RL: 13.45					
SOIL DESCRIPTION	Sandy Clay		Sandy Clay					
OVERSIZE SIEVE (mm)	19.0		19.0					
OVERSIZE - WET BASIS (%)	-		-					
FIELD MOISTURE CONTENT (%)	13.5		13.0					
OPTIMUM MOISTURE CONTENT(%)	13.5		13.5					
MOISTURE VARIATION (%)	0.0		-0.5					
FIELD WET DENSITY (t/m^3)	2.04		2.04					
PEAK CONVERTED WET DENSITY (t/m^3)	2.11		2.13					
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-		-					
HILF DENSITY RATIO / SPEC (%)	**96.5**	**95**	**95.5**	**95**				

TEST PROCEDURE

Field A.S. 1289 5.8.1

Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1

TERMINOLOGY LEGEND

(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT:	BROWN CONSULTING (QLD) PTY LTD	REPORT NO:	24
PROJECT:	VALENCIA SPRINGS ESTATE – STAGE 7	JOB NO:	CQAL/09/038
JOB DESCRIPTION:	RESIDENTIAL SUBDIVISION	DATE:	22 October 2009

SAMPLE NUMBER	DL/09/6250		DL/09/6251					
DATE/TIME TESTED	8/10/09, 8.30am		8/10/09, 8.40am					
DEPTH OF TEST (mm)	150		150					
DEPTH OF LAYER (mm)	-		-					
LAYER TERMINOLOGY	AF46		AF47					
TEST LOCATION	Lot 185, 6m off North, 9m off East boundaries		Lot 185, 5m off North, 6m off West boundaries					
TEST ELEVATION	RL: 11.65		RL: 11.71					
SOIL DESCRIPTION	Sandy Clay		Sandy Clay					
OVERSIZE SIEVE (mm)	19.0		19.0					
OVERSIZE - WET BASIS (%)	-		-					
FIELD MOISTURE CONTENT (%)	26.0		23.0					
OPTIMUM MOISTURE CONTENT(%)	26.5		24.0					
MOISTURE VARIATION (%)	-0.5		-1.0					
FIELD WET DENSITY (t/m^3)	2.03		1.95					
PEAK CONVERTED WET DENSITY (t/m^3)	1.97		1.98					
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-		-					
HILF DENSITY RATIO / SPEC (%)	**103.0**	**95**	**98.5**	**95**				

TEST PROCEDURE	Field A.S. 1289 5.8.1 Laboratory A.S. 1289 5.7.1 (Standard Compaction), 2.1.1
TERMINOLOGY LEGEND	(S) Subgrade; (LSB) Lower Subbase; (B) Base Course; (SB) Subbase Course; (F) Fill; (SF) Select Fill; (AF) Allotment Fill; (STF) Sewer Trench Fill; (EF) Embankment Fill; (SWTF) Stormwater Trench Fill

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FIELD DENSITY RATIO (HILF) TEST REPORT (A.S.)

CLIENT:	BROWN CONSULTING (QLD) PTY LTD	REPORT NO:	25
PROJECT:	VALENCIA SPRINGS ESTATE – STAGE 7	JOB NO:	CQAL/09/038
JOB DESCRIPTION:	RESIDENTIAL SUBDIVISION	DATE:	22 October 2009

SAMPLE NUMBER	DL/09/6252	DL/09/6253					
DATE/TIME TESTED	16/10/09, 1.30pm	16/10/09, 1.40pm					
DEPTH OF TEST (mm)	150	150					
DEPTH OF LAYER (mm)	-	-					
LAYER TERMINOLOGY	AF48	AF49					
TEST LOCATION	Lot 186, 8m off back, 9m off right boundaries	Lot 186, 6m off front, 6m off left boundaries					
TEST ELEVATION	RL: 12.69	RL: 12.58					
SOIL DESCRIPTION	Silty Sand	Sandy Clay					
OVERSIZE SIEVE (mm)	19.0	19.0					
OVERSIZE - WET BASIS (%)	-	-					
FIELD MOISTURE CONTENT (%)	9.0	13.0					
OPTIMUM MOISTURE CONTENT(%)	11.5	13.0					
MOISTURE VARIATION.(%)	-2.5	0.0					
FIELD WET DENSITY (t/m^3)	1.91	2.02					
PEAK CONVERTED WET DENSITY (t/m^3)	2.01	2.09					
ADJUSTED PEAK CONVERTED WET DENSITY (t/m^3)	-	-					
HILF DENSITY RATIO / SPEC (%)	**95.0**	**95**	**96.5**	**95**			

TEST PROCEDURE	Field	A.S. 1289 5.8.1		
	Laboratory	A.S. 1289 5.7.1 (Standard Compaction), 2.1.1		
TERMINOLOGY LEGEND	(S) Subgrade	(B) Base Course	(SF) Select Fill	(EF) Embankment Fill
	(LSB) Lower Subbase	(SB) Subbase Course	(AF) Allotment Fill	(SWTF) Stormwater Trench Fill
		(F) Fill	(STF) Sewer Trench Fill	

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APPENDIX B

Daily Site Visit Report Sheets

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD

A.B.N. 52 058 855 431

GEOTECHNICAL CONSULTANTS

DAILY SITE VISIT REPORT

CLIENT: Brown Consulting (Qld) Pty Ltd
DATE: 12/6/09

CONTRACTOR: Doan Nash Constructions (Qld) Pty Ltd
JOB NO: CQAL07/038

PROJECT: Valencia Springs Estate - Stage 7
WEATHER: Fine

TEST PITS Conducted on Proposed Fill Areas

TEST PIT 1 - LOT 183
0-300 Extremely wet topsoil
300-700 SATURATED SAND
700 STIFF CLAY

TEST PIT 2 - LOT 181
0-300 Extremely wet topsoil
300-700 SATURATED SAND
700 STIFF CLAY

TEST PIT 3 - ROAD 14 (CH 50)
0-200 Extremely wet topsoil
200-600 SATURATED SAND
600 FIRM CLAY.

SIGNED:

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD

A.B.N. 52 058 855 431

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: Brown Consulting (Qld) Pty Ltd DATE: 1/7/05

CONTRACTOR: Dean Ash Constructions (Qld) Pty Ltd JOB NO: CQA/04/038

PROJECT: Valencia Springs - Stage 7, Redland Bay WEATHER: Fine

PURPOSE OF VISIT: AS 3798, Level Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS:

SECTIONS READY FOR TESTING/INSPECTING: [redacted] of Dean Ash Constructions requested inspection of Roads 14 after removal of temporary unsuitable (saturated sand) material. [redacted] of Brown Consulting had been notified by [redacted]

SAMPLING/TESTING CARRIED OUT:

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM:

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: [redacted] (Dean Ash Const)

- An inspection was carried out on Road 14 after removal of saturated sand layer (temporary unsuitable). It revealed all unsuitable material had been removed to a clay base. Some pockets of water still remained & these will be addressed before fully commences. Also the area must be proof rolled before duly. The approximate quantity removed measured 85m x 9m x 0.7m = 535m³. The material removed can be re-used some due to

- ☐ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.
- ☐ Please ensure that excessive organic material is removed from incoming fill.
- ☐ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☐
- ☐ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

SIGNED: Page: 1 of: 1

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD

A.B.N. 52 058 855 431

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L

DATE: 6/7/09

CONTRACTOR: DEAN ASH CONSTRUCTIONS

JOB NO: CQAL09/0038

PROJECT: VALENCIA SPRING ESTATE - STAGE 7, REDLAND BAY

WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: LEVEL 1 FILLING ROAD 14

SECTIONS READY FOR TESTING/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT:

EF1 - ROAD 14, CH: 50, 1M RHS OF ℄, 0.7M ↓ PAVEMENT LEVEL
EF2 - ROAD 14, CH: 55, 2M LHS OF ℄, 0.7M ↓ PAVEMENT LEVEL
EF3 - ROAD 14, CH: 60, 2M RHS OF ℄, 0.7M ↓ PAVEMENT LEVEL

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTIONS)

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (DEAN ASH CONSTRUCTIONS)

*ROAD 14 WAS INSPECTED. ALL POCKETS OF WATER WERE REMOVED AND AREA WAS PROOF ROLLED WITH MINIMAL MOVEMENT. PERMISSION TO FILL WAS GIVEN.

- [x] Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.
- [x] Please ensure that excessive organic material is removed from incoming fill.
- [x] Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry [ ] Too Wet [x]
- [x] All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: Brown Consulting (Qld) P/L

DATE: 7/7/09

CONTRACTOR: Dean Ash Constructions

JOB NO: CQA/09/038

PROJECT: Valencia Springs Estate - Stage 7, Redlands Bay

WEATHER: Fine

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: Level 1 Filling Road 14

SECTIONS READY FOR TESTING/INSPECTING: As Above

SAMPLING/TESTING CARRIED OUT:

EF 4 – Road 14, CH: 70, 1 m LHS Of ℄, 0.3m ↓ Pavement Level

EF 5 – Road 14, CH: 80, 1 m RHS Of ℄, 0.3m ↓ Pavement Level

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (Dean Ash Constructions)

* Filling To Continue Later In Week. Dean Ash Will Contact CQA Prior To Fill Operations Recommencing.

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (Dean Ash Constructions)

☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☑ Please ensure that excessive organic material is removed from incoming fill.

☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑

☐ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: Brown Consulting (Qld) P/L

DATE: 9/7/09

CONTRACTOR: Dean Ash Constructions

JOB NO: CQAL09/038

PROJECT: Valencia Springs Estate - Stage 7

WEATHER: Fine

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: Level 1 Inspection Of Lots 183-185

SECTIONS READY FOR ~~TESTING~~/INSPECTING: As Above

SAMPLING/TESTING CARRIED OUT: N/A

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (Dean Ash Constructions)

* Please Conduct Inspection On Lots 183-185

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (Dean Ash Constructions)

* An Inspection Was Conducted On Lots 183-185. Proof Roll Revealed Movement Throughout The Southern Half Of Lots 183-185. Pits Revealed The Top 200mm (Approximately) Of Natural Material Was Overwet Of Optimum. This Area Must Be Moisture Conditioned Prior To Further Proof Roll And Commencement Of Filling. All Topsoils And Organics Had Been Removed To A Natural Sandy Clay Material.

- ☐ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.
- ☑ Please ensure that excessive organic material is removed from incoming fill.
- ☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑
- ☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

SIGNED: [signature]

Page: 1 of: 1

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: Brown Consulting (QLD) P/L
DATE: 10/7/09

CONTRACTOR: Dean Ash Constructions
JOB NO: CQA/07/1038

PROJECT: Valencia Springs Estate - Stage 7
WEATHER: Fine

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: Level 1 Inspection And Filling Of Lots 182-185

SECTIONS READY FOR TESTING/INSPECTING: As Above

SAMPLING/TESTING CARRIED OUT:

AF 6 - Lot 185, 11 m Off SB, 3 m Off EB, RL: 11.70
AF 7 - Lot 184, 13 m Off SB, 6 m Off WB, RL: 11.85
AF 8 - Lot 183, 5 m Off SB, 2 m Off WB, RL: 11.95

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (Dean Ash Constructions)

* Lots 182-185 Have Been Moisture Conditioned. Please Re-Inspect These Lots

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (Dean Ash Constructions)

* Proof Roll With Onsite Padfoot Roller Revealed Menimal Movement After Moisture Conditioning. Permission To Fill Lots 182-185 Was Given.
* Please Moisture Condition Incoming Fill Prior To Compaction.

☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☑ Please ensure that excessive organic material is removed from incoming fill.

☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑

☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L
DATE: 13/7/09

CONTRACTOR: DEAN ASH CONSTRUCTIONS
JOB NO: CQA/09/038

PROJECT: VALENCIA SPRINGS ESTATE - STAGE 7
WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: LEVEL 1 FILLING LOTS 182-185

SECTIONS READY FOR TESTING/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT: N/A

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTION

* FILL OPERATIONS TO CEASE UNTIL FURTHER NOTICE. DEAN ASH TO CONTACT CQA PRIOR TO RECOMMENCING FILL OPERATIONS.

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (DEAN ASH CONSTRUCTIONS)

* FILL PLACED ON LOTS 182-185 IS OVERWET OF OPTIMUM MOISTURE. PLEASE TYNE AREA AND ALLOW TO DRY PRIOR TO RECOMMENCING FILL OPERATIONS.

- [x] Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.
- [x] Please ensure that excessive organic material is removed from incoming fill.
- [x] Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑
- [x] All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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Page: 1 of: 1

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L

DATE: 15/7/09

CONTRACTOR: DEAN ASH CONSTRUCTIONS

JOB NO: CQA/09/038

PROJECT: VALENCIA SPRINGS ESTATE - STAGE 7

WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: LEVEL 1 INSPECTION AND FILLING OF LOTS 178-181

SECTIONS READY FOR ~~TESTING~~/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT: N/A

* NO TESTING WAS CONDUCTED DUE TO MINIMAL AMOUNTS OF FILL BEING PLACED.

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTIONS)

* PLEASE INSPECT LOTS 178-181

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (DEAN ASH CONSTRUCTIONS)

* LOTS 178-181 WERE INSPECTED. ALL TOPSOILS AND ORGANICS HAD BEEN REMOVED TO A NATURAL BASE. AREA WAS PROOF ROLLED WITH ONSITE PADFOOT ROLLER WITH SOME SMALL AREAS OF DEFLECTION. THESE AREAS WERE MOISTURE CONDITIONED BY MIXING DRY CLAY THROUGH THE NATURAL MATERIAL. AREAS WERE PROOF ROLLED AGAIN WITH MINIMAL MOVEMENT VISIBLE. PERMISSION WAS GIVEN TO FILL.

☐ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☑ Please ensure that excessive organic material is removed from incoming fill.

☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑

☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L

DATE: 16/7/09

CONTRACTOR: DEAN ASH CONSTRUCTIONS

JOB NO: CQAL/09/038

PROJECT: VALENCIA SPRINGS ESTATE - STAGE 7

WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: LEVEL 1 FILLING LOTS 178-181

SECTIONS READY FOR TESTING/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT:

AF 9 - LOT 180, 6 M OFF SB, 4 M OFF EB, RL: 12.50

AF 10 - LOT 179, 7 M OFF SB, 6 M OFF WB, RL: 12.40

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTIONS)

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (DEAN ASH CONSTRUCTIONS)

- ☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.
- ☑ Please ensure that excessive organic material is removed from incoming fill.
- ☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑
- ☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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DAILY SITE VISIT REPORT

FORM:CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L

DATE: 17/7/09

CONTRACTOR: DEAN ASH CONSTRUCTIONS

JOB NO: LQAC/09/038

PROJECT: VALENCIA SPRINGS ESTATE - STAGE 7

WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: LEVEL 1 FILLING LOTS 178-181

SECTIONS READY FOR TESTING/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT:

AF 11 - LOT 181, 4 M OFF BB, 3 M OFF RB, RL: 12.00

AF 12 - LOT 178, 8 M OFF SB, 4 M OFF WB, RL: 11.95

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTIONS)

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (DEAN ASH CONSTRUCTIONS)

- [x] Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.
- [x] Please ensure that excessive organic material is removed from incoming fill.
- [x] Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry [ ] Too Wet [x]
- [x] All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L
DATE: 22/7/09

CONTRACTOR: DEAN ASH CONSTRUCTIONS P/L
JOB NO: CQAL/09/038

PROJECT: VALENCIA SPRINGS ESTATE - STAGE 7
WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: LEVEL 1 INSPECTION AND FILLING PART OF LOTS 180, 181 & 183 AND LOT 182

SECTIONS READY FOR ~~TESTING~~/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT: N/A

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTIONS)

*PLEASE INSPECT LOTS 180-183

*AN APPROXIMATE MEASUREMENT OF OVERWET NATURAL REMOVED FOR DRYING WAS:-25 55 0

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (DEAN ASH CONSTRUCTIONS)

*AN SNS INSPECTION WAS CONDUCTED ON PART OF LOTS 180, 181, 183 AND ON LOT 182. ALL TOPSOILS WERE REMOVED, THE TOP LAYER OF NATURAL GROUND WAS OVERWET OF OPTIMUM THIS IS TO BE MOISTURE CONDITIONED ~~UPON~~ PRIOR TO CONDUCTING FILL OPERATIONS.

*AN APPROXIMATE MEASUREMENT OF STOCKPILE NEAR SED BASIN WAS:- 9MX7MX2M

*APPROXIMATE MEASUREMENT OF EXCESS TOPSOIL REMOVED WAS:- 34MX 55MX0.3M = 561M

- ☐ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.
- ☑ Please ensure that excessive organic material is removed from incoming fill.
- ☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑
- ☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

SIGNED: Page: 1 of: 1

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L
DATE: 24/7/09

CONTRACTOR: DEAN ASH CONSTRUCTIONS
JOB NO: LQAL/09/038

PROJECT: VALENCIA SPRINGS ESTATE - STAGE 7
WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: LEVEL 1 FILLING LOTS 180-183

SECTIONS READY FOR TESTING/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT:

AF 13 - LOT 181, 4 m OFF BB, 12 m OFF RB, RL: 11.80
AF 14 - LOT 182, 6 m OFF BB, 6 m OFF LB, RL: 11.90

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTIONS)

* FILL STOCKPILE WILL BE "DRIED" THROUGH THE REST OF THE DAY AND FIRST HALF OF TOMORROW. FILL TO CONTINUE TOMORROW AT LUNCHTIME.

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO (DEAN ASH CONSTRUCTIONS)

* INCOMING FILL IS OVERWET OF OPTIMUM, PLEASE MOISTURE CONDITION FILL PRIOR TO PLACEMENT OF FURTHER LAYERS.

☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☑ Please ensure that excessive organic material is removed from incoming fill.

☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑

☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L
DATE: 28/7/2009
CONTRACTOR: DEAN ASH CONSTRUCTIONS
JOB NO: LQA1/09/038
PROJECT: VALENCIA SPRINGS ESTATE-STAGE 7
WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: LEVEL 1 FILLING LOTS 180-183

SECTIONS READY FOR TESTING/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT:

AF 15 - LOT 180, 6 M OFF NB, 3 M OFF EB, RL: 12.40
AF 16 - LOT 183, 10 M OFF BB, 4 M OFF RB, RL: 12.01

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTIONS)

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (DEAN ASH CONSTRUCTIONS)

☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☑ Please ensure that excessive organic material is removed from incoming fill.

☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑

☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L
DATE: 28/9/09
CONTRACTOR: DEAN ASH CONSTRUCTIONS
JOB NO: CQA/09/038
PROJECT: VALENCIA SPRINGS ESTATE - STG 7, REDLAND BAY
WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: SNS INSPECTION OF LOT 187

SECTIONS READY FOR ~~TESTING~~/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT: N/A

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTIONS)

* PLEASE INSPECT LOT 187

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (DEAN ASH CONSTRUCTIONS)

* SNS INSPECTION OF LOT 187 REVEALED ALL UNCONTROLLED FILL AND TOPSOIL BENEATH UNCONTROLLED FILL (OLD STOCKPILE), HAD BEEN REMOVED TO A SOUND NATURAL BASE. PROOF ROLL WITH ONSITE PADFOOT ROLLER REVEALED MINIMAL MOVEMENT. PERMISSION TO FILL WAS GIVEN.
* AN APPROXIMATE MEASUREMENT OF UNCONTROLLED FILL REMOVED WAS 13M X 20M X 0.4M ≈ 104M³

☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☑ Please ensure that excessive organic material is removed from incoming fill.

☐ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☑ Too Wet ☐

☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: Brown Consulting (QLD) P/L
DATE: 2/10/09
CONTRACTOR: Dean Ash Constructions
JOB NO: CQA/09/038
PROJECT: Valencia Springs Estate – Sta 7, Redland Bay
WEATHER: Fine
PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks
EARTHWORKS IN CURRENT PROGRESS: Level 1 Filling Lot 187

SECTIONS READY FOR TESTING/INSPECTING: As Above

SAMPLING/TESTING CARRIED OUT:
AF 37 – Lot 187, 5 m Off NB, 9 m Off EB, RL: 13.40
AF 38 – Lot 187, 7 m Off NB, 13 m Off WB, RL: 13.45

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (Dean Ash Construction
* Fill Operations To Continue At A Later Date. Dean Ash Construction Will Contact CQA Prior To Recommencing Fill Operations

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (Dean Ash Constructions)
* Please Contact CQA For Inspection Of Lot 186 Once Stockpile Has Been Removed From Lot 186.

☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.
☑ Please ensure that excessive organic material is removed from incoming fill.
☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☑ Too Wet ☐
☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: Browns Consulting (Qld) Pty DATE: 8/10/09

CONTRACTOR: Dean Ash Constructions JOB NO: CQA/09/1255

PROJECT: Valencia Springs Est, stg 7, Redland Bay WEATHER: Fine

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS:

Level 1 filling Lot 185

SECTIONS READY FOR TESTING/INSPECTING: As Above

SAMPLING/TESTING CARRIED OUT:

AF46 Lot 185, 6 mdd NB, 9 mdd EB, Rc: 11.65

AF47 Lot 185, 5 mdd NB, 6 mdd NB, Rc: 11.71

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM:

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO:

* An SVS Inspection was carried out on the remaining Northern corner of Lot 185, all topsoil and organics were removed. Area was proofrolled no signs of movement - Permission given to fill.

- ☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.
- ☑ Please ensure that excessive organic material is removed from incoming fill.
- ☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☐
- ☐ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

SIGNED: Page: 1 of: 1

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: Brown Consulting (Qld) Pty DATE: 12/10/09

CONTRACTOR: Deans Rsh Constructions (Qld) Pty JOB NO: CQAL 09/038

PROJECT: Valencia Springs Estate - Stage 7, Redland Bay WEATHER: Fine

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS:

SECTIONS READY FOR TESTING/INSPECTING: [redacted] of Deans Rsh Constructions requested an inspection of Lot 186 after removal of fill stockpile.

SAMPLING/TESTING CARRIED OUT:

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: [redacted] (Brown Consulting Pty

- Saturated sand underlying the topsoil on Lot 186 to be removed to the firm sandy clay layer CQA to inspect & record the total of saturated sand removed.

- [redacted] (Deans Rsh Const.) Sandy clay layer on Lot 186 ready for inspection + proof roll Ann 13/10/09

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: [redacted] (Deans Rsh Constructions)

- An inspection was carried out on Lot 186 after removal of existing stockpile. It revealed all stockpile material had been removed to a topsoil layer. Test pits in this area revealed 150 mm of topsoil overlay a 300 mm layer of saturated sand. Underlying this wet sand was a firm sandy clay material. CQA to contact Brown Consulting with findings.

☐ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☐ Please ensure that excessive organic material is removed from incoming fill.

☐ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☐

☐ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

SIGNED: Page: of:

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GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: BROWN CONSULTING (QLD) P/L

DATE: 13/10/09

CONTRACTOR: DEAN ASH CONSTRUCTIONS

JOB NO: CQAC/09/038

PROJECT: VALENCIA SPRINGS ESTATE - STAGE 13, REDLAND BAY

WEATHER: FINE

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS: LEVEL 1 INSPECTION AND FILLING OF LOT 186

SECTIONS READY FOR TESTING/INSPECTING: AS ABOVE

SAMPLING/TESTING CARRIED OUT:

*NO TESTING CONDUCTED DUE TO INSUFFICIENT FILL BEING PLACED. TESTING WILL BE CONDUCTED UPON FURTHER PLACEMENT OF FILL.

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM: (DEAN ASH CONSTRUCTIONS)

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO: (DEAN ASH CONSTRUCTIONS)

*AN INSPECTION OF LOT 186 REVEALED THE MAJORITY OF THE SATURATED SAND HAD BEEN REMOVED FROM LOT 186. REMAINING SAND IS TO BE MIXED WITH INCOMING FILL TO MOISTURE CONDITION TO OMC. AREA WAS PROOFROLLED WITH ONSITE PADFOOT AFTER REMAINING SAND WAS MOISTURE CONDITIONED. MINIMAL MOVEMENT WAS VISIBLE, PERMISSION WAS GIVEN TO FILL.

*AN APPROXIMATE MEASUREMENT OF SATURATED SAND REMOVED WAS 37M X 15M X 3.5M = 1942

☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☑ Please ensure that excessive organic material is removed from incoming fill.

☑ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☑

☑ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

SIGNED:

Page: 1 of: 1

CIVIL QUALITY ASSURANCE (QLD) PTY. LTD

A.B.N. 52 058 855 431

GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

DAILY SITE VISIT REPORT

FORM CQA/CF/04

CLIENT: Brown Consulting (Qld) P/L
DATE: 16/10/09
CONTRACTOR: Dean Ash Constructions
JOB NO: CQA/09/012
PROJECT: Valencia Springs Est-stg 7, Redland Bay
WEATHER: Fine

PURPOSE OF VISIT: AS 3798, Level 1 Inspection and Testing - Earthworks

EARTHWORKS IN CURRENT PROGRESS:

Level 1 filling, Lot 186

SECTIONS READY FOR TESTING/INSPECTING: As Above

SAMPLING/TESTING CARRIED OUT:

AF48 Lot186, 6mdd BB, 9mdd RB, RL: 12.69
AF49 Lot186, 6mdd FB, 6mdd CB, RL: 12.58

INSTRUCTIONS/INFORMATION/ADVICE RECEIVED FROM:

INSTRUCTIONS/INFORMATION/ADVICE GIVEN TO:

* Please ensure fill is moisture conditioned prior to compaction

☑ Initial results indicate that the above field density tests should meet specification requirements. Final results will be available upon completion of laboratory testing.

☐ Please ensure that excessive organic material is removed from incoming fill.

☐ Please ensure that fill material is moisture conditioned as appropriate prior to compaction. Material is Too Dry ☐ Too Wet ☐

☐ All earthworks as detailed above generally complies with the requirements of AS 3798 and the project specification.

SIGNED: Page: 1 of: 1

APPENDIX C

Drawings

CLIENT:	BROWN CONSULTING (QLD) PTY LTD
PROJECT:	VALENCIA SPRINGS ESTATE – STAGE 7, REDLAND BAY
JOB NO:	CQAL/09/038
DRAWING NO:	CQAL/09/038-D1

Approximate lateral extent of Level 1 (controlled filling).
Controlled fill certification is limited to within this area.
Unless specifically stated in the report, level 1 compaction control and certification does not address or include:

- backfill to service trenches and/or retaining walls (including boulder walls).
- topsoil placed subsequent to completion of controlled filling.

LEGEND

- PROPOSED MOUNTABLE KERB
- EXISTING MOUNTABLE KERB A
- PROPOSED STORMWATER DRA
- EXISTNG STORMWATER DRAIN
- PROPOSED ROOFWATER DRAIN
- EXISTING ROOFWATER DRAINA
- EXISTING SURFACE CONTOUR
- DESIGN SURFACE CONTOUR (0.
- PROPOSED INTERSECTION THRE TREATMENT - REFER NOTE
- STD RCC CONCRETE FOOTPATH REFER LANDSCAPE ARCHITECT FOR ALIGNMENT DETAILS
- SEWER LINE
- WATER LINE
- TELSTRA LINE
- ENERGEX LINE
- PROPOSED ROCK RETAINING WALL
- EXISTING ROCK RETAINING WALL
- PROPOSED KERB ADAPTOR
- PROPOSED 100Ø uPVC CONNECTOR TO PIT
- INDICATIVE DRIVEWAY LOCATIONS
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS

PROVIDE 3.0% REVERSE CROSSFALL TO VERGE LOCALLY BEHIND GULLY PIT. CUT TURFED OUTLET DRAIN AT MIN. 0.50% GRADE TO EXISTING TABLE DRAIN.

EXISTING STORMWATER CULVERT TO BE RETAINED

EXISTING 300Ø SEWERAGE

EXISTING 150Ø WATER

TEMPORARY TURN AROUND AREA, REFER DRAWING B07018-108 FOR DETAILS

SECTION OF FOOTPATH BETWEEN ROAD 13 AND CONNECTION TO EXISTING PATH TO ALSO BE USED AS DRIVEWAY FOR MAINTENANCE ACCESS TO BASIN REFER RSC STD DRG R-RSC-3 FOR REINFORCEMENT REQUIREMENTS.

WARNING:
EXISTING TELSTRA OPTIC FIBRE MAIN EXISTS IN THIS AREA

REFER DRG B07018-400 FOR BASIN DETAILS

JOIN PATHWAY SMOOTHLY TO EXISTING

EXISTING ROOFWATER DRAINAGE

EXISTING STAGE 6

MULLER STREET

UNWIN ROAD

ROAD 13

ROAD 14

DONALD ROAD

1 RP105230

2 SP180944

2 RP167793

ROOFWATER NOTES:

1. SET OUT POINT FOR DRAINAGE STRUCTURES IS TO THE GEOMETRIC CENTRE.
2. HOUSE CONNECTIONS EXCLUDING INSPECTION PITS SHALL BE LOCATED 4.0m UPSTREAM OF THE SIDE BOUNDARY UNLESS NOTED OTHERWISE.
3. HOUSE CONNECTIONS TO EXTEND A MINIMUM OF 1m PAST ADJACENT SEWER LINES.
4. BRANCH CONNECTIONS INTO INSPECTION CHAMBERS SHALL BE 100mm DIA WITH A 100mm-90mm PUSH ON CAP. OTHER BRANCH CONNECTIONS SHALL BE THROUGH PIPE DIA X 100mm "Y" WITH 100mm - 90mm DIA REDUCER AND PUSH ON CAP.
5. ROOFWATER DRAINAGE PIPES TO BE uPVC CLASS "SN4" OR FRC CLASS 2 WITH RUBBER RING JOINTS.
6. MINIMUM COVER TO PIPES TO BE 500m AND TO SUIT FINISHED SURFACE LEVEL.
7. ENDS OF PIPES AND STUBS TO BE CAPPED.
8. LOTS WITHOUT REAR ALLOTMENT DRAINAGE SHALL HAVE WITHIN 0.5m OF THE SIDE BOUNDARY, OR 0.3m FROM ROOFWATER ALIGNMENT ON LOT 172 AND 177, A KERB ENTRY ADAPTOR ON THE LOWEST SIDE OF THE LOT.
9. ROOFWATER PITS TO BE IN ACCORDANCE WITH I.M.E.A.Q. STD DRG D-0110.
10. ROOFWATER TO DRAINAGE LINES TO BE CONNECTED WITH EPOXY SADDLE JOINT.

NOTE:
INTERSECTION PAVEMENT
- PAINTED ASPHALT SURFACE 250mm MIN. COMPACTED DEPTH GRAVEL PAVEMENT.
- 25mm A.C. SURFACING WITH SINGLE COAT 7mm CHIP SEAL).
- "B TRACK" PAINTED SURFACE TREATMENT OR APPROVED EQUIVALENT COMPLETE AS SPECIFIED (OFFSET PATTERN, RED BRICK INFILL).

NOTE:
THE STORMWATER DESIGN HAS BEEN CHECKED WITH A 50% BLOCKAGE FACTOR APPLIED TO ALL INLETS AND CATCHPITS, TO ENSURE OVERLAND FLOWS LEVELS DO NOT INUNDATE BUILDING FLOOR LEVELS.

NOTE:
CONSTRUCTION OF 2.5m WIDE SHARED CONCRETE PATHWAY IN DONALD ROAD IS NOT PART OF STAGE 7 CIVIL WORKS

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed.

Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-101.dwg DATE: 23-07-2009 TIME: 11:56
Xref's: X_B07018-TITLE X_B07018-BASE USR: Nayanan Hatherarajah

ISSUE	CALCD	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.08	ROAD 13 CURVE WIDENING AMENDED / PRAM RAMPS ADDED
C	MJH	MJH	23.01.09	GULLY PIT G1/E AND RWD PITS ADDED AND NOTE AMENDED
D				
E				
F				

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ:6921
JEFF GRIFFITHS RPEQ:4115
DEAN PAYNE RPEQ:4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 9 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol

BROWN

DRAWING TITLE: ROADWORKS AND DRAINAGE LAYOUT PLAN

DRAWING NUMBER: B07018-101

ISSUE: B

"VALENCIA SPRINGS ESTATE"

REDLAND BAY

STAGE 7

FOR AMEX SUBDIVISIONS PTY. LTD.

Redland City Council
Operational Works Approval
17 FEB 2010
Refer Development Permit for
Conditions of Approval
Signature

DRAWING INDEX

ROADWORKS AND DRAINAGE

B07018-100	DRAWING INDEX AND LOCALITY PLAN
B07018-101	ROADWORKS AND DRAINAGE LAYOUT PLAN
B07018-102	EROSION AND SEDIMENT CONTROL PLAN
B07018-103	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
B07018-104	BULK EARTHWORKS LAYOUT PLAN
B07018-105	ROAD 13 LONGITUDINAL SECTION
B07018-106	ROAD 13 CROSS SECTIONS
B07018-107	ROAD 14 LONGITUDINAL SECTION AND CROSS SECTIONS
B07018-108	INTERSECTION DETAILS SHEET
B07018-109	STORMWATER DRAINAGE CATCHMENT PLAN
B07018-110	STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 1 OF 2
B07018-111	STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 2 OF 2
B07018-112	STORMWATER DRAINAGE CALCULATIONS TABLE
B07018-113	ROOFWATER DRAINAGE LONGITUDINAL SECTIONS
B07018-114	SURVEY SETOUT AND LAYOUT PLAN
B07018-115	SIGNS AND LINEMARKING LAYOUT PLAN
B07018-116	DONALD ROAD PATHWAY EARTHWORKS LAYOUT PLAN
B07018-117	DONALD ROAD PATHWAY CROSS SECTIONS

SEWERAGE RETICULATION

B07018-200	SEWERAGE RETICULATION LAYOUT PLAN
B07018-201	SEWERAGE RETICULATION LONGITUDINAL SECTIONS

WATER RETICULATION

B07018-300	WATER RETICULATION LAYOUT PLAN
B07018-301	WATER RETICULATION NOTES

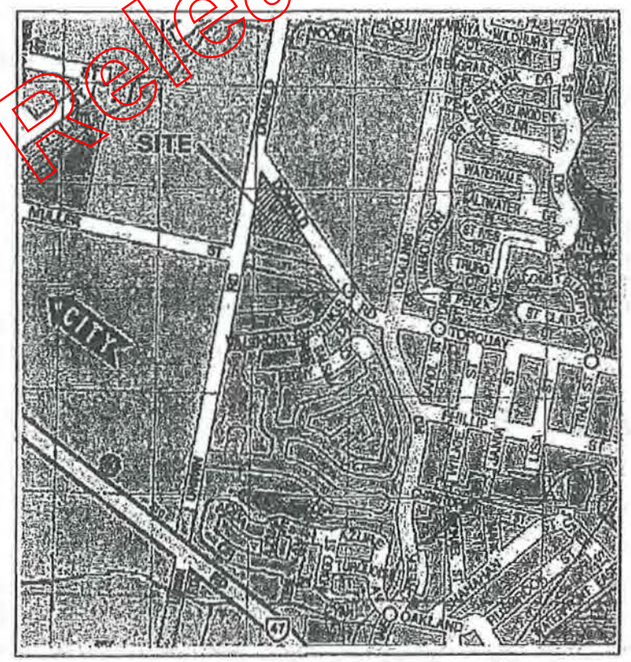
STORMWATER QUALITY MANAGEMENT

B07018-400	BIO RETENTION BASIN LAYOUT PLAN AND DETAILS

NO. OF LOTS = 18 AREA OF SITE = 1.82 Ha
RP DESCRIPTION PART OF LOT 2 ON RP 850031 PARISH OF REDLAND COUNTY OF STANLEY
DATUM LEVEL P.S.M. 154627 RL 16.88 AHD CORNER OF BASSATT STREET AND EBONY CRESCENT

CONSTRUCTION HOLD POINT
PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY LEVELS OF ALL EXISTING CROSSINGS AND CONNECTION POINTS.

CONSTRUCTION HOLD POINT
ONCE THE BASE OF MANHOLES, INSPECTION PITS, GULLIES AND FIELD INLETS FOR STORMWATER DRAINAGE AND SEWER RETICULATION HAVE BEEN POURED, FURTHER CONSTRUCTION SHALL NOT PROCEED UNTIL THE SUPERINTENDENT AND OR ENGINEER HAVE INSPECTED THE WORKS FOR FINISHED LEVELS AND APPROVED CONSTRUCTION TO CONTINUE.



LOCALITY PLAN
NTS
UBD. MAP 246. REF. H.7.

Redland City Council
Operational Works Approval
14 SEP 2010
Refer Development Permit for
Conditions of Approval
Signature

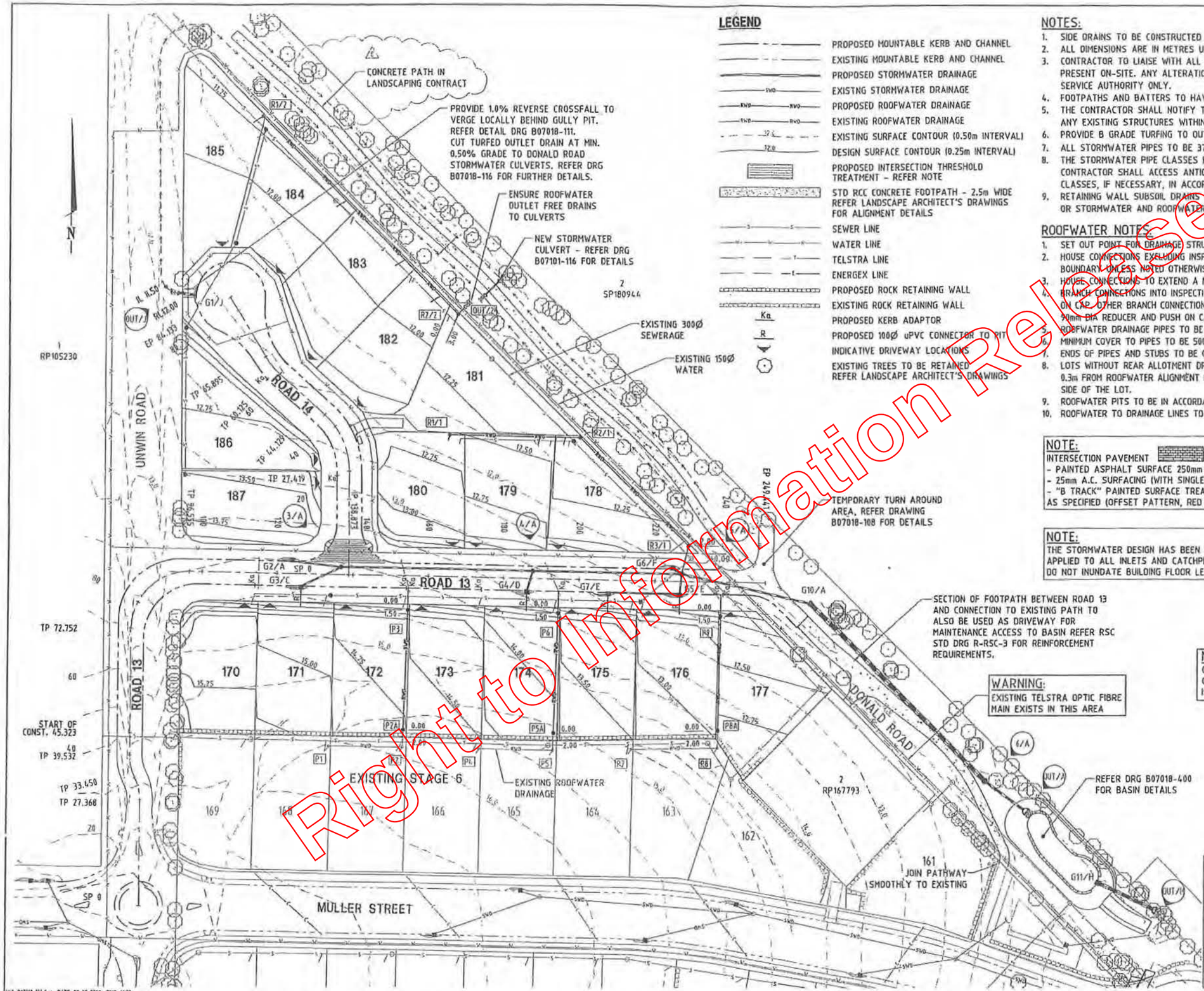
WORKS AS CONSTRUCTED
It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004792.7

ISSUE	AMENDMENT DETAILS	DESIGN CHECK	SCALE (METRES)	DRAWING No.	SURVEYOR: DTS Group Pty Ltd 1st Floor, 6 Heussler Tce Ph (07) 3118 0600 Fax (07) 3118 0699	CLIENT: AMEX SUBDIVISIONS PTY LTD	Brown Consulting (QLD) Pty Ltd Engineers & Managers Level 3 410 Queen Street Brisbane QLD Australia 4000 Telephone 07 3231 5555 Facsimile 07 3231 5500	DRAWING TITLE: DRAWING INDEX AND LOCALITY PLAN
A	SIGNS AND LINEMARKING PLAN ADDED	DRAWN CHECK		PROJECT No. B07018	APPROVED: ANDREW McPHAIL RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4802 FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD	PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY	BROWN	DRAWING NUMBER: B07018-100 ISSUE: B
B	SHE 9A & 10 ADDED							



LEGEND

- PROPOSED MOUNTABLE KERB AND CHANNEL
- EXISTING MOUNTABLE KERB AND CHANNEL
- PROPOSED STORMWATER DRAINAGE
- EXISTNG STORMWATER DRAINAGE
- PROPOSED ROOFWATER DRAINAGE
- EXISTING ROOFWATER DRAINAGE
- EXISTING SURFACE CONTOUR (0.50m INTERVAL)
- DESIGN SURFACE CONTOUR (0.25m INTERVAL)
- PROPOSED INTERSECTION THRESHOLD TREATMENT - REFER NOTE
- STD RCC CONCRETE FOOTPATH - 2.5m WIDE REFER LANDSCAPE ARCHITECT'S DRAWINGS FOR ALIGNMENT DETAILS
- SEWER LINE
- WATER LINE
- TELSTRA LINE
- ENERGEX LINE
- PROPOSED ROCK RETAINING WALL
- EXISTING ROCK RETAINING WALL
- PROPOSED KERB ADAPTOR
- PROPOSED 100Ø uPVC CONNECTOR TO PIT
- INDICATIVE DRIVEWAY LOCATIONS
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS

NOTES:

1. SIDE DRAINS TO BE CONSTRUCTED BELOW ALL KERB AND CHANNEL AS PER RCC STANDARDS.
2. ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE.
3. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE. ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY.
4. FOOTPATHS AND BATTERS TO HAVE MINIMUM OF 75mm TOPSOIL (AND GRASSING IF ORDERED).
5. THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
6. PROVIDE B GRADE TURFING TO OUTLETS AS DIRECTED BY THE SUPERINTENDENT.
7. ALL STORMWATER PIPES TO BE 375Ø R.C.P. OR F.R.C. CLASS 2 UNLESS NOTED OTHERWISE.
8. THE STORMWATER PIPE CLASSES HAVE BEEN DESIGNED FOR SERVICE LOADS ONLY, AND THE CONTRACTOR SHALL ACCESS ANTICIPATED CONSTRUCTION LOADS AND UPGRADE THE PIPE CLASSES, IF NECESSARY, IN ACCORDANCE WITH A.S. 3725 - 1989.
9. RETAINING WALL SUBSOIL DRAINS TO CONNECT TO KERB AND CHANNEL SUBSOIL, SWALE SUBSOIL, OR STORMWATER AND ROOFWATER STRUCTURES.

ROOFWATER NOTES:

1. SET OUT POINT FOR DRAINAGE STRUCTURES IS TO THE GEOMETRIC CENTRE.
2. HOUSE CONNECTIONS EXCLUDING INSPECTION PITS SHALL BE LOCATED 4.0m UPSTREAM OF THE SIDE BOUNDARY UNLESS NOTED OTHERWISE.
3. HOUSE CONNECTIONS TO EXTEND A MINIMUM OF 1m PAST ADJACENT SEWER LINES.
4. BRANCH CONNECTIONS INTO INSPECTION CHAMBERS SHALL BE 100mm DIA WITH A 100mm-90mm PUSH ON CAP. OTHER BRANCH CONNECTIONS SHALL BE THROUGH PIPE DIA X 100mm "YJ" WITH 100mm - 90mm DIA REDUCER AND PUSH ON CAP.
5. ROOFWATER DRAINAGE PIPES TO BE uPVC CLASS "SN4" OR FRC CLASS 2 WITH RUBBER RING JOINTS.
6. MINIMUM COVER TO PIPES TO BE 500m AND TO SUIT FINISHED SURFACE LEVEL.
7. ENDS OF PIPES AND STUBS TO BE CAPPED.
8. LOTS WITHOUT REAR ALLOTMENT DRAINAGE SHALL HAVE WITHIN 0.5m OF THE SIDE BOUNDARY, OR 0.3m FROM ROOFWATER ALIGNMENT ON LOT 172 AND 177, A KERB ENTRY ADAPTOR ON THE LOWEST SIDE OF THE LOT.
9. ROOFWATER PITS TO BE IN ACCORDANCE WITH I.M.E.A.Q. STD DRG D-0110.
10. ROOFWATER TO DRAINAGE LINES TO BE CONNECTED WITH EPOXY SADDLE JOINT.

NOTE:
INTERSECTION PAVEMENT
- PAINTED ASPHALT SURFACE 250mm MIN. COMPACTED DEPTH GRAVEL PAVEMENT.
- 25mm A.C. SURFACING (WITH SINGLE COAT 7mm CHIP SEAL).
- "B TRACK" PAINTED SURFACE TREATMENT OR APPROVED EQUIVALENT COMPLETE AS SPECIFIED (OFFSET PATTERN, RED BRICK INFILL).

NOTE:
THE STORMWATER DESIGN HAS BEEN CHECKED WITH A 50% BLOCKAGE FACTOR APPLIED TO ALL INLETS AND CATCHPITS, TO ENSURE OVERLAND FLOWS LEVELS DO NOT INUNDATE BUILDING FLOOR LEVELS.

Redland City Council
Operational Works Approval
17 FEB 2010
Refer Development Permit for Conditions of Approval
Signature

WORKS AS CONSTRUCTED

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Andrew McPhail 6921
Signature ..... Jeff Griffiths 4115
Dean Payne 4802
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

ISSUE	CALC	DRAW	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.01.08	ROAD 13 DRIVE WIDENING AMENDED / PRAM RAMPS ADDED
C	MJH	MJH	23.01.08	GULLY PIT GIVE AND RWD PITS ADDED AND NOTE AMENDED
D	MJH	MJH	15.06.09	SWD LINE A AMENDED
E	MJH	MJH	25.08.09	SWD / RWD AMENDED
F	MJH	TL	02.10.09	CONCRETE PATH NOTE ADDED / ROCK PITCHING ADDED

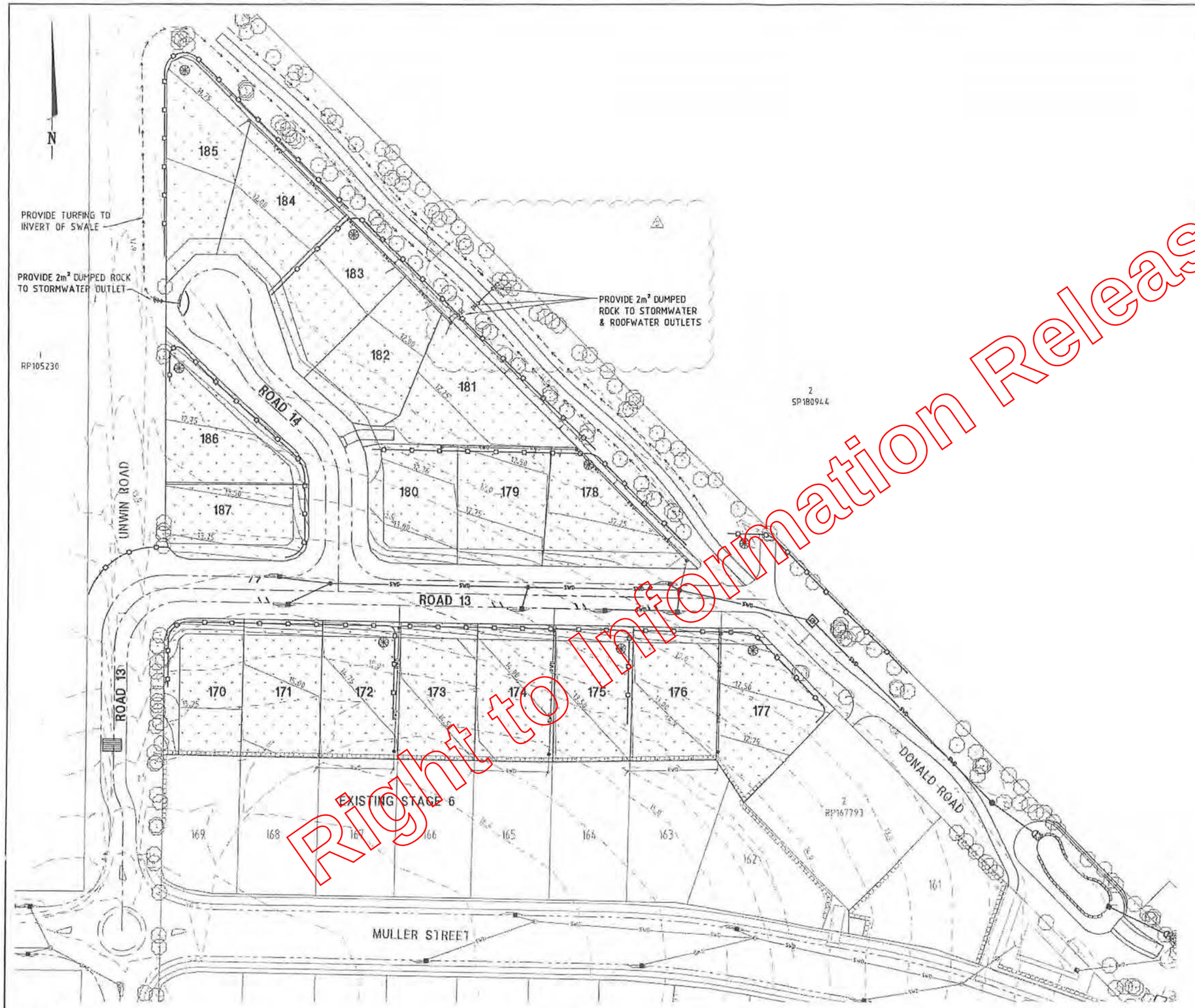
DESIGN CHECK
DRAWN CHECK
SCALE (METRES) 1:500 10 5 0 10 20 A1 / 1:1000 A3
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED ANDREW McPHAIL RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Adelaide Canberra Melbourne Sydney Singapore Sunshine Coast Bond

DRAWING TITLE: ROADWORKS AND DRAINAGE LAYOUT PLAN
DRAWING NUMBER: B07018-101
ISSUE: E



LEGEND

- SEDIMENT FENCE (OR AS DIRECTED BY SITE ENGINEER)
- KERB INLET PROTECTION (SAG GULLIES)
- KERB INLET PROTECTION (GULLIES ON GRADE)
- FIELD INLET PROTECTION
- EARTHWORKS AREAS TO BE TOP SOILED AND GRASS SEEDED
- TEMPORARY ENTRY/EXIT DEVICE - REFER DETAIL
- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS

NOTES:

1. REFER DRG B07018-103 FOR NOTES AND DETAILS.
2. PROVIDE 'GRADE B' TURFING WITH RETURNS TO:
   - FULL VERGE BETWEEN KERB AND LOT BOUNDARY.
   - 2 STRIPS BEHIND DRIVEWAYS AND PATHWAYS
   - AND TO TOTAL WIDTH OF SWALES.

REFER DRG B07018-103 FOR TYPICAL DETAIL.

⊛ PROVIDE 'SPILL THROUGH WEIR' IN SEDIMENT FENCE. 'SPILL THROUGH WEIR' TO BE GENERALLY IN ACCORDANCE WITH SILT FENCE DETAIL WITH GEOTEXTILE FABRIC TO BE WRAPPED AROUND STAR PICKET PLACED HORIZONTAL APPROX. 400mm ABOVE FINISHED SURFACE.

NOTED BY RLL 17/2/10

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921, Jeff Griffiths 4115, Dean Payne 4802

Date of Practical Completion / /

For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

V:\E\B07018-102.dwg DATE: 02-09-2009 TIME: 10:36
Xref's X_B07018-TITLE X_B07018-BASE USR: Mark Hastings

AMENDMENTS	FIRST ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	A	MJH	MJH	12.12.07	
	B	MJH	MJH	25.06.08	TURFING NOTE AMENDED
	C	MJH	MJH	23.01.09	KIP ADDED TO NEW GULLY
	D	MJH	MJH	25.08.09	RWD / SWD AMENDED
	E	MJH	TL	02.09.09	STONE PITCHING NOTE AMENDED
	F				

DESIGN CHECK: DC
DRAWN CHECK: TL
SCALE (METRES): 1:500 10 5 0 10 20 A1; 1:1000 A2
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED: Dean Payne
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bruno

BROWN

DRAWING TITLE: EROSION AND SEDIMENT CONTROL LAYOUT PLAN

DRAWING NUMBER: B07018-102 ISSUE: D

EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO CONTROL & MINIMISE EROSION AND DOWNSTREAM SEDIMENTATION DURING ALL STAGES OF CONSTRUCTION INCLUDING THE MAINTENANCE PERIOD.
2. ALL PERIMETER BANK/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
3. IT ALL TIMES THE CONTRACTOR SHALL MONITOR THE PREVAILING WEATHER CONDITIONS AND PROTECT ANY DOWNSTREAM CONSTRUCTION AND GULLY INLETS.
4. INLETS SHALL HAVE SILT PROTECTION IN ACCORDANCE WITH KERB INLET PROTECTION DETAIL AT LOCATIONS SHOWN OR AS DIRECTED BY THE SUPERINTENDENT.
5. THE EXTENT OF GRASSING SHALL BE DETERMINED BY THE SUPERINTENDENT AND SHALL BE SEEDED, AS SPECIFIED, WITHIN SEVEN DAYS OF FINAL TRIMMING.
6. CONSTRUCT WASH DOWN BAY OR SHAKE DOWN AT ENTRY/EXIT TO COUNCIL STANDARDS AND TO THE SATISFACTION OF COUNCIL'S LICENSING AND COMPLIANCE OFFICER.
7. CLEARING OF SITE AND STOCKPILE SITE TO BE DETERMINED ON SITE BY SUPERINTENDENT AND IS TO BE CLEAR OF ANY WATER COURSE.
8. WHERE POSSIBLE PROVIDE CUT-OFF DRAINS TO DIVERT CLEAN WATER FROM UNDISTURBED CATCHMENT.
9. PROVIDE 2 TURF STRIPS OVER SEWER/ROOFWATER LINES WHERE ADJACENT TO EXISTING PROPERTIES.
10. ALL SEDIMENT FENCES TO BE INSTALLED TO THE SATISFACTION OF COUNCIL'S LICENSING AND COMPLIANCE OFFICER.
11. ALL OPEN ENDED PIPEWORK LOCATED IN OPEN TRENCHES AND INCOMPLETE PITS ARE TO BE CAPPED WITH SUITABLE FILTER CLOTH AT THE END OF EACH DAYS' WORK AND IMMEDIATELY PRIOR TO STORMS.
12. ALL MATERIALS TRACKED OR SEDIMENT WASHED ONTO COUNCIL'S ROAD FROM THE DEVELOPMENT ARE TO BROOMED UP AND COLLECTED.
13. ALL TEMPORARY EROSION AND SEDIMENT CONTROL (ESC) MEASURES ARE TO BE MAINTAINED AND FULLY OPERATIONAL DURING THE MAINTENANCE PERIOD, AND ARE TO BE REMOVED AFTER THE SATISFACTORY COMPLETION OF AN "OFF MAINTENANCE" INSPECTION AND PRIOR TO FORMAL ACCEPTANCE BY COUNCIL.
14. NO OBSTRUCTIONS SHALL BE PLACED ON COUNCIL'S PUBLIC ROADS OR GULLY PITS FOR SAFETY REASONS
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH COUNCIL'S REQUIREMENTS IN RELATION TO GRASS STRIKE AND GRASS COVERAGE RATES AT THE ON AND OFF MAINTENANCE INSPECTIONS
16. NOTWITHSTANDING THE DESIGN SHOWN ON THE DRAWINGS THE CONTRACTOR IS RESPONSIBLE TO IMPLEMENT SEDIMENT CONTROL DEVICES USING BEST PRACTICES AS NECESSARY TO MINIMISE THE QUANTITY OF SEDIMENT LEAVING THE SITE.
17. SOME VARIATIONS TO THE SPECIFIED CONSTRUCTION SEQUENCE MAY BE NECESSARY IN CERTAIN AREAS TO FACILITATE CONSTRUCTION. WHERE THIS IS THE CASE, ANY VARIATION MUST BE APPROVED BY THE SUPERINTENDENT PRIOR TO IMPLEMENTATION.

SEDIMENT MANAGEMENT PROGRAM:

1. CLEARING
- SEDIMENT FENCES TO BE CONSTRUCTED AS INDICATED OR REQUIRED.
- EXISTING GRASSED AREAS TO REMAIN WHERE POSSIBLE.
- SHAKE DOWN/WASH DOWN BAY AT ENTRY/EXIT POINT AS REQUIRED BY SUPERINTENDENT.
- REFER ALSO TO VEGETATION MANAGEMENT PLAN
- SUPERINTENDENT TO CONFIRM EXTENT OF CLEARING TO CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS

2. EARTHWORKS
- SEDIMENT FENCES AND DIVERSION DRAINS TO BE CONSTRUCTED AS INDICATED OR REQUIRED.

3. SEWER/ROOFWATER/STORMWATER/ SERVICES
- EXCAVATED MATERIAL TO BE PLACED ON HIGH SIDE OF TRENCH AND TO PROTECT PIPE WORK AND DIRECT SURFACE RUNOFF AWAY FROM EXCAVATIONS.
- TOPSOIL AND GRASS SEED AREAS IN ALLOTMENTS IMMEDIATELY AFTER COMPLETING THE SEWER AND ROOFWATER DRAINAGE CONSTRUCTION AND TURF OVER TRENCHES WHERE ADJACENT TO EXISTING PROPERTIES.

4. STOCKPILE
- SEDIMENT FENCE TO BE ERECTED 5m FROM TOE OF BATTER ON LOW SIDE OF STOCKPILE.
- CUT OFF DRAIN ON HIGH SIDE TO DIRECT SURFACE RUNOFF AROUND STOCKPILE.

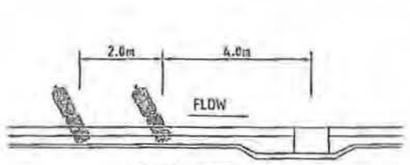
5. ROADWORKS
- SEDIMENT FENCES TO ALLOTMENTS TO BE ERECTED.
- KERB INLET PROTECTION TO BE PROVIDED TO ALL GULLIES UNLESS NOTED OTHERWISE.
- TURF FILTER STRIPS BEHIND KERB AND CHANNEL.

6. ALLOTMENTS
- MULCH, TOPSOIL AND SEED ALLOTMENTS AS DIRECTED.
- SEDIMENT FENCES TO ALLOTMENTS TO BE ERECTED.
- COVERS TO GULLY GRATES TO BE REMOVED IF THE SUPERINTENDENT INDICATES THE GRASS STRIKE IS SUFFICIENT.

7. MAINTENANCE PERIOD
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED:
  - AT LEAST DAILY (WHEN WORK IS OCCURRING ON SITE) OR WEEKLY (WHEN WORK IS NOT OCCURRING ON SITE)
  - WITHIN 24 HOURS OF EXPECTED RAIN; AND
  - WITHIN 18 HOURS OF A RAINFALL EVENT
- ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED THE SAME DAY WHEN THE CAPACITY OF THE EROSION AND SEDIMENT CONTROL MEASURE FALLS BELOW 75%.
- ANY REPAIRS TO EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE EFFECTED IMMEDIATELY. SEDIMENT AFTER RAIN IS TO BE CLEANED FROM STREETS AND ALLOTMENTS IMMEDIATELY AND CORRECTIVE ACTION TAKEN TO AVOID A RE-OCCURRENCE OF THE FAILURE.

CONSTRUCTION SEQUENCE:

A. CONSTRUCT ENTRY AND EXIT POINTS TOGETHER WITH SHAKE DOWN DEVICE.
B. ERECT SEDIMENT FENCES ALONG DOWNSTREAM ADJACENT PROPERTY BOUNDARIES AS DIRECTED.
C. CLEARING, GRUBBING AND STRIPPING OF THE SITES EARTHWORKS AREAS.
D. UNDERTAKE EARTHWORKS OPERATIONS. CONSTRUCT BIO RETENTION BASIN, EXCLUDING FILTER MATERIAL.
E. CONSTRUCT ALL UNDERGROUND HYDRAULIC SERVICES ENSURING STORMWATER DRAINS REMAIN CAPPED DURING CONSTRUCTION.
F. PLACE SEDIMENT FENCES AT BOUNDARIES ADJACENT TO ROADWAYS WHERE LOT SLOPES TOWARDS ROAD.
G. TOPSOIL AND SEED ALL LOTS FOLLOWING PROGRESSIVE COMPLETION OF KERB AND CHANNEL.
H. ON COMPLETION OF WORKS AND 70% GRASS COVER AND APPROVAL BY COUNCIL, SEDIMENT CONTROL DEVICES TO BE REMOVED.
I. COMPLETE BIO RETENTION BASIN FILTER MEDIA TO THE SUPERINTENDENTS DIRECTIONS.



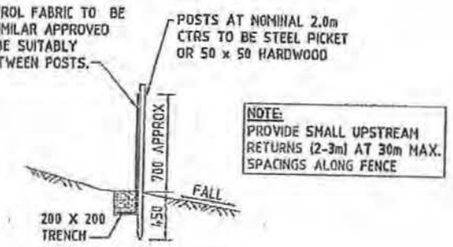
GULLIES ON GRADE
NTS

SAG GULLIES
NTS

SANDBAGS AT GULLIES
TO BE PROVIDED AT ALL GULLIES

SAND BAG PROTECTION (SAND BAGS TO BE EMBEDDED 50mm, AND ARE TO EXTEND 150mm ABOVE THE INVERT LEVEL OF INLET)

FIELD INLET
NTS



SEDIMENT FENCE DETAIL
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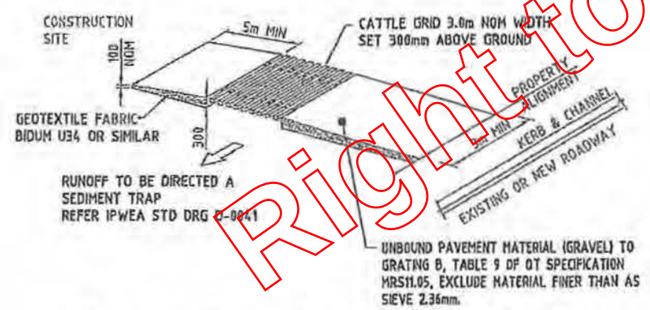
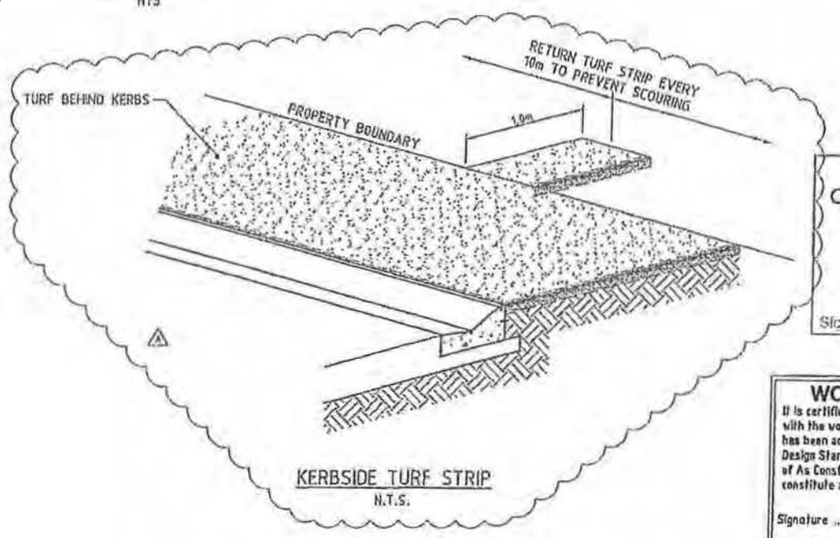


TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP
NTS



KERBSIDE TURF STRIP
N.T.S.

NOTED BY RCC
17/2/10

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-103.dwg DATE: 25-06-2009 TIME: 13:49
Xrefs: X_B07018-TITLE DTS mark hastings

PART	CHKD	INITIAL	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.06.09	RPEQ DETAIL AMENDED
C				
D				
E				
F				

DRAWN CHECK
DRAWN CHECK
SCALE: 1 METRE 1
DATUM/RL No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

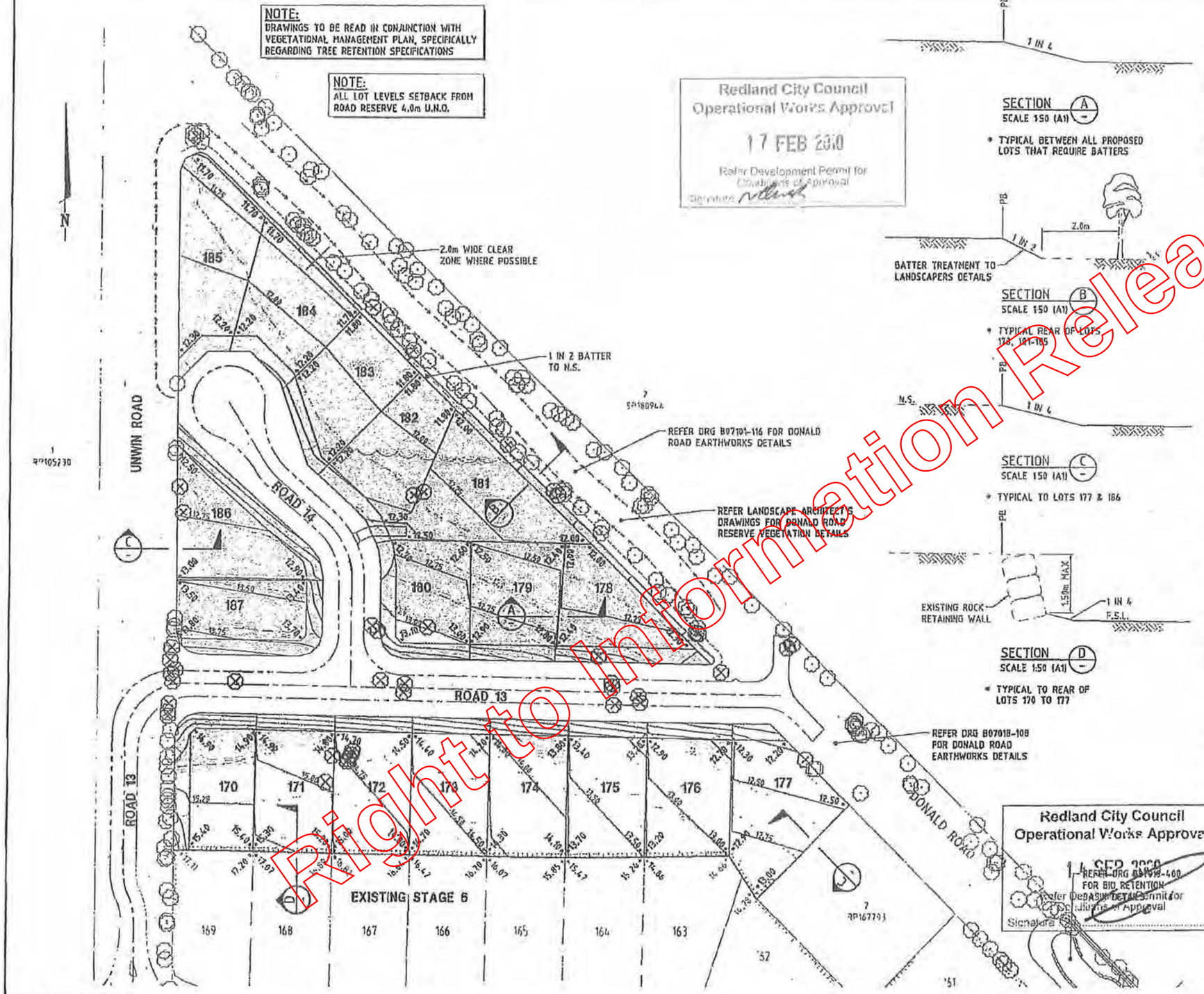
CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

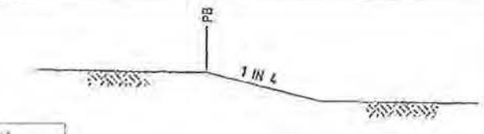
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Dubai

DRAWING TITLE: EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
DRAWING NUMBER: B07018-103
ISSUE: A

NOTE:
DRAWINGS TO BE READ IN CONJUNCTION WITH VEGETATIONAL MANAGEMENT PLAN, SPECIFICALLY REGARDING TREE RETENTION SPECIFICATIONS

NOTE:
ALL LOT LEVELS SETBACK FROM ROAD RESERVE 4.0m U.N.O.





SECTION A
SCALE 1:50 (A1)
* TYPICAL BETWEEN ALL PROPOSED LOTS THAT REQUIRE BATTERS

SECTION B
SCALE 1:50 (A1)
* TYPICAL REAR OF LOTS 178, 181-185

SECTION C
SCALE 1:50 (A1)
* TYPICAL TO LOTS 177 & 186

SECTION D
SCALE 1:50 (A1)
* TYPICAL TO REAR OF LOTS 170 TO 177

LEGEND

- PROPOSED FINISHED SURFACE LEVEL
- PROPOSED SURFACE CONTOURS (0.25m INTERVAL)
- EXISTING SURFACE CONTOURS (0.50m INTERVAL)
- PROPOSED ROCK RETAINING WALL
- EXISTING ROCK RETAINING WALL
- AREA OF CUT
- AREA OF FILL
- EXISTING TREES TO BE RETAINED REFER LANDSCAPE ARCHITECT'S DRAWINGS
- EXISTING TREES TO BE REMOVED REFER LANDSCAPE ARCHITECT'S DRAWINGS

EARTHWORKS NOTES:

1. NOTWITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE CROSS SECTIONS, THE ACTUAL LIMITS SHALL BE DETERMINED ON-SITE BY THE ENGINEER DURING CONSTRUCTION AND SIMILARLY THE FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE ENGINEER DURING CONSTRUCTION
2. SUBGRADE TEST RESULTS TO BE FORWARDED TO SUPERVISING ENGINEER FOR DETERMINATION OF BOX DEPTHS PRIOR TO EXCAVATION. TESTS SHALL INCLUDE SOAKED CBR AND/OR OTHER TESTS AS REQUESTED BY THE SUPERVISING ENGINEER.
3. CONTRACTOR TO LIAISE WITH ALL RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY
4. ALL FILL IS TO BE COMPACTED IN ACCORDANCE WITH R.C.C. GUIDELINES AND SPECIFICATIONS UNLESS NOTED OTHERWISE
5. THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
6. ALL DRAINAGE STRUCTURES TO BE PRESERVED FROM THE EFFECTS OF STRUCTURAL LOADING GENERATED BY THE EARTHWORKS.

FAUNA MANAGEMENT NOTES:

1. AT LEAST 14 DAYS BEFORE COMMENCEMENT OF ANY VEGETATION REMOVAL, DEWATERING OR EARTHWORKS, THE DEVELOPER MUST APPOINT AN ACCREDITED WILDLIFE SPOTTER TO EXAMINE THE SITE FOR WILDLIFE HABITAT, AND TO SUPERVISE CLEARING OPERATIONS.
2. PRIOR TO THE PRE-START MEETING, THE SPOTTER SHOULD PROVIDE COUNCIL WITH A PLAN INDICATING THE BROADD RANGE OF FAUNA EXPECTED ON THE SITE, THE PROPOSED METHOD OF OPERATION, AND ANY EXPECTED CONSTRAINTS.
3. DURING CLEARING OPERATIONS, THE CLEARING CONTRACTOR MUST:
   - LIAISE WITH THE ON-SITE SPOTTER; AND
   - ENSURE THAT EACH TREE OR OTHER FEATURE IDENTIFIED BY THE SPOTTER AS BEING A RISK TO WILDLIFE IF FELLED, DISTRUBED OR DEWATERED, IS NOT DAMAGED OR DISTURBED UNTIL THE SPOTTER ADVISES THAT IT IS APPROPRIATE TO DO SO.
4. BEFORE COMMENCEMENT OF AND DURING CLEARING OPERATIONS, IT IS THE RESPONSIBILITY OF THE SPOTTER TO:
   - BE PRESENT AT THE SITE OF CLEARING, DEWATERING, AND OTHER OPERATIONS;
   - IDENTIFY ANY TREE OR FEATURE WITH WILDLIFE PRESENT, AS WELL AS ANY TREE THAT HAS A CROWN WHICH IS INTERMESHED OR OVERLAPPING WITH SUCH A TREE; ADVISE THE CONTRACTOR OF THE PRECISE LOACTION OF EACH SUCH TREE OR OTHER FEATURE.

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004762.7

FILE: B07018-104.dwg DATE: 01-07-2009 TIME: 16:08
Xref's: X_B07018-TITLE X_B07018-BASE USR: Tom Tyrell

PRINT STATUS	DATE AMD	DRAWN	DATE	AMENDMENT DETAILS
A	19.01	19.01	25.06.08	EXISTING TREE SURVEY UPDATED
B	19.01	19.01	23.09.09	LOT OFF LEVELS, SECTION D AMENDED & RETAINING WALL DETAIL REMOVED
C	19.01	19.01	25.09.09	DONALD ROAD EARTHWORKS

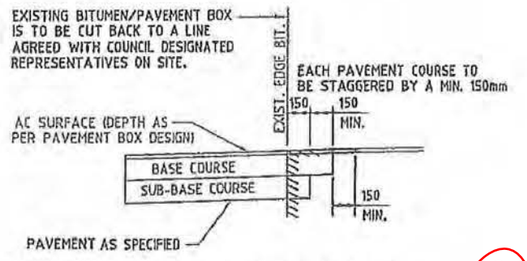
DESIGN CHECK: DRAWN CHECK:
SCALE (1 METRE): 1:500 (A1) 1:1000 (A3)
DRAWING No.: B07018
SURVEYOR: DTS Group Pty Ltd, 1st Floor, 6 Heussler Tce, Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED: ANDREW McPHAIL RPEQ 6921, FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7, UNWIN ROAD, REDLAND BAY
Brown Consulting (Qld) Pty Ltd Engineers & Managers, Level 3 410 Queen Street Brisbane QLD Australia 4000, Telephone 07 3221 5555 Facsimile 07 3221 5500, Brisbane Adelaide Melbourne Sydney Singapore Kuwait Dubai
DRAWING TITLE: BULK EARTHWORKS LAYOUT PLAN
DRAWING NUMBER: B07018-104
ISSUE: C

PRELIMINARY PAVEMENT DESIGN

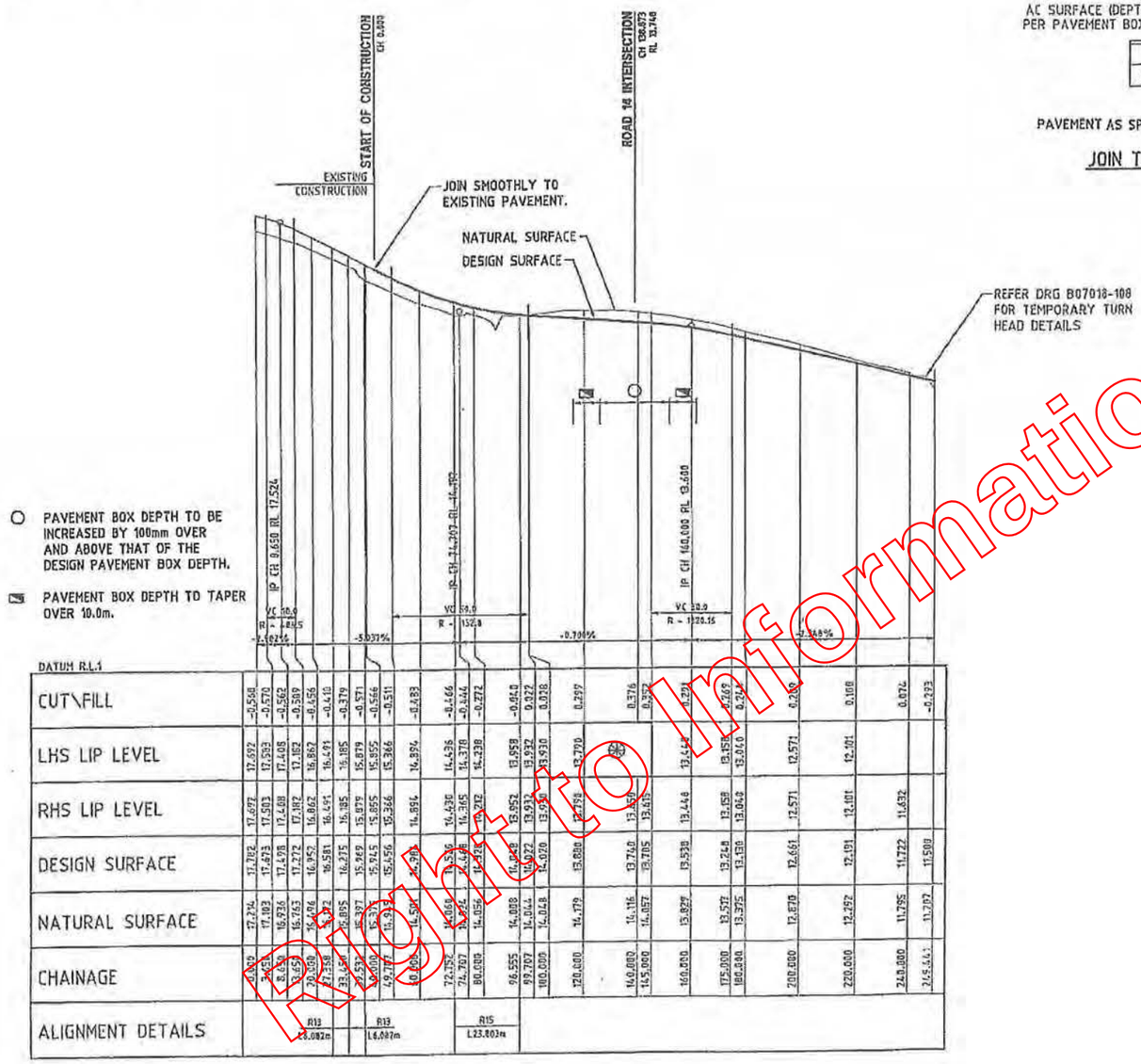
ROAD	TRAFFIC ESA'S	ROAD CLASS	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BOX (MM)
ROAD 13	5×10^5	A	25 #	125	125	–	280

NOTE:
PRELIMINARY PAVEMENT DESIGNS HAVE BEEN BASED ON MINIMUM REQUIREMENTS. ACTUAL PAVEMENT DESIGNS WILL BE BASED ON TEST RESULTS TAKEN AFTER STRIPPING HAS BEEN COMPLETED.

A 7mm SINGLE COAT 'CHIP SEAL' IS TO BE PLACED UNDER AC SURFACING ON ALL ROADS. (RSC REQUIRMENT) REFER TO RSC STANDARDS FOR SPRAY RATES.



JOIN TO EXISTING PAVEMENT DETAIL
N.T.S.



○ PAVEMENT BOX DEPTH TO BE INCREASED BY 100mm OVER AND ABOVE THAT OF THE DESIGN PAVEMENT BOX DEPTH.

PAVEMENT BOX DEPTH TO TAPER OVER 10.0m.

⊛ REFER INTERSECTION DETAILS FOR LIP LEVELS

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
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Signature ..... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4902
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-105.dwg DATE: 14-12-2007 TIME: 08:25
Xrefs: X_B07018-TITLE X_B07018-BASIS USER: mark hastings

PRINT ISSUE	CHECK	DRAWN	DATE
A	MH	MH	12.12.07
B			
C			
D			
E			
F			

AMENDMENT DETAILS

DESIGN CHECK
DRAWN CHECK

SCALE 1 METRE=1
1:1000 10 0 10 20 30 40 50 A1
1:2000 A3 HORIZONTAL
1:100 2 1 0 2 4 A1
1:200 A3 VERTICAL

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW MCPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4902
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

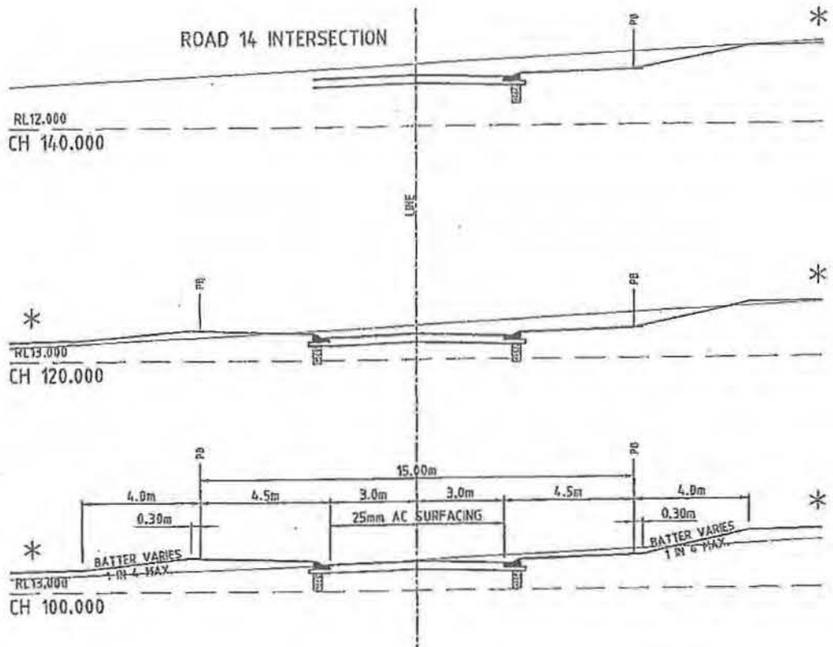
PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (Qld) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3221 5555 Facsimile 07 3221 5500
Adelaide Canberra Melbourne Sydney Singapore Sunshine Coast Perth

BROWN

DRAWING TITLE: ROAD 13
LONGITUDINAL SECTION

DRAWING NUMBER: B07018-105
ISSUE:



* REFER B05018-104 FOR FINISHED SURFACE LEVELS

Redland City Council
Operational Works Approval
14 SEP 2009
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Signature

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Signature ..... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion / /

For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-104.dwg DATE: 10-12-2007 TYPE: 0035
Xref's: X_B07AM-TITLE X_B07018-ROADS USR: mark hastings

PRINT SIZE	CHECK	DRAWN	DATE	AMENDMENT DETAILS
A1	MH	MH	10.12.07	
A3				
B				
C				
D				
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE 1 METRE 1
1:100 1:200
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Haussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW McPHAIL RPEQ 6921 / JEFF GRIFFITHS RPEQ 4115 / DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Darwin

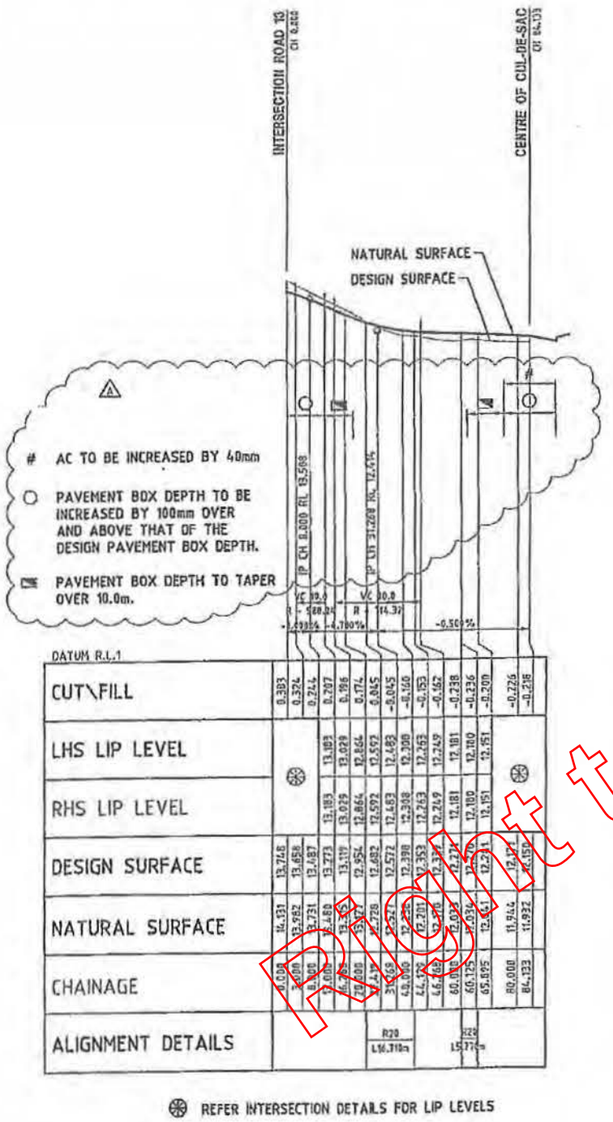
DRAWING TITLE: ROAD 13 CROSS SECTIONS
DRAWING NUMBER: B07018-106
ISSUE:

PRELIMINARY PAVEMENT DESIGN

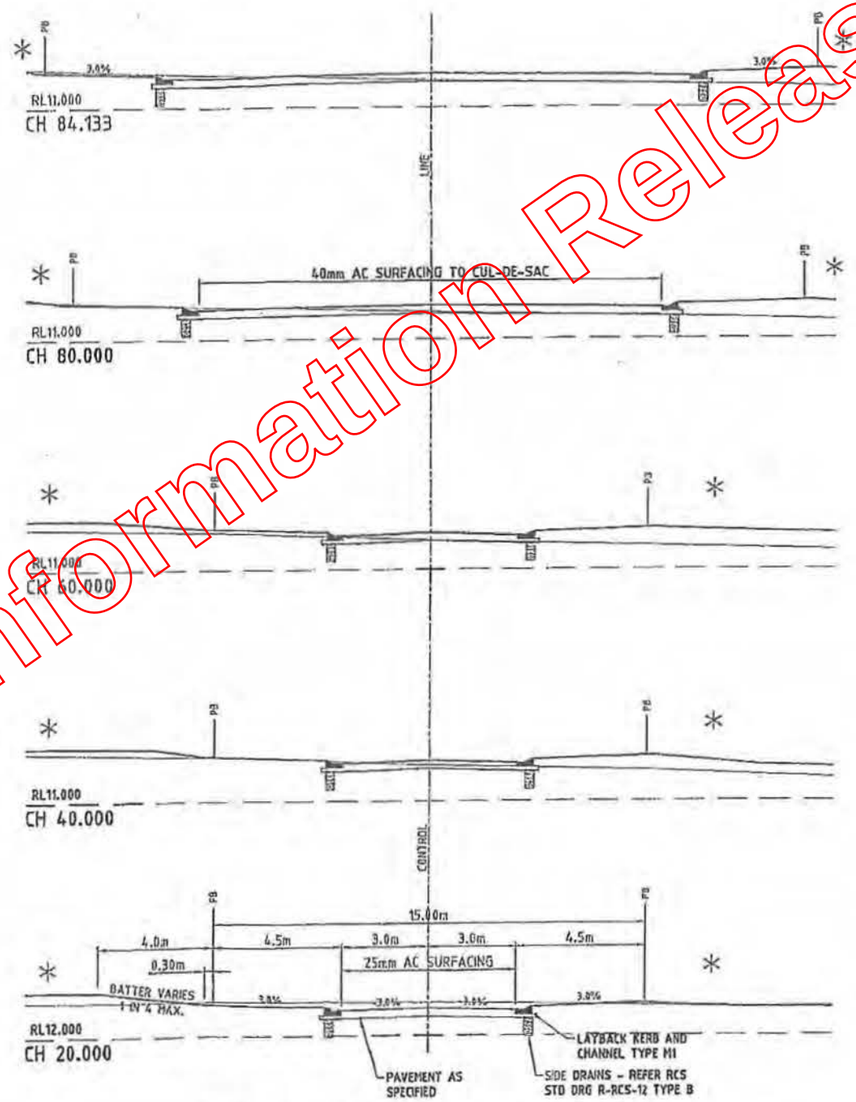
ROAD	TRAFFIC ESA'S	ROAD CLASS	SURFACING (MM)	BASE (MM)	SUB BASE (MM)	BLANKET (MM)	TOTAL BOX (MM)
ROAD 14	5×10^5	A	25 #	125	125	-	280

NOTE:
PRELIMINARY PAVEMENT DESIGNS HAVE BEEN BASED ON MINIMUM REQUIREMENTS. ACTUAL PAVEMENT DESIGNS WILL BE BASED ON TEST RESULTS TAKEN AFTER STRIPPING HAS BEEN COMPLETED.

A 7mm SINGLE COAT 'CHIP SEAL' IS TO BE PLACED UNDER AC SURFACING ON ALL ROADS. (RSC REQUIRMENT) REFER TO RSC STANDARDS FOR SPRAY RATES.



⊛ REFER INTERSECTION DETAILS FOR LIP LEVELS



* REFER B07018-104 FOR FINISHED SURFACE LEVELS

Redland City Council
Operational Works Approval
14 SEP 2020
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
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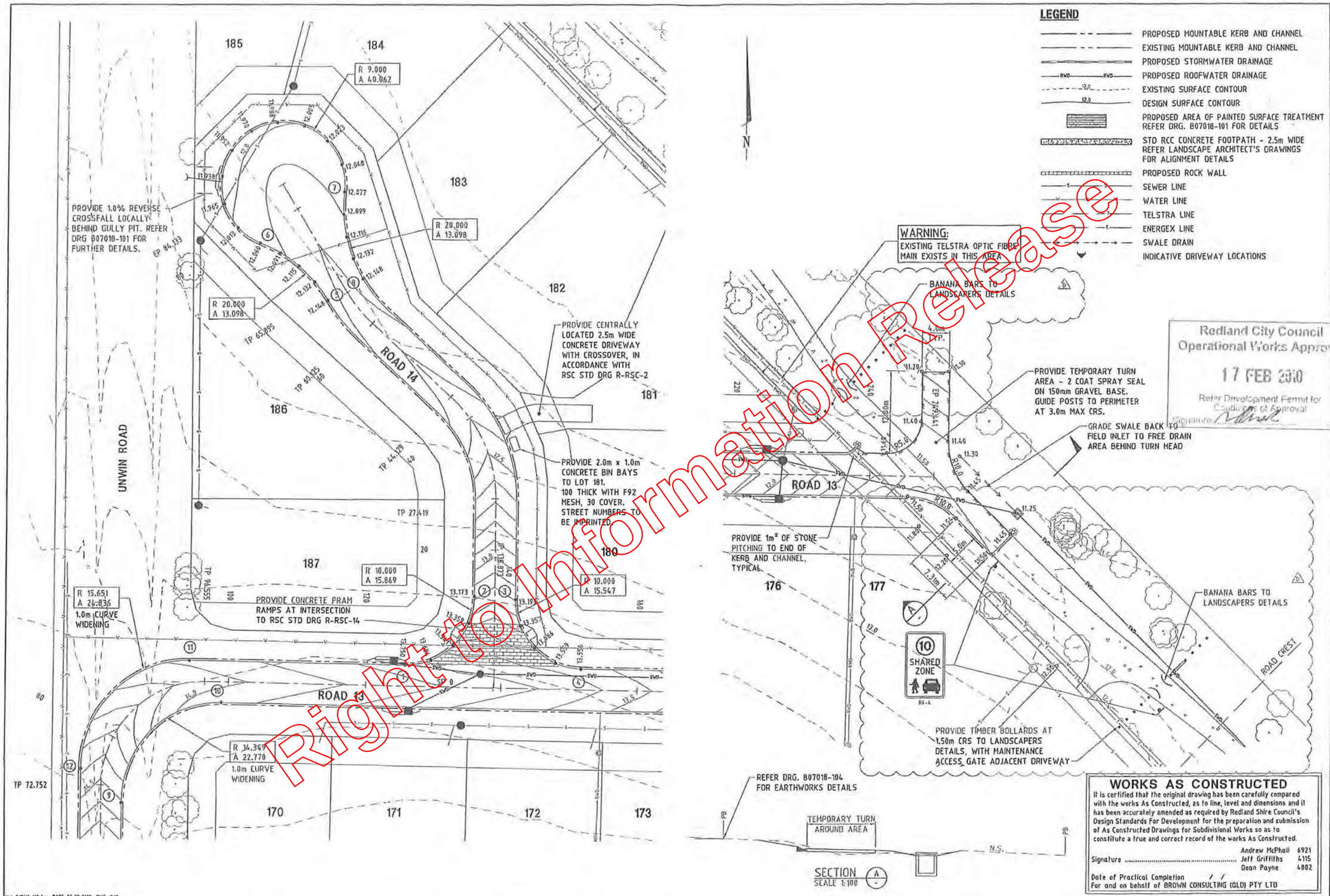
Signature ..... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

XREF: B07018-107.dwg DATE: 23-06-2020 TIME: 11:44
Xref's: X_B07018-TITLE X_B07018-ROADS USR: mark hastings

PRINT INIT.	DATE	DRAWN	DATE	AMENDMENT DETAILS
A	MRH	MRH	12.12.27	
B	MRH	MRH	25.06.20	PAVEMENT AND AC DEPTHS AMENDED IN CUL-DE-SAC
C				
D				
E				
F				

DESIGN CHECK:
DRAWN CHECK:
SCALE (METRES)
1:1000 HORIZONTAL
1:200 VERTICAL
MICROFILM No.
PROJECT No. B07018
SURVEYOR: DTS Group Pty Ltd, 1st Floor, 6 Heussler Tce, Ph (07) 3118 0600, Fax (07) 3118 0699
APPROVED: ANDREW McPHAIL RPEQ 6921, JEFF GRIFFITHS RPEQ 4115, DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7, UNWIN ROAD, REDLAND BAY
Brown Consulting (QLD) Pty Ltd Engineers & Managers, Level 3 410 Queen Street Brisbane QLD Australia 4000, Telephone 07 3221 6555 Facsimile 07 3221 6500
DRAWING TITLE: ROAD 14 LONGITUDINAL SECTION AND CROSS SECTIONS
DRAWING NUMBER: B07018-107
ISSUE: A



WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921, Jeff Griffiths 4115, Dean Payne 4802

Date of Practical Completion / /

For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FIRST ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	25.08.08	CURVE WIDENING AMENDED / PRAM RAMPS / TURNHEAD DETAILS AMENDED
C	MJH	MJH	23.01.09	LOT 177 / TURNHEAD EARTHWORKS DETAILS AND LEGEND AMENDED
D	MJH	MJH	25.03.09	RWD / SWD AMENDED
E	MJH	TL	02.06.09	BANANA BARS ADDED ON PATHWAY
F				

DESIGN CHECK: DP
DRAWN CHECK: AR
SCALE 1 METRE 1
1:250 1:500 5 0 5 10 A1 A3
MICROFILM No.
PROJECT No. B07018

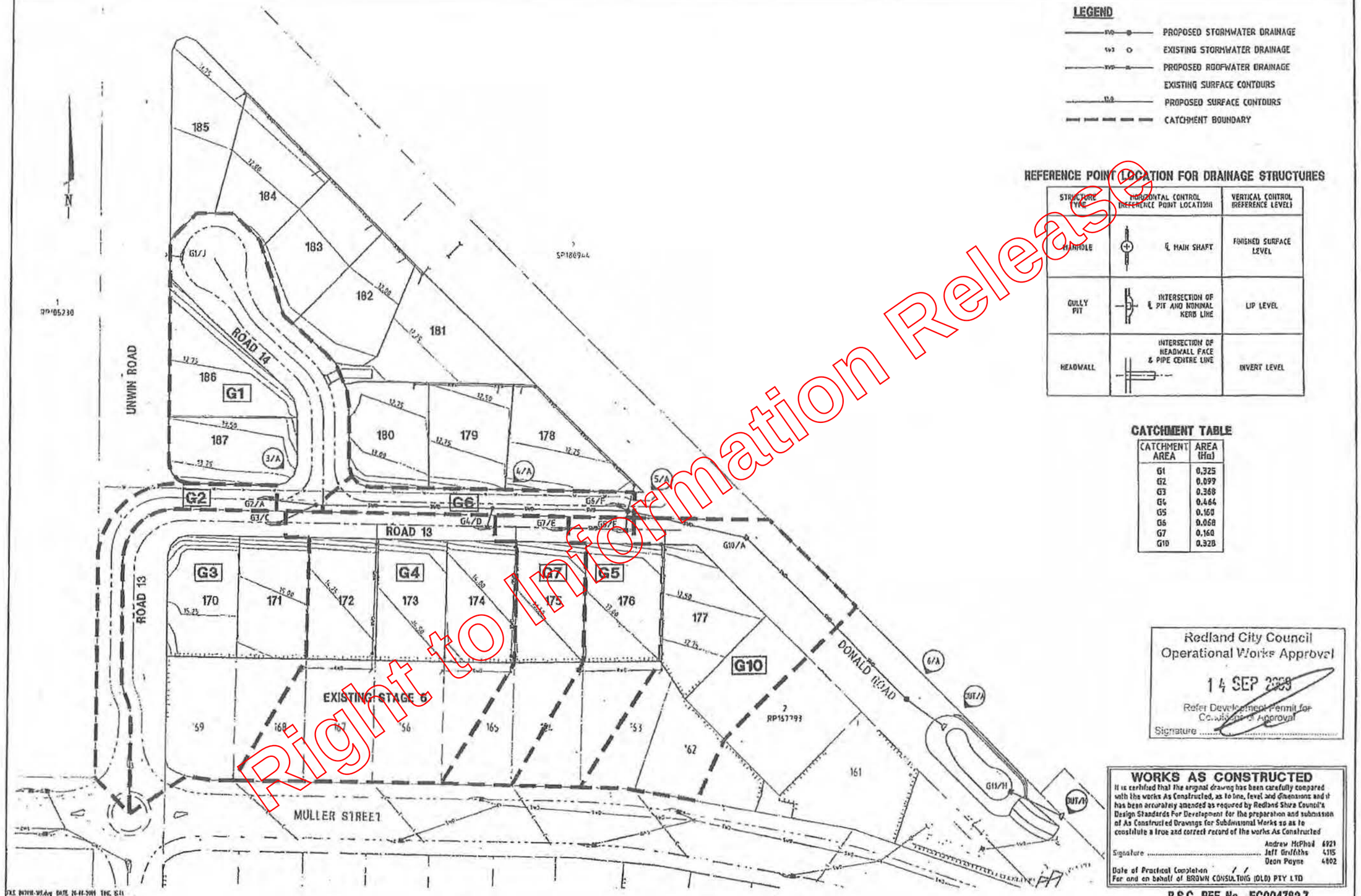
SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol

DRAWING TITLE: INTERSECTION DETAILS LAYOUT PLAN
DRAWING NUMBER: B07018-108
ISSUE: D



LEGEND

- PROPOSED STORMWATER DRAINAGE
- EXISTING STORMWATER DRAINAGE
- PROPOSED ROOFWATER DRAINAGE
- EXISTING SURFACE CONTOURS
- PROPOSED SURFACE CONTOURS
- CATCHMENT BOUNDARY

REFERENCE POINT LOCATION FOR DRAINAGE STRUCTURES

STRUCTURE TYPE	HORIZONTAL CONTROL (REFERENCE POINT LOCATION)	VERTICAL CONTROL (REFERENCE LEVEL)
MANHOLE	℄ MAIN SHAFT	FINISHED SURFACE LEVEL
GULLY PIT	INTERSECTION OF ℄ PIT AND NOMINAL KERB LINE	LIP LEVEL
HEADWALL	INTERSECTION OF HEADWALL FACE & PIPE CENTRE LINE	INVERT LEVEL

CATCHMENT TABLE

CATCHMENT AREA	AREA (Ha)
G1	0.325
G2	0.099
G3	0.368
G4	0.464
G5	0.160
G6	0.068
G7	0.160
G10	0.328

Redland City Council
Operational Works Approval
14 SEP 2009
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Signature .....

WORKS AS CONSTRUCTED

It is certified that the original drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

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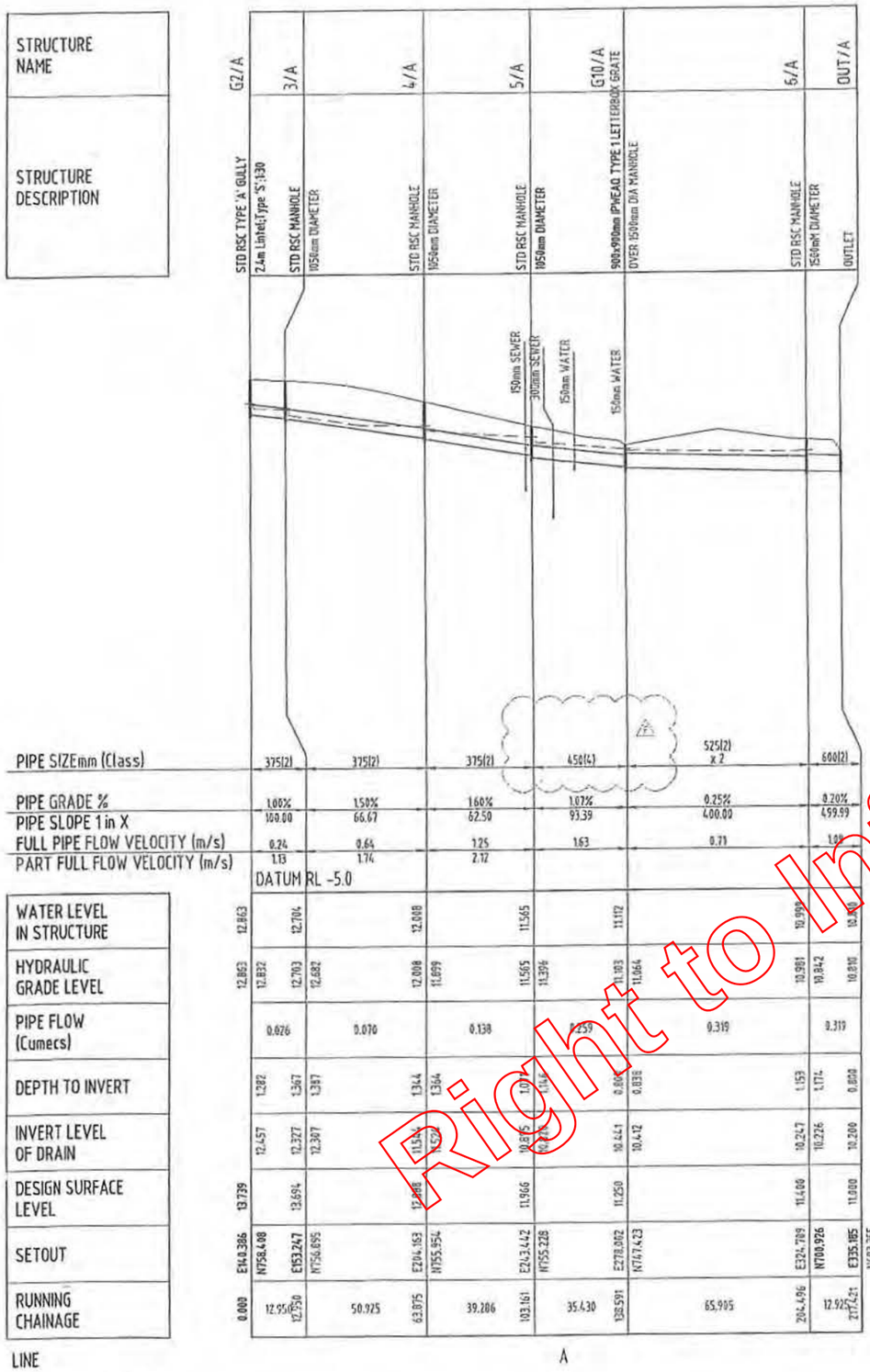
R.S.C. REF No. -EC004782.7

ISSUE	CHKD	APPD	DATE	AMENDMENT DETAILS
	MH	KH	12.0.47	
A	MH	KH	25.06.08	SWD ADDED
B	KH	KH	23.09.09	CATCHMENT G1 AND MANHOLE NO 6/A ADDED
C	KH	KH	15.09.09	RWD / SWD ADDED
D				
E				
F				

DESIGN CHECK
DRAWN CHECK
SCALE (METRIC)
1:500 10 5 0 10 20 A1
1:1000 A3
MCROWN No.
PROJECT No. B07018
SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED ANDREW MCPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD
CLIENT AMEX SUBDIVISIONS PTY LTD
PROJECT VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY
Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane Q'LD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
DRAWING TITLE STORMWATER DRAINAGE CATCHMENT PLAN
DRAWING NUMBER B07018-109
ISSUE C



Redland City Council
Operational Works Approval
17 FEB 2010
Refer Development Permit for Conditions of Approval
Signature

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Signature .....
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R.S.C. REF No. -EC004782.7

AMENDMENTS	PENT MADE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
A	A	MJH	MJH	12.11.07	
B	B	MJH	MJH	21.05.08	STRUCTURE A/A AMENDED
C	C	MJH	MJH	25.06.08	SWD LONGS AMENDED
D	D	MJH	MJH	23.09.08	SWD LONGS AMENDED, STRUCTURE S/A DETAILS DELETED
E	E	MJH	MJH	15.04.09	SWD LINE A AMENDED
F	F	MJH	MJH	15.05.09	SWD AMENDED
G	G	MJH	JL	02.07.09	PIPE CLASS

DESIGN CHECK: DP
DRAWN CHECK: DS
SCALE (METRES)
1:1000 1:2000 HORIZONTAL
1:100 1:200 VERTICAL
MICROFILM No.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
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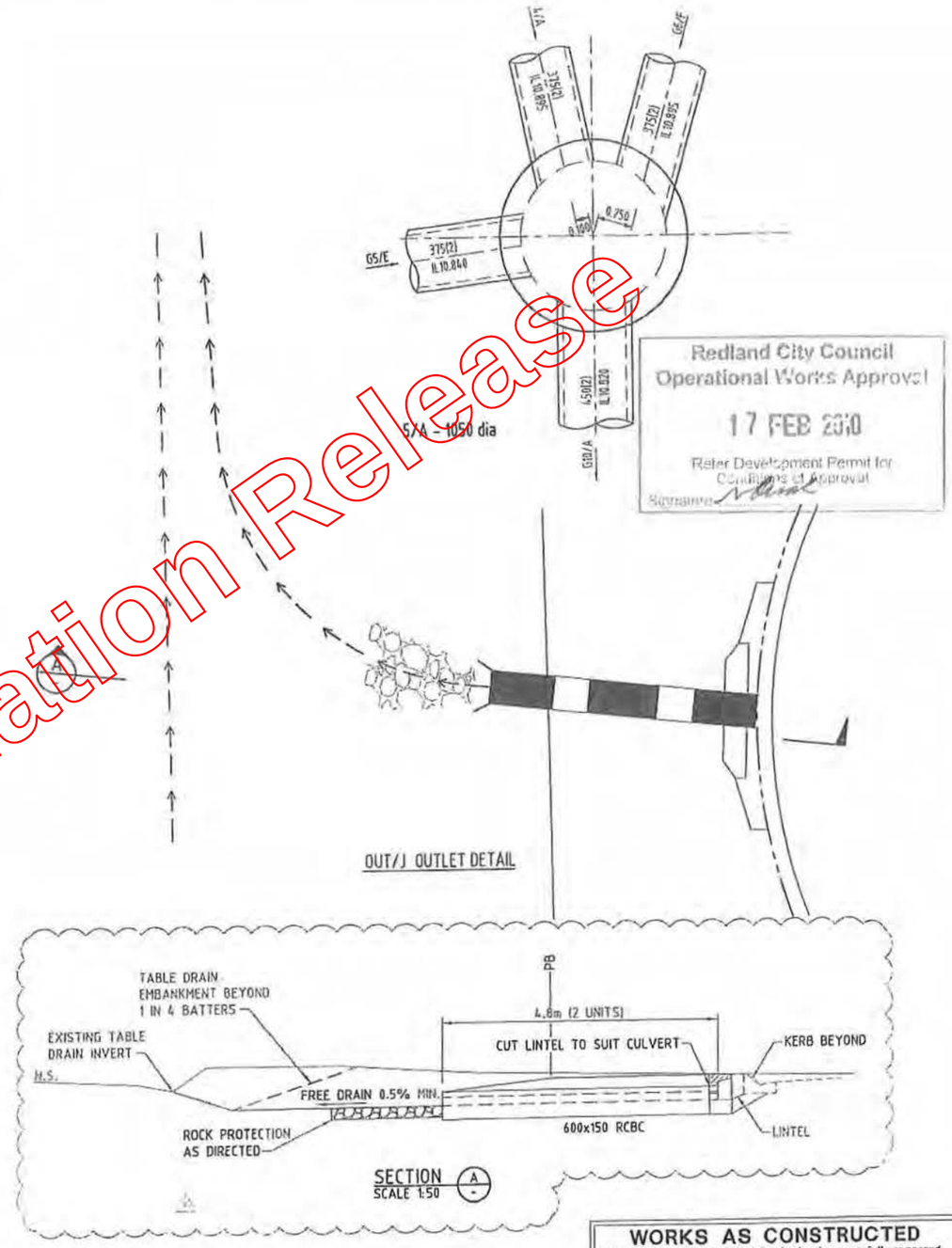
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bowen

DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 1 OF 2
DRAWING NUMBER: B07018-110
ISSUE: F

	C	D	E	F	H	J
STRUCTURE NAME	G3/B	G4/D	G7/E	G6/F	G11/H	G1/J
	3/A	4/A	G5/E	5/A	OUT/H	OUT/J
STRUCTURE DESCRIPTION	STD RSC TYPE 'A' GULLY 2.4m Lintel;Type 'S';1:30	STD RSC TYPE 'A' GULLY 2.4m Lintel;Type 'S';1:30	STD RSC TYPE 'A' GULLY 2.4m Lintel;Type 'S';1:30	STD RSC TYPE 'A' GULLY 2.4m Lintel;Type 'S';1:30	FIELD INLET 900x900mm MEAQ TYPE 1 WITH LETTERBOX GRATE	STD RSC SMALL LINTEL CUT TO SUIT CULVERT - REFER DETAIL
	STD RSC MANHOLE 1050mm DIAMETER	STD RSC MANHOLE 1050mm DIAMETER	150mm SEWER; STD RSC MANHOLE 1050mm DIAMETER	150mm SEWER; STD RSC MANHOLE 1050mm DIAMETER	OUTLET	OUTLET
PIPE SIZEmm (Class)	375(2)	375(2)	375(2) / 375(2)	375(2)	375(2) x 2	600 x 150 (RCBC)
PIPE GRADE %	1.00%	1.00%	1.00% / 0.50%	1.00%	0.50%	0.62%
PIPE SLOPE 1 in X	100.00	100.00	100.00 / 200.00	100.00	200.00	160.00
FULL PIPE FLOW VELOCITY (m/s)	0.48	0.66	0.43 / 0.73	0.21	0.86	0.67
PART FULL FLOW VELOCITY (m/s)	1.39				1.24	1.05
WATER LEVEL IN STRUCTURE	12.936 / 12.704	12.287 / 12.088	11.718 / 11.640 / 11.565	11.593 / 11.565	10.653 / 10.275	11.839 / 11.659
HYDRAULIC GRADE LEVEL	12.936 / 12.820 / 12.703 / 12.682	12.287 / 12.017 / 12.008 / 11.899	11.718 / 11.642 / 11.628 / 11.576 / 11.565 / 11.396	11.593 / 11.565 / 11.396	10.653 / 10.355 / 10.275	11.838 / 11.680 / 11.659
PIPE FLOW (Cumecs)	0.053	0.073	0.047 / 0.100	0.023	0.189	0.060
DEPTH TO INVERT	1.278 / 1.367	1.270 / 1.344	1.296 / 1.026 / 1.058 / 1.126	1.047 / 1.071	0.526 / 0.608	0.393 / 0.580
INVERT LEVEL OF DRAIN	12.445 / 12.321	11.598 / 11.543	10.815 / 10.866 / 10.840	10.922 / 10.895	9.900 / 9.900	11.530 / 11.500
DESIGN SURFACE LEVEL	13.723 / 13.694	12.868 / 12.808	12.365 / 11.922 / 11.966	11.969 / 11.966	10.500 / 10.500	11.923 / 12.080
SETOUT	E142.562 N7518.95 / E153.247 N756.895	E202.652 N750.706 / E204.163 N755.954	E224.081 N750.390 / E242.931 N749.962 / E243.442 N755.228	E241052 N756.547 / E243.442 N755.228	E355.608 N674.479 / E369.484 N667.602	E114.553 N828.366 / E109.798 N828.957
RUNNING CHAINAGE	0.000 / 11.741 / 11.741	0.000 / 5.461 / 5.461	0.000 / 18.853 / 18.853 / 5.291 / 24.144	0.000 / 2.730 / 2.730	0.000 / 16.000 / 16.000	0.000 / 4.800 / 4.800
LINE	C	D	E	F	H	J



Redland City Council
Operational Works Approval
17 FEB 2010
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Signature

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For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-111.dwg DATE: 02-09-2009 TIME: 14:42
Xrefs: X_B07018-TITLE X_B07018-SWD USR: Ian Lynch

PRINT NAME	CALCD	DRAWN	DATE	AMENDMENT DETAILS
A	MJH	MJH	12.12.07	
B	MJH	MJH	21.05.08	STRUCTURE G11/A AMENDED
C	MJH	MJH	25.06.08	SWD LONGS AMENDED
D	MJH	MJH	23.01.09	SWD LONGS AMENDED, STRUCTURE G11/A DETAIL DELETED
E	MJH	MJH	15.04.09	SWD LINE A AMENDED
F	MJH	MJH	25.08.09	SWD AMENDED
G	MJH	IL	02.09.09	ROCK PROTECTION ADDED TO DETAIL

DESIGN CHECK: GB
DRAWN CHECK: IAN

SCALE (METRES)
1:1000 10 0 10 20 30 40 50 A1
1:2000 HORIZONTAL A3
1:100 2 1 0 2 4 A1
1:200 VERTICAL A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 4921
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Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bowen

BROWN

DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 2 OF 2

DRAWING NUMBER: B07018-111

ISSUE: F

CALCULATIONS TABLE

DESIGN ARI (yrs)	STRUCTURE No	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT (%)	Tc SUB-CATCHMENT TIME OF CONC (min)	I RAINFALL INTENSITY (mm/h)	C10 10yr RUNOFF CO-EFFICIENT	C CO-EFFICIENT OF RUNOFF	A SUB-CATCHMENT AREA (ha)	C×A EQUIVALENT AREA (ha)	ΣCA SUM OF (C × A) (ha)	Q SUB-CATCHMENT DISCHARGE (l/s)	FLOW IN K&C (INC. BYPASS) (l/s)	ROAD GRADE AT INLET (%)	MINOR FLOW ROAD CAPACITY (l/s)	INLET TYPE	Qg FLOW INTO INLET (l/s)	Qb BYPASS FLOW (l/s)	BYPASS STRUCTURE No.
2 100	G2/A	G2/A to 3/A	G2			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (FLOW WIDTH/DEPTH [illegible] DOWNSTREAM [illegible])	[illegible]	[illegible]	1	[illegible]	5	G4/F
2 100	G3/C	G3/C to 3/A	G3			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (FLOW WIDTH/DEPTH [illegible] DOWNSTREAM [illegible])	[illegible]	[illegible]	1	[illegible]	[illegible]	G4/D
2 100	3/A	3/A to 4/A	G2 G3														[illegible]			
2 100	G4/D	G4/D to 4/A	G4			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (FLOW WIDTH/DEPTH [illegible] DOWNSTREAM [illegible])	[illegible]	[illegible]	1	[illegible]	[illegible]	G7/E
2 100	4/A	4/A to 5/A	G2 G3 G4														[illegible]			
2 100	G7/E	G7/E to G5/E	G7			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (FLOW WIDTH/DEPTH [illegible] DOWNSTREAM [illegible])	[illegible]	[illegible]	1	[illegible]	[illegible]	G5/E
2 100	G5/E	G5/E to 5/A	G7 G5			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (FLOW WIDTH/DEPTH [illegible] DOWNSTREAM [illegible])	[illegible]	[illegible]	1	[illegible]	[illegible]	
2 100	G6/F	G6/F to 5/A	G6			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (FLOW WIDTH/DEPTH [illegible] DOWNSTREAM [illegible])	[illegible]	[illegible]	1	[illegible]	[illegible]	
2 100	5/A	5/A to G10/A	G2 G3 G4 G7 G5 G6														[illegible]			
2 100	G10/A	G10/A to 8/A	G2 G3 G4 G7 G5 G6 G10			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (FLOW WIDTH/DEPTH [illegible])	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2 100	8/A	8/A to OUT/A	G2 G3 G4 G7 G5 G6 G10														[illegible]			
2 100	G11/A	G11/A to OUT/A	G11			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (FLOW WIDTH/DEPTH [illegible])	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2 100	G1/J	G1/J to OUT/J	G1			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (FLOW WIDTH/DEPTH [illegible])	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

STRUCTURE No	Tc CRITICAL TIME OF CONC (min)	I RAINFALL INTENSITY (mm/h)	ΣCA TOTAL (C × A) (ha)	Qt MAJOR TOTAL FLOW (l/s)	Qm MAJOR SURFACE FLOW CAPACITY (l/s)	Qs MAJOR SURFACE FLOW (l/s)	Qp PIPE FLOW (l/s)	L REACH LENGTH (m)	S PIPE GRADE (%)	PIPE / BOX DIMENSIONS (CLASS) (mm)	V FLOW VELOCITY FULL (PIPE GRADE VELOCITY) (m/s)	T TIME OF FLOW IN REACH (min)	STRUCTURE CHART No	STRUCTURE RATIOS FOR "K" VALUE CALCULATIONS
G2/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Grate flow)	[illegible]	[illegible]	375(2)	[illegible]	[illegible]		[illegible]
G3/C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Grate flow)	[illegible]	[illegible]	375(2)	[illegible]	[illegible]		[illegible]
3/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Sum upstream flows)	[illegible]	[illegible]	375(2)	[illegible]	[illegible]		[illegible] Join Pipes [illegible]
G4/D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Grate flow)	[illegible]	[illegible]	525(2)	[illegible]	[illegible]		[illegible]
4/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Sum upstream flows)	[illegible]	[illegible]	375(2)	[illegible]	[illegible]		[illegible] Combined pipes [illegible] Join Pipes [illegible]
G7/E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Grate flow)	[illegible]	[illegible]	375(2)	[illegible]	[illegible]		[illegible]
G5/E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Sum upstream flows)	[illegible]	[illegible]	375(2)	[illegible]	[illegible]		[illegible]
G6/F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Grate flow)	[illegible]	[illegible]	375(2)	[illegible]	[illegible]		[illegible]
5/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Additional flow [illegible])	[illegible] (Pipe flow = Sum upstream flows)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible] Join Pipes [illegible] Combined pipes [illegible] Join Pipes
G10/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Sum upstream flows)	[illegible]	[illegible]	[illegible] ×2	[illegible]	[illegible]		[illegible]
8/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Sum upstream flows)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
G11/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow [illegible])	[illegible]	[illegible]	[illegible] ×2	[illegible]	[illegible]		[illegible]
G1/J	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] (Pipe flow = Sum upstream flows)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]

STRUCTURE No	V²/2g VELOCITY HEAD (m)	Ku U/S HEADLOSS COEFFICIENT	hu U/S PIPE STRUCT HEADLOSS (m)	Kl LAT. HEADLOSS CO-EFFICIENT	hl LAT. PIPE STRUCT. HEADLOSS (m)	Kw W.S.E. CO-EFFICIENT	hw CHANGE IN W.S.E. (m)	Sf PIPE FRICTION SLOPE (%)	hf PIPE FRICTION HEADLOSS (L × Sf) (m)	DEPTH (m)	Vp VELOCITY (m/s)	OBVERT LEVELS (m)	DRAIN SECTION H.G.L. (m)	UPSTREAM H.G.L. (m)	LAT. H.G.L. (m)	W.S.E. (m)	SURFACE OR INVERT LEVEL (m)	STRUCTURE No.
G2/A	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	G2/A
G3/C	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	G3/C
3/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	3/A
G4/D	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	G4/D
4/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	4/A
G7/E	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	G7/E
G5/E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	G5/E
G6/F	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	G6/F
5/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	5/A
G10/A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	G10/A
8/A	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	8/A
G11/A	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	G11/A
G1/J	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	G1/J

Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature ....

WORKS AS CONSTRUCTED

It is certified that the orignal drawing has been carefully compared with the works As Constructed, as to line, level and dimensions and it has been accurately amended as required by Redland Shire Council's Design Standards For Development for the preparation and submission of As Constructed Drawings for Subdivisional Works so as to constitute a true and correct record of the works As Constructed

Signature .... Andrew McPhail 6921 / Jeff Griffiths 4115 / Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE B07018-112.dwg DATE 28-01-2009 TIME 15:57
Xref's X_B07018-TITLE X_B07018-SVO UKA Mark Hastings

PRINT ORDER	CALCD	DRAWN	DATE	AMENDMENT DETAILS
	MJH	MJH	12.12.07	
A	MJH	MJH	25.06.08	SVO AMENDED
B	MJH	MJH	23.01.09	SVO AMENDED
C	MJH	MJH	15.06.09	SVO EXE & AMENDED
D	MJH	MJH	25.02.09	SVO AMENDED
E				
F				

DESIGN CHECK / DRAWN CHECK

SCALE (METRES)

MICROFILM No.

PROJECT No. B07018

SURVEYOR. DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT
AMEX SUBDIVISIONS PTY LTD

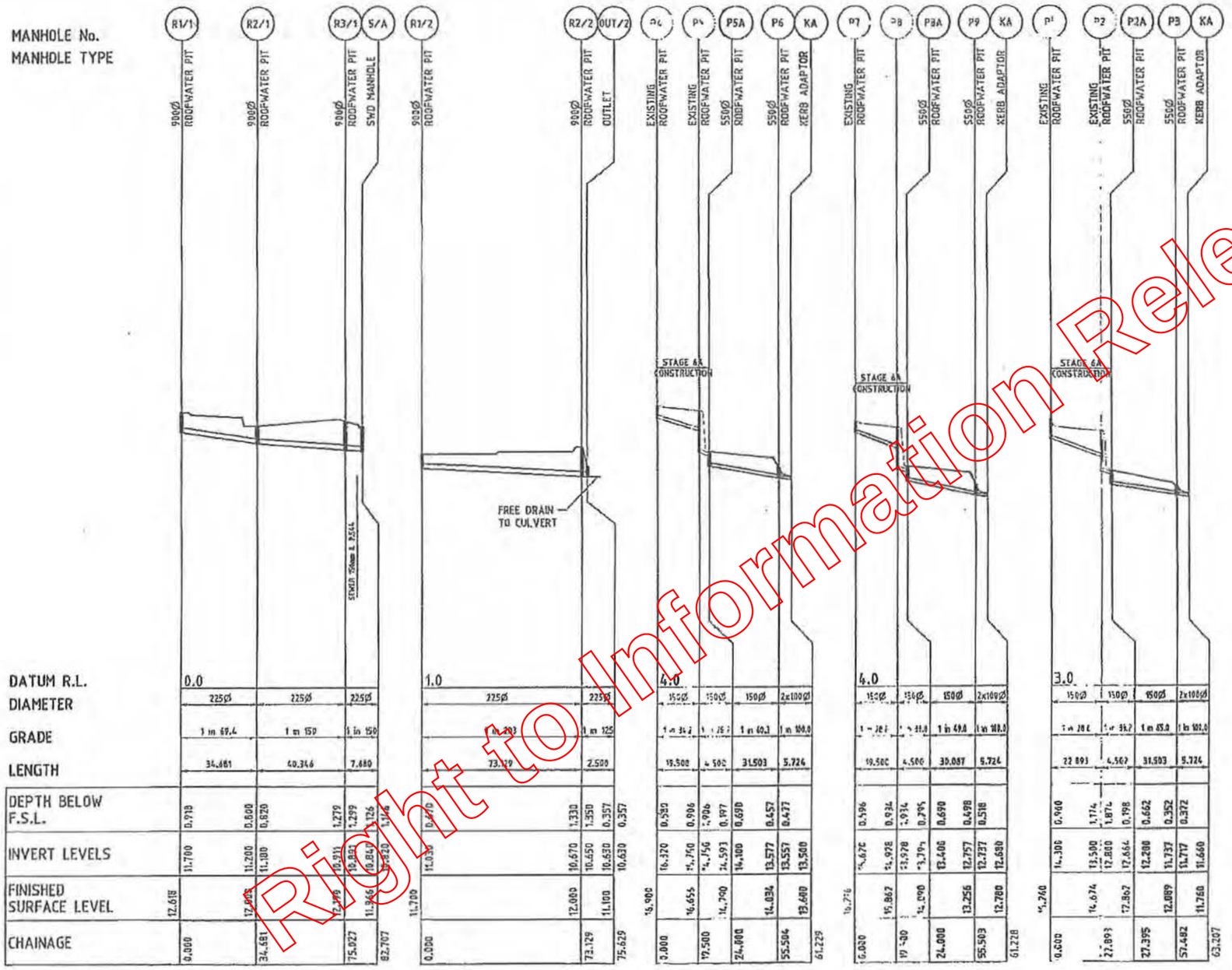
PROJECT
VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5600

BROWN

DRAWING TITLE
STORMWATER DRAINAGE
CALCULATIONS TABLE

DRAWING NUMBER B07018-112
ISSUE D



Redland City Council
Operational Works Approval
14 SEP 2009
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE 807018-113.dwg DATE 28-08-2009 TYPE ISO5
Xrefs: X_807018-111.dwg X_807018-SWD MSA Markups

PLOT MODE	CAD ID	DRAWN	DATE	AMENDMENT DETAILS
	KJH	KJH	12.12.08	
A	KJH	KJH	23.01.09	SWD MHS ADDED AND MH'S AMENDED
B	KJH	KJH	05.06.09	SWD LINE & AMENDED
C	KJH	KJH	25.8.09	SWD AMENDED
D				
E				
F				

DESIGN CHECK: P
DRAWN CHECK: P

SCALE (METRES)
1:1000 10 0 10 20 30 40 50 A1
1:2000 A3 HORIZONTAL
1:100 2 1 0 2 4 A1
1:200 A3 VERTICAL

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

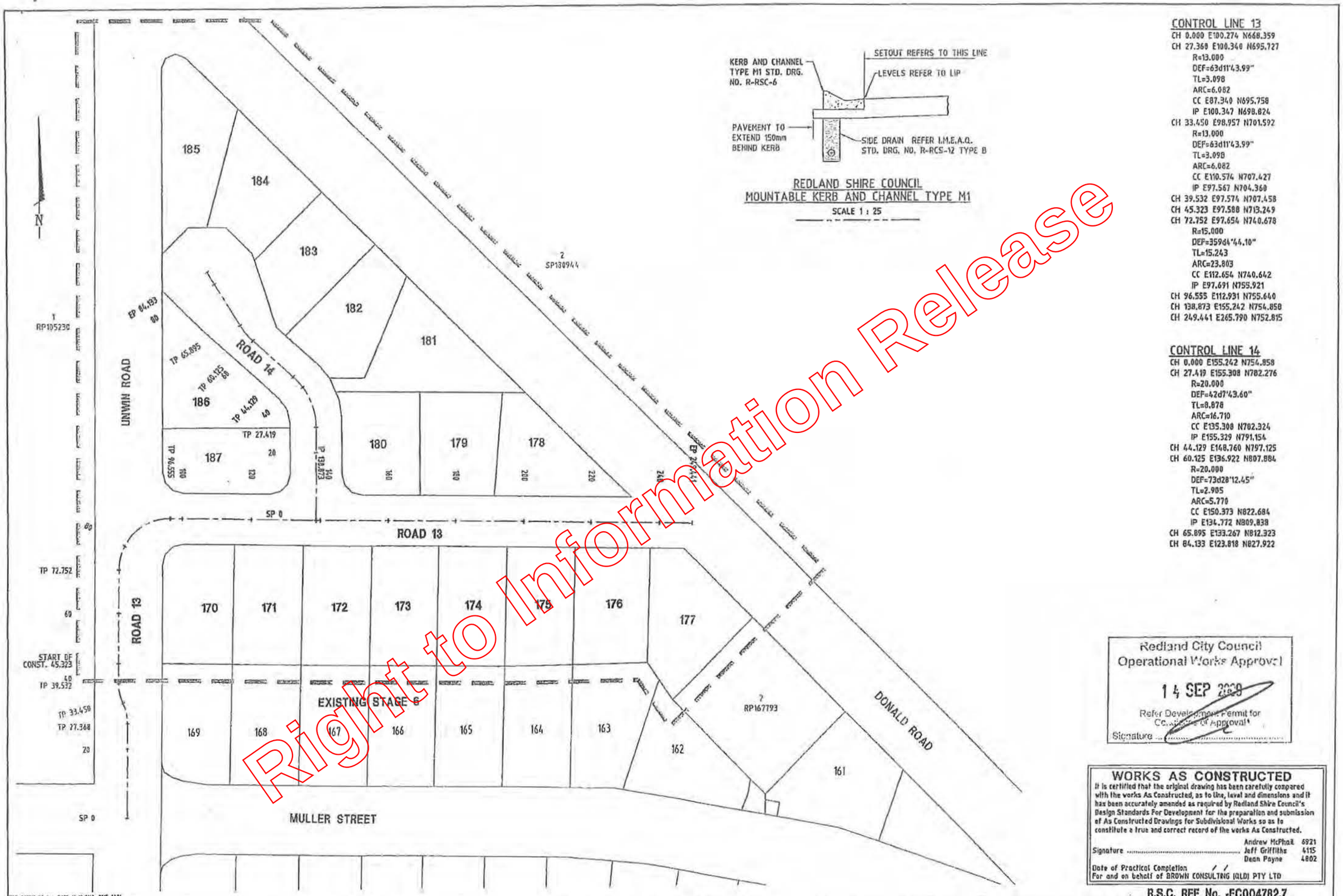
APPROVED: Dean Payne — ANDREW MCPHAIL RPEQ 6921; JEFF GRIFFITHS RPEQ 4115; DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

BROWN PROJECT No. 807018

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (Qld) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3221 5555 Facsimile 07 3221 5500
Brisbane Canberra Melbourne Sydney Singapore Switzerland Perth

DRAWING TITLE: ROOFWATER DRAINAGE LONGITUDINAL SECTIONS
DRAWING NUMBER: 807018-113
ISSUE: C



CONTROL LINE 13
CH 0.000 E100.274 N668.359
CH 27.368 E100.340 N695.727
R=13.000
DEF=63d11'43.99"
TL=3.098
ARC=6.082
CC E87.340 N695.758
IP E100.347 N698.824
CH 33.450 E98.957 N701.592
R=13.000
DEF=63d11'43.99"
TL=3.098
ARC=6.082
CC E110.574 N707.427
IP E97.567 N704.360
CH 39.532 E97.574 N707.458
CH 45.323 E97.588 N713.249
CH 72.752 E97.654 N740.678
R=15.000
DEF=359d4'44.10"
TL=15.243
ARC=23.803
CC E112.654 N740.642
IP E97.691 N755.921
CH 96.555 E112.931 N755.640
CH 138.873 E155.242 N754.858
CH 249.441 E265.790 N752.815

CONTROL LINE 14
CH 0.000 E155.242 N754.858
CH 27.419 E155.308 N782.276
R=20.000
DEF=42d7'43.60"
TL=8.878
ARC=16.710
CC E135.308 N782.324
IP E155.329 N791.154
CH 44.129 E148.760 N797.125
CH 60.125 E136.922 N807.884
R=20.000
DEF=73d28'12.45"
TL=2.985
ARC=5.770
CC E150.373 N822.684
IP E134.772 N809.838
CH 65.895 E133.267 N812.323
CH 84.133 E123.818 N827.922

Redland City Council
Operational Works Approval
14 SEP 2020
Refer Development Permit for Conditions of Approval
Signature .....

WORKS AS CONSTRUCTED
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Signature ..... Andrew McPhail 6921, Jeff Griffiths 4115, Dean Payne 4802
Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-114.dgn DATE: 18-12-2019 TIME: 9:26
Xref's: X_B07018-TITLE X_B07018-BASE USER: mark.hastings

PRINT ISSUE	CAD'D	DRAWN	DATE
A			
B			
C			
D			
E			

AMENDMENT DETAILS

DESIGN CHECK
DRAWN CHECK

SCALE (METRES)
1:500 10 5 0 10 20 A1
1:1000 A3

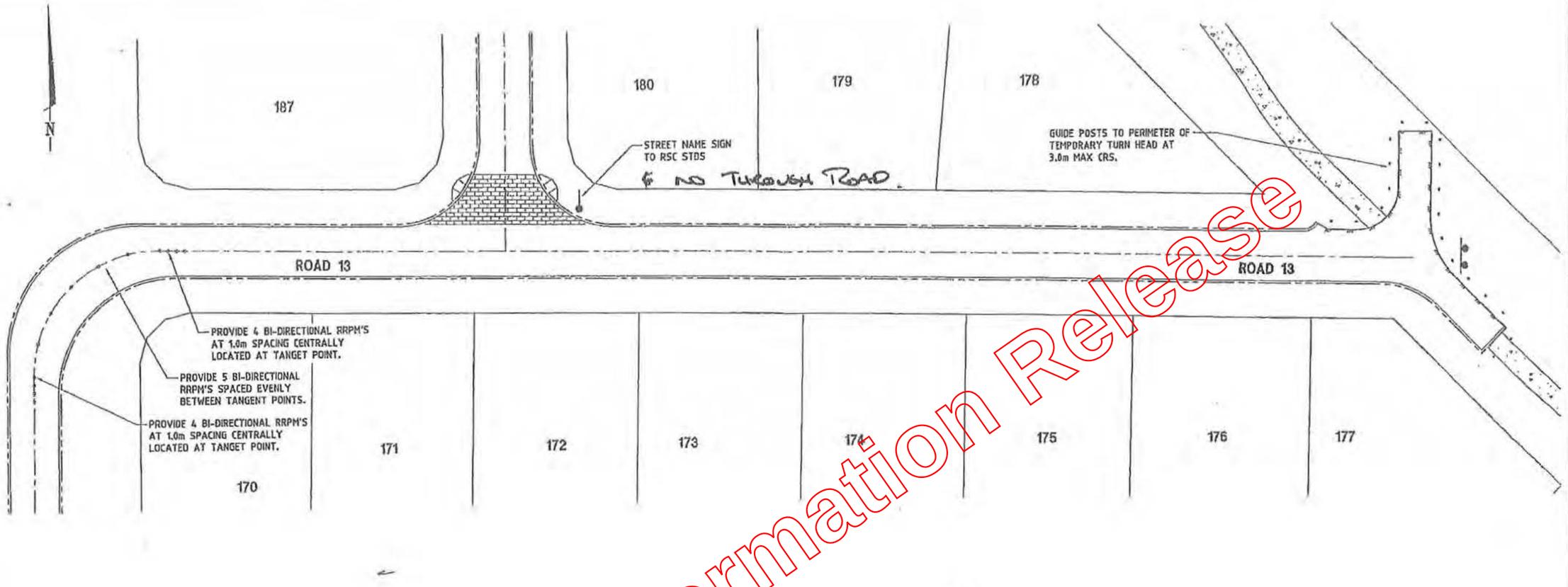
MICROFILM NO.
PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699
APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD
PROJECT: VALENCIA SPRINGS STAGE 7 UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3221 5555 Facsimile 07 3221 6500
Brisbane Canberra Melbourne Sydney Singapore Auckland Bristol
BROWN

DRAWING TITLE: SURVEY SETOUT LAYOUT PLAN
DRAWING NUMBER: B07018-114
ISSUE



Redland City Council
Operational Works Approval

14 SEP 2009

Refer Development Permit for Conditions of Approval

Signature .....

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Signature ..... Andrew McPhail 6921
Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

(QLD) B07018-115.dwg DATE: 25-06-2008 TIME: 1321
Xrefs: X_B07018-TITLE X_B07018-BASE USER mark hastings

PART ISSUE	CHECK	DESIGN	DATE
A			
B			
C			
D			
E			
F			

AMENDMENT DETAILS

DRAWN CHECK

DESIGN CHECK

SCALE 1 METRE 1

1:250 1:500 5 0 5 10 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT AMEX SUBDIVISIONS PTY LTD

PROJECT VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Adelaide Canberra Melbourne Sydney Singapore Kuala Lumpur Brunei

BROWN

DRAWING TITLE SIGNS AND LINEMARKING LAYOUT PLAN

DRAWING NUMBER B07018-115

ISSUE

CONCRETE PATH IN LANDSCAPE CONTRACT

ABANDON EXISTING PIPE CULVERT

PROPOSED 375Ø STORMWATER CULVERT WITH ROCK PITCHING EACH END AS DIRECTED U.S.I.L. 10.60, D.S.I.L. 10.58, 4.8m LONG. EXCAVATE FREE-DRAINING OUTLET AS DIRECTED BY CIVIL ENGINEER

DONALD ROAD

EXISTING TREES TO BE RETAINED

DIRECT ROOFWATER OUTLET TO STORMWATER CULVERT

0.50% MIN. GRADE SWALE TO STORMWATER CULVERT

UNWIN ROAD

ROAD 14

185 183 182 181 178 179 180 186

PATHWAY SETOUT TABLE

POINT	EASTING	NORTHING
1	248.475	773.622
2	229.329	795.962
3	216.862	806.821
4	207.433	816.207
5	196.386	828.775
6	186.958	838.161
7	174.340	849.152
8	164.912	858.538
9	153.724	871.266
10	144.614	880.373
11	125.345	897.302

EXISTING GRAVEL ROAD

1 in 4 TYPICAL

RL AS SPECIFIED

4.0m

SECTION A
SCALE 1:100

WORKS AS CONSTRUCTED

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Andrew McPhail 6921
Signature ..... Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-116.dwg DATE: 02-03-2009 TIME: 14:38
Xref's: X_B07018-TITLE X_B07018-BASE USER: Mark Hastings

PART	ISSUED	DRAWN	DATE	AMENDMENT DETAILS
AMENDMENT	MH	MH	25.02.09	
A	MH	TL	02.03.09	NOTES AMENDED
B				
C				
D				
E				
F				

DESIGN CHECK: GB
DRAWN CHECK: GB

SCALE 1 METRES 1
1:250 5 0 5 10 A1
1:500 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

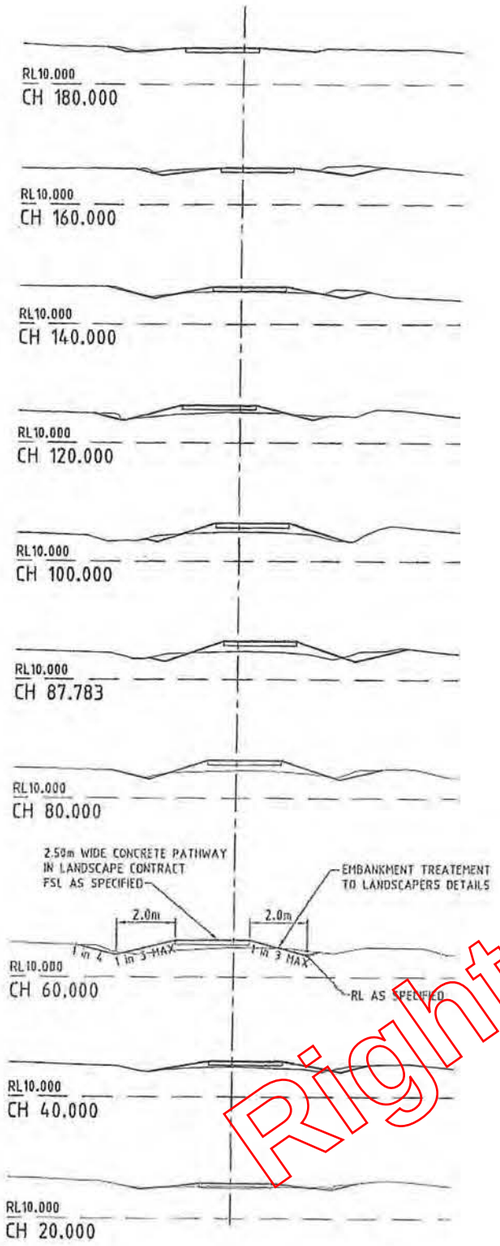
CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Bristol

DRAWING TITLE: DONALD ROAD PATHWAY EARTHWORKS LAYOUT PLAN

DRAWING NUMBER: B07018-116 ISSUE: A



Redland City Council
Operational Works Approval
17 FEB 2010
Refer Development Permit for
Conditions of Approval
Signature

WORKS AS CONSTRUCTED

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Signature ..... Jeff Griffiths 4115
Dean Payne 4802

Date of Practical Completion / /
For and on behalf of BROWN CONSULTING (QLD) PTY LTD

R.S.C. REF No. -EC004782.7

FILE: B07018-117.dwg DATE: 02-09-2009 TIME: 14:42
Xref's: X_B07018-TITLE X_B07018-BASE USR: Tom Lynch

AMENDMENT	FIRST ISSUE	CALCS	DRAWN	DATE	AMENDMENT DETAILS
	A	MH	TL	02.09.09	NOTES AMENDED
	B				
	C				
	D				
	E				
	F				

DESIGN CHECK: DS
DRAWN CHECK: TL

SCALE (METRES)
1:250 1:500 5 0 5 10 A1 A3

MICROFILM No.

PROJECT No. B07018

SURVEYOR: DTS Group Pty Ltd
1st Floor, 6 Heussler Tce
Ph (07) 3118 0600 Fax (07) 3118 0699

APPROVED
ANDREW McPHAIL RPEQ 6921
JEFF GRIFFITHS RPEQ 4115
DEAN PAYNE RPEQ 4802
FOR & ON BEHALF OF BROWN CONSULTING (QLD) PTY LTD

CLIENT: AMEX SUBDIVISIONS PTY LTD

PROJECT: VALENCIA SPRINGS
STAGE 7
UNWIN ROAD, REDLAND BAY

Brown Consulting (QLD) Pty Ltd Engineers & Managers
Level 3 410 Queen Street Brisbane QLD Australia 4000
Telephone 07 3231 5555 Facsimile 07 3231 5500
Brisbane Canberra Melbourne Sydney Singapore Sunshine Coast Brunei

BROWN

DRAWING TITLE: DONALD ROAD PATHWAY CROSS SECTIONS

DRAWING NUMBER: B07018-117

ISSUE: A

Disclaimer: This Contour Plan must be used in conjunction with the photographs supplied in the Site Survey Report.

Building Approval for structures listed on associated decision notice only. Ancilliary structures and existing work such as retaining walls, Decks, pools, driveways, sheds etc are not included unless listed on the decision notice.

CONFIRM ALL LEVELS ON SITE PRIOR TO COMMENCING WORK.

ALL PLUMBING POINTS TO BE CONNECTED TO EXISTING DRAINS IN ACCORDANCE WITH LOCAL AUTHORITIES REQUIREMENTS.

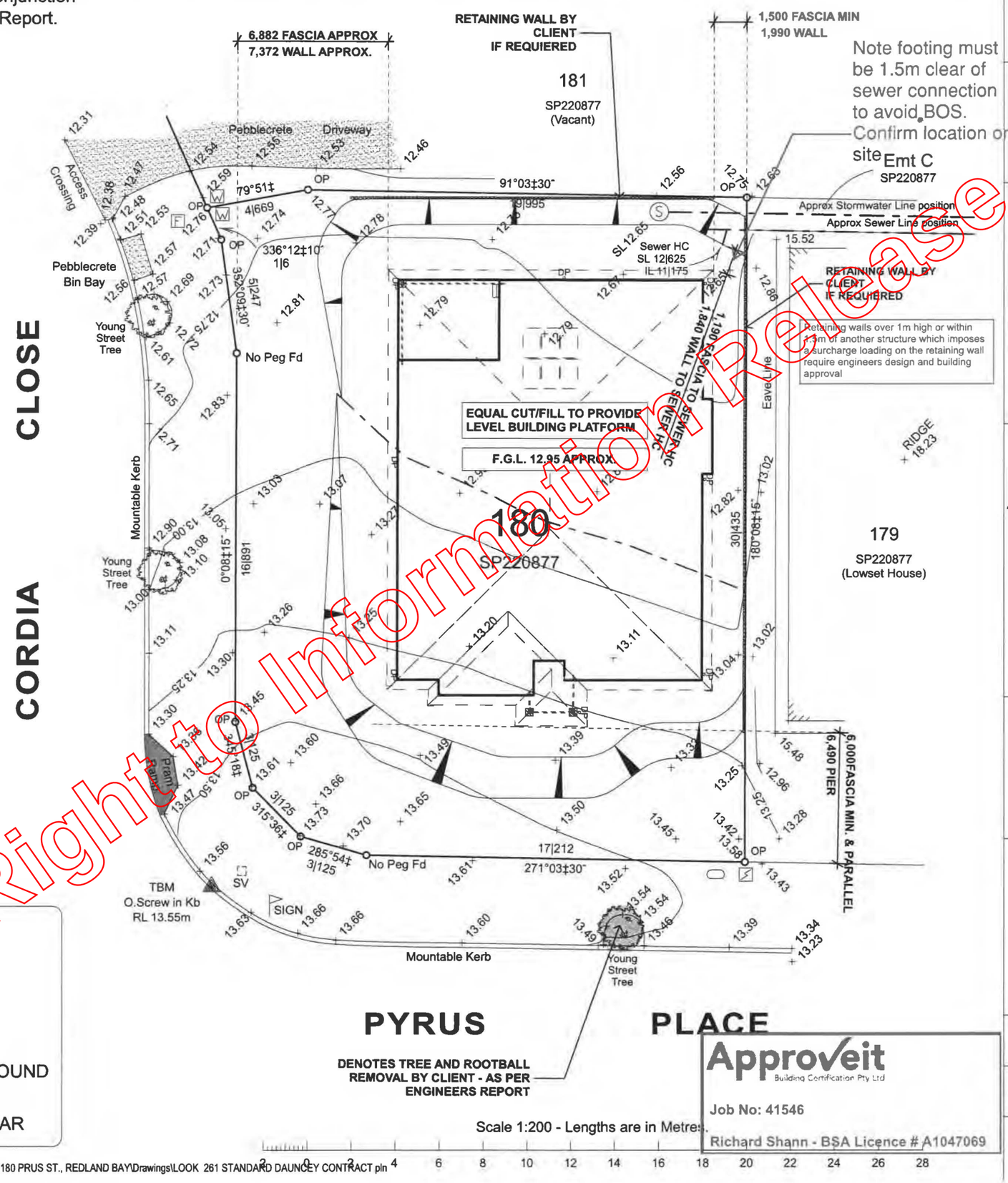
STORMWATER TO BE CONNECTED TO EXISTING DRAINS IN ACCORDANCE WITH LOCAL AUTHORITIES REQUIREMENTS.

PROVIDE 2 No. CAPPED UPSTANDS FOR FUTURE YARD GULLIES BY OWNER AFTER HAND OVER.

Stormwater to be piped to legal point of discharge to council requirements.
Surface water drainage to comply BCA and AS3500 - not to cause nusiance to adjoining Properties

SERVICES

O/H Power	PP	NO
U/G Power		YES
Water		YES
Telecom		YES
Gas	G	NOT FOUND
Sewer		YES
Stormwater	S	TO REAR



PYRUS PLACE

Approveit Building Certification Pty Ltd
Job No: 41546
Richard Shann - BSA Licence # A1047069

CONTOUR SURVEY PLAN

CLIENT: Stylemaster Homes

SITE ADDRESS:
Lot 180 Cordia Close
Redland Bay

REAL PROPERTY DESCRIPTION

Lot:	180
on:	SP220877
Parish of:	Redland
County of:	Stanley
Area:	700 m²
UBD Ref: Map	246 **Ref** M5
Local Authority:	Redland City Council
Contour Interval:	0.25m
Datum:	AHDD (Sew MH2/1 - SL13.912)

LEGEND

LP	LIGHT POLE		FENCE
OP	ORIGINAL PEG		ROCK RETAINING WALL
TBM	TEMPORARY BENCH MARK		TIMBER RETAINING WALL
PP	POWER POLE	S	STORM WATER PIPE
F	FIRE HYDRANT	G	GAS SUPPLY
A	AIR VALVE		BARRIER KERB LINE
	SEWER MANHOLE		SURVEY CONTROL MARK
R	ROOFWATER PIT	S	STORMWATER MANHOLE
E	POWER BOX		PERMANENT SURVEY MARK
	TELSTRA PIT		GULLY GRATE
	CROSS-OVER	W	WATER TAP/WATER/VALVE
	HEADWALL		SIGN (AS SHOWN)
S	SEWER LINE	SW	STORMWATER LINE
TOP	Top of Bank		ELECTRIC POWER LINE
TOE	Bottom of Bank		

Disclaimer:
The position of Fence Lines, Retaining Walls and other detail is indicative only and should not be relied upon as depicting the Boundary Lines. This is a plan of VISIBLE SERVICES ONLY. The location of pegs found have NOT BEEN CHECKED and as such should not be relied on as marking the corners of the lot. An Identification Survey should be carried out prior to any construction works.

KEVIN HOLT CONSULTING
SURVEYORS AND TOWN PLANNERS
1B Technology Office Park
107 Miles Platting Road
Eight Mile Plains Qld 4113
Phone 07 3219 0400
Fax 07 3219 0900
Email brisbane@kevinholtconsulting.com

DATE SURVEYED: 16/09/2010
SURVEYOR: LR (AG)

A3
SCALE: 1:200
DATE DRAFTED: 20/09/2010

JOB NO. 103478
PLAN NO. REV 103478-001A

M:\ArchiCAD\Jobs\Stylemaster\Project\2013 STYLEMASTER Drafting Jobs\DAUNCEY, LOT 180 PRUS ST., REDLAND BAY\Drawings\LOOK 261 STANDARD DAUNCEY CONTRACT pln

N O R T H

SCARIFY HOUSE PAD 600mm TO COMPLY WITH ENGINEER'S REQUIREMENTS. SCARIFIED PAD HEIGHT 12.43 A.H.D.

NOTE:- USE TEMPORARY DOWNPIPES.
- FILL PLACED AROUND THE PERIMETER OF THE CONCRETE SLAB (IMMEDIATELY FOLLOWING SLAB POUR) TO DIVERT WATER AWAY FROM FOUNDATIONS.
- 100mm STORMWATER LINES TO ENTIRE SITE

10,000L ABOVE GROUND WATER TANK SERVICING WASHING MACHINE PROVISION, 1XHOSECOCK & WC'S ONLY. x3 DOWNPIPES & 1 DROPPER COLLECTING 100m2 OF ROOF AREA. TANK OVERFLOW DISCHARGED TO STORMWATER SYSTEM.

NOTES
SETBACK DISTANCES ARE FROM THE OUTSIDE OF THE FASCIA TO THE BOUNDARY.
EAVE WIDTH TO OUTSIDE OF FASCIA IS 600mm MAX.

= 100m² OF ROOF CATCHMENT AREA

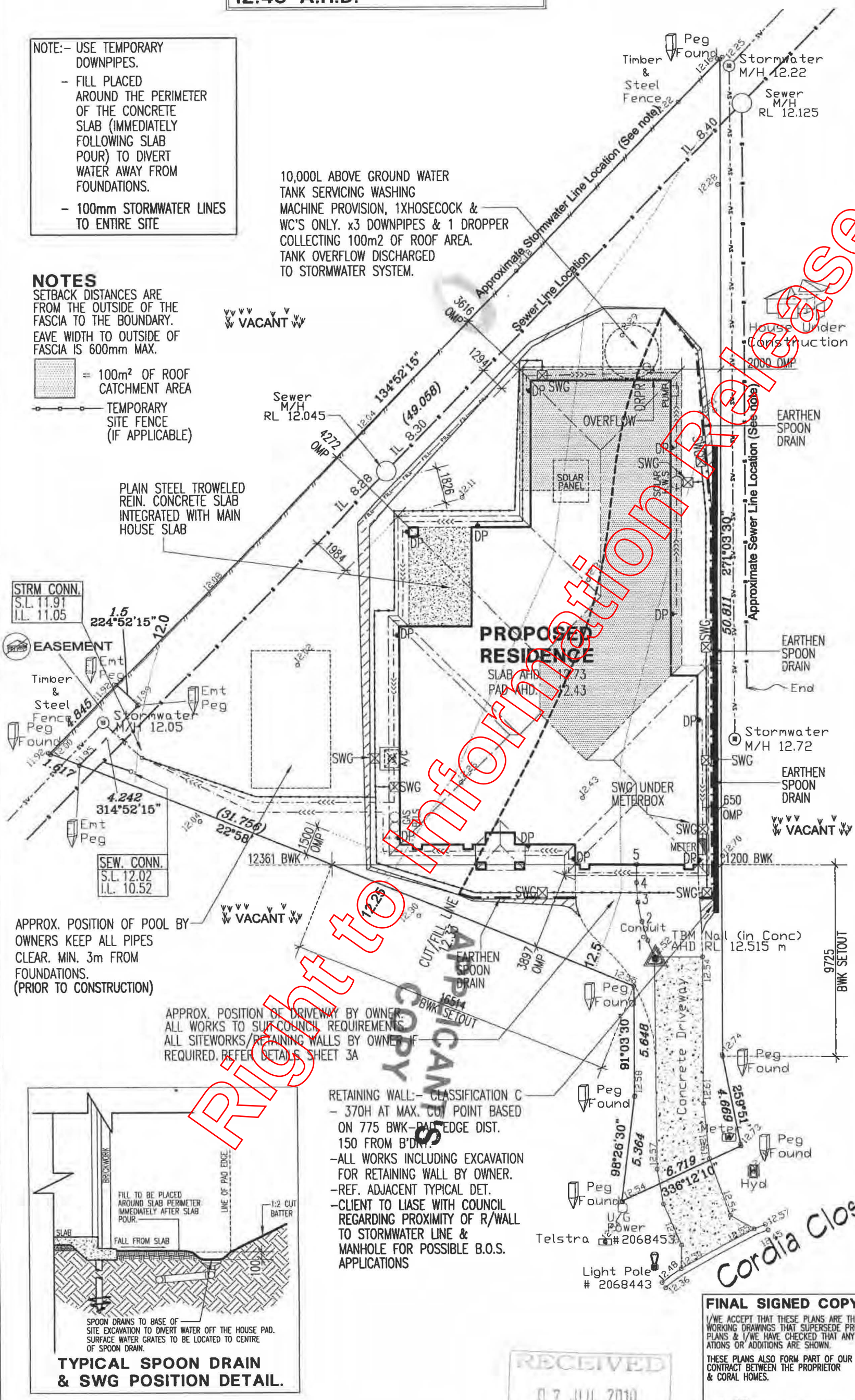
TEMPORARY SITE FENCE (IF APPLICABLE)

PLAIN STEEL TROWELED REIN. CONCRETE SLAB INTEGRATED WITH MAIN HOUSE SLAB

APPROX. POSITION OF POOL BY OWNERS KEEP ALL PIPES CLEAR. MIN. 3m FROM FOUNDATIONS. (PRIOR TO CONSTRUCTION)

APPROX. POSITION OF DRIVEWAY BY OWNER. ALL WORKS TO SUIT COUNCIL REQUIREMENTS. ALL SITEWORKS/RETAINING WALLS BY OWNER IF REQUIRED. REFER DETAILS SHEET 3A

RETAINING WALL:- CLASSIFICATION C - 370H AT MAX. CUT POINT BASED ON 775 BWK-PAD EDGE DIST. 150 FROM B'DRY.
-ALL WORKS INCLUDING EXCAVATION FOR RETAINING WALL BY OWNER.
-REF. ADJACENT TYPICAL DET.
-CLIENT TO LIASE WITH COUNCIL REGARDING PROXIMITY OF R/WALL TO STORMWATER LINE & MANHOLE FOR POSSIBLE B.O.S. APPLICATIONS



OWNERS RESPONSIBILITY:
RETAINING WALLS GREATER THAN 1m HIGH (CUT OR FILL) ARE REQUIRED TO BE ENGINEER DESIGNED & CERTIFIED PRIOR TO BUILDING APPROVAL AND, IF CLOSER THAN 1500mm FROM BOUNDARY, WILL ALSO REQUIRE A RELAXATION OR COMPLIANCE WITH SUBDIVISIONAL APPROVAL OF THE ESTATE (FILL SIDE ONLY).
RETAINING WALLS UNDER 1m HIGH WITHIN 1.5m OF AND EXISTING RETAINING WALL OR STRUCTURE TO BE ENGINEER DESIGNED & CERTIFIED PRIOR TO BUILDING APPROVAL.
SHOULD THE OWNER CONSTRUCTED RETAINING WALLS (NOT REQUIRING ENGINEERING) BE UNSUITABLE OR STRUCTURALLY UNSOUND, THE PRIVATE CERTIFIER MAY REQUEST WALL TO BE RE-BUILT, REPAIRED, OR ENGINEER DESIGNED TO RECTIFY THESE WALLS.
ENGINEERS DESIGN TO ADDRESS ISSUES IF IN CLOSE PROXIMITY TO SEWER, STORMWATER, EASEMENTS OR EXISTING STRUCTURES. SEPARATE COUNCIL APPLICATION AND FEES MAY APPLY.
OWNER TO LIASE WITH PRIVATE CERTIFIER OR LOCAL COUNCIL IN REGARDS TO APPROVALS & ENGINEERING AS REQUIRED.
OWNER IS RESPONSIBLE TO CONSTRUCT ANY CUT OR FILL SIDE RETAINING WALLS WIHTIN TIMEFRAMES AS OUTLINED IN SIGNED CONTRACT.

SERVICES ALERT
Axis Surveys take no responsibility for the location of any non-visible service

GROUND LEVEL ALERT
The levels shown were taken on the surveyed date and may not represent the Local Authority's definition of Ground Level. Please contact this office for a quote or further advice.

IDENTIFICATION SURVEY ALERT
This Contour and Feature Survey, as prepared by Axis Surveys, does not guarantee the location of boundary pegs or fences. Please contact this office for a quote or for further advice.

FLOOD SEARCH ALERT
Axis Surveys has not completed a flood search on this property. Check council for flood information.

TITLE SEARCH ALERT
Axis Surveys has not carried out a title search for this survey Check DERM for easements and encumbrances.

SITE COST OPTION:- 19/5/10

PROPERTY DESCRIPTION
LOT 181 ON sp 220877
CORDIA CLOSE

SUBURB	REDLAND BAY
LOCAL AUTH.	REDLAND CITY CNCL
PARISH	REDLAND
COUNTY	STANLEY
UBD REF.	246 M5

AREAS	M²
LAND	876
SITE COVERAGE	33.7%

SITEWORKS
CUT:- 0.370
FILL:- 0.300
PAD AHD.:- 12.43
SLAB AHD.:-12.73
NOTE : PLATFORM HEIGHT & RETAINING CAN VARY DUE TO SITE COND.

LEGEND
DENOTES 90/100mm DIA P.V.C STORM-WATER PIPE.
SWG DENOTES 250 x 250 SURFACE WATER GRATE CONNECTED TO SEPARATE STORMWATER PIPE.

CRITICAL PAD LEVEL
☑NO ☐YES

NOTE : ALL BUILDING WORKS ARE TO COMPLY WITH THE BUILDING CODE OF AUSTRALIA.

WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE.

SURVEYOR No. - 10-01046

Coral Homes
"Built On Trust"
Coral Homes
36 Laver Drive, Robina 4226
P.O. Box 4627, Robina Town Centre 4230
B.S.A LIC. No. 1014053 (QLD)
B.S.C LIC. No. 62084C (NSW)

CLIENTS
LOT 181 CORDIA CLOSE, REDLAND BAY

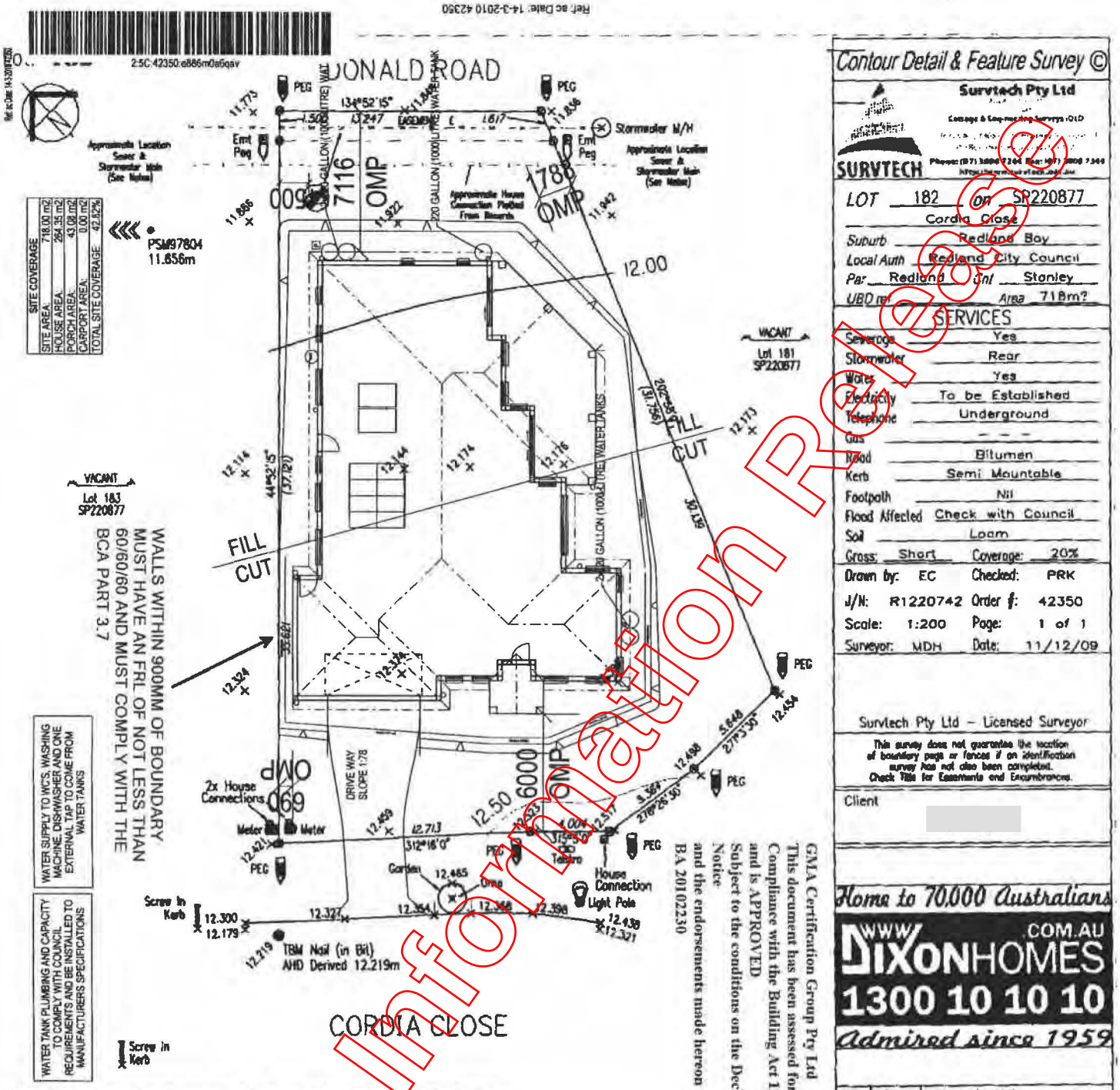
FINAL SIGNED COPY
I/WE ACCEPT THAT THESE PLANS ARE THE FINAL WORKING DRAWINGS THAT SUPERSEDE PRELIM. PLANS & I/WE HAVE CHECKED THAT ANY ALTERATIONS OR ADDITIONS ARE SHOWN.
THESE PLANS ALSO FORM PART OF OUR CONTRACT BETWEEN THE PROPRIETOR & CORAL HOMES.

PROPRIETOR SIGNATURE PROPRIETOR SIGNATURE
BUILDERS SIGNATURE

CHECKED	TENDER LETTER 15 JUN 2010
DRAWING SITE PLAN LAYOUT	REFERENCE No. J18358
SCALE: 1:200	DATE: 02/06/10 CP
DRAWN: JEL	
TEAM: 4	
SHEET 3 OF 10	

RECEIVED 07 JUL 2010

SITE PLAN



Contour Detail & Feature Survey ©

Survtech Pty Ltd

LOT 182 on SP220877
Cordia Close
Suburb Redland Bay
Local Auth Redland City Council
Par: Redland Cnt Stanley
UBD ref Area 718m²

SERVICES

Sewerage	Yes
Stormwater	Rear
Water	Yes
Electricity	To be Established
Telephone	Underground
Gas	
Road	Bitumen
Kerb	Semi Mountable
Footpath	Nil
Flood Affected	Check with Council
Soil	Loam
Gross:	Short Coverage: 20%
Drawn by:	EC Checked: PRK
J/N:	R1220742 Order #: 42350
Scale:	1:200 Page: 1 of 1
Surveyor:	MDH Date: 11/12/09

Survtech Pty Ltd – Licensed Surveyor

This survey does not guarantee the location of boundary pegs or fences if an identification survey has not also been completed. Check Title for Easements and Encumbrances.

Client

Issue	Date	Amendment
A	14/12/09	Original Issue
B	19/02/10	Amendment - 5m uplift & Sewer & Stormwater Main

GMA Certification Group Pty Ltd
This document has been assessed for Compliance with the Building Act 1975 and is APPROVED
Subject to the conditions on the Decision Notice
and the endorsements made hereon
BA 20102230

NOTE: Flood levels have not been searched by Survtech Pty Ltd. If required please contact the office for further information.

NOTE: Underground service locations are approximate only and should be verified by local authority prior to construction.

NOTE: No Work to Commence on Site or at the Builders Discretion until Retaining Walls are complete.

NOTE: Natural surface levels supplied may differ from councils definition of natural surface levels. Please contact if further clarification necessary.

NOTE: Sewer Drawn to plans provided by DIXON HOMES

Clean Building Zone ____ Distance ____

NOTE:

NOTE: AHD Derived from PSM97804 R.L 11.656m

* Services shown hereon have been located where possible by field survey. If not able to be located, services have been plotted from the records of relevant authorities where available. Prior to any excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services.

EARTHWORKS

GL: 12.18 approx / FFL: 12.48 approx

Equal Cut & Fill

NOTES:
* When preparing plumbing & drainage plan, position pipes under floor slab to allow for shortest possible run
* All dimensions, boundary and setbacks to be verified on site

The pad and slab height levels are to be read as that stated plus or minus 300mm and subject to further changes due to moisture content, settlement, bulking and / or similar. The client accepts that those levels will be varied without further notice to avoid extra costs of importing or disposing of fill.

CLIENT

CLIENT
DATE 23-3-10
BUILDER
DATE 26/3/10
NOT TO BE RECEIVED WITHOUT WRITTEN AUTHORITY

PATH OR PAD AGAINST PERIMETER OF HOUSE TO BE 50mm MINIMUM BELOW TOP OF EXPOSED EDGE CONCRETE OR WEEP HOLES WHEN APPLICABLE

Siteworks:

Siteworks shall be deemed to include the Works as required to prepare the building platform. This includes allowances for pushing aside small trees (max. diameter 150mm, max. height 6m) and the excavation to provide a building platform and grading surface water up to 1m away from the house footings.

The site and slab height levels, are to be read as that stated, plus or minus 300mm, and are subject to further changes due to moisture content, settlement, bulking and/or similar. The Owner(s) accept that the said levels will be varied with further notice, to avoid the extra costs of importing or disposing of fill.

BATTER ANGLES

Batter Angles are to comply with local government requirements and are to conform as follows:

- Clay based soils – 1 vertical to 1 horizontal
- Sandy soils – 1 vertical to 2 horizontal
- Weathered Rock – 1 vertical to 1.5 horizontal
- Massive Rock – Almost Vertical

ROOFWATER

- To street Channel or Gully
- To Connection Point
- To Dispersion Pods
- To Rubble Pits (MIN 6m from House & 1.5M from bdy)
- To Water Tanks

RETAINING WALLS

Retaining Wall/s by Owner.
Batter Earthworks to Soil.

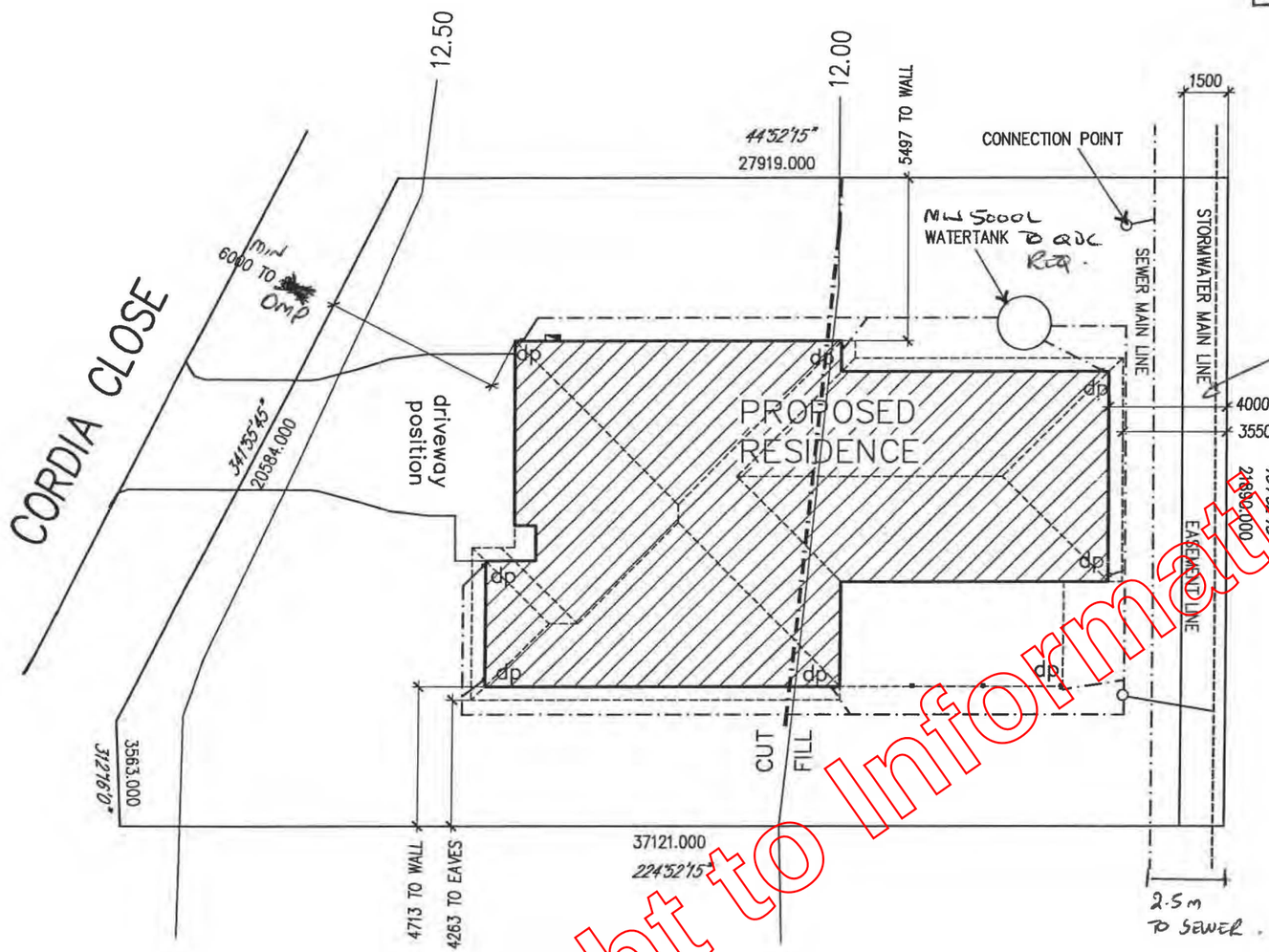
Walls	Max. Height Found	Batter	Wall	Fill	Fill

Building approval for structures listed on associated decision notice only.

Ancillary structures and existing work such as retaining walls, pools, driveways, sheds etc are not included unless listed on the decision notice.

approval for structures listed on ciated decision notice only.

structures and existing work such as walls, pools, driveways, sheds etc are d unless listed on the decision notice.



NOTES: (I) ALL BUILDING WORK TO BE MIN 1500mm CLEAR OF COUNCIL SEWER + STORMWATER MAINS + M/L POLES

(II) RETAINING WALLS EXCEEDING 1m HIGH OR WITHIN 1.5m OF ANOTHER LOAD BEARING STRUCTURE REQ ENGINEERS DESIGN + BUILDING APPROVAL.

(III) ROOFWATER TO BE PIPED TO COUNCIL STORMWATER SYSTEM.

(IV) SURFACE DRAINAGE TO COMPLY BCA 2009 + AS3500.

APPROX. HOUSE PAD R.L. 12.0
SUBJECT TO SITE CONDITIONS

ALL CONSTRUCTION METHODS AND MATERIALS TO BE IN ACCORDANCE WITH;
THE BUILDING CODE OF AUSTRALIA
THE BUILDING ACT BUILDING ACT AMENDENT ACT 1991*
REFERENCE DOCUMENT USED :
AS 1684.2–1999
HYNE SPAN TABLES
AUSTRALIAN DOMESTIC CONSTRUCTION MANUAL

APPROVEIT BUILDING CERTIFICATION PTY LTD
JOB No: 40461
RICHARD SHANN
BSA CERTIFICATION LICENCE # A1047089

R.P.D.

LOT	183.
RP	SP 220877
PARISH	Redland
COUNTY	Stanley
AREA	730 sq.m.

Site Plan. Scale 1 : 200.

PROVINCIAL BUILDING

U39. No. 120. BLOOMFIELD ST.
CLEVELAND 4163.
PH.: 3286 7762
FAX: 3286 1690

DRAWN: OTTO
DATE: 20/4/10
SCALE: 1:200

N2

CLIENT:

SITE ADDRESS:
LOT 183. CORDIA CL.
REDLAND BAY

JOB No. 240PB183
Sheet No. 1. of 6

AMENDMENTS TO CONTRACT

	DATE	REMARKS
A		
B		
C		
D		
E		
F		

KOSCAD AUSTRALIA PTY LTD
47. Reuben St.
Cornubia
Phone : 3806 0800
0409 740 340
Fax : 3806 0811
BSA lic. No. 657045

NSW Lic. No. 1109310
Qld Lic. No. 718748
PERRY HOMES (AUST) PTY LTD
ABN 53 090 866 630

CLIENT:

BUILDERS JOB NO: 6621

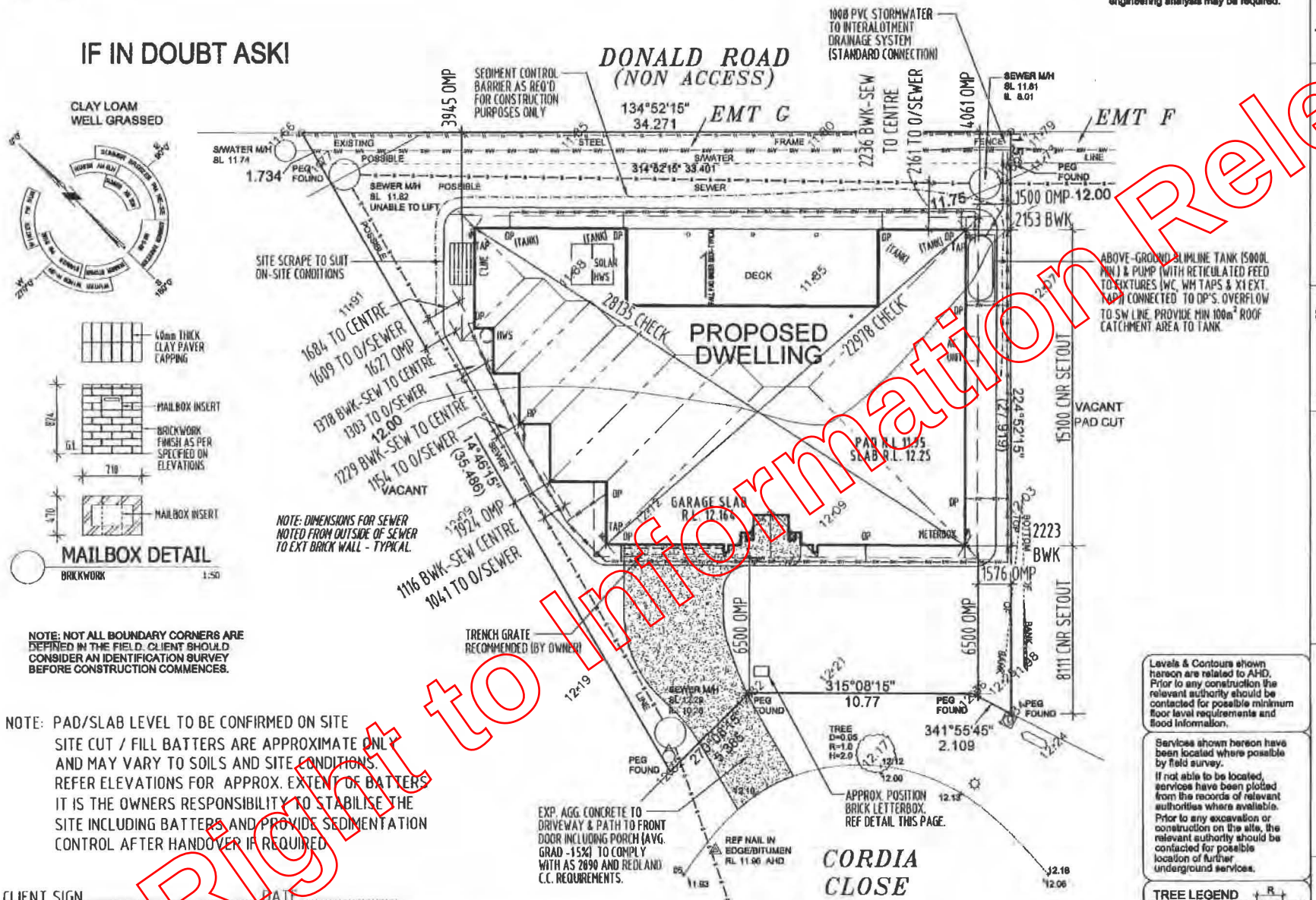
NOTE:
TERMITE PROTECTION TO BE EXPOSED SLAB EDGE TO PERIMETER WITH PHYSICAL PROTECTION OF SLAB PENETRATIONS

NOTE:- AS-CONSTRUCTED PLANS WERE UNAVAILABLE AT TIME OF SURVEY. SWR & SWTR LINES HAVE BEEN PLOTTED VIA FIELD SURVEY & ARE APPROX. ONLY. BUILDER SHOULD CHECK WITH COUNCIL FOR EXACT POSITIONS PRIOR TO START OF CONSTRUCTION.

OVERLAND FLOW POTENTIAL: (PER BSA SUBSIDENCE POLICY) We have inspected the subject site during survey and consider that it is UNLIKELY there is any potential for concentrated stormwater overland flow. The aim is to identify features such as a drain, gully or low point. No specific Local Council searches have been conducted and engineering analysis may be required.

STEVE COOPER & ASSOCIATES PTY LTD
ABN 67 010 839 022
LICENSED LAND SURVEYORS,
LAND PLANNING CONSULTANTS.
PH:- 3846 6477 FAX:- 3846 6488
27 NORFOLK ROAD, SOUTH BRISBANE 4101
EMAIL:- admin@stevecooper.com.au

IF IN DOUBT ASK!



NOTE: NOT ALL BOUNDARY CORNERS ARE DEFINED IN THE FIELD. CLIENT SHOULD CONSIDER AN IDENTIFICATION SURVEY BEFORE CONSTRUCTION COMMENCES.

NOTE: PAD/SLAB LEVEL TO BE CONFIRMED ON SITE
SITE CUT / FILL BATTERS ARE APPROXIMATE ONLY AND MAY VARY TO SOILS AND SITE CONDITIONS. REFER ELEVATIONS FOR APPROX. EXTENT OF BATTERS. IT IS THE OWNERS RESPONSIBILITY TO STABILISE THE SITE INCLUDING BATTERS AND PROVIDE SEDIMENTATION CONTROL AFTER HANDOVER IF REQUIRED.

CLIENT SIGN. ..... DATE .....

REV	DATE	DESCRIPTION
-	-	-
B	3/9/10	VAR.12 - DMC
A	2/7/10	SA6-DMC
i	22/7/10	SITE DIMS ADJUSTED

PROVIDE ABLE-FLEX OR SIMILAR APPROVED PRODUCT BETWEEN SLAB & ADJOINING SURFACE FINISH (TYP)

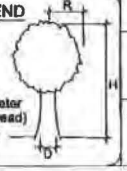
GMA Certification Group Pty Ltd
This document has been assessed for Compliance with the Building Act 1975 and is APPROVED
Subject to the conditions on the Decision Notice

CONTRACT COPY

Levels & Contours shown hereon are related to AHD. Prior to any construction the relevant authority should be contacted for possible minimum floor level requirements and flood information.

Services shown hereon have been located where possible by field survey.
If not able to be located, services have been plotted from the records of relevant authorities where available.
Prior to any excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services.

TREE LEGEND



D=Trunk Diameter
R=Radius (Spread)
H=Tree Height

SITE:

CORDIA CLOSE
REDLAND BAY
LOT 184 ON SP220877

LOCAL AUTH:	REDLAND C.C.
COUNTY:	STANLEY
PARISH:	REDLAND
AREA:	725m²
UBD REF:	246 M5

CONTOUR AND DETAIL SURVEY

THIS SURVEY MAPS THE SITE FEATURES AND LEVEL, IT DOES NOT GUARANTEE THE POSITION OF PEGS, ALLOTMENT BOUNDARIES OR FENCES. CHECK TITLE FOR ANY EASEMENTS.

SERVICES

O/H POWER	NO
U/G POWER	YES
WATER	YES
TELECOM	YES
GAS	NOT FOUND
SEWER	YES
ROOFWATER	REAR
STORMWATER	REAR

LEGEND

O/H LIGHT	
S/WATER PIT	
FIRE HYDRANT	
WATER VALVE	
MOUNTABLE KERB	
NON-MOUNT KERB	
REF RL.	11.96
DATUM	AHD (VIA LOT 183)

DATE:	28/04/10	DRAWN BY:	CL
FB:	-	SURVEYOR:	KCP
		CHECKED:	

SCALE: 1:200 - Orig A3
2 0 2 4 6 8 10

JOB NO: 10-942 (6621B) SHEET 1 OF 6

Heltech™ INDUSTRIES
60 Export Drive, Molendinar
Queensland 4214
Director/Secretary: Paul Camilleri
Supervising Engineer: John Murazak RPEQ 10156
Email: admin@heltech.com.au
Phone: 07 5571 6006
Fax: 07 5594 0051
A.C.N. 100 172 905
A.B.N. 21 100 172 905
B.S.A.# 1119450

STABLE SLAB

REVISIONS

Date	Initials

CLIENT: Coral Homes
Head Office: (07) 5585 2555
Fax: (07) 5585 2500

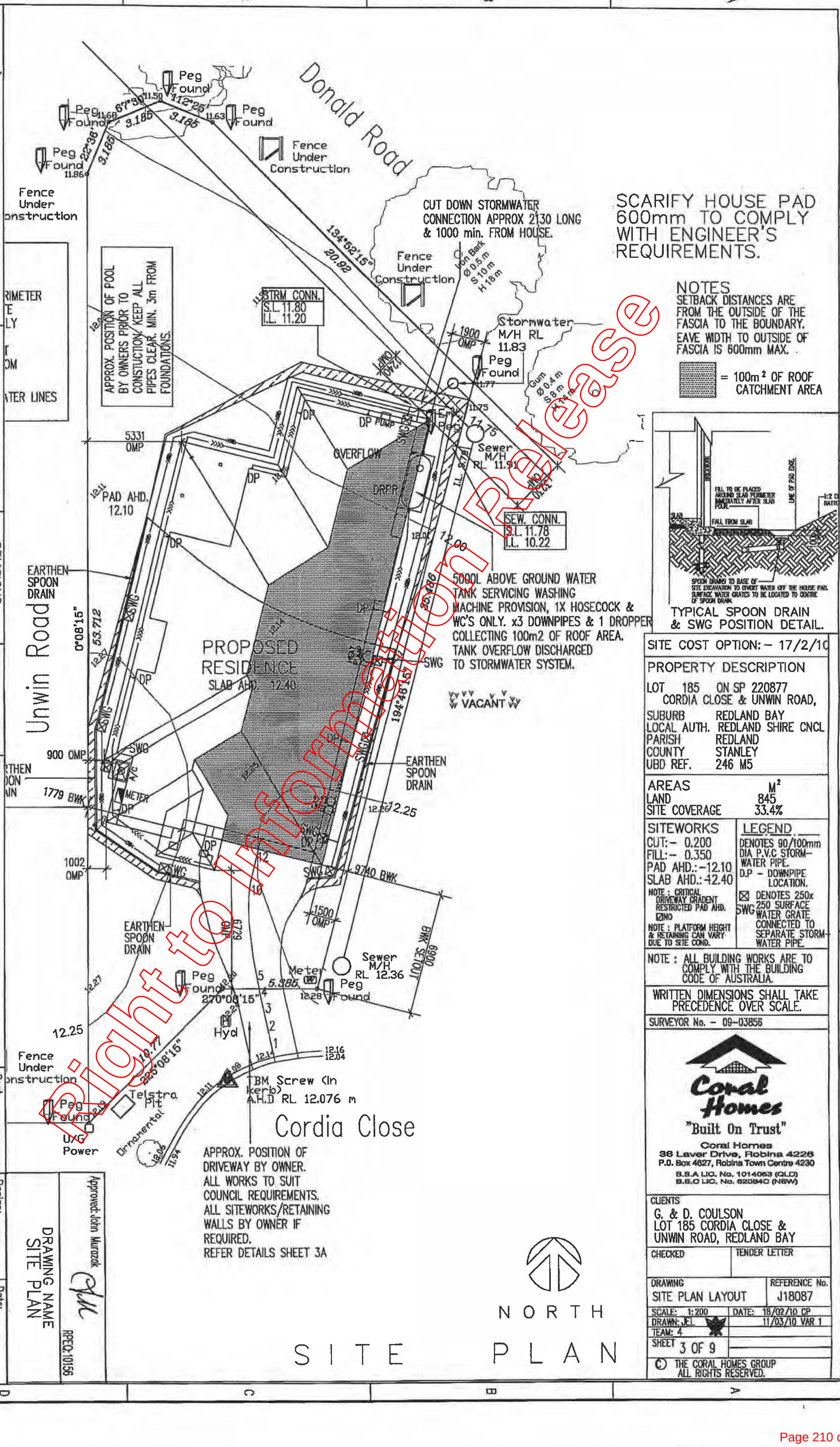
FOR:

SITE ADDRESS:
LOT 185 CORDIA CLOSE & UNWIN ROAD
REDLAND BAY
REDLAND SHIRE COUNCIL

Cost Code:	4
Soil Classification:	H
Site Classification:	P
Revision	
Sheet No	2
Design:	PC
Drawn:	BL
Approved:	JM
Sheet:	2 of 6
Date:	15th March 10
Scale:	1:200
Client Job No:	J18087
Heltech Job No:	27366 COR

DRAWING NAME
SITE PLAN

Approved: John Murazak
RPEQ: 10156



SITE COST OPTION:- 17/2/10

PROPERTY DESCRIPTION

LOT 185 ON SP 220877
CORDIA CLOSE & UNWIN ROAD,

SUBURB	REDLAND BAY
LOCAL AUTH.	REDLAND SHIRE CNCL
PARISH	REDLAND
COUNTY	STANLEY
UBD REF.	246 M5

AREAS	M²
LAND	845
SITE COVERAGE	33.4%

SITEWORKS
CUT:- 0.200
FILL:- 0.350
PAD AHD.:-12.10
SLAB AHD.:-42.40
NOTE : CRITICAL DRIVEWAY GRADIENT RESTRICTED PAD AHD. ☑NO
NOTE : PLATFORM HEIGHT & RETAINING CAN VARY DUE TO SITE COND.

LEGEND
DENOTES 90/100mm DIA P.V.C STORM-WATER PIPE.
D.P - DOWNPIPE LOCATION.
☒ SWG DENOTES 250x 250 SURFACE WATER GRATE CONNECTED TO SEPARATE STORM-WATER PIPE.

NOTE : ALL BUILDING WORKS ARE TO COMPLY WITH THE BUILDING CODE OF AUSTRALIA.

WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE.

SURVEYOR No. - 09-03856

Coral Homes
"Built On Trust"
Coral Homes
36 Lever Drive, Robina 4226
P.O. Box 4627, Robina Town Centre 4230
B.S.A LIC. No. 1014053 (QLD)
B.S.C LIC. No. 620840 (NSW)

CLIENTS
G. & D. COULSON
LOT 185 CORDIA CLOSE & UNWIN ROAD, REDLAND BAY

CHECKED	TENDER LETTER

DRAWING	REFERENCE No.
SITE PLAN LAYOUT	J18087

SCALE: 1:200	DATE: 18/02/10 CP
DRAWN: JEL	11/03/10 VAR 1
TEAM: 4	
SHEET 3 OF 9	

SCARIFY HOUSE PAD 600mm TO COMPLY WITH ENGINEER'S REQUIREMENTS.

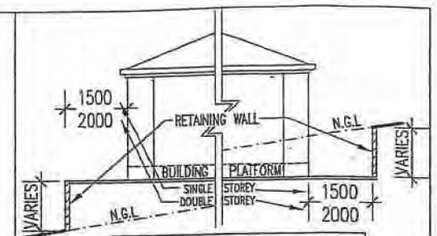
NOTE:– USE TEMPORARY DOWNPIPES.
- FILL PLACED AROUND THE PERIMETER OF THE CONCRETE SLAB (IMMEDIATELY FOLLOWING SLAB POUR) TO DIVERT WATER AWAY FROM FOUNDATIONS.
- 100mm STORMWATER LINES TO ENTIRE SITE

TYPICAL SPOON DRAIN & SWG POSITION DETAIL.

NOTES
SETBACK DISTANCES ARE FROM THE OUTSIDE OF THE FASCIA TO THE BOUNDARY.
EAVE WIDTH TO OUTSIDE OF FASCIA IS 600mm MAX.

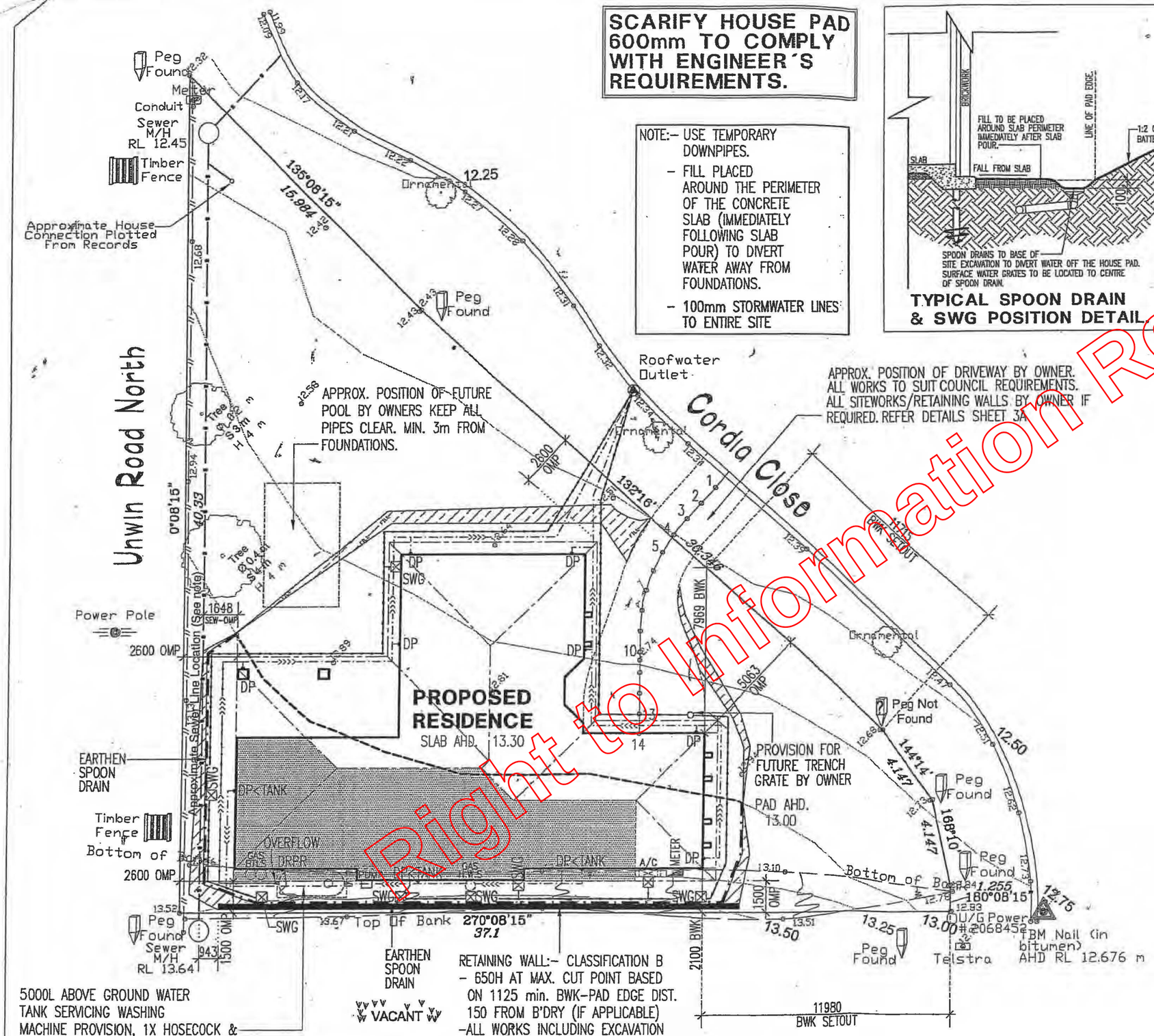
= 100m² OF ROOF CATCHMENT AREA

TEMPORARY SITE FENCE (IF APPLICABLE)



– IF RETAINING EXCEEDS 1000mm HIGH, TO BE ENGINEER DESIGN & INSPECTED.
– RETAINING HEIGHT WILL VARY IF SITE WORKS VARY FROM SHOWN.

TYPICAL RETAINING DETAIL.



SITE PLAN

OWNERS RESPONSIBILITY:
RETAINING WALLS GREATER THAN 1m HIGH (CUT OR FILL) ARE REQUIRED TO BE ENGINEER DESIGNED & CERTIFIED PRIOR TO BUILDING APPROVAL AND, IF CLOSER THAN 1500mm FROM BOUNDARY, WILL ALSO REQUIRE A RELAXATION OR COMPLIANCE WITH SUBDIVISIONAL APPROVAL OF THE ESTATE (FILL SIDE ONLY).
ENGINEERS DESIGN TO ADDRESS ISSUES IF IN CLOSE PROXIMITY TO SEWER, STORMWATER, EASEMENTS OR EXISTING STRUCTURES. SEPARATE COUNCIL APPLICATION AND FEES MAY APPLY.

SERVICES ALERT
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GROUND LEVEL ALERT
The levels shown were taken on the surveyed date and may not represent the Local Authority's definition of Ground Level. Please contact this office for a quote or further advice.

IDENTIFICATION SURVEY ALERT
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FLOOD SEARCH ALERT
Axis Surveys has not completed a flood search on this property. Check council for flood information.

TITLE SEARCH ALERT
Axis Surveys has not carried out a title search for this survey Check DERM for easements and encumbrances.

FINAL SIGNED COPY
I/WE ACCEPT THAT THESE PLANS ARE THE FINAL WORKING DRAWINGS THAT SUPERSEDE PRELIM. PLANS & I/WE HAVE CHECKED THAT ANY ALTERATIONS OR ADDITIONS ARE SHOWN.
THESE PLANS ALSO FORM PART OF OUR CONTRACT BETWEEN THE PROPRIETOR & CORAL HOMES.

PROPRIETOR SIGNATURE PROPRIETOR SIGNATURE
BUILDERS SIGNATURE

SITE COST OPTION:- 9/3/10

PROPERTY DESCRIPTION
LOT 186 ON SP 220 877
CORDIA CLOSE

SUBURB	REDLAND BAY
LOCAL AUTH.	REDLAND CITY CNCL
PARISH	REDLAND
COUNTY	STANLEY
UBD REF.	N/A

AREAS	M²
LAND	836
SITE COVERAGE	%

SITEWORKS
CUT:– 0.650
FILL:– 0.450
PAD AHD.:– 13.00
SLAB AHD.:–13.30
NOTE : PLATFORM HEIGHT & RETAINING CAN VARY DUE TO SITE COND.

LEGEND
DENOTES 90/100mm DIA P.V.C STORM–WATER PIPE.
SWG ☒ DENOTES 250 x 250 SURFACE WATER GRATE CONNECTED TO SEPARATE STORMWATER PIPE.

CRITICAL PAD LEVEL
☑NO ☐YES

NOTE : ALL BUILDING WORKS ARE TO COMPLY WITH THE BUILDING CODE OF AUSTRALIA.

WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE.

SURVEYOR No. – 10–00436

Coral Homes
Built on trust

Coral Homes
36 Laver Drive, Robina 4226
P.O. Box 4627, Robina Town Centre 4230
B.S.A LIC. No. 1014053 (QLD)
B.S.C LIC. No. 62084C (NSW)

CLIENTS
LOT 186 CORDIA CLOSE, REDLAND BAY

CHECKED	TENDER LETTER
	07 APR 2010
DRAWING	REFERENCE No.
SITE PLAN LAYOUT	J18224
SCALE: 1:200	DATE: 31/03/10 CP
DRAWN: JEL	
TEAM: 4	
SHEET 3 OF 9	

APPROVED
12/4/10.

CONTOURS AND REFERENCE LEVELS SHOWN ON SITE PLAN ARE INDICATIVE ONLY, BASED ON EQUAL CUT/FILL (UNLESS OTHERWISE NOTED) AND MAY VARY ACCORDING TO SITE CONDITIONS. A TOLERANCE OF +/- 200mm CAN OCCUR IN FINISHED HOUSE PLATFORM LEVEL AT COMPLETION OF SITE WORKS. NOTE: NO ALLOWANCE HAS BEEN MADE FOR IMPORT/EXPORT OF ANY CUT/FILL.

HOUSE STORMWATER LINES ARE SHOWN IN APPROXIMATE POSITIONS ONLY AND MAY CHANGE ON SITE

N.K. (11/12/09)

N.K. (11/12/09) V0.1

STORMWATER DISCHARGE TO:

- [x] KERB & CHANNEL
- [ ] SUITABLE SIZED SOAKAGE PIT
- [ ] DISPERSE ON SITE
- [ ] INTER ALLOTMENT DRAINAGE PIT
- [ ] RAINWATER STORAGE TANKS
- [ ] TO EXISTING APPROVED SYSTEM

- STORMWATER TO BE DISCHARGED SO AS TO NOT CAUSE NUISANCE TO ADJOINING OWNERS
- STORMWATER SYSTEM TO COMPLY WITH AS3500 PART 3
- ALL OTHER DETAILS TO LOCAL GOVERNMENT

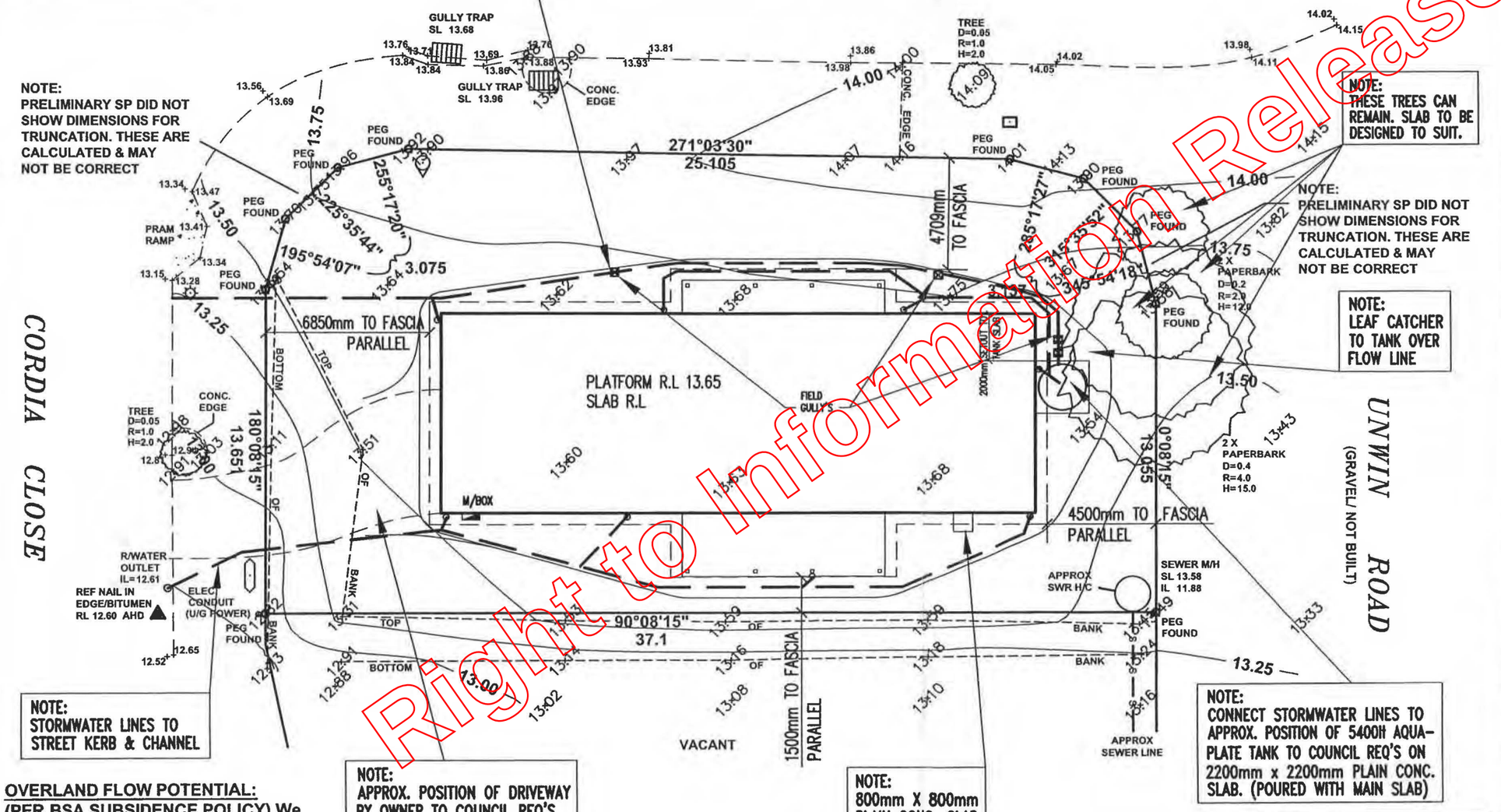
NOTE: SCRAPE BUILDING AREA TO PROVIDE A LEVEL BUILDING PLATFORM

Levels & Contours shown hereon are related to AHD. Prior to any construction the relevant authority should be contacted for possible minimum floor level requirements and flood information.

Services shown hereon have been located where possible by field survey.

If not able to be located, services have been plotted from the records of relevant authorities where available.

Prior to any excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services.

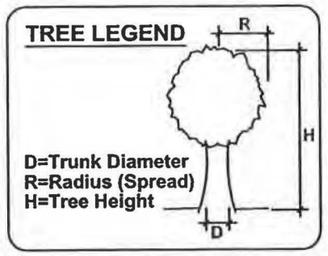


OVERLAND FLOW POTENTIAL:
(PER BSA SUBSIDENCE POLICY) We have inspected the subject site during survey and consider that it is UNLIKELY there is any potential for concentrated stormwater overland flow. The aim is to identify features such as a drain, gully or low point. No specific Local Council searches have been conducted and engineering analysis may be required.

NOTE:- POSITION OF SEWER LINES ARE APPROX. ONLY & HAVE BEEN PLOTTED VIA FIELD SURVEY AND FROM BUILDER SUPPLIED AS-CON PLAN.

NOTE: BOUNDARIES ARE PLOTTED FROM PRELIMINARY SP220877. BOUNDARIES ARE SUBJECT TO SURVEY AND REGISTRATION OF SURVEY PLAN WITH THE DEPARTMENT OF NATURAL RESOURCES, MINES AND WATER.

TREE LEGEND



D=Trunk Diameter
R=Radius (Spread)
H=Tree Height

STEVE COOPER & ASSOCIATES PTY LTD
ABN 67 010 839 022
LICENSED LAND SURVEYORS, LAND PLANNING CONSULTANTS.
PH:- 3846 6477 FAX:- 3846 6488
27 NORFOLK ROAD, SOUTH BRISBANE 4101
EMAIL:- admin@stevecooper.com.au

SITE:

CORDIA CLOSE
REDLAND BAY
LOT 187 ON SP220877 (PRELIM.)

LOCAL AUTH:	REDLAND C.C.
COUNTY:	STANLEY
PARISH:	REDLAND
AREA:	700m²
UBD REF:	246 M5

CONTOUR AND DETAIL SURVEY

THIS SURVEY MAPS THE SITE FEATURES AND LEVELS, IT DOES NOT GUARANTEE THE POSITION OF PEGS, ALLOTMENT BOUNDARIES OR FENCES. CHECK TITLE FOR ANY EASEMENTS.

SERVICES

O/H POWER	⊕	NO
U/G POWER	⊡	YES
WATER	⬭	YES
TELECOM	⬭	YES
GAS	—GAS—	NOT FOUND
SEWER	—S—	YES
ROOFWATER	—RW—	ROAD
STORMWATER	—SW—	ROAD

LEGEND

O/H LIGHT	
S/WATER PIT	
FIRE HYDRANT	
WATER VALVE	
MOUNTABLE KERB	
NON-MOUNT KERB	
REF RL.	12.60
DATUM	AHD (VIA LOT 183)

SUNCOAST BUILDING APPROVALS
0207 18 FEB 2010
JOHN HILL BSA No A14794
DEVELOPMENT APPROVAL FOR BUILDING WORKS
PH: 5443 7244 MOB: 0407 573 743

DATE:	10/12/09	DRAWN BY:	DD
FB:	-	SURVEYOR:	DK
SCALE:	1:200	CHECKED:	

BUILDER:
Hallmark Homes

CLIENT:

JOB NO:
09-3620