HUNT MICHEL & PARTNERS PTY LTD

ABN: 75 074 746 599

CONSULTING ENGINEERS - Structural & Civil

HEAD OFFICE:
24 Darling Street
Ipswich Q 4305

Telephone: (07) 3812 2399
Facsimile: (07) 3812 1900
Email: dan@hmengineers.com.au

Our Reference: 212035.L1.info response

7 August 2012

Urban Land Development Authority
C/- AJS Surveys
P O Box 4201
GUMDALE QLD 4154

RE: PROPOSED DEVELOPMENT
AT 107 ABRAHAMS ROAD SOUTH RIPLEY
APPLICATION NUMBER: DEV2012/295

We provide the following supporting information in response to ULDA's information request 28 June 2012. The response provides all the information requested relating to stormwater and erosion control and Abrahams Road reserve works.

Stormwater Drainage

The construction works area will consist of 3 buildings / structures being an amenities block, kiosk / office building and a storage area comprising of shipping containers. A carpark with 30 spaces will service the base camp area. The carpark is proposed to be constructed with a hardstand gravel surface. The roofed areas will be harvested in rainwater tanks and reused for toilets. The works will have negligible affect on downstream runoff discharges due to minimal impervious areas. The base camp and carpark areas grade towards the south and slightly towards the west (towards Abrahams Road). The natural grade of the land is approximately 1 in 8 at these locations. It is proposed that the site be protected by an upstream table drain which will divert water to Abraham Road. Another table drain will be constructed between the base camp area and the carpark which will also direct the runoff to Abrahams Road and will protect the carpark surface. A cut and fill earthworks operation will be required to provide acceptable grades to the parking area. A maximum cut and fill in the order of 1.0m is expected. The remaining works areas will shed as sheet flow. Turfed buffer strips will

be provided to all embankments and open space areas excluding pavement surfaces.

Sediment and Erosion Control

The development site has been classified as "high risk" using the Building Site Erosion Hazard Assessment Form from the IECA Erosion and Sediment Control Guidelines primarily due to the steepness of the site. As discussed in the stormwater section above, the constricted site area will be protected by a table drain upstream of the works which will divert runoff around the disturbed areas. An erosion and sediment control plan we prepared for the site in accordance with these guidelines and submitted with the Operational Works Application. The details will include the strategies outlined below.

Phase 1 – Clearing

- The construction site will be cleared and stripped within the earthworks zone only. All vegetation outside this zone is to remain undisturbed with the following exceptions:
    - Trees marked for removal may be removed and the disturbed area topsoiled and grass seeded within 7 days.
- Vegetation required to be slashed shall be cut to a minimum height of 75mm.
- Cleared vegetation shall be mulched and retained on site for use in landscaping or sediment control berms.

Phase 2 – Construction and re-establishment

- Topsoil shall be stockpiled on site and have silt fences installed at the base of all stockpiles.
- Silt fences shall be installed downstream of earthworks zones.
- Swale and convert inlets shall be protected to prevent silt ingress and outlets shall be protected from scouring by rockspalls or vegetation.

- The site shall be monitored to identify areas of concentrated flow developing on steep slopes. Check dams and mulch berms shall be placed as required to spread runoff and reduce velocities.
- All sediment control devices shall be monitored, cleaned and/or repaired whenever the accumulated sediment reduces the capacity by 25%.
- Silt management controls are to be maintained in place until grass cover is established.

Phase 3 – Long-term performance

- Low flows during minor storms will be reduced with the use of rainwater tanks.
- Landscaping and hardstand areas established and maintained to prevent scouring and sediment transport.
- Monitoring and periodic cleaning of stormwater drainage devices.

Site Access and Abrahams Road Upgrade

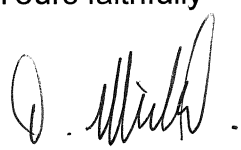
The existing pavement to Abrahams Road consists of a single lane gravel track. It is proposed to upgrade Abrahams Road to a 3m wide gravel pavement to provide all weather access to the site. The extent of the upgrade will be from the intersection of Barrams Road to the site access point approximately 80m from the sites southern boundary. This section of road has two sags (gully crossings) which presently have no piped culverts. The sags are located approximately 100m from Barrams Road intersection and adjacent the southern boundary of the site. It is proposed to provide a 375mm pipe culvert at each of these locations to provide wet weather access. The culverts will have precast concrete end and head walls and appropriate rock armouring at the inlets and outlets. A crest also exists approximately 240m from Barrams Road intersection. It is proposed to provide a 6m wide pavement to this section to enable safe passing. Table drains will be formed to the cut side of the road. Where table drains exceed 5 percent gradient,

cross-drainage culverts will be constructed at regular intervals to divert and shed stormwater runoff to the downstream side. Check dams and table drain lining will be implemented where necessary.

The site will be accessed off Abrahams Road via a 6m wide compacted gravel crossover at the location of the carpark with 6m radi returns. The table drain to the eastern side of Abrahams Road will be piped under the crossover with a 375mm diameter culvert to enable wet weather access.

Please do not hesitate to contact us for any further information on the above matters.

Yours faithfully



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