















APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with **Development Permit No.:** D/39-2023 **Dated: 26 October 2023**











Angle Design and Project

> DRAWN C.J.C.

SCALE (@ A1) 1:100

31-BA2

PROJECT NUMBER









f	SL92	
to	m	

RETAINING WALL SPECIFICATION			
FOOTINGS Concrete Strength Min Cover to all edges & faces	- 50MPa - 65mm		
<u>WALL</u> Core Fill Concrete Strength Masonry Block Durability Masonry Mortar Grout	- 32MPa - Exposure Grade (EXP) - Mortar Class M4		



Our Ref: MJ2401/01:IG Your Ref: 8 Kiln Court

24 February 2023

Casa Engineering C/- Angle Design and Project Management 27 Halland Terrace CAMP HILL QLD 4152

Attention:Chris CooperEmail:chris.cooper@angledesign.com.au

ROCKHAMPTON REGIONAL COUNCIL APPROVED PLANS These plans are approved subject to the current conditions of approval associated with Development Permit No.: D/39-2023 Dated: 26 October 2023

Dear Chris,

RE: WORKSHOP AT 8 KILN COURT, PARKHURST – STORMWATER ASSESSMENT

This letter report has been prepared in support of development application for the site.

Existing Conditions

The site is located at 8 Kiln Court, Parkhurst which is within a recently constructed industrial development referred to a Lily Place Estate. The site currently has gravel hardstand area, an existing office, sheds, containers and unvegetated pervious area. There is an open drain along the northern side (rear) and southern side (within 777 Yaamba Road) of the site, which are contained within an easement.

The site is generally flat, defined by an average slope of ~0.3%, and in accordance with the design catchment plans for the overall development, the site overland sheet flows towards the two (2) open drains noted above. **Figure 1** illustrates the catchment split. It appears that at some point between the OPW design/construction and plan titling phases of the development of the overall estate, the common boundary to 777 Yaamba Road (Lot 12) has been modified, resulting in overland flow from the site to discharge over a portion of 777 Yaamba Road prior to reaching the open drain. In accordance with the Queensland Urban Drainage Manual (QUDM) tests in determining the lawful point of discharge (LPOD), and under the original design intent for stormwater management of the overall estate, the stormwater easements to the north and south would have been defined as the LPOD for the site as they are under the lawful control of the local government.

With the change to the common boundary of 777 Yaamba Road, it is our opinion that the LPOD to the south changes to Kiln Court while the easement to the north is maintained. This change potentially has an impact on the original design intent for stormwater management within the immediate surrounds of the site such that run-off previously entering the upstream end of the of southern open drain will now be forced to the road corridor. Ultimately, run-off from the site will still be conveyed to the end of line detention basin via the pit, pipe and open drain network downstream of the site.





Figure 1 Lily Place Estate design catchment extract (source: D/137-2020 approved OPW plans prepared by Siris & Associates)

Previous Work

Northern Consulting Engineers (NCE) were supplied with the study carried out by Knobel Engineers (KE), *Stormwater Management Plan (Including Hydraulic Impact Assessment) – Proposed Industrial Development* 777 Yaamba Road PARKHURST, reference K4820-0003 Revision B dated 12 June 2020 in relation to development of Lily Place Estate, permit no: D/52-2019 which was approved by Rockhampton Regional Council (RRC). This study was done as a part of reconfiguration of lots (RoL) approval of the industrial development located at 777 Yaamba Road, Parkhurst.

A review of this report highlighted the following key aspects:

- The hydraulic model (TUFLOW) adopted rain-on-grid (ROG) hydrology, however the report does not explicitly state the pre- and post-development impervious area for the development but does state "The 2D Manning's roughness 'n' has also been updated as per the Manning's values provided in Table 5, in proposed development areas, to account for future impervious surfaces and roads."
- Under the water quality section, the development has been modelled as industrial pollutants at 90% impervious, for which a bio basin within the detention basin achieves the water quality targets for the development.

Based on the above, we believe it is reasonable to assume that the flood model adopted a 90% impervious area for the development for which the drains and detention basin mitigate any impacts associated with the development of the site.

Proposal – Workshop and Carparks

The proposed development is a workshop with additional carparks including gravel hardstand, concrete apron and stormwater easement which is located along the rear boundary. The majority of the site currently consists of unvegetated pervious area. An assessment of the impervious area of the site, once developed, has been carried out and based on the proposal plans, this has been defined as 87%. It is noted that the



areas shown as gravel hardstand on the proposal plans have been included as impervious in the assessment as it this material is likely to consist of a cement treated/modified material in order to mitigate potential dust generation. The development imperviousness is shown in red line markup on **Figure 2**.

It is anticipated that the development will imitate existing levels by minimising earthworks to generally align with the overall catchment splits of the site and maintain overland sheet flow towards the existing LPOD's.





Stormwater Assessment

Stormwater Quantity

The contributing catchment, defined as 1.956 ha which is the entire lot area including the existing stormwater easement. Following construction of the proposed workshop, carpark, concrete apron and gravel hardstand; the impervious area for the proposed development is calculated as 87%, noting this defines the gravel hardstand as impervious.



Based upon the study by KE, it is reasonable to assume that the flood impact assessment (FIA) adopted 90% imperviousness for the development. As the 87% imperviousness of the proposed development does not exceed the allowable fraction impervious value of the overall estate, no future onsite mitigation is required.

As previously noted, due to the change in the common boundary with 777 Yaamba Road, run-off will be directed to Kiln Court as the LPOD. It is anticipated that this will occur as overland sheet flow via the driveway access, which can be confirmed as part of the detailed design phase.

Stormwater Quality

The study by KE also included a water quality assessment which considered the stormwater quality objectives for the operational phase. MUSIC modelling demonstrated the stormwater quality objectives for the overall estate were achieved via the inclusion of an end of line bio-retention basin based on a lump land use defined as Industrial Development with 0.9 fraction impervious. As the treatment effectiveness met the RRC Water Quality Objective Requirements and The State Planning Policy 2017 in terms of water quality objectives and the development being 87% impervious, no further onsite treatment is required.

Overall, the above assessment demonstrates that the peak flows from the development does not require mitigation and therefore non-worsening on the existing system. Furthermore, the end of line treatment train within the overall development achieves the water quality objects for an industrial development, thus requiring no further onsite treatment devices.

Flood Assessment

Pre- and post-development peak water surface levels and afflux impact assessment have been carried out under Hydraulic Impact Assessment (HIA) section of KE study. Current development has been identified and approved as having no adverse impact and no worsening of peak flood levels or peak flood velocity externally including State Controlled Road and the Railway Corridor to the west. **Figure 3** shows the 1% AEP existing development peak flood levels where the proposal development is highlighted in yellow. The finished floor levels (FFL) of 25.5m AHD proposed for the workshop and office buildings is above the 1% AEP flood level and therefore compliant with design standards. This FFL may vary during the detailed design phase, or order to provide positive fall away from the buildings to maintain overland sheet flow towards the LPOD. Therefore, there will be no change to the flood storage and flow paths are not impeded.





Figure F100/A 1% AEP Pre-Development Flood Water Level

Figure 3 Development Peak Flood Mapping extracted from SMP by KE

Overall, the development will not impact the on-site storage of flood water or existing flow paths, and there is unlikely to be impacts to the flood characteristics outside the development extents.

We trust the above, in conjunction with the adopted previous studies and proposal plans, demonstrate that the proposed development has no impact beyond the site extents.

Yours sincerely,

IREM GUNEY Civil Engineer

Approved,

Hirgle

JOHN SINGLE Senior Civil Engineer (RPEQ 24378)