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5th October 2016

CRGref: 12141 Letter 05_10_2016

Project 28 Pty Ltd,
C/- DAC Planning Pty Ltd,
8 Corporation Circuit,
TWEED HEADS SOUTH NSW 2486

RE: POSITION PAPER FOR CONCILIATION CONFERENCE, ACOUSTICAL ISSUES, PROPOSED SERVICE STATION KINGS FOREST, PLANNING AND ENVIRONMENT COURT CASE 2016/178476

This Position Paper is further to the previous Paper dated 28th August 2016, and is required to take into account the approved 2.5m high acoustical barrier to be constructed on the western side of the Tweed Coast Road. We are in receipt of the Respondent's Statement of Facts and Contentions (SOFAC), and offer the following response in respect to Item 41cii, which states the following:

"*c. The proposed development has unacceptable amenity impacts on nearby residents of Old Bogangar Road:*

ii. Noise: the acoustic barriers on Tweed Coast Road were designed to reduce noise from traffic entering Kings Forest Parkway, it has not been demonstrated that there will be sufficient attenuation of noise from the development."

We note that in response to the SOFAC and the initial S34 conference on 13 September 2016, the following amendments to the development are proposed:

- Building location as per original submission (21.0m East setback maintained);
- Increased North buffer (10m wide vegetated);
- Building extent to North reduced (station shop reconfigured) to achieve 13.5m setback to vegetated buffer;
- Distance between car bowsers and station shop car parking increased (from 7m to 8m);
- Bowsers and roof over shifted South to achieve 13.5m setback to roof line;
- Truck bowsers deleted;
- Tanker filling point relocated (Distance of 7m from vegetated buffer to tanker filling point);
- Revised traffic movements (car and AV swept path);
- Revised car parking (from total 73 carparks to total 56 carparks);
- Carwash, dogwash, vacuum, air/water relocated to East of site (carwash building *clear of & not* within 21.0m East setback);
- Number of pylon signs reduced (from 4 to 2 signs), Pylon signs noted on plan;
- Deletion of the roof top terrace;
- The internal stair to the roof terrace has been removed from the plan;
- Roof Terrace floor area (sqm) has been removed from the drawing and subtracted from the total GFA area calculation;
- Deletion of the 2.5m high Colorbond fence on the northern site boundary and replacement with a Koala fence in accordance with the Draft KPOM (JWA 2016).

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The amended proposed service station/food and drink premises will still operate 24 hours per day, seven days per week. Refer to the attached amended proposed site layout.

We offer the following comments in response to the above statement:

The existing acoustical barriers were inspected as part of the initial site investigations on Thursday 4th September 2014. From the field notes, it was observed that the barriers were acoustic design lapped timber palings at a height of approximately 1.9m above ground level, and extended approximately 80m north from the intersection of Old Bogangar Road and Tweed Coast Road, and more than 100m south from the intersection of Old Bogangar Road and Tweed Coast Road. It should also be noted that the assessment only took into account the existing barrier, and not the 2.5m high barrier recommended in the Environmental Noise Impact Report dated 11 March 2011 and approved under the Stage 1 Kings Forest Major Project Approval No. MP08_0194. Refer to the attached Sketch No. 1, being an extract from the approved Environmental Noise Impact Report detailing the location and extent of the 2.5m high barrier. The taller 2.5m high barriers will provide higher acoustical attenuation than that attributed to the existing 1.9m high barrier as assessed in the Environmental Noise Impact Report for the Service Station proposal.

It is acknowledged that whilst the existing and future upgraded barriers were intended to attenuate noise from traffic on the Tweed Coast Road, that these barriers would also attenuate other noise sources, depending on the positional relationship of the noise source to the barrier and receptors. The noise impact assessment for the proposed service station (CRG Acoustics report reference 12141 report rev. 2, dated 21st September 2015) took into account the relative height level of the subject site, the acoustical barrier and the receptors, with the position of the noise sources also taken into account. As there is an opening between the two barrier legs to accommodate Old Bogangar Road, this opening was taken into account in the noise prediction modelling. As a "rule of thumb", if the noise source is visible to the receiver, then the barrier has no effect; the more the line of sight is cut by the barrier, the higher the level of noise reduction.

The report included noise prediction calculations on Pages 22 – 27, with a separate item being "barrier screening" within the calculation matrix. As the barriers would not screen receptors due north or due east, barrier noise reductions were not applied to these northern and eastern receptors, but only to dwellings due west, and then for a limited number of noise sources.

Noise sources assumed to have no screening to the western dwellings by the barriers were as follows:

- Car door closures in customer car spaces with unobstructed line of sight to the nearest receptors at 242 and 246 Old Bogangar Road. This was assumed to be the propagation line from the car spaces, across Tweed Coast Road and in the opening between the two barriers;
- Car door closures at bowsers with unobstructed line of sight to 242 and 246 Old Bogangar Road. This was assumed to be the propagation line from the car spaces, across Tweed Coast Road and in the opening between the two barriers;
- Onsite car movements with unobstructed line of sight to 242 and 246 Old Bogangar Road. This was assumed to be the propagation line from the car spaces, across Tweed Coast Road and in the opening between the two barriers;
- Carwash facility foam spray, high pressure rinse and air blower assumed to be taller than the effective screening height of the barrier. This assumption is applied as the canopy above the mechanical plant is reflective, therefore, the sound energy emitted by the plant will be reflected off the underside of the canopy, resulting in the elevated effective height of the plant noise source;
- Truck movements, exhaust points assumed to be taller than the effective screening height of the barrier. This is a conservative assumption, as most trucks have low slung exhausts, with mainly fuel tankers having the elevated exhausts;
- Goods unloading assumed to occur in the car parking area adjacent to the building, higher than the effective screening height of the barrier. This is a conservative assumption, as the main loading area is located to the rear of the building, screened to the dwellings to the west;
- Waste collection assumed to occur in the car parking area adjacent to the building, higher than the effective screening height of the barrier. This is a conservative assumption, as the bin store is located to the rear of the building, screened to the dwellings to the west;

The only noise sources assumed to benefit from the barrier or building screening were as follows. Note that we have also assessed the shortest propagation path between the truck airbrake noise source and receiver not cut by the barrier to illustrate this scenario. As the distance separation is increased to reflect the propagation path not obstructed by the barriers, the noise reduction due to distance is increased, with the barrier screening removed (refer to Figure 1 attached that illustrates this aspect).

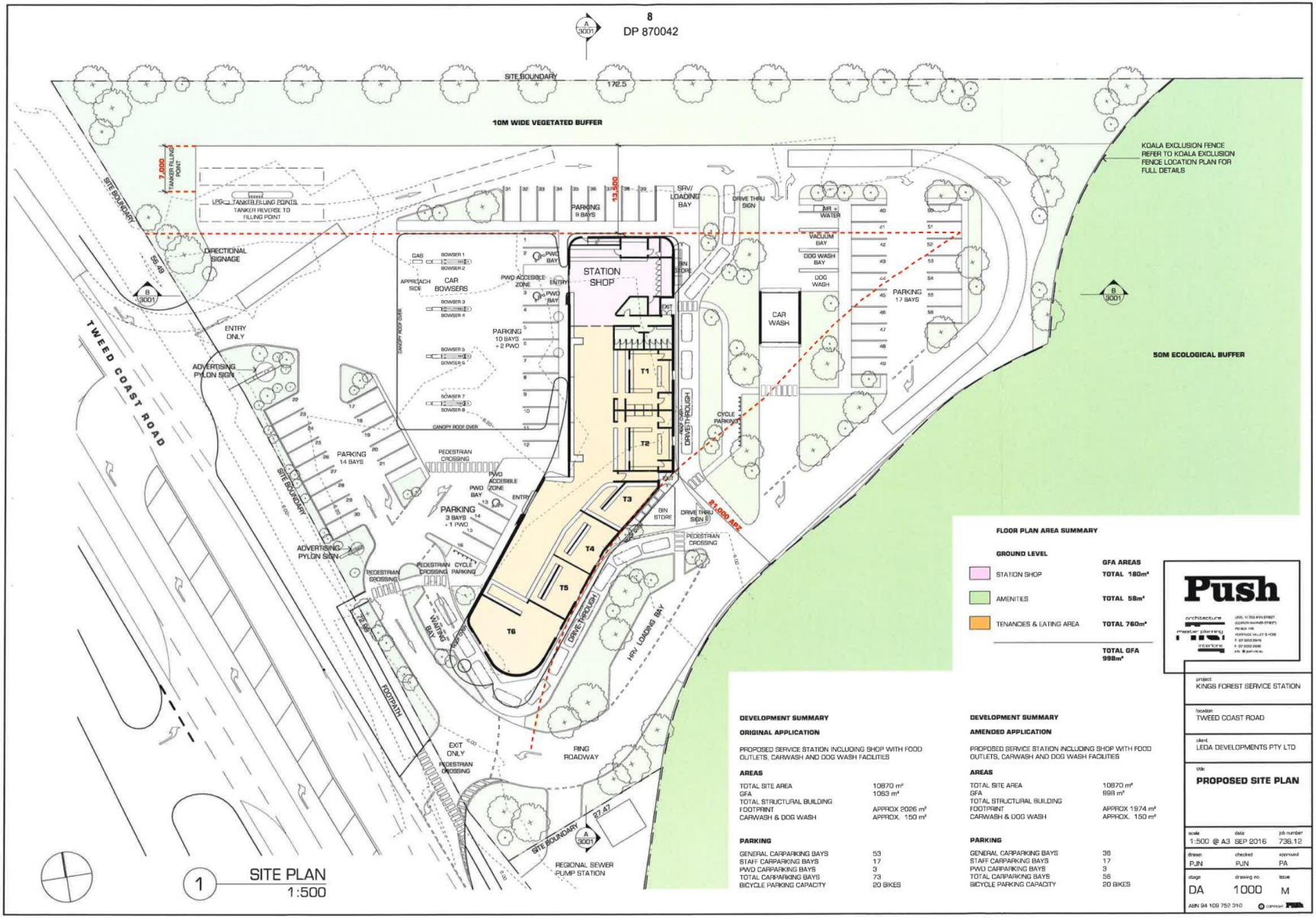
- Tyre pressure beeper, located to the north-east of the Station Shop. The barriers and onsite building will effectively screen this source to the dwellings, as typically, a beeper unit is approximately 1.2m above ground level. There is no unobstructed line of sight from this source to the nearest dwellings, due to overlap of barriers with the onsite proposed building. For this reason, we have not assessed an unobstructed line of sight for this noise source.
- Truck airbrakes, assumed to activate at the entry point to the site. Airbrake release valves are typically located less than 1m above ground level, which the barriers will screen effectively. The unobstructed line of sight from this source to the nearest dwelling would result in an impact level of approximately 37 dB(A) L_{eq}, which is below the night time criteria of 40 dB(A).

Overall, it is submitted that the assumptions applied to barrier attenuation were reasonable, with conservative assumptions of barrier screening, taking into account only existing barriers and not the upgraded barriers recommended as part of the previous approved Environmental Noise Impact Report. The noise assessment assumed the noise sources were located as close to the receivers as possible, and if the barriers cut line of sight, then attenuation rates were applied to barrier screening. If the line of sight was not cut to the nearest receptor by the barriers, then no attenuation was applied for barrier screening.

If the effect of the barriers/building screening is removed from calculations for Tyre Beeper and Truck Airbrake to represent the propagation path through the opening between the barriers (thus increasing the distance separation between the source and receiver), it is concluded that noise impacts are still below the established noise limit criteria.

Kind Regards
CRG ACOUSTICS PTY LTD

JAY CARTER BSc
Director



FLOOR PLAN AREA SUMMARY

GROUND LEVEL

	GFA AREAS
STATION SHOP	TOTAL 180m²
AMENITIES	TOTAL 58m²
TENANCIES & EATING AREA	TOTAL 760m²
	TOTAL GFA 998m²

DEVELOPMENT SUMMARY

ORIGINAL APPLICATION

PROPOSED SERVICE STATION INCLUDING SHOP WITH FOOD OUTLETS, CARWASH AND DOG WASH FACILITIES

AREAS

TOTAL SITE AREA	10870 m²
GFA	1063 m²
TOTAL STRUCTURAL BUILDING FOOTPRINT	APPROX 2026 m²
CARWASH & DOG WASH	APPROX. 150 m²

PARKING

GENERAL CARPARKING BAYS	53
STAFF CARPARKING BAYS	17
PWD CARPARKING BAYS	3
TOTAL CARPARKING BAYS	73
BICYCLE PARKING CAPACITY	20 BIKES

DEVELOPMENT SUMMARY

AMENDED APPLICATION

PROPOSED SERVICE STATION INCLUDING SHOP WITH FOOD OUTLETS, CARWASH AND DOG WASH FACILITIES

AREAS

TOTAL SITE AREA	10870 m²
GFA	998 m²
TOTAL STRUCTURAL BUILDING FOOTPRINT	APPROX 1974 m²
CARWASH & DOG WASH	APPROX. 150 m²

PARKING

GENERAL CARPARKING BAYS	36
STAFF CARPARKING BAYS	17
PWD CARPARKING BAYS	3
TOTAL CARPARKING BAYS	56
BICYCLE PARKING CAPACITY	20 BIKES

Push
architecture
master planning
interiors

project: KINGS FOREST SERVICE STATION
location: TWEED COAST ROAD
client: LEDA DEVELOPMENTS PTY LTD
title: **PROPOSED SITE PLAN**

scale	date	job number
1:500 @ A3	SEP 2016	736.12
drawn: PJN	checked: PJN	approved: PA
stage: DA	drawing no: 1000	issue: M

ABN 94 109 752 310

Sketch No. 1: Extract from approved Environmental Noise Impact Report dated 11 March 2011

ACOUSTIC BARRIER LEGEND

Recommended 2.5m high acoustic barrier constructed above finished ground. Barriers are to be constructed free of gaps and holes. Typical materials include earth berms, 19mm lapped timber fence (40% overlap), 6mm FC sheet, masonry, or a combination of the above (a minimum surface mass of 11kg/m^2 is required).

Figure 1: Diagram of barrier screening propagation path