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Re: Narla Response to Council and Department — Hydrological and Soil Profile Impacts on Retained Blue Gum High Forest

Overview

Council's submission noted that Section 8.4.1 of the SBDAR (Narla Environmental, 2025) asserts that hydrological and soil profiles within the retained BGHF will remain unaltered, but that this conclusion is not supported by a referenced study or a discussion of potential hydrological impacts on the BGHF on the campus. Council also noted that the development represents the type of active edge effect that contributes to the cumulative pressures reducing the extent and connectivity of BGHF. The Department has indicated it did not expect a full hydrological report, but requires further justification for the conclusions reached, drawing on Narla's ecological expertise and the level of disturbance proposed.

The following provides that justification, drawing on the SBDAR (Narla Environmental, 2025), the Flooding Assessment (Arup, 2025), the civil stormwater design (BG&E, 2025), and the Vegetation Management Plan (Narla Environmental, 2025).

Hydrology

The assessment of hydrological impact on the retained BGHF focuses on whether the proposed works will increase the quantity, velocity, or contamination of stormwater reaching the BGHF corridor relative to predevelopment conditions.

The Subject Land currently comprises areas of vegetation, existing educational buildings, hardstand, and tennis courts, which are, primarily, impervious and semi impervious surfaces. The proposed development replaces these surfaces with the SIP building, associated landscaping, and the Campus Commons green space.

The Flooding Assessment (Arup, 2025) confirms that the Subject Site sits on a local high point and is not subject to mainstream flooding. A topographic assessment confirms that in most circumstances, rainfall runoff is directed northward towards the drainage depression north of the development site (Arup, 2025). The SBDAR (Section 2.3) records site elevations ranging from RL 124.50 at the southern corner to RL 116 at the northwest corner, i.e. a north facing slope. Runoff therefore flows generally away from the developed area and towards the drainage depression, in the same direction as the BGHF corridor. This means that any change in surface runoff characteristics occurs in a direction consistent with the predevelopment drainage pattern and does not constitute a new or redirected hydrological pressure on the BGHF.

The civil drainage design (BG&E, 2025) includes an onsite stormwater detention (OSD) tank specifically designed to attenuate peak flows and limit post development discharge rates. As confirmed in the Flooding Assessment (Arup, 2025), this measure will minimise the potential for increasing downstream velocities of flow. The OSD tank therefore ensures that the volume and velocity of stormwater reaching the drainage depression and the vicinity of the BGHF corridor will not exceed predevelopment levels. The grading plan also directs runoff away from building entrances and towards stormwater drainage pits and pipes (Arup, 2025; BG&E, 2025), further reducing the risk of uncontrolled surface flow reaching the BGHF edge.

The Landcom (2004) guidelines recognise that drainage systems designed to minimise both the quantity of flow and its velocity are fundamental to reducing pollution and degradation of receiving environments. The OSD and grading measures adopted by BG&E (2025) are consistent with these principles.

Riparian Buffers

The SBDAR (Section 2.4) identifies two unmapped watercourses to the northwest of the Subject Land. As per the KLEP (2015) and KDCP (2022), both watercourses carry a 10 metre riparian buffer. The Subject Land does not intersect these buffers and no impacts to the watercourses are anticipated (SBDAR, Section 2.4). The Flooding Assessment (Arup, 2025) also confirms that while a watercourse or drainage depression exists to the northeast of the development area, the project does not include any works that would encroach on this watercourse or its associated depression. Subsurface and surface hydrological processes within the riparian zone will not be disturbed.

Soil Impacts

The retained BGHF corridor occupies the natural slope to the north of the development footprint, on an intact soil profile that has not been subject to historical hardstand or building use, unlike the Subject Land itself.

The following observations support the conclusion that the soil profiles within the retained BGHF will not be materially altered:

- The basement excavation for the SIP is confined to the development footprint. Excavation limits were deliberately reduced to preserve the mature canopy along the northern boundary. No works are proposed within or beneath the root zones of trees forming part of the retained BGHF corridor, and Tree Protection Zones as per AS 4970 will be established prior to the commencement of works.
- The SIP basement floor level (RL 117.30) is approximately 4 metres above the bed level of the adjacent minor tributary (Arup, 2025). This vertical separation confirms that excavation will not intercept subsurface flows supplying the BGHF root zone and will not lower the local water table to reduce soil moisture availability to the retained corridor.
- The VIS plot data (SBDAR) confirm that the vegetation within the Subject Land is already in low condition (VIS 28.2), with historical soil compaction, existing hardstand, and limited native regeneration. The soils within the 0.19 ha to be cleared are therefore already substantially modified. Their removal will not alter the soil profile characteristics of the adjacent retained BGHF, which occupies a separate and largely intact soil profile on the natural slope and is separated by the service road.
- The CEMP and SBDAR mitigation measures (SBDAR, Table 19) specify that storage, laydown, and stockpile areas are to be located away from retained vegetation, and that soil importation is to be avoided to minimise the introduction of weeds and pathogens. These controls prevent any alteration of soil chemistry or structure at the edge of the BGHF corridor during construction.

Edge Effects

The Council's submission correctly identifies that edge effects are a recognised cumulative threat to BGHF, and this is not disputed. The SBDAR acknowledges that indirect impacts, including weed infiltration, altered moisture, nutrient loading, and dust or light spill, may affect the BGHF edge as a result of the proposed works, consistent with the broader pattern of urban driven degradation already affecting this community.

However, the proposed development does not introduce a new type of edge pressure that does not already exist. The Subject Land is already bordered by educational infrastructure and hardstand. The area to perimeter ratio of BGHF within 500 metres changes by only 2.38% as a result of the proposed works, i.e. from 11.72 to 12.

Critically, the VMP (Narla Environmental, 2026) has been prepared specifically to manage the retained BGHF within the broader Subject Property going forward. The VMP includes measures for hydrological buffering, erosion control, edge effect management, weed suppression, enrichment planting, and monitoring of edge

stability. These measures intercept and manage the incremental edge pressures, including any changes in moisture, nutrient, and sediment loads at the forest margin, that could otherwise accumulate.

Please do not hesitate to contact me should you have any questions.

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