Dean Stojanovski
Assistant Development Manager
Billbergia
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Meadowbank, NSW, 2114
E: dean.stojanovski@billbergia.com.au

Re: 26-42 Eden Street, Arncliffe NSW
Our Ref: A101021.0210.LTR1.v1f
Date: 15 September 2021

Dear Mr Stojanovski,

ADE Consulting Group Pty Ltd (ADE) has been engaged by Billbergia to provide further information regarding groundwater management in response to queries raised by the Department of Planning, Industry and Environment (DPIE) for the proposed development site located at 26-42 Eden Street, Arncliffe NSW (the site). The specific comments ADE has been requested to provide further information on are:

- Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, and groundwater dependent ecosystems, and measures proposed to reduce and mitigate these impacts
- Proposed surface and groundwater monitoring activities and methodologies
- Consideration of relevant legislation, policies and guidelines, including the NSW Aquifer Interference Policy (2012), the Guidelines for Controlled Activities on Waterfront Land (2018) and the relevant Water Sharing Plans (available at https://www.industry.nsw.gov.au/water).

ADE notes that no surface water bodies or water courses are present within the site or adjacent to the site, and as such has focused this review on items relating to groundwater. Further assessment of surface water is not considered necessary for the Site. Similarly, no riparian zones are present within the site or adjacent to the site and as such do not require further assessment.

In responding to the above items, ADE has undertaken a review of the Environmental Impact Statement, and relevant appendices:

- Ethos Urban Pty Ltd, 'Environmental Impact Statement SSD-11429726', dated 19 July 2021 (Ethos, 2021)
- ADE Consulting Group Pty Ltd, 'Geotechnical Investigation Report - STC-2148-18709 v2', dated 22 December 2020 (ADE 2020)
- ADE Consulting Group Pty Ltd, 'Detailed Site Investigation - STC-2151-18730 v2', dated 1 July 2021 (ADE 2021)

Summary of the Proposed Project

ADE understands that the project involves the demolition of all existing structures within the site and construction of four residential tower blocks of 17 to 21 stories with associated retail and underground parking on a lot of area 13,440 m^2. The basement parking extends to 5 levels including upper ground and lower ground. The approximate depth of the excavation will be 19 m below ground level.

The features of the construction will include:

- 744 apartments across (4) buildings between 19-23 storeys in height, as follows:
  - 186 market housing apartments in Building A;
  - 202 market housing apartments in Building B;
  - 180 social housing apartments in Building C; and
  - 176 market housing apartments in Building D;

- 3,113m2 retail gross floor area;
- 240m2 for a future childcare centre;
- 3,706m2 of communal open space;
- 813 spaces of lower ground and basement car parking; and
- 4,870m2 of publicly accessible open space including a 4,000m2 park; an 870m2 public plaza (meeting space) and through site link connecting Eden Street and the Princes Highway.

Legislative Requirements

The NSW Aquifer Interference Policy (2012) adopts the definition of aquifer interference from the Water Management Act (2000) as any of the following:

- The penetration of an aquifer
- The interference with water in an aquifer
- The obstruction of flow of water in an aquifer
- The taking of water from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations
- The disposal of water taken from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations.

Based on the above, ADE considers that the proposed development will involve aquifer interference and as such consideration of the environmental effects are required.

Summary of Relevant Findings

The Environmental Impact Statement (EIS) (Ethos, 2021) outlines that site sits between relative level (RL) 28 at the southern end of the site, and RL19 at the northern end.

A review of the geotechnical investigation (ADE 2020) outlined that the site is underlain by fill, followed by residual sandy clay and sandstone bedrock to the depth of excavation approximately 19 metres below ground level (bgl). Section 6.2.6 (Groundwater) of ADE (2020) outlines that groundwater seepage flows are expected to occur at the soil-rock interface and through joints and bedding places within the completed cut faces. During excavation, initial flows into the excavation may be locally high but would decrease significantly as the bedding seams/joints are drained. In the long-term, the installation of drainage behind basement walls and below the basement slab is recommended to connect to a sump and pump system which would discharge groundwater to the stormwater system.

With regards to groundwater quality, the Detailed Site Investigation DSI) (ADE 2021) concluded that due to the lack of potential onsite and adjacent off-site contamination sources, the potential for groundwater contamination was low and no further assessment of groundwater quality was warranted. As such no groundwater sampling was undertaken. ADE 2021 recommended that should pumping of groundwater be required during excavation, or for long term groundwater management at the site, further investigation of groundwater quality would be required prior to discharge to stormwater.

ADE notes that the site is not situated within the Botany Sands Aquifer and as such the development is not considered a high risk to groundwater and significant groundwater flows are not anticipated.

Based on the location, topography, and underlying geology of the site, ADE considers that the sump and pump system as recommended in the geotechnical investigation (ADE 2020) will be sufficient to manage groundwater seepage, and a tanked basement is not needed. The site is located between the M5 and M8 tunnels. The tunnel alignment is significantly deeper than the proposed excavation with the M8 tunnel at Arncliffe being located at approximately 25 m below AHD.

A review of available mapping for groundwater dependent ecosystems (GDE) was undertaken as part of this review and is shown in Appendix A – Figures. The maps indicate that the closest potential GDE is located approximately 400-500 m to the east of the site. Considering the low groundwater flow within the Hawkesbury

sandstone ADE considers it unlikely that the proposed development with have an adverse effect on GDEs.

DATA GAPS

The Aquifer Interference Policy (2012), outlines taking of water from an aquifer requires a water licence. The following is an excerpt from the AIP:

> *"A water licence is required whether water is taken for consumptive use or whether it is taken incidentally by the aquifer interference activity. For example, dewatering of groundwater during building construction and groundwater filling and evaporating from a void post-activity requires a water licence (unless an exemption applies) even where that water is not being used consumptively as part of the activity's operation"*

As outlined in the geotechnical investigation, groundwater seepage is expected to be low, however the exact inflow and volume of water that will require discharge is unknown. Exemptions to the need for a water licence apply if the volume extracted is less than 3 ML per year. ADE recommends further hydrogeological investigation and development of a dewatering management plan (if required). The assessment should also include an assessment of groundwater quality, should groundwater require discharge to the stormwater system.

Further to the above, an assessment of potential effects of groundwater drawdown on surrounding infrastructure resulting from the proposed excavation has not been undertaken and should be included in the additional assessment.

ADE appreciates the opportunity to provide this review in relation to the proposed development. If you have any questions, please contact the undersigned.

Sincerely,

Matthew Toole
2021.09.15
16:28:07 +10'00'

Matthew Toole
Senior Environmental Consultant

Digitally signed by Andrew Mitchell
Date: 2021.09.15 16:31:07 +10'00'

Andrew Mitchell
Principal Environmental Consultant

APPENDIX A – FIGURES

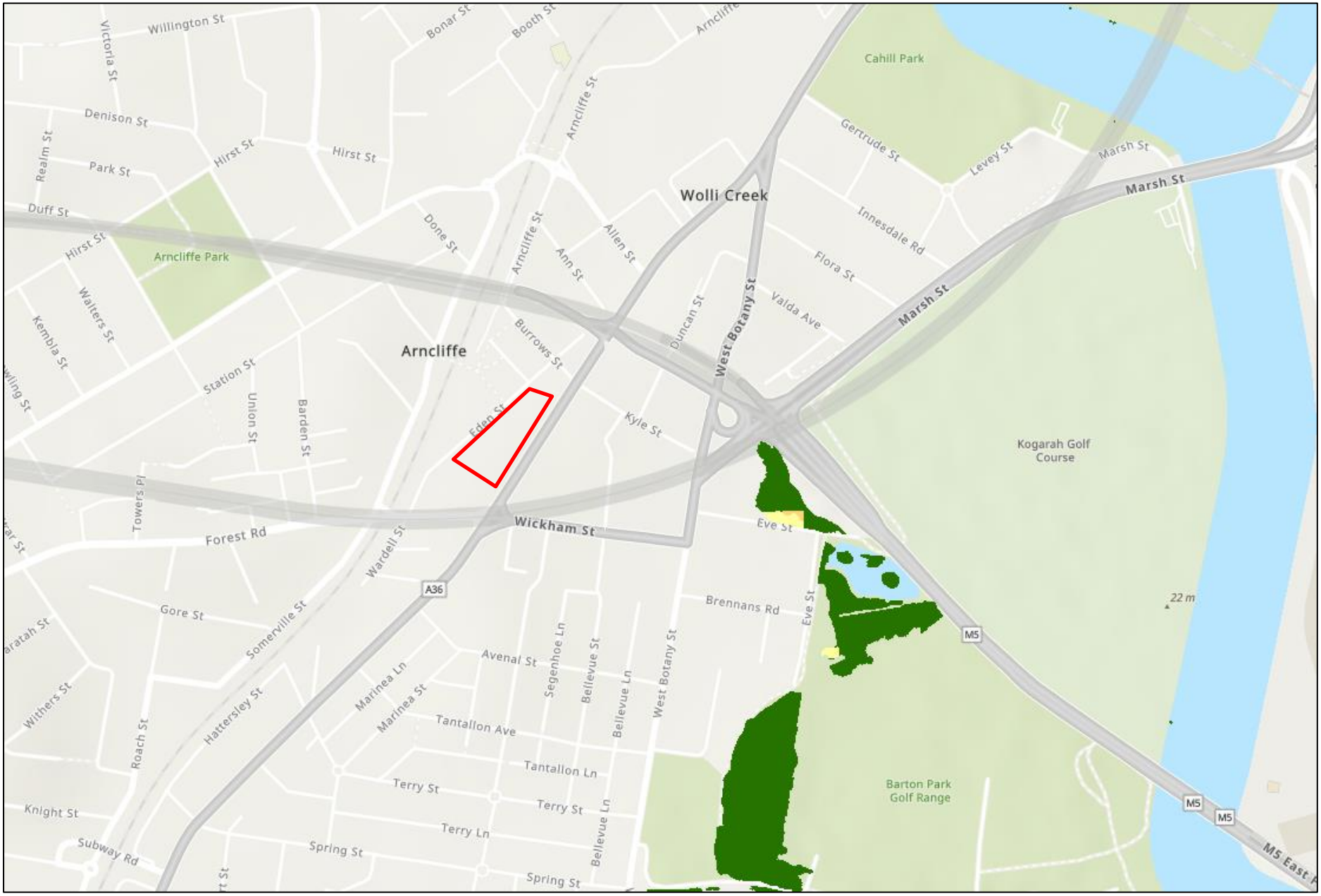

Figure 1 – Location of groundwater dependent ecosystems in relation to the Site (adapted from spatial-portal.industry.nsw.gov.au).