Introduction
SHAC have engaged and managed as Head Design Consultant to provide a high level review of the existing Civil, Electrical, Hydraulic & Fire Protection infrastructure at Lake Cathie Public School. Existing installed services have been documented by a registered surveyor & distributed to all relevant consultants, survey enclosed.

Existing Site Conditions
The existing site comprises a total plan area of approximately 42,000 m² based on boundaries included on the available survey drawings (Detail Survey 7728 – Issue No: A on 31.05.2018 by Land Dynamics Australia). The existing site topography incorporates a mixture of grassed areas, school buildings, paved areas and road pavements. Surface slopes are in the order of 3.1% from the north boundary towards the centre of the site. The site then slopes at approximately 0.85% towards the south east corner of the site. The average site slope is typically under 2%.

Site Infrastructure Requirements
The brief & existing DA conditions requires the temporary road access from Ocean Drive to be removed and the ecological corridor rehabilitated, this will require the main pedestrian & vehicular entry to be relocated along the eastern boundary serviced from the proposed collector road.

SHAC has identified specific existing resources such as covered walkways & COLA areas that can be repurposed elsewhere on-site or within other DoE facilities within the region. The proposed school infrastructure masterplan aims to provide the required brief facilities with minimal to no disruption to normal school operations.
School Infrastructure

The proposed upgrade works at Lake Cathie Public School allowed SHAC the opportunity to not only provide for the brief requirements but also integrate the existing school with the new learning areas and landscape including the surrounding subdivision.

Key initiatives such as integration, safety, improved public address and environmentally conscious & ecologically sustainable design has guaranteed the masterplans success.
Civil Design Strategy

Introduction

Civil expansion works include extension to the existing stormwater drainage system to cater for the new buildings along with formalizing and refining existing overland flow paths within the school grounds to allow for improved outdoor play areas. The Collector Road O1 on the eastern side of the existing school (currently under construction), is also proposed to be upgraded to include bus bays and carpark dropoff zones to service the school expansion.

Existing Structure & Civil Works

Previous documentation of the existing structures was provided to MPC for review indicating the following within Blocks A, B, C & D:

- These blocks were constructed using reinforced concrete raft type foundations with a combination of light gauge steel and structural steelwork for the walls and roof elements. Previous work as executed (WAE), structural documents prepared by Northrop Consultants indicate that the geotechnical site classification.

With reference to MPC’s Stormwater Management and Sediment & Erosion Control Report (Ref 18-525 Rev 1, Sept 2018), existing civil documents prepared by Northrop indicate underground stormwater drainage systems throughout the southern portion of the site with outlet flows being directed towards the south eastern corner of the site.

Site Conditions

MPC were provided with a geotechnical engineering report accounting for the proposed upgrade works. The report prepared by Douglas Partners (Project 89691.00, July 2018), classifies the site as Class P (Unsuitable site foundation material), mainly due to the presences of uncontrolled filling on the site. The report also states that the site reactivity of the clay material is Class H1 (Highly reactive clay site), unlike the site classification of Class S for the design of Blocks A, B, C & D previously constructed.

Foundation recommendations outlined in Douglas Partners report include two options being either to undertake full removal of uncontrolled filling and recompaction of suitable fill materials using Level 1 testing, or to pile the footings to suitable strata at depth.

Site Civil Stormwater Drainage

Management and Sediment & Erosion Control Report along with detailed plans outlining the full design intent for the school expansion.

In preparing this Stormwater Management Plan, MPC reviewed the Port Macquarie-Hasting Development Control Plan, in relation to stormwater management for the proposed school upgrade. The key requirements to be addressed are summarised as follows:

- Ensure that rainwater runoff from the developed site for all design storms up to a 1:100 year ARI event is directed through the drainage network in accordance with Port Macquarie-Hasting Council’s Development Control Plan (‘DCP’) and AS/NZS 3500.3-2003;
- Ensure contaminated water from new impervious areas is passed through an appropriate pollution and sediment control system, and meets the water quality targets of the Port Macquarie-Hasting Council’s DCP;
- Employ suitable stormwater harvesting measures. This will incorporate new above-ground rainwater collection tanks with a water re-use facility to service toilets and irrigation;
- Ensure that overland flow in the event of a choked or blocked piped system does not adversely impact on buildings located on the site and does not cause a nuisance to neighbouring properties;
- Ensure the design of stormwater pits and pipes considers long term maintenance issues, such as ensuring suitable pipe slopes are specified so as to lower the risk of accumulation of debris and obstructions.

The stormwater management system will collect runoff for all design events up to the 100 year ARI for subsequent storage, re-use and disposal (as appropriate). In-ground pits and pies have been designed for a Minor Storm event of 1.20 years ARI, as per the Port Macquarie-Hasting Council’s Development Design Specification, DS “Stormwater Drainage Design” document.

The site has been designed for a 1:100 year ARI Major Storm event.