

SITE ASSESSMENT REPORT

1.	<u>Date of site visit:</u>	06 October 2020
2.	<u>Site visit attendance:</u>	<ul style="list-style-type: none"> • James Brown (MMPA QS, 079-990 6589) • Luyolo Kabeni (MMPA QS, 083-511 4124) • Fuzile Dlwati (Ikhala VTEC College, 073-827 1302) • Mfundo Mari (SRK Consulting, 083-785 0162) • Jaap van Wyk (Mariswe, 082-926 2279)
3.	<u>Water demand:</u>	<ul style="list-style-type: none"> • The population figures were forwarded by Mr. Dlwati to Mr. Brown. • There is no industrial water demands. There is however practical building work (concrete mixing, brick- and plaster work) but this done on a small scale. • The municipal meter readings were requested from Mr. Dlwati. It was however indicated that these will not be a true reflection of the water use, as the municipal water supply was very intermittent and could not supply in the full demand. • Mr. Dlwati request that should the water supply allow it, provision must be made for water supply for landscaping. • Mr. Dlwati also indicated that the water demand used for the current upgrading must be for the current population only and no allowance must be made for future growth. • Mr. Dlwati is not keen to use rainwater for domestic water supply unless it is thoroughly treated. • All sanitation fixtures were inspected, and a Summary is Attached as Annexure C.
4.	<u>Existing Infrastructure:</u>	<ul style="list-style-type: none"> • Buildings <ul style="list-style-type: none"> ○ The Main Administration Building is a double story building. All buildings other buildings are single story. • Municipal water connection <ul style="list-style-type: none"> ○ The College has one municipal connection. ○ The water connection is off Gwadana Drive (close to the bottom service entrance gate) ○ From the visual inspection, the connection consists of a 40mm dia galvanised steel pipe with 25mm dia water meter in a chamber without lid. ○ The internal water reticulation connects with a 50mm HDPE (unknown Class) to the water meter ○ There is also a 15mm domestic water meter connected to the municipal supply, but is disconnected from the internal reticulation. ○ There is a 40mm dia brass stop tap on the municipal side of the water meter. There is no non-return valve.

		<ul style="list-style-type: none"> ○ There is no separate fire flow connection visible. ○ No infrastructure other than what was visible could be confirmed by the facility operator. ○ It was confirmed by Chris Hani District Municipality that the water connection is on a 110mm diameter reticulation pipeline (assumed to be UPVC of unknown class) on the opposite side of Gwadana Drive. ○ See Annexure A for positions and Annexure B for photos. <ul style="list-style-type: none"> ● Municipal Supply <ul style="list-style-type: none"> ○ The municipal supply is reported to be very intermittent with very low pressures. Unable to measure pressures at time of site meeting. ○ No water supply was available at time of site visit. <ul style="list-style-type: none"> ● On-site reticulation <ul style="list-style-type: none"> ○ The position, size, type, and class of pipework of the on-site potable water reticulation pipes are unknown ○ The size of the connection pipe at each ablution / kitchen facility is indicated in Annexure B. ○ The position of the ablution and kitchen facilities are indicated in Annexure A. <ul style="list-style-type: none"> ● Fire water supply <ul style="list-style-type: none"> ○ The facility is generally equipped with fire extinguishers ○ Only two fire hose reels were visible, in the “new” carpentry workshop. ○ It is assumed that the hose reels are connected to the domestic reticulation (of unknown size and pressure class) and that no separate fire supply reticulation exists on site ○ It was confirmed by Chris Hani District Municipality that there are no existing fire hydrants at Ezibeleni <ul style="list-style-type: none"> ● Treatment <ul style="list-style-type: none"> ○ There is no on-site water treatment <ul style="list-style-type: none"> ● Plumbing <ul style="list-style-type: none"> ○ Plumbing to buildings are mainly copper pipes from a central connection point at each facility. ○ The plumbing configuration at each ablution facility is unknown. ○ Water supply to toilets and taps/wash basins are not separate. ○ Would need to re-plumb facility if untreated water /rainwater must be supplied to toilet cisterns. Can be viable at student ablution facility (A12/A13) <ul style="list-style-type: none"> ● Storage <ul style="list-style-type: none"> ○ There is no on-site storage, other than rainwater tanks.
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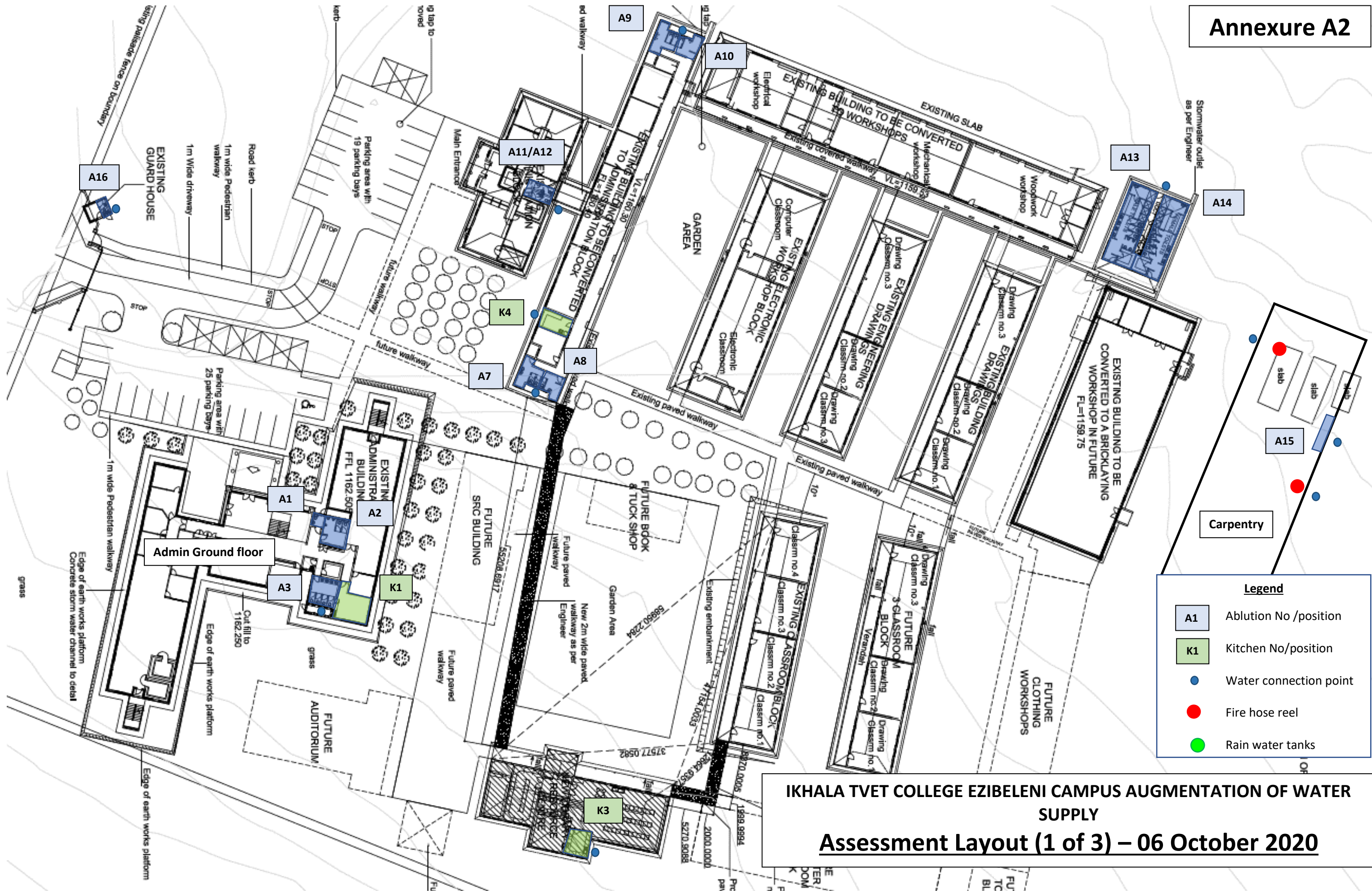
		<ul style="list-style-type: none"> • Rainwater harvesting <ul style="list-style-type: none"> ○ Rainwater harvesting is done in 7 No x 2 500 liter semi elevated tanks at the Main Administration Building. The tanks only collect a small portion (+-7%) of the roof's run-off. <ul style="list-style-type: none"> ▪ The tanks are connected via a 32mm dia HDPE Pipe to a small domestic pressure pump that is connected to the Main Administration Building only. ▪ The tanks also have inlet pipes, that is assumed to be connected to the domestic water supply (closed at time of site visit) ○ 6 No x 2500-liter rainwater tanks are also installed on other buildings, and only harvest portions of the roof areas: <ul style="list-style-type: none"> ▪ 2 No x 2500l at Administration building. ▪ 2 No x 2500l at Mechanical/Electrical workshop ▪ 1 No x 2500l at Prefabricated classrooms (there is 2 No additional tank bases casted – tanks removed) ▪ These tanks are not connected directly to the Municipal water supply or the internal reticulation system. From hose pipes laying on the ground next to the tanks, it is assumed that these tanks (especially the two at the administration building) are filled with water from the municipal supply, when available. ▪ Water from these tanks are used by the students, who collect water at the tanks ▪ The rainwater is not treated. ○ The Gutters of the facility are generally in good condition. ○ Some of the down pipes leading into the rainwater tanks are missing and must be replaced.
5.	<u>Proposed Infrastructure/ positions:</u>	<ul style="list-style-type: none"> • See Annexure A5 for positions/layout of proposed infrastructure • <u>Boreholes</u> <ul style="list-style-type: none"> ○ Boreholes are to be identified by SRK Consulting ○ The development of the boreholes and rising mains will be finalised once the data/position(s) are available. ○ Treatment (if required) is recommended to be done on the College site next to the elevated tank. • <u>Storage</u> <ul style="list-style-type: none"> ○ An elevated storage tank to provide water to the facility is required. ○ Newly developed ground water sources will pump into the elevated tank. ○ It is proposed that the municipal water supply also be connected to the elevated water tank, to enable the facility to store Municipal water when available. ○ Due to low pressures, it might be required that a ground level reservoir/tank be installed, that can fill with the Municipal water at a low pressure when available. This water will then have to be boosted to the elevated tank.

		<ul style="list-style-type: none"> ○ The preferred position for access and maintenance is the south-eastern corner of the property (Site 1). Alternatively, the storage can be erected at Site 2 at the back of the Main Administration Block. Access for construction is however restricted. • <u>Electrical supply</u> <ul style="list-style-type: none"> ○ 3 -phase electricity is available on site ○ To be confirmed by electrical engineer once boreholes has been identified. • <u>Reticulation</u> <ul style="list-style-type: none"> ○ Domestic <ul style="list-style-type: none"> ▪ The existing reticulation system is reported to be in good condition: no leaks or pipe bursts. The system does not need an upgrade. ▪ An additional reticulation pipe with drinking fountains may be required (See Annexure E for position) on campus - it can be connected to the existing reticulation at the Main administration-, Administration- and Building Workshop buildings. ▪ A potential new water supply point (standpipe) can also be installed next to the carpentry workshop to supply water to the for practical building works. ○ Fire <ul style="list-style-type: none"> ▪ A fire hydrant must be installed on Campus, from the Municipal main (position to be determined). CHDM confirmed that the fire hydrant can be connected to their 110mm dia water reticulation pipe in Gwadana Drive. ▪ A separate on-site fire flow reticulation system is proposed. See proposed layout in Annexure E for position. ▪ Additional fire hose reels must also be installed. • <u>Connections</u> <ul style="list-style-type: none"> ○ The new on-site storage must have an inlet supply from the Municipal Connection to fill the storage if and when possible. ○ The Storage must supply water to the existing water reticulation network. ○ It is proposed that the inlet and outlet pipework of the storage reservoir be connected to the existing Municipal connection. ○ Isolation valves must be installed on the in- and outlet pipework at the connection, as well is in between the two connections ○ The fire reticulation must be connected to the elevated storage tank (separate outlet)
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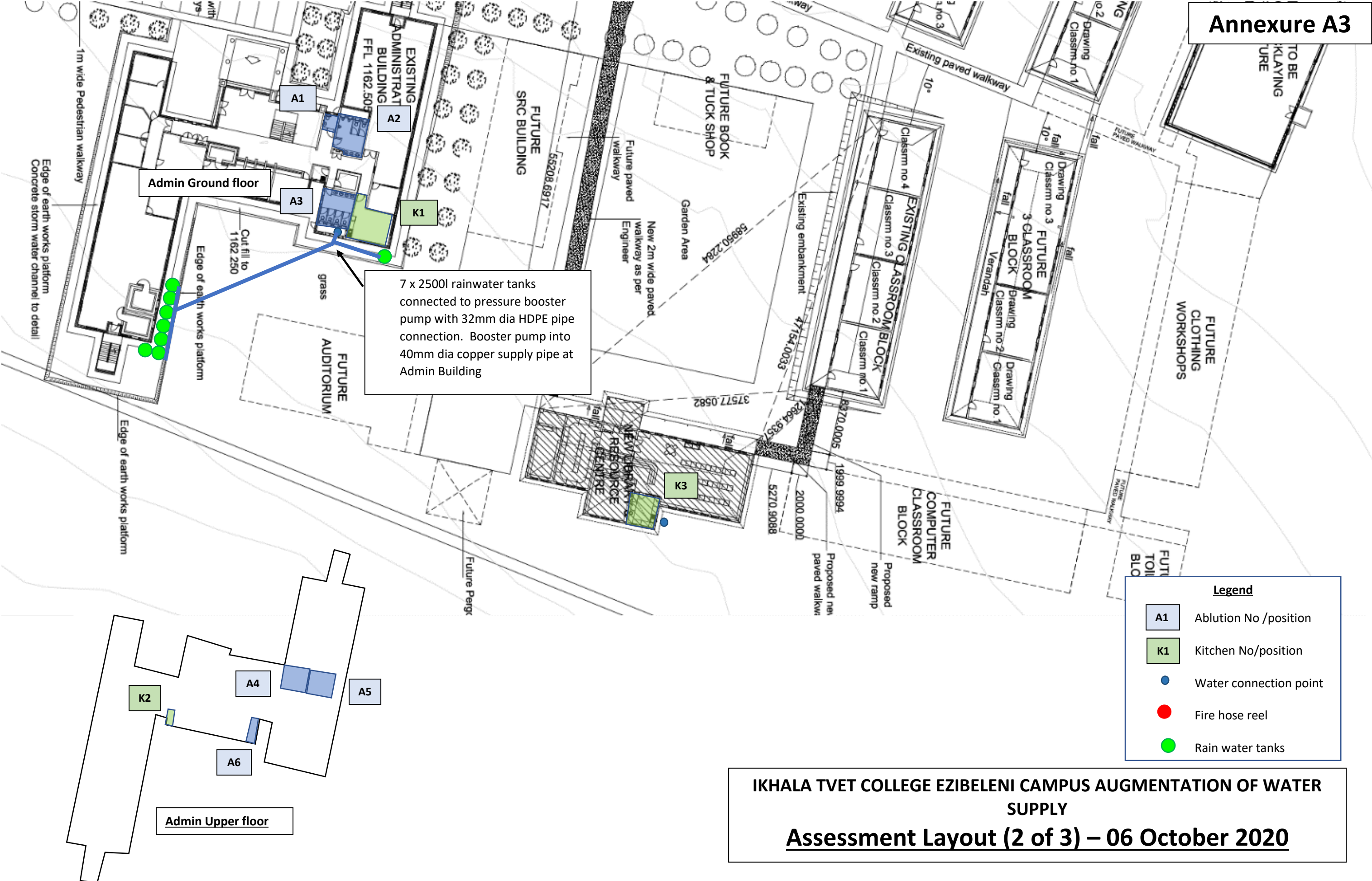
6.	<u>Alternative water sources:</u>	<ul style="list-style-type: none"> • Rainwater harvesting <ul style="list-style-type: none"> ○ Potential yield from rainwater must be quantified and feasibility evaluated. ○ Rainwater harvesting would require: <ul style="list-style-type: none"> ▪ Reconfiguration of down pipes to new tank positions; ▪ Rainwater tanks with stand/platform at each down pipe position; ▪ Connection pipe work with a booster pump(s) to pump rainwater to treatment facility or grey water use; ▪ Treatment of water if used for potable water.
7.	<u>Current or future projects:</u>	<ul style="list-style-type: none"> • Not specifically identified. • Not to be catered for
8.	<u>Annexures:</u>	<p>Annexure A – Layout map and drawings (existing)</p> <p>Annexure B - Photo report</p> <p>Annexure C - Summary of sanitation fixtures</p> <p>Annexure D – Water demand calculations</p> <p>Annexure E – Layout mapping (proposed)</p>

ANNEXURE A – LAYOUT MAP AND DRAWINGS (EXISTING)

Annexure A2



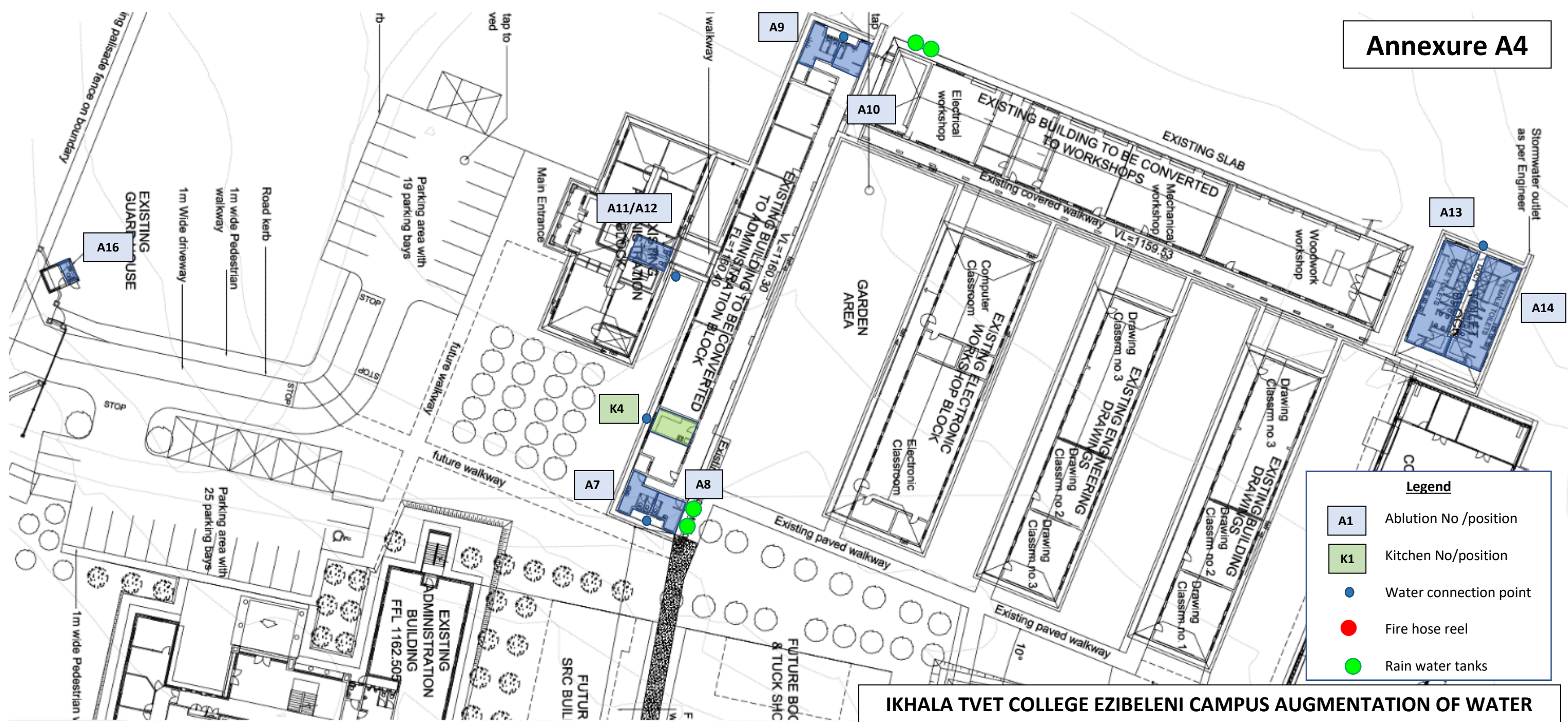
Annexure A3



IKHALA TVET COLLEGE EZIBELENI CAMPUS AUGMENTATION OF WATER SUPPLY

Assessment Layout (2 of 3) – 06 October 2020

Annexure A4



IKHALA TVET COLLEGE EZIBELENI CAMPUS AUGMENTATION OF WATER SUPPLY

Assessment Layout (3 of 3) – 06 October 2020