**Sewer Drainage System**

The new sewer drainage systems are as follows;

A 150 mm PVC drain is connected to the existing Sewer Manhole located at the northeast corner of the Stage 2 section of the building. This drain extends from the manhole up to the new Stage 1 building. Branches are installed connecting all Ensuites on the northern side of the building. An SMS shaft is installed in this drain to connect Ensuites, Sink waste and Cleaners Sink waste at the Western end of Stage 2. This SMS Shaft also connects Ensuites and Dirty Utility located near Courtyards 2 and 3. This drain located in Courtyard 2 extends into the Stage 3 section of the building. There is a new ORG located on the northern side of Stage 2. Ensuites located in Courtyard 4 are connected to either the existing in ground Sewer drain or existing suspended Sewer drain within Undercroft area depending on location. Ensuites on the eastern side of Stage 2 are connected to the existing suspended Sewer drain within Undercroft area. Below slab drains are indicated on the ASbuilt drawings.

**Water Services**

The new hot, cold and warm services are as follows;

Cold Water

A 65mm branch and gate valve is installed in the ceiling space within Stage 1 above Sitting G . 125 . 65mm Copper extends into Stage 2 with Mainline branches installed above corridors. Branches are located adjacent to each Ensuite, Dirty Utility and Laundry. A 65mm Copper line extends through to the Plant deck in Courtyard 2 servicing the Hot water Plant. Yellow colour coded Sharkbite piping is used for the Inwall/Ceiling space roughin within each room. Tmv’s located within each room are fitted with a bypass and isolation valve. Locations of pipework and isolation valves are indicated on as constructed drawings.

Hot Water

A Rheem Commpak system located on the plant deck consisting of 6 continuous flow natural gas heaters on a skid provides domestic hot water for stage 2. Hot flow pipework constructed using Copper penetrates the roof with separate loops for Stage 2 Zone 1 and Stage 2 Zone 2 , each having separate return lines. These return lines are joined at the hot water plant via balancing valves. Flow and Return pipework has been installed within Stage 2 from the Hot water Plant into Stage 3 for later Hot water supply for Zone’s 3 and 4.The hot water pipework follows the cold water pipework typically throughout the building. Red colour coded Sharkbite piping is used for the Inwall/Ceiling space roughin within each room. All hot water pipe is insulated with 25mm wall P.E section. Locations of pipework and isolation valves are indicated on as constructed drawings.

Warm Water

Aquablend Thermostatic Mixing Valves located typically within walls produce tempered water for ensuites, bathrooms and wash basins. They are housed within a lockable stainless steel box. Incoming hot and cold water can be isolated at this point. Valves will be set at 40 degree’s.

**Below Ground Hydrant Fire Service**

The new below ground Hydrant Fire Service system are as follows;

A new 100mm branch and Master Sluice valve is installed into the existing 100mm Copper Hydrant service located within the lawn area on the eastern side of Stage 2. 125mm electrofusion welded Poly pipe PN16 extends in ground to separate risers located under the existing balcony near Sitting G. 97 and into undercroft area at the northern end of Stage 2, for later connection to Hydrants. These risers are fitted with Rollgrove adaptors. Each riser has separate Sluice valves with covers in lawn area. The Poly pipe is joined to either Copper or Sluice valve using a stainless steel flange, poly stub and 16mm stainless steel bolts, nuts and washers. A Coppermate flange is silver soldered onto the Copper side.

**Stormwater Drainage System**

The new Stormwater drainage systems are as follows;

A new Orifice pit ( OP 2 ) is installed and connected to the existing 225mm PVC drain located on the eastern side of Stage 2. This pit picks up stormwater from downpipes and grated pits located in Courtyards 2,3 and 4. Downpipes on the northern side of Stage 2 are connected to the nearby existing 225mm PVC drain. Pit locations, pipe sizes and invert levels are indicated on the Asbuilt drawings.