**Sewer Drainage System**

The new Stage3 sewer drainage systems are as follows;

The new Sewer drainage for Stage 3 is mostly connected to either existing inground drains or suspended drains within Undercroft area depending on location. The exception being connections to the following rooms Multipurpose/Boardroom G.140 , WC G.143 and Staff Room G. 145 having utilised a drain previously installed as per Stage 1 works. Redundant drains cut and sealed. Below slab drains are indicated on the ASbuilt drawings.

**Water Services**

The new Stage 3 hot, cold and warm services are as follows;

Cold Water

A new 50mm copper DCW branch and gate valve is installed within the services duct near Stair 3 .It extends into the ceiling space within Stage 3 mostly following the corridors. Branches are located adjacent to each Ensuite,Hairdresser,Café Medical Centre etc. Branches are also located adjacent to existing wet area rooms that are not being upgraded. 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 above Stage 2 consisting of 6 continuous flow natural gas heaters provides domestic hot water for stages 2 and 3 . Hot flow pipework constructed using copper penetrates the roof with separate loops for Stage 2 Zone 1 and Stage 2 Zone 2 , Stage 3 Zone 3 and Stage 3 Zone 4 each having separate return lines. These return lines are joined at the hot water plant via balancing valves. 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 41 degree’s.

**Below Ground Hydrant Fire Service**

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

A new 100mm branch , Sluice valve and cover is installed into the existing 100mm Copper Hydrant service located within the lawn area on the eastern side of Stage 3. 125mm electrofusion welded Poly pipe PN16 with copper riser extends up into the new plantroom under stage 3. This riser is fitted with a Rollgrove adaptor. 100mm galvanised rolled grove pipe is suspended at high level connecting the new fire hydrant located on the south east balcony in Stage 3. 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 3 ) is installed and connected to the existing 225mm PVC drain located on the eastern side of Stage 3. This pit picks up stormwater from downpipes and grated pits located in Courtyards 6,7,8 and 9. Downpipes and grated pits on the southern side of Stage 3 are connected to the existing pit outside Ensuite’s 035/036 . Pit locations, pipe sizes and invert levels are indicated on the Asbuilt drawings.