Ridgeway is a high grade gold-copper porphyry deposit. It is the deepest formed and highest grade of the four main deposits within the Cadia-Ridgeway mineralised corridor. The deposit is an upright, bulbous body of stockwork quartz veining and alteration zoned around a 50 to 100 m diameter, vertically attenuated, alkalic intrusive plug of porphyritic Cadia Hill Monzonite, which is of monzodioritic to quartz monzonitic composition and is part of the CIC, but some 500 m NW of exposures of the main CIC body, and concealed at a depth of 450 m below the present surface (Wilson et al., 2003). Mineralisation and alteration are hosted both by the intrusive and by the surrounding volcanic rocks of the Forest Reefs Volcanics, at and just above, the contact with the underlying Weemalla Formation. The dominant volcanic host occurs as massive bands that are >50 m thick of intercalated volcanic lithic conglomerates to breccias, and bedded volcanic sandstone. Intercalated with these bands are up to 100 m thick packages of plagioclase, crystal-rich volcanic sandstones that may locally, but not commonly, show graded bedding on scales of metres to tens of metres. Other minor lithofacies include clinopyroxene-phyric basaltic to basaltic andesite flows and a series of steeply north to NE dipping clinopyroxene-phyric basaltic to plagioclasephyric andesitic dykes (Wilson et al., 2003).

The Ridgeway complex of intrusions are physically separated from, but are petrographically and compositionally identical to, and is believed to be connected at depth to, the main Cadia Igneous Complex (CIC). The earliest phase of the Ridgeway intrusions is an equigranular monzodiorite occurring as a NW elongated, steep north dipping, 200 x 50 x 500 m body with an elliptical cross section, located on the southwestern margin of the Ridgeway orebody. In detail it occurs as two lobes, cut by the mineralisation, and is interpreted to be pre-mineral (Wilson et al., 2003).

The main mineralisation at Ridgeway is spatially related to three groups of monzonite intrusions (early-, inter- and late-mineral), all of which are post-monzodiorite. They form an irregularly shaped composite plug with dimensions of 70 x 100 x 600 m, immediately to the NE of the monzodiorite. The individual bodies of the composite mass having dimensions from metres to tens of metres horizontally and up to 200 m vertically. Multiple intrusion and mineralising phases are indicated by truncation of contacts and veins (Wilson et al., 2003).

The highest grade gold accompanies the most intense alteration and stockwork development immediately adjacent to the monzonite porphyry, with the best being localised directly above the plug compared to grades on its lateral margins. Grades decrease laterally outwards and inwards from the intrusive contact.

The top of the Ridgeway deposit (defined by the 0.2 g/t Au cut-off) is some 500 m below the current surface, and takes the form of a subvertical, pipe like, quartz-sulphide vein stockwork body, with a WNW elongated axis and an elliptical 150 x 250 m horizontal shape which persists over a vertical interval of more than 600 m. Distinct styles of veining and alteration are related to each of the three monzonitic intrusive phases of the igneous complex. The metal grades and intensity of alteration decrease from the early- to the late-mineral phases of the intrusive (Wilson et al., 2003).

Early-mineral intrusion is accompanied by intense actinolite-magnetite-biotite (calc-potassic) alteration and up to four stages of high grade quartz-magnetite-sulphide veins, all of which contain abundant magnetite, actinolite and bornite with variable amounts of chlorite, biotite, chalcopyrite, pyrite, quartz and orthoclase. Bornite, which is the most abundant sulphide, correlates closely with gold. Magnetite dominates in the earliest vein stage, while in the last, chalcopyrite becomes more important. Some of these veins persist for up to 350 m outwards from the Ridgeway Igneous Complex (Wilson et al., 2003).

Moderate- to weak-intensity potassic alteration as orthoclase-biotite±magnetite accompanies both the inter- and late-mineral intrusions and is associated with chalcopyrite- and pyrite-rich quartz-orthoclase veining. The veining and alteration accompanying the inter-mineral phase intrusives is referred to as transitional-stage veining and transitional-stage alteration respectively. Transitionalstage alteration assemblages are characterised by orthoclase, biotite (mostly retrograde altered to chlorite) and magnetite with minor quartz, titanite and apatite. The transitional-stage veining occurs as up to 4 styles which contain variable amounts of magnetite, chalcopyrite and pyrite with quartz and orthoclase, while bornite is rare to absent. The late-mineral monzonite intrusives is accompanied by weak late-stage alteration, occurring as weak pervasive potassic (orthoclase) development around late-stage veins, and chlorite alteration of mafic components of the monzonite. The late-stage veins are characterised by pyrite±chalcopyrite with fluorite, but no bornite or actinolite, and gangue progressing from quartz to sericite to chlorite-calcite from early to late phases (Wilson et al., 2003).