Chattisgarh basin, the third largest of the Proterozoic basins of India covering an area of around 35,000 sq. km, is an intracratonic, middle Proterozoic basin located within the Bastar craton. Recent reports on the occurrence of diamondiferous kimberlitic pipes and ores of uranium in and around the margin of this basin enhanced the necessity to understand the structural configuration & evolution of this otherwise less studied basin. The mapping of basement structures is difficult in Chattisgarh basin as the basin is filled with undeformed Proterozoic sediments with very limited to no exposed outcrops. We have utilized aeromagnetic data collected on a reconnaissance scale and its transformations for accurate positioning of geological boundaries and identified the distribution of magnetic sources there by to build a tectonic model representing the evolutionary history of the basin. For the first time several sub-surface lineaments that can possibly represent kimberlite pipes or zones conducive for uranium mineralization were identified. From the analysis we found that the basin is composed of older NW-SE horst and graben structure in north and younger EW structures in the south. The sediments are having an average thickness of 5km and the younger dykes are intruded into the sediments and are at an average depth of 1.5km from the surface. Few profiles across the newly identified dykes have been modeled and the results were compared with the rock magnetic studies carried out on the dykes occurring on the margins of the basins. Results of these will be presented.