

Impacts of land use change on groundwater recharge: case study from Western Australia

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Abstract This study evaluates the effects of land use on groundwater recharge using groundwater observations from various locations within Western Australia. The water table fluctuation method was used to estimate the groundwater recharge. Estimated groundwater recharge has been used to develop relationships between rainfall and groundwater recharge for residential, industrial and rural/agricultural land uses. Average groundwater recharge as a percentage of rainfall has been estimated to compare spatial and temporal changes. The effects of land use change on groundwater recharge were clearly identified in areas where a remarkable land use change had occurred. Changing the land use from rural to residential in Canning Vale, the recharge decreased from 28% to 21%. Changing the land use from rural to industrial in Welshpool, the recharge decreased from 27% to 17%. Results of this study will be useful for land use planning in the future for the sustainable management of groundwater resource.

Key words groundwater; recharge; groundwater level; land use