Groundwater residence time in a dissected and weathered sandstone plateau: Kulnura–Mangrove Mountain aquifer, NSW, Australia

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SUPPLEMENTARY PAPERS


* Tables S1–3 [indicated by an asterisk (*) in the text and listed at the end of the paper] are Supplementary Papers; copies may be obtained from the Geological Society of Australia's website (www.gsa.org.au), the Australian Journal of Earth Sciences website (www.ajes.com.au) or from the National Library of Australia's Pandora archive (http://nla.gov.au/nla.arc-25194).

Table S1 Groundwater wells with number corresponding to the NOW monitoring well number, sampling date, elevation, total well depth, screened interval and abbreviated water type.

Table S2 SIROQUANT calculated proportions (wt%) for the different whole rock samples. Well location can be seen in Figure 1. Qtz = quartz, Clay = kaolinite + illite + interstratified illite/smectite, Goe = goethite, Rut + Ana = rutile + anatase, Sid = siderite, Mic = microcline, others depending on samples are Ank = ankerite, Mus = muscovite, Cal = calcite.

Table S3 Estimated average vertical hydraulic conductivity, $K_v$, between screens (or the ground surface) where SWL’s, apparent ages and samples are available.
REFERENCES


Table S1 Groundwater wells with number corresponding to the NOW monitoring well number, sampling date, elevation, total well depth, screened interval and abbreviated water type.

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Table S2 SIROQUANT calculated proportions (wt%) for the different whole rock samples. Well location can be seen in Figure 1. Qtz = quartz, Clay = kaolinite + illite + interstratified illite/smectite, Goe = goethite, Rut + Ana = rutile + anatase, Sid = siderite, Mic = microcline, others depending on samples are Ank = ankerite, Mus = muscovite, Cal = calcite.

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Table S3 Estimated average vertical hydraulic conductivity, \( K_v \), between screens (or the ground surface) where SWL’s, apparent ages and samples are available.

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Estimation of \( K_v \) was simply based on the Darcy equation:  
\[ v = -K_v \Delta H \Delta L \]

Where Darcy’s specific discharge, \( v \), is proportional to head differences \( \Delta H \), and (for vertical velocities) inversely proportional to the difference in depths, \( \Delta L \). Apparent vertical velocity between the middle of each screened interval or the soil profile is simply \( \Delta L \Delta \tau \), where \( \Delta \) is the difference in corrected ages. Assuming uniform sandstone porosity, \( \theta \), of 15%, to convert vertical velocity to specific discharge gives:  
\[ \Delta L \Delta \tau \theta = -K_v \Delta H \Delta L \]

Therefore:  
\[ K_v = \Delta L \Delta \tau \times 0.15 \]