The importance of nitrogen fixation to a temperate, intertidal embayment determined using a stable isotope mass balance approach

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Figure S1 provides the distribution of the model output for the sedimentary isotopic signature ($\delta^{15}N$) described in our study. The summary of results of the linear regression analysis for all parameters (loadings and isotopic end-members/fractionation factors) used in the model described in our study are presented in Figures S2-S3.

20 The coordinates for the oceanic and terrestrial field sites are summarised in Table S1. Table S2 summarises the output from the statistical analysis of the particulate nitrogen content and isotopic signature ($\delta^{15}N$) over the tidal cycle at San Remo and Cowes.



Figure S1: Distribution of model output after 10,000 iterations.

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Figure S2: Linear regression analysis for each loading term vs. sediment δ^{15} N. (a) Riverine TN, (b) nitrogen fixation, (c) atmospheric deposition – NH₄⁺, (d) atmospheric deposition – NO_X, (e) denitrification, (f) sediment burial and (g) assimilation.



Figure S3: Linear regression analysis for each end-member vs. sediment δ^{15} N. (a) Riverine TN, (b) nitrogen fixation, (c) atmospheric deposition – NH₄⁺, (d) atmospheric deposition – NO_X, (e) denitrification and (f) assimilation.

Table	S1:	Sample	locations	for	oceanic	and	riv	erine	inpu	its.
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Site	Coordinates	Terrestrial/Oceanic
Bass River	-38.467045°, 145.515672°	Terrestrial
Bunyip River	-38.196927°, 145.477834°	Terrestrial
Lang Lang River	-38.255695°, 145.548879°	Terrestrial
Toomuc Creek	-38.178193°, 145.441891°	Terrestrial
Watsons Creek	-38.229754°, 145.235564°	Terrestrial
Cowes	-38.446132°, 145.239837°	Oceanic
San Remo	-38.520262°, 145.364816°	Oceanic

Table S2: Results of two-factor ANOVA comparing the nitrogen isotopic signature (δ^{15} N) and nitrogen content of oceanic-derived particulate material amongst sites (Cowes and San Remo) and tidal cycle (incoming and outgoing tides). *Denotes *p* < 0.05.

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δ¹⁵N of particulate material

Source	dF	F	Р
Sample Site	1	2.421	0.127
Tide	1	1.792	0.188
Sample Site × Tide	1	0.057	0.812

Nitrogen content of particulate material

Source	dF	F	Р
Sample Site	1	17.763	<0.001*
Tide	1	0.073	0.788
Sample Site × Tide	1	0.851	0.362

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