Chapter 9. A geoarchaeological model of the Trent-Soar Confluence Zone

9.1 Generalising and modelling the chronostratigraphy

On the basis of the radiocarbon dates and the OSL dates it has been possible to date the floodplain according to basal age of the floodplain and fine sediments above the gravels (overburden). This can be compared with the chronostratigraphic model proposed in Phase I and re-introduced in Section 5.1 of this report (Figs. 9.1, 9.2 and 9.3).

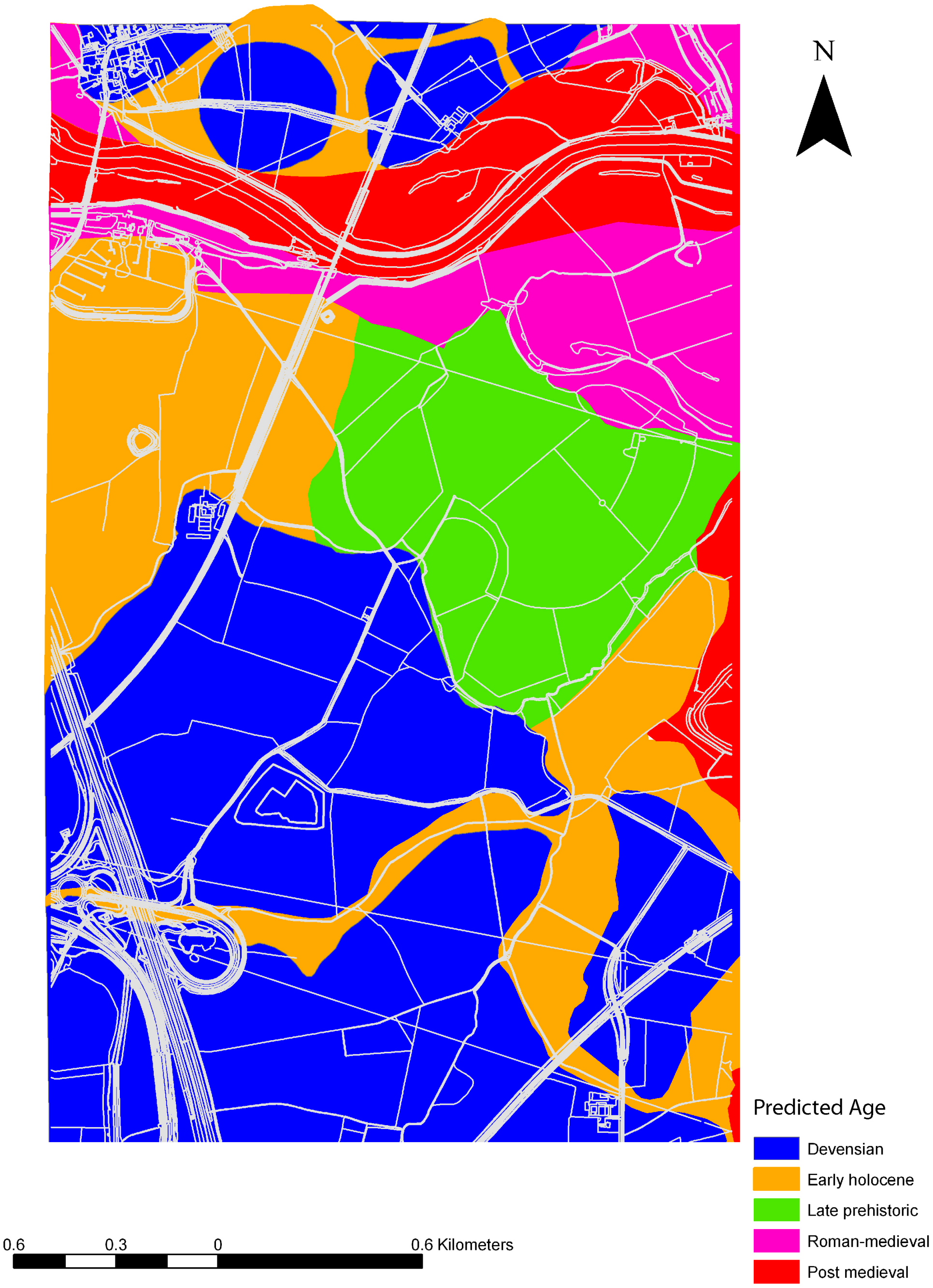

Fig 9.1: The original chronostratigraphic model produced in phase I.

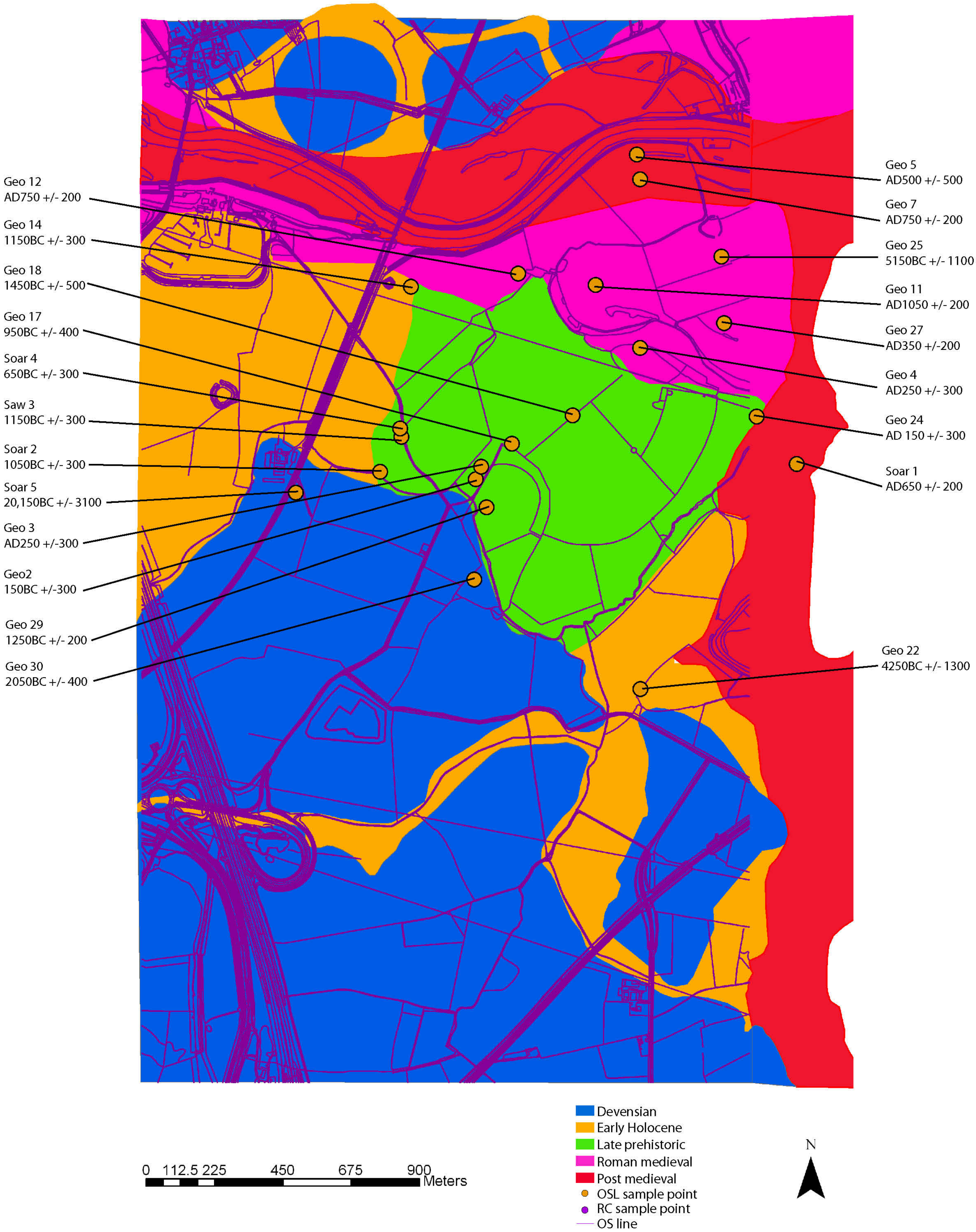

Fig 9.2: A map of the confluence area zoned into landscape blocks of a predominant age with OSL dates superimposed.

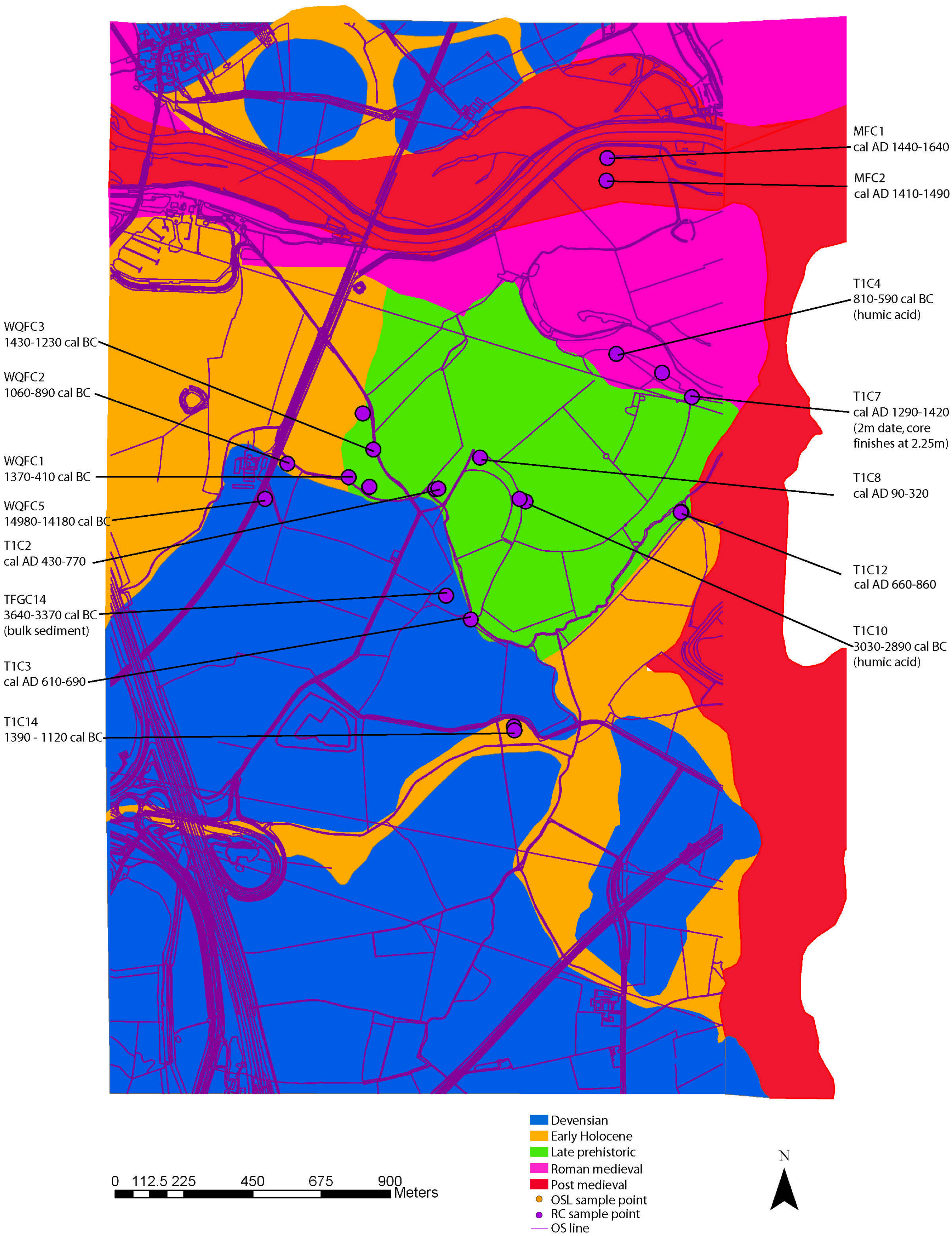

Fig 9.3: A map of the confluence area zoned into landscape blocks of a predominant age with 14C dates superimposed.

		Chronostratigraphic model				
		Devensian	*Early Holocene*	*Late Prehistoric*	*Roman-Medieval*	*Post Medieval*
Observed	*Devensian*	-				
	Neolithic		1			
	Bronze Age		6	3	1	
	Roman-British			3		
	Late Medieval				3	1

Tab. 9.1: Correspondance (confusion) of matrix of chronostratigraphic model with observed dates.

As can be seen from a comparison of the chronostratigraphic model with the observed model there are strong similarities and differences (Tab. 9.1).

9.2 Development of a valley floor evolution model

The dating and the stratigraphy have been combined to produce a model of the evolution of the confluence area in the Late Devensian-Holocene using archaeological time periods (Figs. 9.4 – 9.9). The phasing is not absolute and we get glimpses of earlier phases preserved in predominantly later phases of depositional activity, the best example being the Neolithic palaeochannel which crosses the meander core of the major central meander loop which is occupied (probably reoccupied) in the Romano-British period. Further work is currently underway to refine this model.

However, from the extensive dating programme some pertinent observations can be made regarding the evolution of the floodplain and its geoarchaeological potential. Of primary importance is the antiquity of the gravels of terrace 1. These clearly predate the majority of the palaeochannels on terrace 1, and as the OSL dates and dendrochronological dates clearly show, date from the Neolithic onwards. In addition WQFC5, located just above the Devensian gravels, shows some areas of terrace 1 have even earlier dates of formation, with potential preservation of human material culture and palaeoecological remains from the early Mesolithic. Clearly the paucity of archaeological remains on terrace 1 is a function of floodplain development, with a relatively deep alluvial blanket on top of gravels hiding archaeological remains to conventional methods of archaeological prospection.

The second important observation is that most of the palaeochannels have incised into older gravels deposits and largely post date the gravels. This model of floodplain evolution places heavy emphasis on avulsion, the re-occupation of channels and levee and overbank sedimentation as the key processes that pattern the geoarchaeological record and not meander migration, lateral erosion and aggradation that are normally seen as the patterning processes. This has important implications for similar high-energy floodplains as well as the lower sedimentary fills of lowland floodplains. Thus large portions of terrace 1 have the potential for preservation of archaeological and palaeoecological remains, with erosion being generally related to avulsion events and reoccupation of existing palaeochannels. Meander migration has been limited and thus the high level of overbank sedimentation has created a generally ‘preserving’ environment on terrace 1 through accumulation of overbank sedimentation. In addition to the known archaeological record located on terrace 2, terrace 1 has a high geoarchaeological potential from the Neolithic onwards.

The main caveat of this model is that the landscape units defined here are themselves diachronous to a variable degree. However, this variation is almost certainly systematic with the palaeochannel belts being of limited diachrony (decades to a century or two) whilst the intervening floodplain units can be diachronous over millennia, the extreme example being the composite terrace to the southern end of Warren Farm Quarry. Whilst this does not render the floodplain chronostratographic zonation methodology invalid it does place some limits on predictive resolution.

There are many ways in which the archaeological resource as revealed by Chapter 2 relates to the sedimentological and chronostratigraphic model devised here. These include the spatial patterning of the archaeological resource in the target area. For example the very uneven distribution of find locations is well explained by the chronostratigraphic and dated confluence evolution model with high density in the SW of the area on terrace 2 and only occasional finds on terrace 1 and the lower floodplain. However, as the model demonstrates, finds do and will occur on the terrace 1 and lower floodplain (almost certainly under the veneer of overbank sediments), due to the avulsive nature of channel change hypothesised in the model and proven by the dating. The reason is that this particular type of confluence evolution in effect preserves segments of older floodplain between younger channel belts. The result is two contexts of preservation, one on and in old floodplains preserved under a blanket of later overbank deposition and secondly archaeology related to channels and riverbanks located in the palaeochannel zones. By this mechanism artefacts of almost any period could be preserved, but they will be strongly patterned by this history of channel and confluence evolution.

The model also helps to explain cultural and technological aspects of the archaeology. The Romano-British settlement on the low terrace in the SW of the study area was almost certainly deliberately located along the edge of the then River Soar, which would have been used for water supply and waste disposal. Chapter 2 also alludes to possible crossing points in the Anglo-Saxon, Medieval and Post-medieval periods. The lack of a definite location and the fact that the first bridge appears to be built (in the detailed study area) across the Soar, at Ratcliffe-on-Soar, only in the Post Medieval period suggests that no permanent crossing points existed, but instead there were fords at suitably shallow locations. This is supported as being likely by the model as the crossing point of the Soar would have had to move eastwards as the confluence migrated in avulsive episodes. Chapter 2 also mentions the documentary evidence of channel change that includes reference to a major avulsion in 1402 which may have created the Sawley Loop palaeochannel. The dating in the study area suggests that it may also have been responsible for the abandonment of the southerly palaeochannel and occupation by the main channel flow of the northerly Soar palaeochannel.

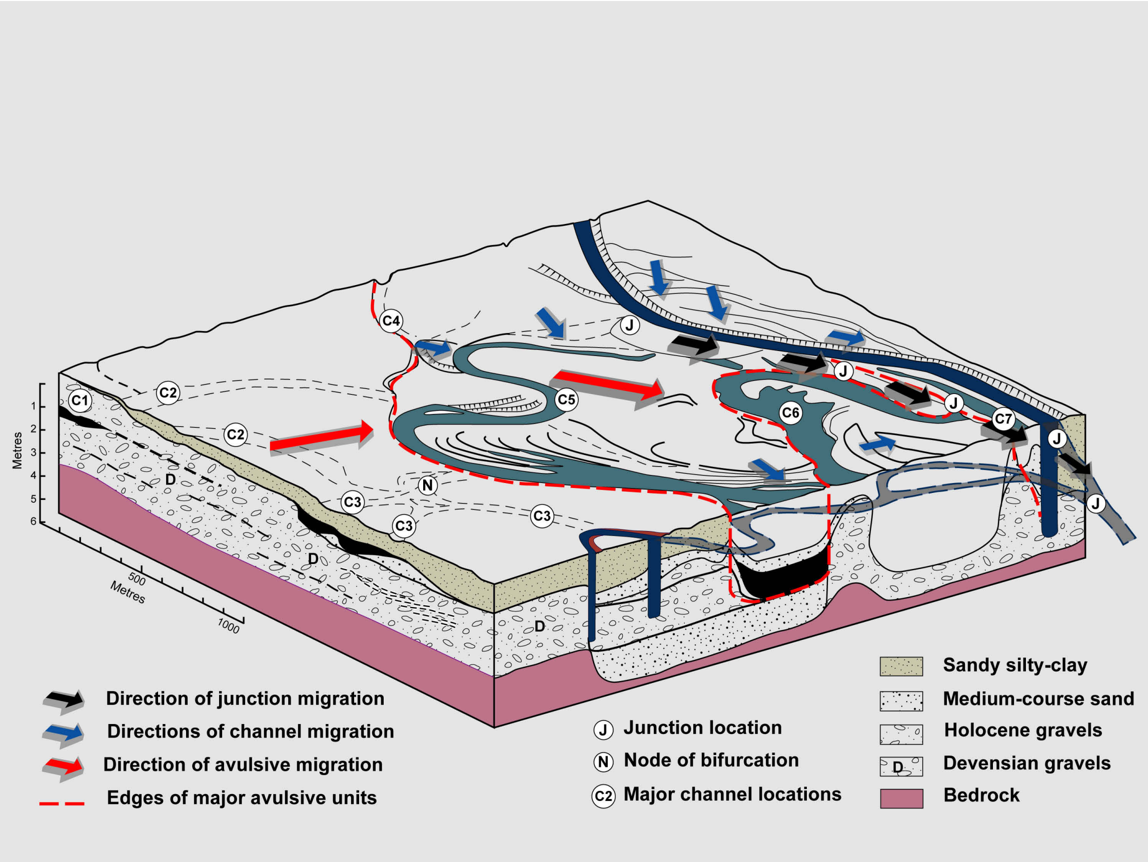

Fig 9.4: Neolithic channels flowing approximately S-N and depositing terrace 1.

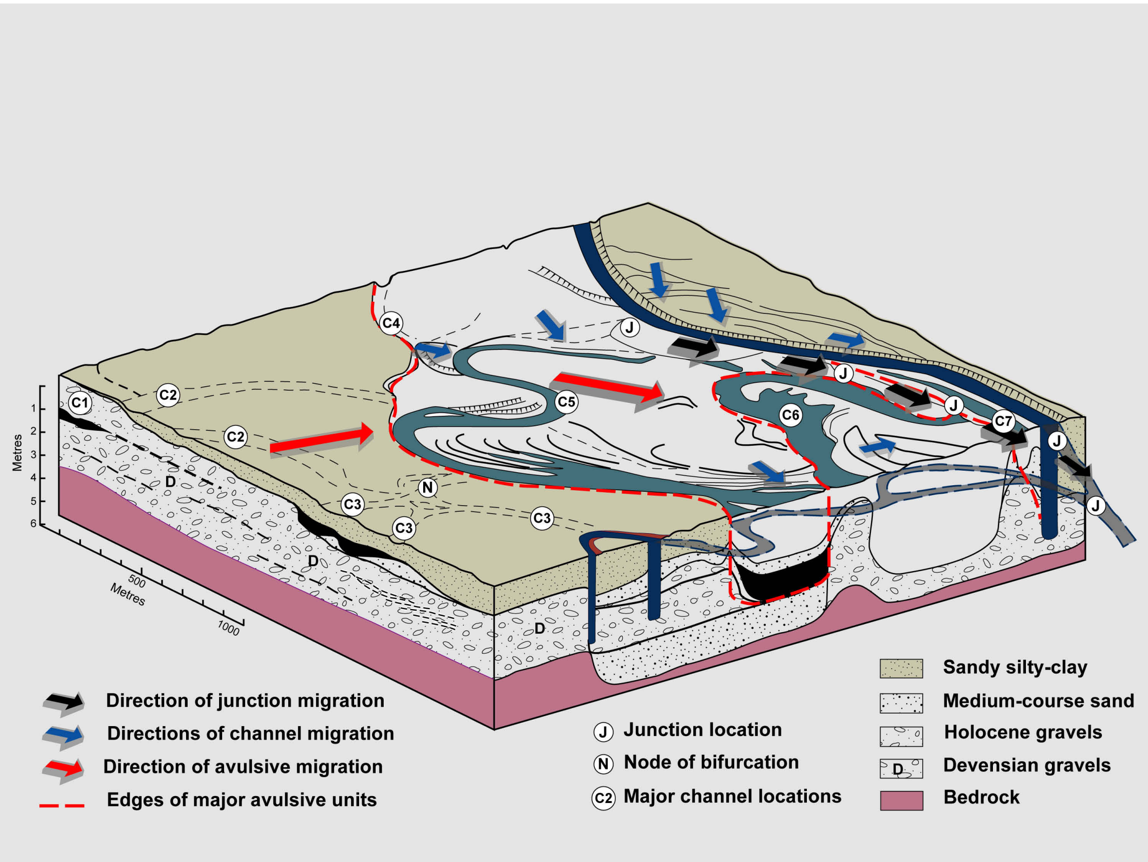

Fig 9.5: Bronze Age channels trending SE-NW abandoned on terrace 1.

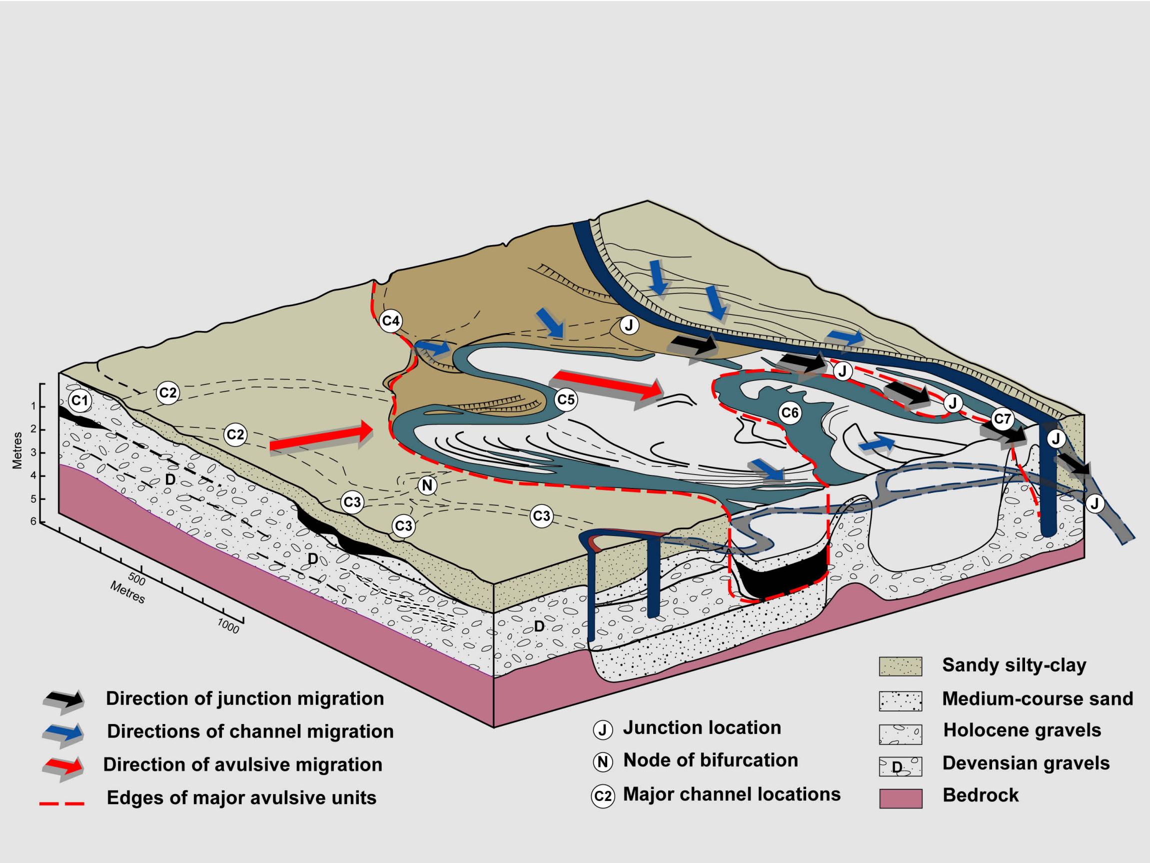

Fig 9.6: Iron-Age-early Post Roman. Note older Neolithic – Bronze Age core within meander loop.

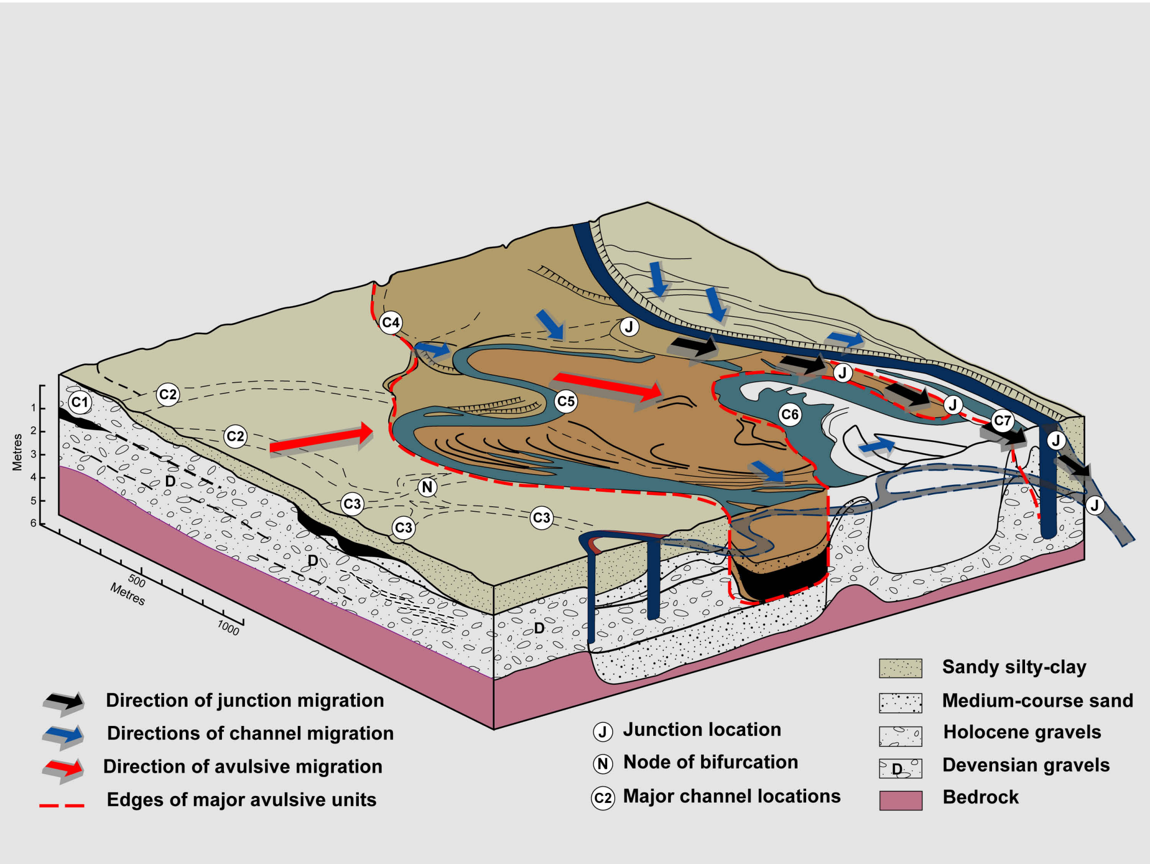

Fig 9.7: New Soar channel location Romano-British – Medieval.

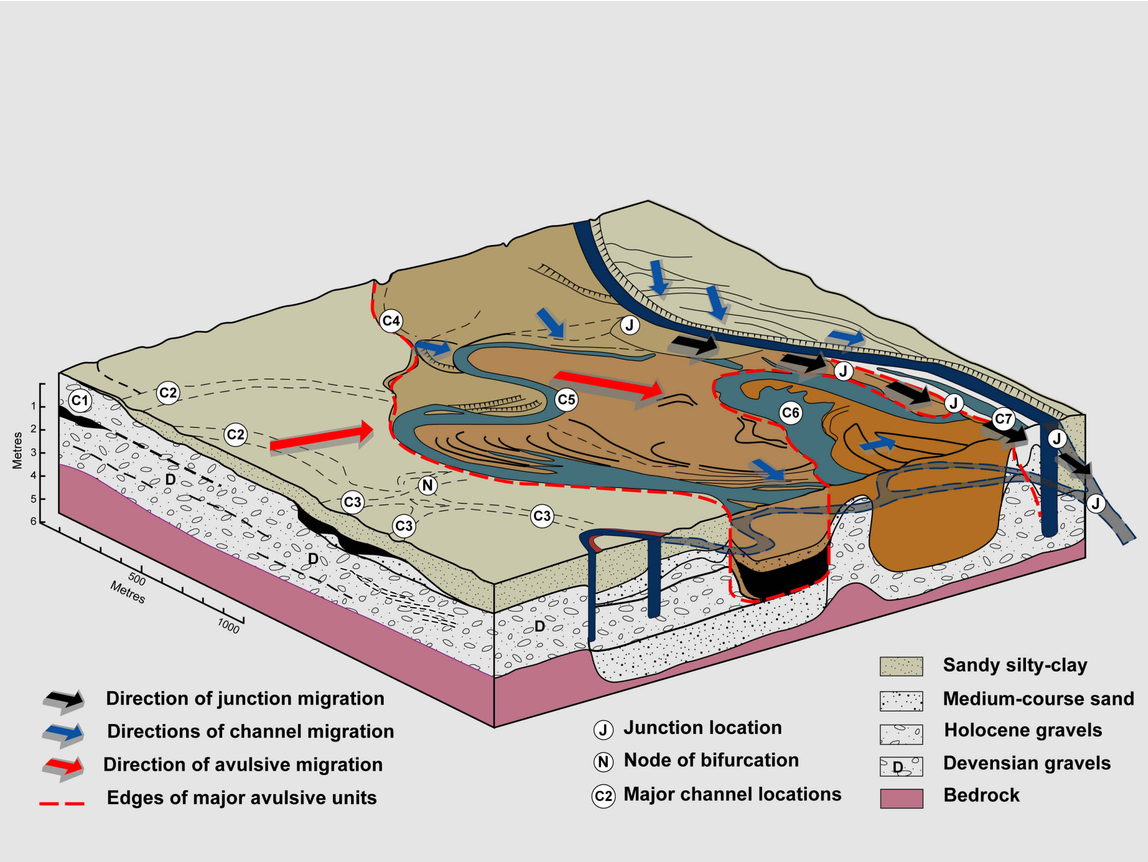

Fig 9.8: Medieval-early Historic abandonment of loop and channel shift to the NE.

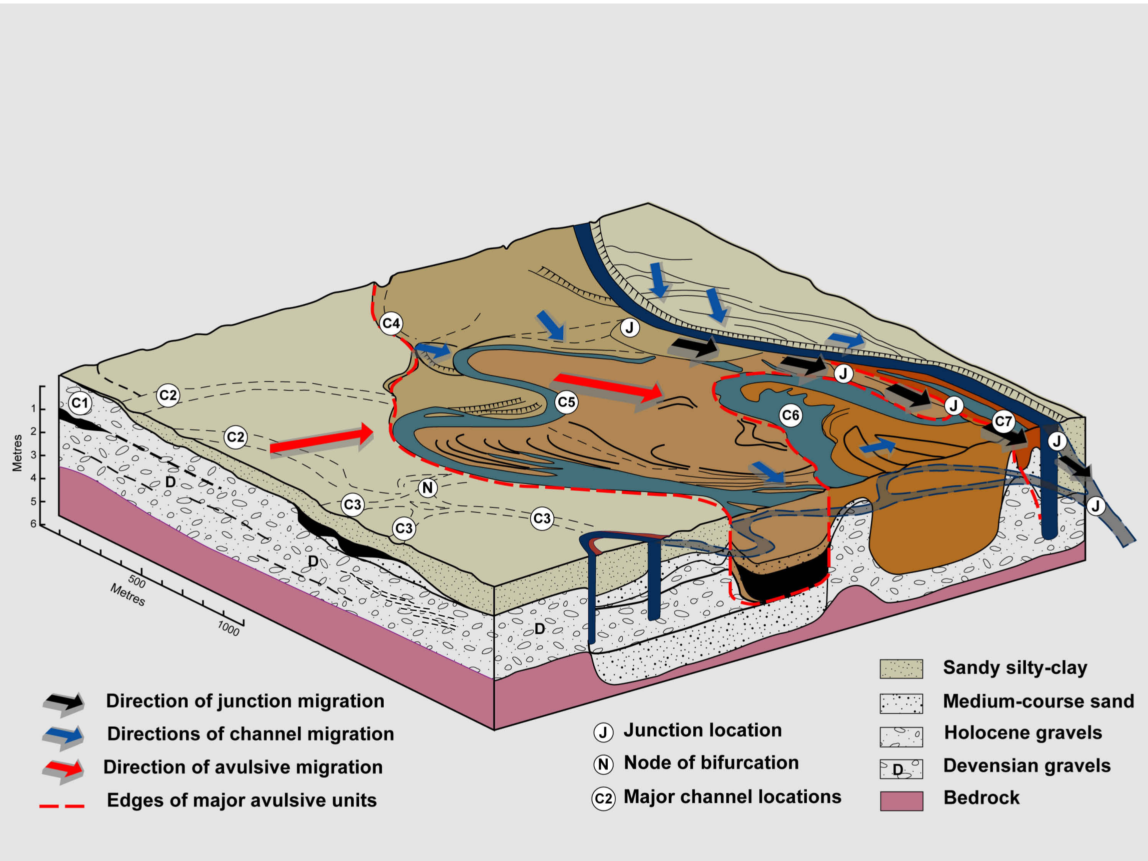

Fig 9.9: Post Medieval northward migration of Trent channel and establishment of the present junction.