

Geology of the Andover area: Concealed strata - Jurassic

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The whole of the marine-dominated Jurassic succession is represented at depth below the district. The relatively uniform, cyclical sequences of mudstone, sandstone and limestone provide sedimentological evidence, regionally, for an eastward shift of the area of maximum subsidence in the Wessex Basin related to the activity of faults bounding the Hampshire–Dieppe High. The depositional lows of the Weald (whose westward extension underlies this district) and Channel basins (proved to the south of the Hampshire – Dieppe High) thus became established at this time with, in general, a regional pattern of northward thickening into the Weald Basin.

Lias Group (LI)

The Lias Group is traditionally described in terms of Lower, Middle and Upper units and these terms are interpreted within the deep boreholes beneath this district. The Lias Group has been formally divided (Cox et al., 1999)^[1] and parts of this formal nomenclature can be recognised in outline in the lithological descriptions in those wells. However the district lies at an intermediate position between the Dorset coast successions and those known from the Worcester Basin and therefore identification of units below formation level is speculative (see also Booth et al., 2011)^[2]. In general the Lias Group consists of grey, well bedded, marine calcareous mudstone and silty mudstone. The occurrence of thin tabular or nodular beds of argillaceous limestone in the descriptions of the lower part of the group allude to correspondence with the Blue Lias, Charmouth and lower part of the Dyrham formations. The presence of ironstone in the middle of the described succession suggests equivalence to the upper part of the Dyrham Formation and the Marlstone Rock Member of the Beacon Limestone Formation. The thicker units of siltstone, and particularly sandstone, described in the upper part of the succession beneath the district, suggests equivalence to the Whitby Mudstone and Bridport Sand formations. The Lias Group thickens against faults that down-throw to the south in the district as shown on Section 1 (BGS, 2012)^[3] reaching 650 m thickness in these areas. It thins somewhat to the south and particularly to the east where approximately 350 m is encountered; in the north of the area beyond the Kingsclere Anticline only 60 m of the Lias Group is present..

Inferior Oolite Group (INO) and Great Oolite Group (GOG)

The Inferior Oolite consists of a varied succession of ooidal, peloidal, marly, sandy, ferruginous and shelly limestones with subordinate sandstone, calcareous mudstone and mudstone beds. The Great Oolite Group consists of calcareous (rarely ooidal) and argillaceous formations. The two formations, taken together, thicken from approximately 160 m to over 200 m in the south of the district — this is likely to be in response to synsedimentary faulting as with the Lias Group.

Kellaways Formation (Kys)

The Kellaways Formation consists of grey mudstone, commonly silty or sandy, with beds of generally calcareous siltstone and sandstone in the upper part. Thicknesses of 9 to 14 m have been proved in boreholes in the area (see the [Stratal thickness table](#)).

Oxford Clay Formation (OxC)

The Oxford Clay succession consists of a brown, slightly calcareous, carbonaceous, siltstone passing upwards into a grey, carbonaceous mudstone. By comparison with the Devizes district to the west the brown- and grey-coloured units can be equated to the Peterborough Member and an undivided younger Stewartby and Weymouth members. The succession is variably pyriteous with thin limestones in the higher part. The unit thickens from approximately 125 m in the east to approximately 300 m towards the south west.

Corallian Group (Cr)

The Corallian Group represents an episode of relatively shallow marine mixed carbonate and siliciclastic sedimentation between two long periods of deep-water argillaceous shelf sedimentation represented by the underlying Oxford Clay and overlying Kimmeridge Clay formations. The Corallian Group in this region is composed of muddy sandstone and yellow, brown and grey, very fine- to medium-grained quartzose sand, with thin sandy siltstone beds in parts. It is approximately 41 to 48 m thick in this district.

Kimmeridge Clay Formation (KC)

The Kimmeridge Clay Formation consists of stiff, waxy, dark grey mudstones, with small pale grey calcareous concretions (known as 'race' or calcrete), calcareous pale grey mudstones, oil shale and silty dark grey mudstone, all are sporadically fossiliferous. It is approximately 185 to 285 m within the deep wells in this district but is estimated to be between 100 and 450 m in seismic sections.

Portland Group

The group consists of the Wardour Formation conformably overlain by the Portland Stone Formation.

The Wardour Formation consists of pale brown, buff, very well sorted, fine- to medium-grained 'sugary' quartz sand, with small amounts of glauconite, giving it a speckled appearance. The base is transitional into the top of the underlying Kimmeridge Clay Formation.

The upward change from the Wardour Formation to the Portland Stone Formation is marked by the appearance of large doggers of fossiliferous, very hard, compact white to yellowish, fine- to medium-grained siliceous sandstone.

The group thickens to the west from about 45 to 60 m.

References

1. [↑](#) Cox, B M, Sumner M G, and Ivimey-Cook, H C. 1999. A formational framework for the Lower Jurassic of England and Wales (onshore area). British Geological Survey Research Report, RR/99/01.

2. [↑](#) Booth, K A, Hopson, P M, Farrant, A R, Newell, A J, Marks, R J, Bateson, L B, Woods, M A, Wilkinson, I P, and Evans D J. 2011. Geology of the Devizes district. *Sheet description of the British Geological Survey. Sheet 282 (England and Wales)*.
3. [↑](#) British Geological Survey. 2012. Andover. England and Wales Sheet 283. Bedrock and Superficial. 1:50 000 (Keyworth, Nottingham: British Geological Survey.)

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