

## 2.6.1. Beselare Member - HnBe

**Author:** Matthijs (2017).

**Description:** this marine unit consists of grey-green sandy to very sandy clay. Sometimes it is reported to be (slightly) calcareous, containing foraminifera and sponge spicula. The base of the clay usually is less sandy and more calcareous. To the northeast the sandy clay turns into a more or less indurated silty to sandy clay or clayey silt (the Kallo borehole – 027E0148, the Mol-SCK borehole - 031W0237) which maybe partially silicified to form a spiculite. De Geyter et al. (2010) informally named these deposits the Wijnendale Member and saw a strong resemblance with the Maaseik Member. They restricted its occurrence to the area south-west of the Brabant Massif. Geophysical well-log correlations, however, show the Beselare Member to be overlying the Maaseik Member and to be occurring north of the Brabant Massif as well. Throughout its area of occurrence the Beselare Member is overlain by the stiff clays of the Waterschei Member. In the west of Belgium the Beselare Member covers the underlying Cretaceous chalk deposits, in the east it covers the sediments of the Heers Formation (from west to east, the Orp Member, the Gelinden Member and the Maaseik Member). The exact relationship with the Cherq Member (Hainaut area) and the Louvil Member (north-western part of France) of the Hannut Formation (sensu Hennebert & Doremus, 1995, 1997) is not yet clear.

**Stratotype:** a stratotype has not yet been defined as there are no outcrops or cored drillings within the area where the Beselare Member is defined. The current definition is based on a combination of cutting-descriptions and geophysical well-log measurements of several drillings within the south of West-Flanders (the Wijnendale borehole - 052E0195, the Boezinge borehole - 81E0143, the Beselare borehole - 082W0148, the Hollebeke borehole - 095E0190, the Wijtschate borehole - 095E0191 and the Menen borehole - 096E0082). A lectostratotype may be defined in the cored Kallo borehole (027E0148) as this has a very detailed description of the sediments by Gulinck (1966, 1967) (coordinates: x = 144820, y = 217840, z = + 2m TAW ). The lower boundary is situated at 444m depth and is characterised by a clayey spiculite covering the top of the marls of the Gelinden Member of the Heers Formation. The transition between the Waterschei and the Beselare Members seems to be rather gradual. Nevertheless, the upper boundary is situated at 434m depth with the first appearance, underneath the stiff clays of the Waterschei Member, of silty and sandy clay containing sponge spicula. A good correlation with the geophysical well-log measurements of the nearby Doel-1 borehole (014E0240) is possible for the upper boundary. Unfortunately the lower boundary was only logged on a poor gamma-ray measurement while drilling.

**Area:** the northern part of Belgium, more specifically the western and the northern part of the Flanders Region. The Beselare member covers the utmost north-western part of the province of Hainaut, the province of West-Flanders, the north-western part of the province of East-Flanders and the northern part of the provinces of Antwerp and Limburg. It is absent on top of the axis of the Brabant Massif, east of the line Roubaix, Kortrijk, Roeselare, Tielt, Deinze, Gent and Zelzate. It is absent as well on the northern flank of the Brabant Massif, south of the line Antwerp, Herenthout, Houthalen, and Waterschei. It remains in subcrop throughout the whole area of occurrence in Belgium. Outcrops of the member or a lateral equivalent (Louvil Member and/or Cherq Member?) may be found in the north-western part of France.

**Thickness:** maximum about 12m in the Heibaart borehole (007E0178) in the north of the Campine Basin in northern Belgium. In the area of the type-section in the south of West-Flanders the Beselare Member has a thickness of approximately 5m. There is a general decrease in thickness in the direction of the Brabant Massif. From there on its thickness increases to the west and to the north.

**Age:** Early Thanetian.

**Remarks:** the member is also discussed by De Geyter, Welkenhuysen & De Ceukelaire (2010), the sediments in the Kallo borehole are discussed by Gulinck (1966, 1969).

**Geophysical borehole references:** reference boreholes with geophysical log pattern of the Beselare Member between the Cretaceous chalk and the Waterschei Member in the south of West-Flanders are the Wijnendale borehole (052E0195), the Boezinge borehole (081E0143), the Beselare borehole (082W0148), the Hollebeke borehole (095E0190), the Wijtschate borehole (095E0191) and the Menen borehole (096E0082); reference boreholes with geophysical log pattern of the Beselare Member between the Maaseik Member and the Waterschei Member in the Rur Valley Graben and the Campine Basin are the Molenbeersel borehole (049W0226), the Mol-SCK borehole (031W0237), the Herentals borehole (030W0372), the Heibaart borehole (007E0178) and the Brasschaat borehole (015E0267).

**References:**

DE GEYTER, G., 1981: Contribution to the lithostratigraphy and sedimentary petrology of the Landen Formation in Belgium. Mededelingen van de Koninklijke Academie voor Wetenschappen, Letteren en Schone Kunsten van België, Klasse der Wetenschappen, 43, pp. 111-153.

DE GEYTER, G., WELKENHUYSEN, K. & DE CEUKELAIRE, M., 2010: Lithostratigrafie van de Groep van Landen op basis van geofysische boorgatmetingen. Geological Survey of Belgium, Internal Report, Volume 2010, 129p.

GULINCK, M., 1966: Lithological description of the Kallo borehole, 027E0148. Archives of the Geological Survey of Belgium, Brussels.

GULINCK, M., 1969. Le sondage de Kallo (au nord-ouest d'Anvers). I. Coupe résumée des terrains traversés au sondage de Kallo et profil géologique NS passant par Woensdrecht-Kallo-Halle. Mémoires pour servir à l'Explication des Cartes Géologiques et Minières de la Belgique, 11: 3-7.

WELKENHUYSEN, K. & DE CEUKELAIRE, M., 2009. Tertiair lithostratigrafische interpretatie op basis van geofysische boorgatmetingen van de boringen van Meetnet 1 VMM - Afdeling Water uitgevoerd in 2005-2006. Geological Survey of Belgium Professional Paper 2009/2 N. 306, 77 p. + ann.