

Flemish Hills Formation

Unit name: Flemish Hills Formation / Formatie van de Vlaamse Heuvels / Formation des Collines Flamandes

Hierarchical unit name: -

Type: Formation

Code: Vh

Author(s): Houthuys Rik

Alternative names: Diestien des Collines de Flandre (disused) / including the poudingue de Renaix, de Cassel

Origin of the name: New name. The Flemish Hills are outlier hills situated in historic Flanders but presently on the linguistic Flemish-French border. Therefore, an exception to the linguistic rules is proposed and an English name is also proposed.

Status: Formal

Date: 01/05/2022

How to refer: Houthuys, R., 2023. The Flemish Hills Formation, 01/09/2023. National Commission for Stratigraphy Belgium. <http://ncs.naturalsciences.be/lithostratigraphy/Flemish-Hills-Formation>

Characterizing description

The Flemish Hills Formation consists of poorly to very poorly sorted, fine to coarse sand. The grain size coarsens upwards. Though the description of the vertical build-up was made in the Ronse area, it is believed to be valid for the North French and southern West-Vlaanderen area (Houthuys, 2014). Small to coarse (up to 15 cm) flint pebbles occur throughout the vertical profile, dispersed in the sand or in inclined or channel-like beds. Towards the top, there is an increasing admixture of coarse, often angular grains. Glauconite varies from almost none at the base to locally 20% near the top. The lower part of the sand deposit is bioturbated. The central part shows besides bioturbated beds also inclined beds and shallow channels partially filled by low-angle parallel lamination. The content of pebbles is highest in this middle part. The top part shows subhorizontal and inclined parallel lamination, and hummocky and swaley cross stratification. The successive parts show gradual transitions, and can interdigitate. The formation is devoid of carbonates and fossils. The formation is affected by limonite cementation in various, often capricious shapes and in various degrees of solidness. Thick cemented beds may be found in the top of the formation. Locally, the ironstone has been used for building stone (poudingue de Renaix, de Cassel: pudding stone, named after the dark brown cemented sand matrix containing pale flint pebbles). In the central part, rare thin, pale to salmon coloured, clay layers occur; they are rich in kaolinite (Adriaens, 2015). Houthuys (2014) presented an up-to-date interpretation of the sedimentary environment.

Type section, type locality, type borehole, type CPT and/or type geophysical borehole

Disused sandpit and dump site at Lumen, municipality of Flobecq, just south of Brakelbos. The site is private-owned and the owner doesn't allow access. Other outcrops are the sunken lane between Pottelberg and Queneau at Flobecq and the disused sandpit north of Muziekbosstraat at Ronse.

Description upper boundary

The Flemish Hills Formation is in the Flemish Hills area the topmost deposit. The flat hill tops suggest the top surface was also flat. It is unknown which Paleogene or Neogene deposits may have covered the formation before denudation.

Description lower boundary

Probably subhorizontal truncation surface, covered by a flint pebble gravel. The gravel is thin to a few decimetres thick. The pebbles are well rounded, and dark-coloured (unweathered). The underlying unit is the Asse Member, possibly also the Ursel Member, of the Maldegem Formation. The other members of that formation are lacking. The preserved clay is truncated by the lower surface of the Flemish Hills Formation.

Thickness

The Flemish Hills Formation is maximally 29 m thick (Cassel, France) and 25 m (Pottelberg near Flobecq). The thickness is less where the outlier hills have tops that don't reach 25 m above the subhorizontal base surface.

Occurrence

The Flemish Hills Formation occurs in the top part of each of the outlier hills that constitute the row of Flemish Hills, from West to East: Cassel, Mont des Récollets, Mont des Cats, Mont de Boeschepe, Mont Noir/Zwarteberg, Rodeberg, Scherpenberg, Kemmelberg, Kluisberg/Mont de l'Enclus, Hotondberg, Muziekberg, Pottelberg, Bois de la Louvière/Livierenbos (Fig. 1 in Houthuys, 2014). It remains to be confirmed if the formation is also found west of Cassel (e.g. Noires Mottes west of Calais). It was observed in reworked remnants in borehole GSB 101W079 on Kesterheide (Gooik). There is a possible eastern outlier between Kraainem and Tervuren (awaiting new evidence, Houthuys et al., 2020).

Regional correlations

Houthuys (2014) and Houthuys et al. (2020) give an overview of correlations suggested by various authors. Additional data is required to elaborate on the precise correlations.

Age

Any age between latest Eocene and late Pliocene. Remains to be established.

Dataset

Data in the LIS are part of the [DOV-Neogene data collection, including links to the GSB-collection data sheets](#):

Name	GSB name	DOV name	GSB Collections URL	DOV URL
Outcrop Pottelberg sunken lane		TO-20140501B		https://www.dov.vlaanderen.be/data/boring/2019-164501
Muziekberg old sandpit		TO-20140501		https://www.dov.vlaanderen.be/data/boring/2019-164498

Extra data:

Name	GSB name	DOV name	GSB Collections URL	DOV URL
Pottelberg well	099W1474	kb30d99w-B1474	https://collections.naturalsciences.be/ssh-geology-archives/arch/099w/099w1474.txt	https://www.dov.vlaanderen.be/data/boring/1968-069737
Kesterberg well	101W079	kb31d101w-B79	https://collections.naturalsciences.be/ssh-geology-archives/arch/101w/101w079.txt	https://www.dov.vlaanderen.be/data/boring/1989-090836

References

Adriaens, R., 2015. Neogene and Quaternary clay minerals in the southern North Sea. Published Ph.D. Thesis, KU Leuven, Leuven, 272 p. https://limo.libis.be/primo-explore/fulldisplay?docid=LIRIAS1930587&context=L&vid=Lirias&search_scope=Lirias&tab=default_tab&lang=en_US

Houthuys, R., 2014. A reinterpretation of the Neogene emersion of central Belgium based on the sedimentary environment of the Diest Formation and the origin of the drainage pattern. *Geologica Belgica*, 17/3-4, 211-235. <https://popups.uliege.be/1374-8505/index.php?id=4602>.

Houthuys, R., Adriaens, R., Goolaerts, S., Laga, P., Louwye, S., Matthijs, J., Vandenberghe, N. & Verhaegen, J., 2020. The Diest Formation: a review of insights from the last decades. *Geologica Belgica*, 23/3-4: 199-218. <https://doi.org/10.20341/gb.2020.012>