

Luchtbal Member (Lillo Formation)

Unit name: Luchtbal Member

Hierarchical unit name: Lillo Formation

Type: Member

Code: LiLu

Author(s):

- Compiled by: Deckers Jef, Louwye Stephen & Goolaerts Stijn
- Modification of: De Meuter & Laga (1976)

Alternative names: "Sables gris blanchâtres à la base du Scaldisien"; "Faluns blanchâtres"; "Zone à Pecten gerardi"; "Zone à Modiolus", "Horizon du Luchtbal"; "Sables et Faluns du Luchtbal" (see De Meuter & Laga (1976) and Louwye et al. (2020) for references and more historical details)

Origin of the name: Named after neighborhood Luchtbal

Status: Formal

Date: 01/05/2022

How to refer: Deckers, J., Louwye, S. & Goolaerts, S., 2023. The Luchtbal Member, 01/09/2023. National Commission for Stratigraphy Belgium. <http://ncs.naturalsciences.be/lithostratigraphy/Luchtbal-Member>

Characterizing description

The Luchtbal Member as formally defined by De Meuter & Laga (1976) is a light brown-grey to whitish, glauconiferous quartz sand with abundant well-preserved shells and large amounts of shell grit. The bivalve *Palliolium gerardi* is conspicuously present, sometimes in dense accumulations forming beds, together with the calcareous tubes of polychaete *Ditrupa*, bryozoans and echinoderm spines. In the Port of Antwerp area, there is a lower part with dispersed shells, and an upper part with shells beds (Marquet & Herman, 2009).

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

The type locality is the neighborhood Luchtbal north of Antwerp and east of the harbor.

The type section of the member lies in the Tweede and Derde Havendok (Second and Third Harbour Docks), situated west of the Luchtbal district, between 10 m and 8 m below the natural land surface.

In the Tunnel Kanaaldok section of Laga (1972) (now named Tijlmanstunnel) (GSB 015W0304; DOV [BGD015W0304](#)), which is the stratotype-section of the Lillo Formation, the member outcropped from 21.20 m to 23.50 m depth (Figure 0-1). On the nearby CPT (DOV [GEO-20/034-S5](#)), the Luchtbal Member is characterised by relatively low friction ratios (< 1%).

Description upper boundary

The upper boundary is truncated, and in many localities, in particular on the left bank of the Scheldt in the Port of Antwerp area, the member is fully eroded with only some reworked pieces of yellowish grey sandstone and shells in the basal bed of the overlying Oorderen Member (Lillo Formation) as a trace of its previous presence. On CPTs, the upper boundary is expressed by a subtle increase in friction ratios from < 1% in the Luchtbal Member towards > 1% in the Oorderen Member.

In its southernmost occurrence, the Luchtbal Member is covered by Quaternary strata.

Description lower boundary

The lower boundary is erosive. It cuts into the underlying Kattendijk Formation and in the eastern outskirts of Antwerp also into the Broechem Bed (Lillo Formation), and marked by a thick shell bed containing gravel. The Luchtbal/Kattendijk boundary is sharp and expressed by strong differences in shell-content (from shell-rich to shell-bearing), a transition in colour from grey-yellowish to dark green related to an increase in glauconite content. Load casting from shell accumulations into the top of the Kattendijk Formation frequently occurs. On CPTs, the lower boundary is expressed by a subtle increase in friction ratios from < 1% in the Luchtbal Member towards > 1% in the Kattendijk Formation (Figure 0-1).

Thickness

De Meuter and Laga (1976) stressed the irregular thickness of the unit, maximum 2 m to absent, due to local erosion. However, thicknesses of up to 10 m are documented in the Campine area north of Antwerp (see profiles <http://collections.naturalsciences.be/ssh-geology/geology/profiles-neogeen2020>).

Occurrence

Described in outcrops to the north of the City of Antwerp and in the Port of Antwerp area. Also interpreted in boreholes in the western Campine area, to the west of Turnhout.

Regional correlations

Lateral equivalent to part of the Oosterhout Formation in the Netherlands.

Age

Early Pliocene, see Louwye et al. (2020).

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 Tunnel Kanaaldok	015W0304	BGD015W0304		https://www.dov.vlaanderen.be/data/boring/1999-161693

Extra data:

Name	GSB name	DOV name	GSB Collections URL	DOV URL
CPT Tunnel Kanaaldok		GEO-20/034-S5		https://www.dov.vlaanderen.be/data/sondering/2020-079300

References

De Meuter, F. & Laga, P., 1976. Lithostratigraphy and biostratigraphy based on benthonic Foraminifera of the Neogene deposits of northern Belgium. Bulletin van de Belgische Vereniging voor Geologie, 85/3-4, 133–152.

Laga, P., 1972. Stratigrafie van de mariene Plio-Pleistocene afzettingen uit de omgeving van Antwerpen met een bijzondere studie van de foraminiferen. Unpublished Ph.D. Thesis. Katholieke Universiteit Leuven - Faculteit Wetenschappen, Leuven. 3 vol., 252 p.

Louwye, S., Deckers, J. & Vandenberghe, N., 2020. The Pliocene Lillo, Poederlee, Merksplas, Mol and Kieseloolite Formations in northern Belgium: a synthesis. *Geologica Belgica*, 23(3-4), 297-313.

Marquet, R. & Herman, J., 2009. The stratigraphy of the Pliocene in Belgium. *Palaeofocus* 2, 1-39.

Annexes

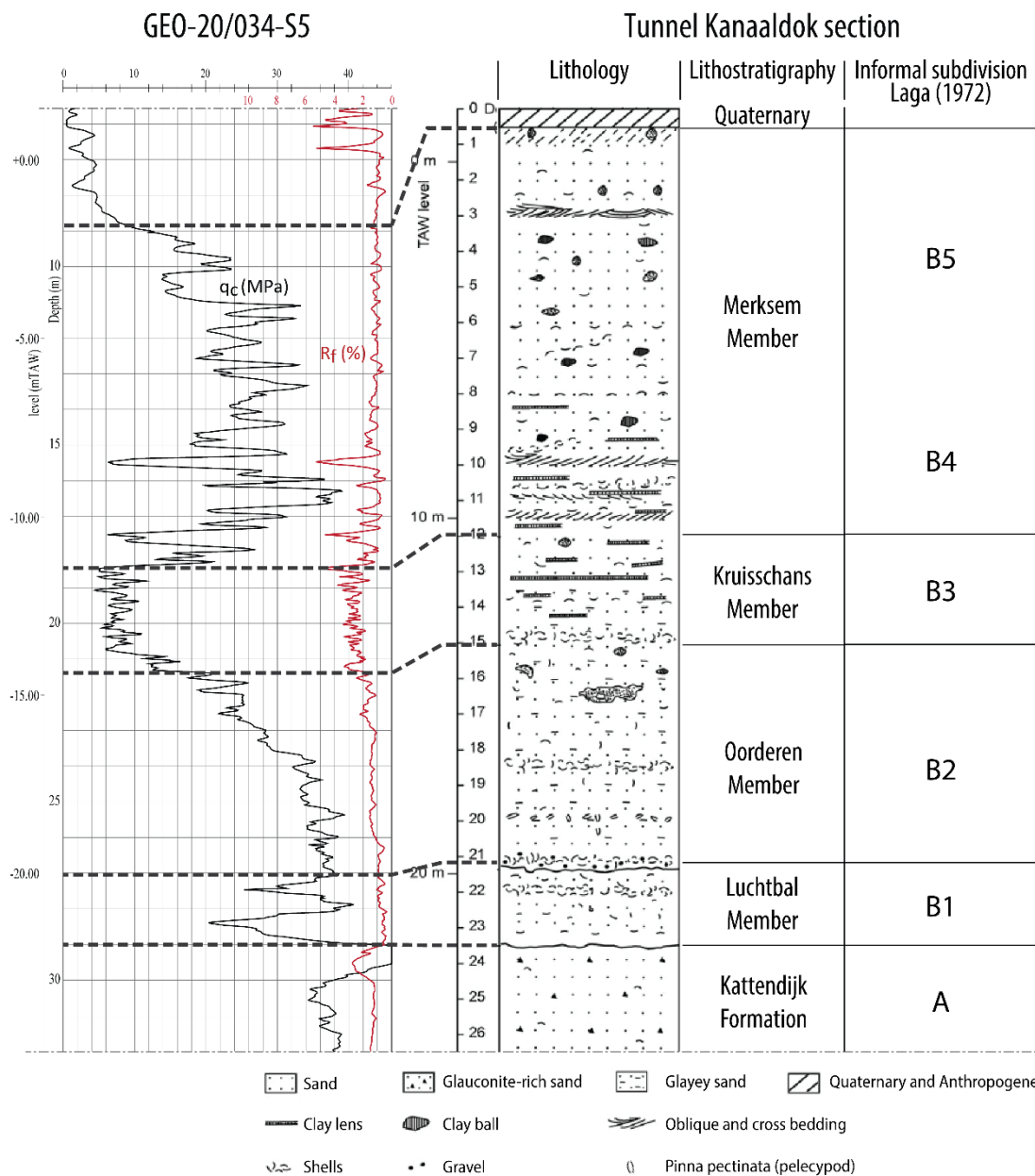


Figure 0-1: The Luchtbal Member at the Tunnel Kanaaldok section as described and interpreted by Laga (1972) and correlation with a nearby CPT by this study.