

Kattendijk Formation

Unit name: Kattendijk Formation

Hierarchical unit name: /

Type: Formation

Code: Kd

Author(s):

- Compiled by: Deckers Jef, Louwye Stephen, Goolaerts Stijn & Everaert Stijn
- Modification of: De Meuter & Laga (1976) after de Heinzelin (1955c)

Alternative names: /

Origin of the name: Kattendijk, locality north of Antwerpen city centre, disappeared at the time of the construction of the dock and the sluice Kattendijk

Type: Formal

Date: 01/05/2022

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

Characterizing description

Dark grey to grey green, fine to medium fine, glauconiferous (around 20%) quartz sand, slightly clayey; sometimes intensely bioturbated, locally with an important amount of *Ditrupa*; shells mostly dispersed but sometimes concentrated in shell beds; large scale sedimentary structures limited to certain intervals, with troughs and sometimes intensely bioturbated foresets, basal gravel of rounded quartz and flint pebbles, together with shark teeth, sandstones, phosphatic nodules and rounded bones. The basal gravel may reach considerable (dm) thickness. Some typical molluscs for the Kattendijk Formation are *Laevastarte omalii omalii*, *Pygocardia rustica tumida*, *Glycymeris obovata ringelei*, *Glossus humanus*, *Pecten grandis* etc.

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

The stratotype section of the Kattendijk Formation selected by De Meuter and Laga (1976) was the temporary outcrop of the Verbindingsdok (GSB 028W0539; DOV [kb15d28w-B603](#), described in detail by Cogels (1874). From 2.5 m to 6.25 m depth or translating to -1.00 m TAW to - 4.75 m TAW. Here, the Kattendijk Formation is located in between the Lillo and Berchem Formations.

Three additional well-studied temporary outcrops are absolutely worth referring:

- The Tunnel Kanaaldok section of Laga (1972) (now named Tijlmanstunnel) (GSB 015W0304; DOV [BGD015W0304](#); Kattendijk Formation between 23.5 m to 27 m depth or translating to -22 m TAW to -25.5 m TAW; Figure 0-1). The base of the Kattendijk Formation is not reached in the outcrop, but a nearby CPT (DOV [GEO-20/034-S5](#)) shows it at -27 m TAW, which is confirmed by nearby borehole (DOV [GEO-61/2891-C](#)).

- The Verrebroekdok section of Goolaerts (2000) (DOV [TO-19990901](#); Kattendijk Formation between -11 m TAW to -18 m TAW; Figure 0-2). The base of the Kattendijk Formation is not reached, but a nearby CPT (DOV [GEO-97/138-SM196](#)) shows it at -23 m TAW.
- The Beverentunnel section of Janssen (1974) and Gaemers (1975) (DOV [kb15d27e-B180](#); GSB 027e0176; Kattendijk Formation between 12.45 m to 21.3 m depth translating to -9.65 and -18.5 m TAW).

Type geophysical borehole is borehole Stabroek (GSB: 015W0216; DOV [kb7d15w-B296](#)) with the Kattendijk Formation from 36 m to 41 m depth (modified after Laga, 1979; Figure 0-3).

Description upper boundary

In its southernmost area, the formation is overlain by Quaternary strata, while further north, it is consistently overlain by the Lillo Formation, in particular by its Luchtbal and Oorderen members. This contact is erosional and overlain by a thick shell bed that causes load casts into the top of the formation. Generally, the transition from the Lillo Formation towards the Kattendijk Formation coincides with a strong decrease in shell content (from shell-rich towards shell-bearing), change in colour from grey or green-grey towards grey-green and an increase in glauconite content from roughly 10% in the Oorderen Member towards roughly 20% in the Kattendijk Formation. On geophysical borehole logs, this boundary coincides with an upwards decrease in gamma-ray values and increase in resistivity values (Figure 0-3).

Description lower boundary

The Kattendijk Formation seems to conformably cover the Diest Formation to the east of the City/Port of Antwerp area. Further west, the Kattendijk Formation truncates progressively older strata towards the west, with first the Diest Formation just to the east of the City/Port of Antwerp area, next the Berchem Formation in the City/Port of Antwerp area and finally, in the Waasland area, also the Boom Formation. A major dm thick basal gravel was observed in many temporary outcrops.

The transition towards the Diest Formation coincides with an increase in glauconite content, often coarsening of the grain size and disappearance of shells and shell grit. The transition towards the Berchem Formation also coincides with an increase in glauconite content and sediments getting darker green to black colours.

On borehole logs, the transition towards the Berchem Formation generally coincides with an increase in gamma-ray values, and the transition towards the Diest Formation with an increase in resistivity values (Figure 0-3).

Thickness

In the Campine area the thickness of this formation is rather uniform between 5 to 10 m (Deckers et al., 2019). In gully systems in the Port of Antwerp, it reaches maximum thicknesses of almost 15 m (Deckers & Louwye, 2020).

Occurrence

From the Waasland area in the west (Laga, 1971), across the City of Antwerp and Port of Antwerp areas into the western Campine area. It presumably covers the western Campine area up to roughly the SW-NE line between Beerse and Weelde in the east. Here, the boundary with the older, but lithologically similar Kasterlee Formation can be presumed, but remains rather difficult to pinpoint. The absence of the Kattendijk Formation in borehole Oud-Turnhout (GSB 017e0401, DOV [kb8d17e-B497](#)) to the east of Beerse is established by both litho- and biostratigraphic data (Buffel et al., 2001; Louwye & De Schepper, 2010).

Regional correlations

It correlates with the Tilburg Member of the Oosterhout Formation in the Netherlands (Munsterman et al., 2019).

Age

Early Pliocene. See Deckers and Louwye (2020) and references therein.

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	http://collections.naturalsciences.be/ssh-geology-archives/arch/015w/015w0304.txt	https://www.dov.vlaanderen.be/data/boring/1999-161693
Borehole Tunnel Kanaaldok	015W0144	GEO-61/2891-C	http://collections.naturalsciences.be/ssh-geology-archives/arch/015w/015w0144.txt	https://www.dov.vlaanderen.be/data/boring/1961-080825
Outcrop Verrebroekdok		TO-19990901		https://www.dov.vlaanderen.be/data/boring/1999-161693
CPT Verrebroekdok		GEO-97/138-SM196		https://www.dov.vlaanderen.be/data/sondering/1998-005094
Borehole Oud-Turnhout	017E0401	kb8d17e-B497	http://collections.naturalsciences.be/ssh-geology-archives/arch/017e/017e0401.txt	https://www.dov.vlaanderen.be/data/boring/1998-083226

Extra data:

Name	GSB name	DOV name	GSB Collections URL	DOV URL
Outcrop Verbindingsdok	028W0539	kb15d28w-B603	http://collections.naturalsciences.be/ssh-geology-archives/arch/028w/028w0539.txt	https://www.dov.vlaanderen.be/data/boring/1874-081520
CPT Tunnel Kanaaldok		GEO-20/034-S5		https://www.dov.vlaanderen.be/data/sondering/2020-079300
Outcrop Kallo (Beverentunnel)	027e0176	kb15d27e-B180	http://collections.naturalsciences.be/ssh-geology-archives/arch/027e/027e0176.txt	https://www.dov.vlaanderen.be/data/boring/1971-083850
Borehole Stabroek	015W0216	kb7d15w-B296	http://collections.naturalsciences.be/ssh-geology-archives/arch/015w/015w0216.txt	https://www.dov.vlaanderen.be/data/boring/2016-147541

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Annexes

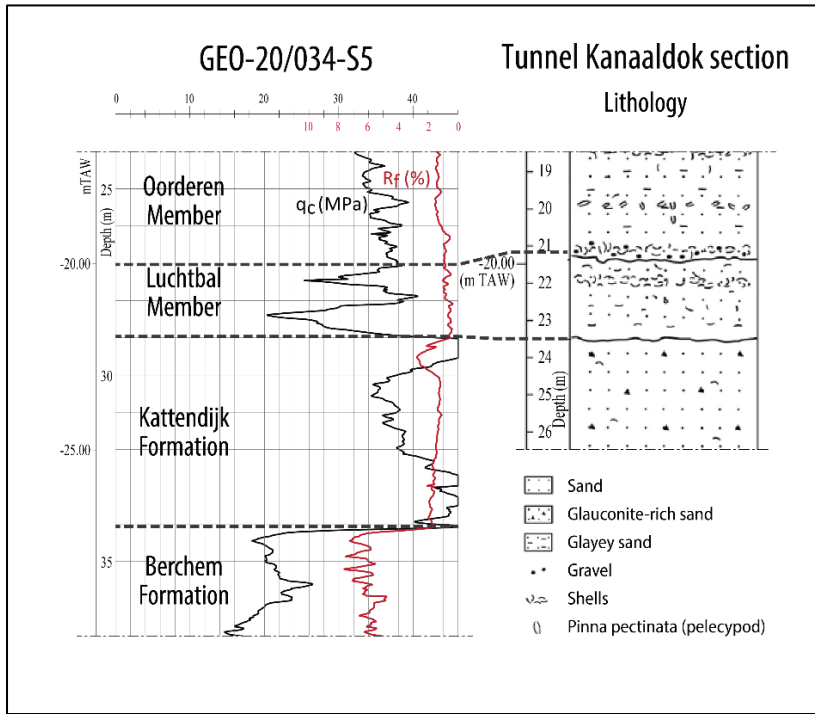


Figure 0-1 The Kattendijk Formation at the Tunnel Kanaaldok section as described and interpreted by Laga (1972) and its expression on a nearby CPT by this study.

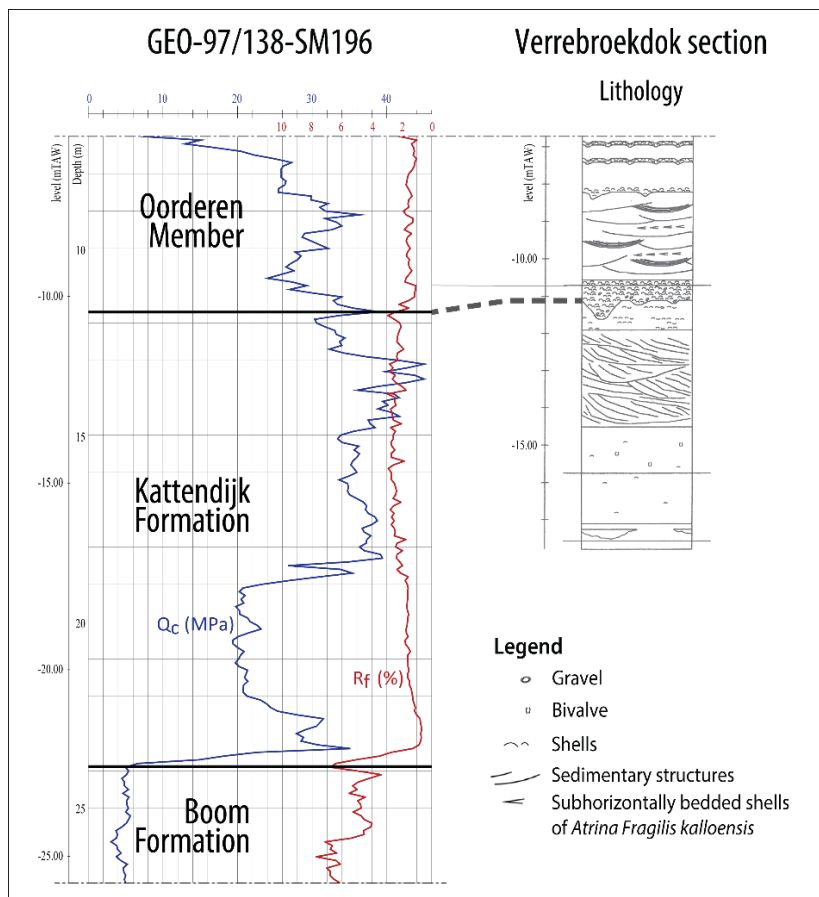


Figure 0-2: The Kattendijk Formation at the Verrebroekdok section as described and interpreted by Goolaerts (2000) and its expression on a nearby CPT, modified after Deckers et al. (2020)..

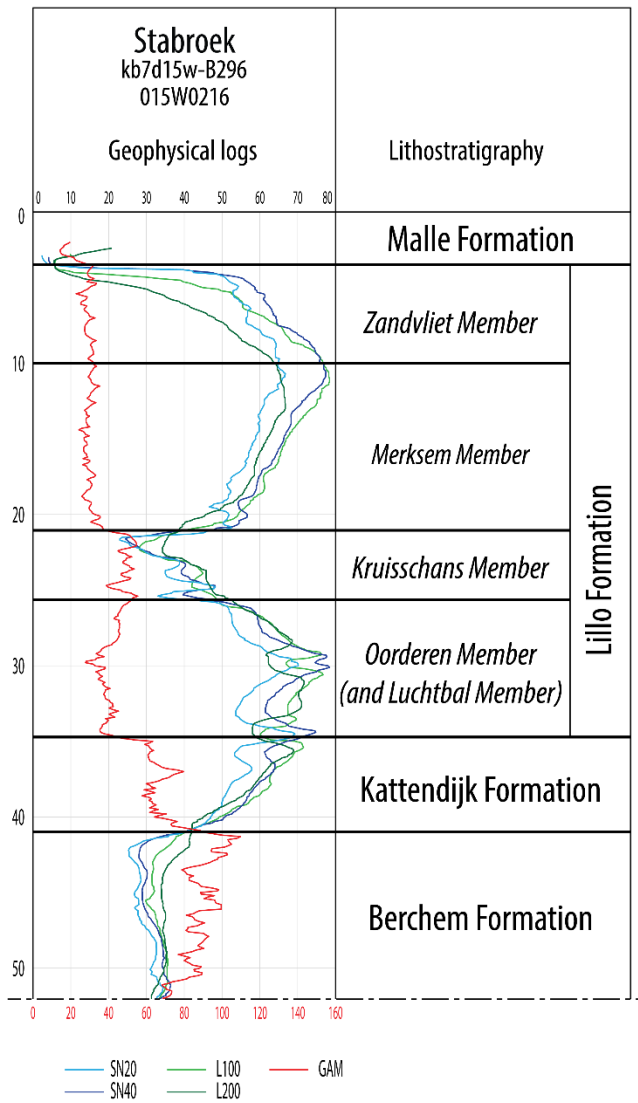


Figure 0-3: Log-expression of the Kattendijk Formation in borehole Stabroek (modified after Laga (1979)).