

## YPRESIAN LITHOSTRATIGRAPHY IN NORTHERN BELGIUM

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Recent biostratigraphical investigations of Steurbaut and Nolf (1986) resulted in a revision of some correlations within the Ypresian in the Belgian Basin. The Ypresian was subdivided into the Ieper Formation (including the Flanders clay, the Egem sand and the Merelbeke clay Members) and the Vlierzele Formation (Pittem sandy clay Member and Vlierzele sand s.s.). It was demonstrated that many deposits mapped as Pittem Member, in fact belong to the Egem Member and in contrast to former subdivisions, the Merelbeke Member was ranked into the Ieper Formation. The model presented by Steurbaut and Nolf implicated the existence of a sharp boundary between the Ieper and Vlierzele Formations. Hitherto, the limits concerned have been described as gradual transitions, but borehole profiles in northern Belgium provide new information.

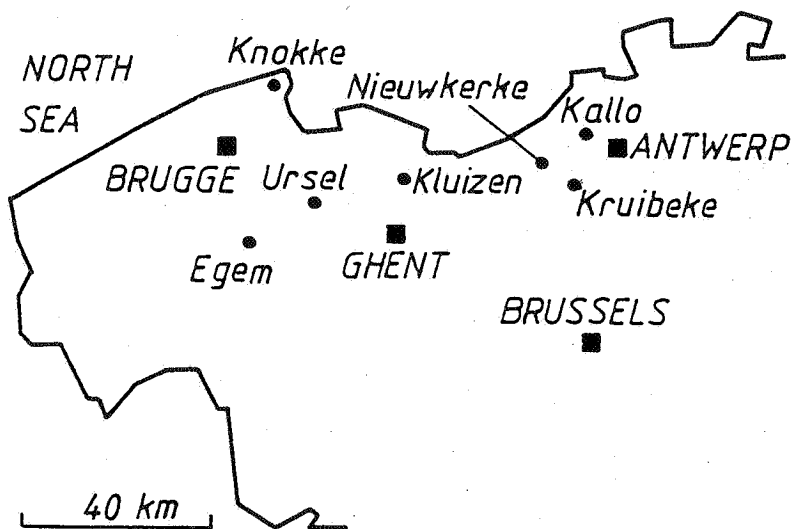


Figure 1. Location of the studied boreholes.

In the studied boreholes (Figures 1 and 2 and annex 1), the Merelbeke Member consists of heavy clay and is overlain by a lignitic sandy clay. The latter deposit was encountered in several boreholes between the North Sea and Antwerp (Knokke, Ursel, Kluizen, Nieuwkerke-Waas and Kruibeke). The overlying Vlierzele Formation is between 25 and 30 m thick and consists of a basal gravel, glauconitic sand, sandy clay (locally rich in fossils), and on top again glauconitic sand.

The lignitic sandy clay above the Merelbeke Member marks the end of the sedimentological cycle of the Ieper Formation. Until now, it has been correlated with the Pittem Member, because of its stratigraphic position immediately above the Merelbeke Member. However, the Pittem Member is ranked into the Vlierzele Formation by Steurbaut and Nolf and in its stratotype (the Egem sandpit), it is found above a sharp boundary marking the hiatus of the Merelbeke Member. Consequently, either the lignitic sandy clay covering the Merelbeke Member, and the Pittem Member are two different deposits, each one belonging to another cycle (in which case the Pittem Member may correspond to the middle sandy clay of the Vlierzele Formation), or the lignitic sandy clay correlates with the Pittem Member, which, in that case, does not belong to the Vlierzele Formation cycle.

In the outcropping areas, the limit between the Ieper and Vlierzele Formations is often marked by an erosional surface, by a basal gravel in the Vlierzele Formation, or by lignitic sediment on top of the Ieper Formation. A correlation study between the borehole sections and the outcropping area is in progress.

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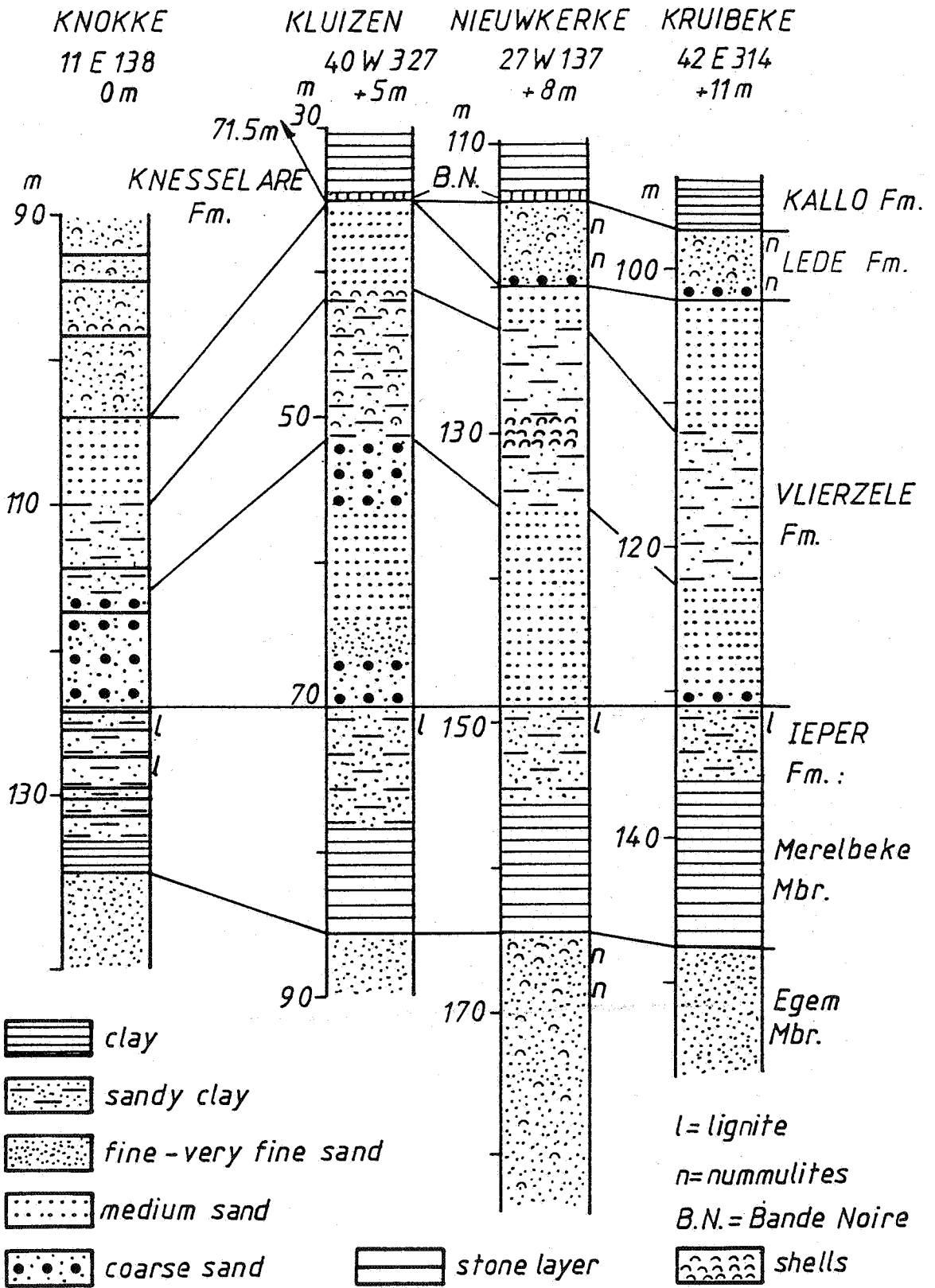


Figure 2. Detailed sections of the boreholes of Knokke, Kluizen, Nieuwerkerke-Waas and Kruikebe.

## REFERENCE

STEURBAUT, E. & NOLF, D., 1986 - Revision of Ypresian Stratigraphy of Belgium and Northern France. *Med. Werkg. Tert. Kwart. Geol.*, **23**: 115-172.

## ANNEX 1 - Borehole descriptions

### Kluizen (40W327)

0 - 25 m	grey fine to medium sand
25 - 34 m	grey heavy clay
34 - 35 m	shell-bed with glauconite
35 - 43 m	grey green glauconitic medium sand
43 - 51 m	grey green glauconitic fine sand and sandy clay with shells and stone layers
51 - 56 m	grey green glauconitic coarse sand
56 - 64 m	grey green glauconitic medium sand
64 - 67 m	brown green argillaceous fine sand with glauconite and wood fragments
67 - 70 m	grey green glauconitic coarse sand
70 - 78 m	grey green (brown on top) glauconitic sandy clay
78 - 86 m	grey green glauconitic clay
86 - 90 m	grey green glauconitic, very fine argillaceous sand.

### Interpretation

0 - 25 m	Pleistocene
25 - 35 m	Maldegem Formation, Asse Member with Bande Noire (34 m)
35 - 70 m	Vierzele Formation
	35 - 43 m : upper sand unit
	43 - 51 m : middle sandy clay
	51 - 70 m : lower sand unit
70 - 78 m	Ieper Formation, Pittem Member
78 - 86 m	Ieper Formation, Merelbeke Member
86 - 90 m	Ieper Formation, Egem Member

### Nieuwerkerke-Waas (27W137)

0 - 1 m	dark brown sand
1 - 3 m	grey green sand
3 - 4 m	grey green sand with shells
4 - 5 m	shell-rich gravel with reworked flint and phosphate
5 - 36 m	grey heavy clay
36 - 40 m	grey green glauconitic very fine argillaceous sand
40 - 42 m	grey clay
42 - 52 m	grey green glauconitic fine sand
52 - 56 m	grey green glauconitic sandy clay
56 - 60 m	grey, slightly glauconitic clay with black inclusions
60 - 65 m	grey sandy clay
65 - 71 m	green glauconitic sandy clay and argillaceous sand
71 - 73 m	green glauconite-rich argillaceous sand with black sand inclusions
73 - 75 m	argillaceous and less glauconitic
75 - 83 m	grey heavy clay
83 - 112 m	grey heavy clay with some glauconite
112 - 114 m	glauconite- and shell-rich sand
114 - 120 m	grey glauconitic very fine sand, fossil-rich (shells and <i>Nummulites variolarius</i> ), with stone layer at 114 m. At 117 m : rolled <i>N. laevigatus</i> .
120 - 123 m	grey green medium coarse sand
123 - 129 m	grey green glauconitic sandy clay with sandstone layers
129 - 131 m	fossil-rich grey green glauconitic sandy clay
131 - 135 m	grey green glauconitic sandy clay
135 - 149 m	grey green glauconitic medium coarse sand
149 - 151 m	brown glauconitic sandy clay
151 - 163 m	green glauconitic sandy clay
163 - 165 m	grey glauconitic clay
165 - 184 m	grey green glauconitic very fine sand with shells and <i>Nummulites planulatus</i> .

*Interpretation*

0 - 5 m	Quaternary
5 - 36 m	Boom Formation
36 - 56 m	Zelzate Formation
56 - 114 m	Maldegem Formation
114 - 120 m	Lede Formation
120 - 149 m	Vlierzele Formation
	120 - 123 m : upper sand unit
	123 - 135 m : middle sandy clay unit
	135 - 149 m : lower sand unit
149 - 165 m	Ieper Formation, Merelbeke Member
165 - 184 m	Ieper Formation, Egem Member

**Kruike (42E314)**

0 - 1 m	dark brown sand
1 - 27 m	grey clay with septaria beds
27 - 48 m	fine sand with glauconite and clay beds
48 - 98 m	alternation of heavy clay, silt and sandy clay, occasionally with glauconite
98 - 103 m	grey very fine sand with fossils and stone layers
103 - 112 m	medium sand, glauconitic, with stone layers
112 - 122 m	very fine argillaceous sand with stone layer (115 m)
122 - 131 m	medium sand, glauconitic, with clayey sand (129 m) and coarse sand at the base (130-131 m)
131 - 135 m	brown glauconitic sandy clay
135 - 145 m	grey glauconitic clay
145 - 148 m	grey clay and <i>Nummulites planulatus</i>
148 - 156 m	green grey very fine glauconitic sand

*Interpretation*

0 - 1 m	Quaternary
1 - 27 m	Boom Formation
27 - 48 m	Zelzate Formation
48 - 98 m	Maldegem Formation
98 - 103 m	Lede Formation
103 - 131 m	Vlierzele Formation
	103 - 112 m : upper sand unit
	112 - 122 m : middle sandy clay unit
	122 - 131 m : lower sand unit
131 - 148 m	Ieper Formation, Merelbeke Member
148 - 156 m	Ieper Formation, Egem Member