

## Wurfeld Formation

**Unit name:** Wurfeld Formation

**Hierarchical unit name:** For the time being this quartz-enriched unit is considered independent. Not to be incorporated in the Kasterlee Formation with which it shares a marked gamma ray signature, nor with the underlying Diest Formation because of the latter's glauconite content, and nor with the Inden Formation or Kieseloolite Formation, two other quartz-enriched stratigraphic units in the Neogene stratigraphic realm of the Roer Valley Graben.

**Type:** Formation

**Code:** Wu

**Authors:**

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**Alternative names:** unit X : This name has been used in literature since the unit was first described by Vandenberghe et al. (2005) and in the review of its stratigraphic position by Louwye & Vandenberghe (2020).

**Origin of the name:** Wurfeld is the name of an old hamlet closeby

For the time being this unit is considered independent of other stratigraphic units and therefore it is ranked as a formation. However its thickness is smaller than usual for a formation and its extension is poorly known.

**Status:** formal

**Date:** 01/05/2022

**How to refer:** Vandenberghe, N., & Dusar, M., 2023. The Wurfeld Formation, 01/09/2023. National Commission for Stratigraphy Belgium. <http://ncs.naturalsciences.be/lithostratigraphy/Wurfeld-Formation>

### Characterizing description

In the Maaseik borehole (049W0220), quartz-enriched pale coloured sand occurs above green glauconite enriched sand. Above the latter, the basal part of the pale-colored sand between 192.7 m and 198 m depth is singled out because of its finer grain size - modal size between 128 and 174  $\mu\text{m}$ -, high mica content, faint lamination, a few percentages of glauconite pellets (1.7 -3.5 %) and as an interval with a more elevated natural gamma ray (GR) signature. The basal part of this pale-colored sand above 198 m was interpreted as a shallow marine deposit.

### Type section, type locality, type borehole, or type geophysical borehole

Until now the Wurfeld Formation has only been positively identified in the Maaseik borehole (049W0220) between 192.7 m and 198 m, consequently making this borehole the reference.(Vandenberghe et al., 2005 ; Louwye & Vandenberghe, 2020).

### Description upper boundary

The upper boundary is best recognised by a jump to higher gamma-ray values, probably caused by the higher mica content compared to the quartz-enriched sand with lignitic fragments above and interpreted as the Inden Formation.

### Description lower boundary

The lower base is marked by the occurrence of green glauconite sand below of the Diest Formation. On the gamma ray log the signal becomes sharply reduced at the top of this underlying glauconite sand. The lithology of the base of the Wurfeld Formation has the characteristics of a reworked deposit: greenish clay, pieces of peat and some gravel.

### Thickness

The thickness is 5,3 m in the Maaseik reference borehole .

Because of its limited thickness and its high gamma-ray signature the unit was included in the underlying Diest Formation in the H30-project (Vernes et al., 2018).

### Occurrence:

Until now the Wurfeld Formation has only been described in cores of the Maaseik borehole (049W0220). However, based on the gamma ray signal, it is suspected that the formation can be more generally present in the Belgian part of the Roer Valley Graben (see logs in Vandenberghe et al., 2005, fig.10).

It should be noted however that the use of the jump to higher gamma ray values needs to be interpreted with caution as in the Maaseik well within the RVG its lithological significance is different compared to the area Dessel-Mol where the top of this gamma-ray signal corresponds to the clayey glauconite sand of the Heist-op-den-Berg Member of the Kasterlee Formation ('clayey Kasterlee' in the Geologica Belgica ,2020 Neogene volume).

### Regional correlations

The proposed correlation scheme below (Figure 0-1) between the Belgian part of the Roer Valley Graben, the Eastern Campine west of the Reppel-Heerlerheide main bordering RVG faults, and between the Lower Rhine Basin (Vandenberghe & Louwye , 2020) is based on dinoflagellate cysts (DN biozones) in the Wurfeld Formation, unit X as reported in Louwye & Vandenberghe (2020).

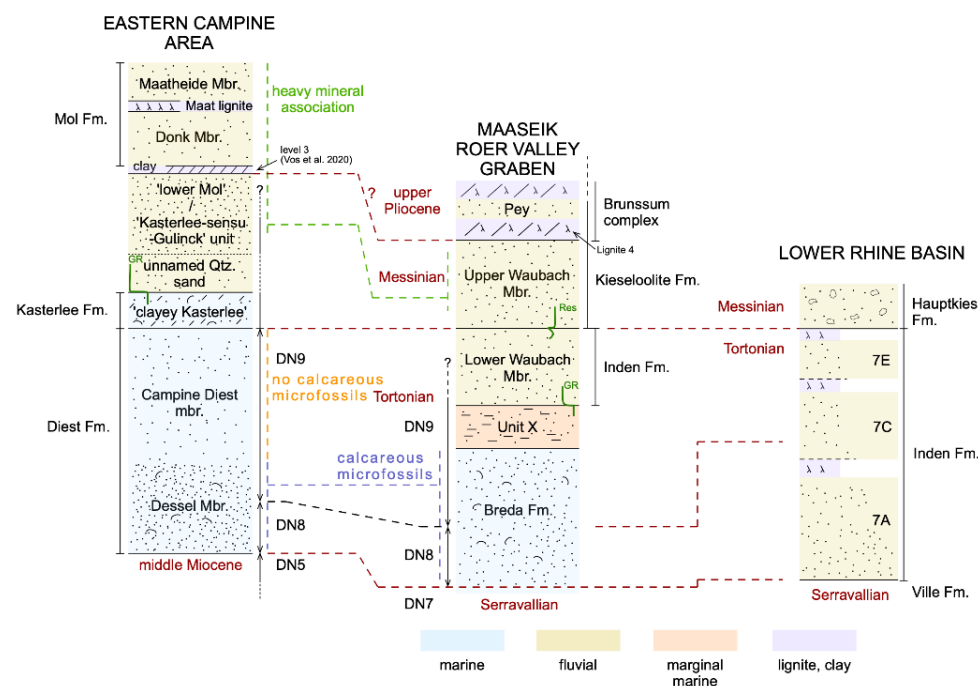


Figure 0-1 Correlation scheme for the Wurfeld Formation (formerly unit X), based on dinoflagellate cysts as reported in Louwye & Vandenberghe (2020).

## Age

Dinoflagellate cysts biostratigraphy shows all samples of the Wurfeld Formation hold the H. obscura Zone, age calibrated between 7.6 and 8.8 Ma indicating a mid-late Tortonian age (7.246 to 11.63 Ma) (Louwye & Vandenberghe, 2020).

## Dataset

Data in the LIS are part of [NCS Neogene 2020 Louwye and Vandenberghe, 2020.](#), including links to the GSB-collection data sheets.

Name	GSB name	DOV name	GSB Collections URL	DOV URL
Maaseik borehole	049W0220	kb18d49w-B220	<a href="https://collections.natural-sciences.be/ssh-geology-archives/arch/049w/049w0220.txt">https://collections.natural-sciences.be/ssh-geology-archives/arch/049w/049w0220.txt</a>	<a href="https://www.dov.vlaanderen.be/data/boring/1980-025921">https://www.dov.vlaanderen.be/data/boring/1980-025921</a>

## References

Louwye, S. & Vandenberghe, N. «A reappraisal of the stratigraphy of the upper Miocene unit X in the Maaseik core, eastern Campine area (northern Belgium)», *Geologica Belgica* [En ligne], Volume 23 (2020), number 3-4 - The Neogene stratigraphy of northern Belgium, 289-295 URL : <https://popups.uliege.be/1374-8505/index.php?id=6680>.

Vandenberghe, N., Laga, P., Louwye, S., Vanhoorne, R., Marquet, R., De Meuter, F., Wouters, K. & Hagemann, H.W., 2005. Stratigraphic interpretation of the Neogene marine-continental record in the Maaseik well (49W0220) in the Roer valley Graben, NE Belgium. *Memoirs of the Geological Survey of Belgium*, 52, 39 p.

Vernes, R.W., Deckers, J., Bakker, M.A.J., Bogemans, F., De Ceukelaire, M., Doornenbal, J.C., den Dulk, M., Duser, M., Van Haren, T.F.M., Heyvaert, V.M.A., Kiden, P., Kruisselbrink, A.F., Lanckacker, T., Menkovic, A., Meyvis, B., Munsterman, D.K., Reindersma, R., Rombaut, B., ten Veen, J.H., van de Ven, T.J.M., Walstra, J. & Witmans, N., 2018. Geologisch en hydrogeologisch 3D model van het Cenozoïcum van de Belgisch-Nederlandse grensstreek van Midden-Brabant / De Kempen (H3O – De Kempen). TNO-rapport TNO 2017 R11261 – VITO 2017/RMA/R/1348, 109 p.