Opportunities in the Netherlands
Scope for exploration in a mature hydrocarbon province

Prospectivity per structural element
currently known resources
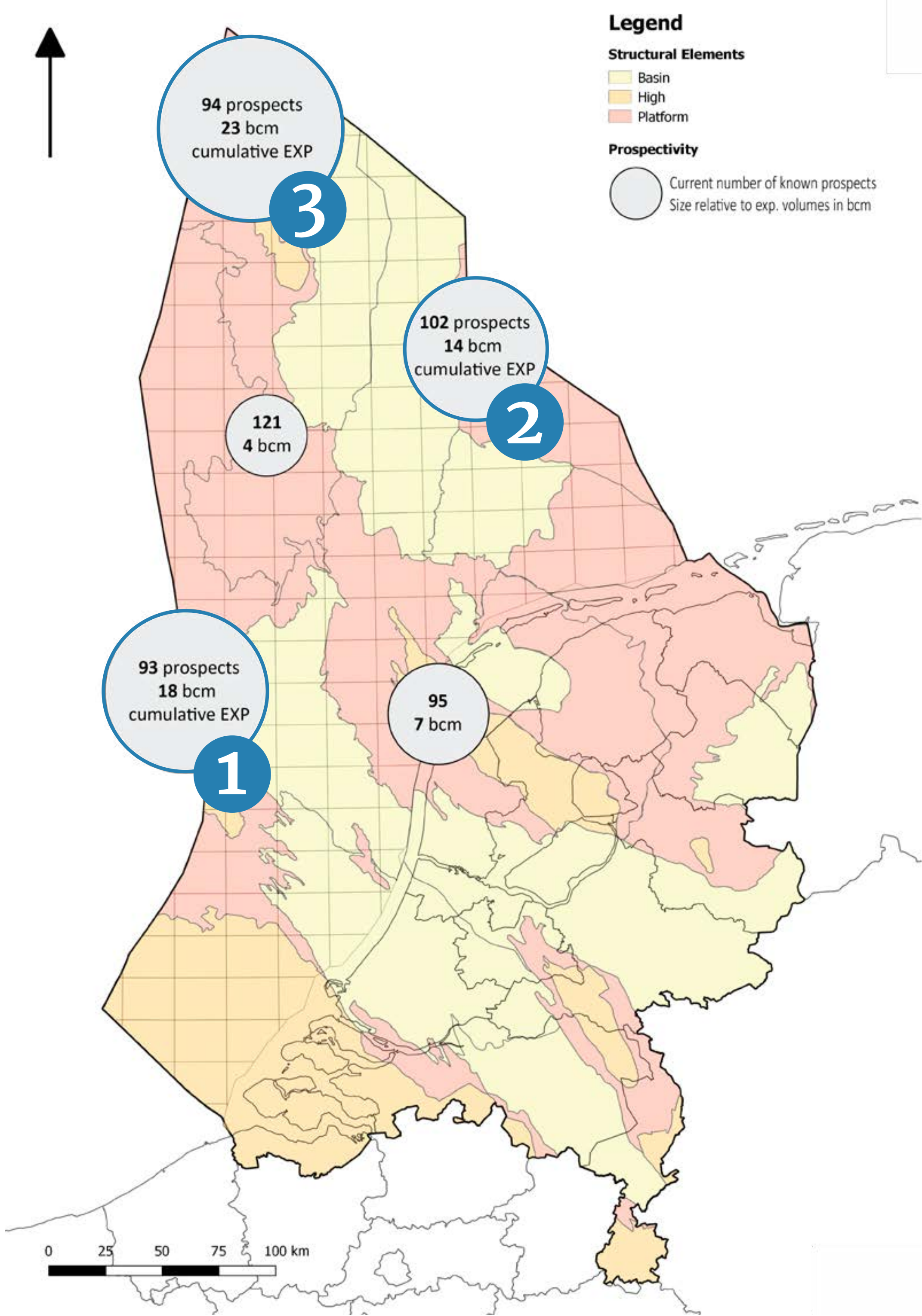

Figure 1.   Prospectivity per structural element based on currently known resources.

Examples in carbonate plays

① Dinantian Carbonates

New insights in the Dinantian Carbonates petroleum play, allowing for prospectivity:
- Wells and seismic data show potential for fractured and/or karstified (producing) reservoir
- Combined with Namurian clastics as secondary targets
- Exploration targets identified in the P-Quad (offshore)

Prospective targets

- The conceptual diagram in figure 3 shows the different scenarios for karstification and/or fracturing of Dinantian carbonate reservoir – to be explored for
- The indicated prospective structures are recognizable on seismic data
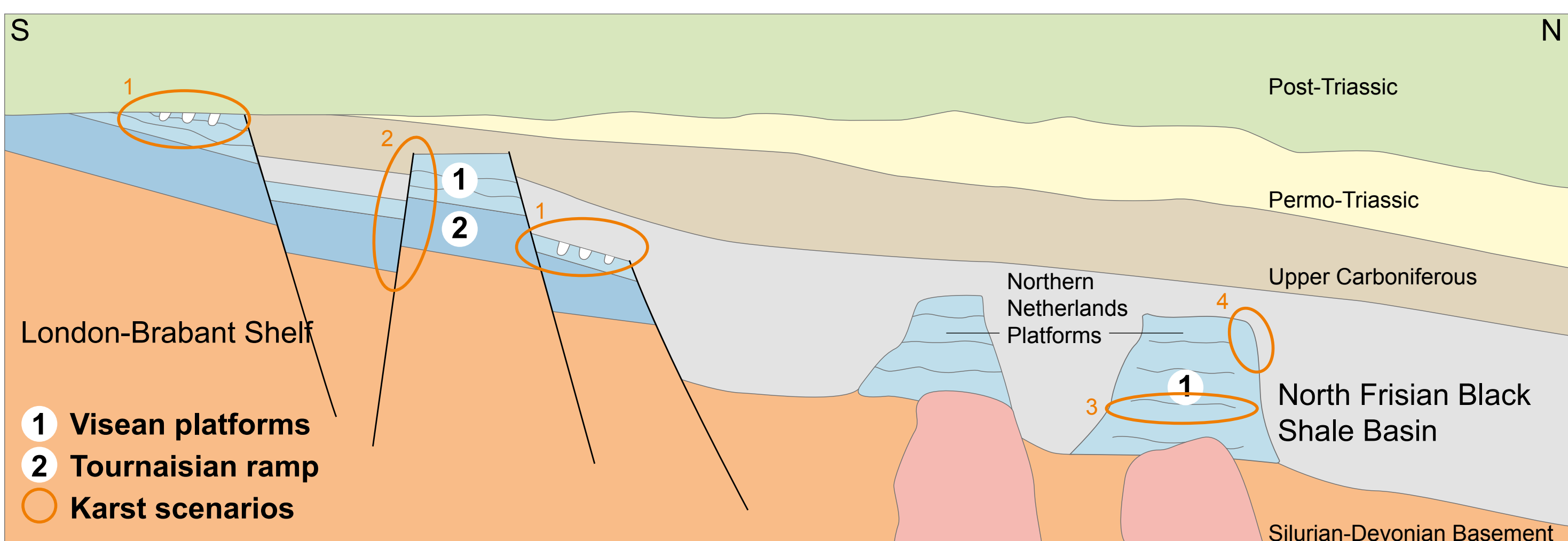

Figure 3.   Locations with a higher chance of karstification are indicated by orange ellipsoids.
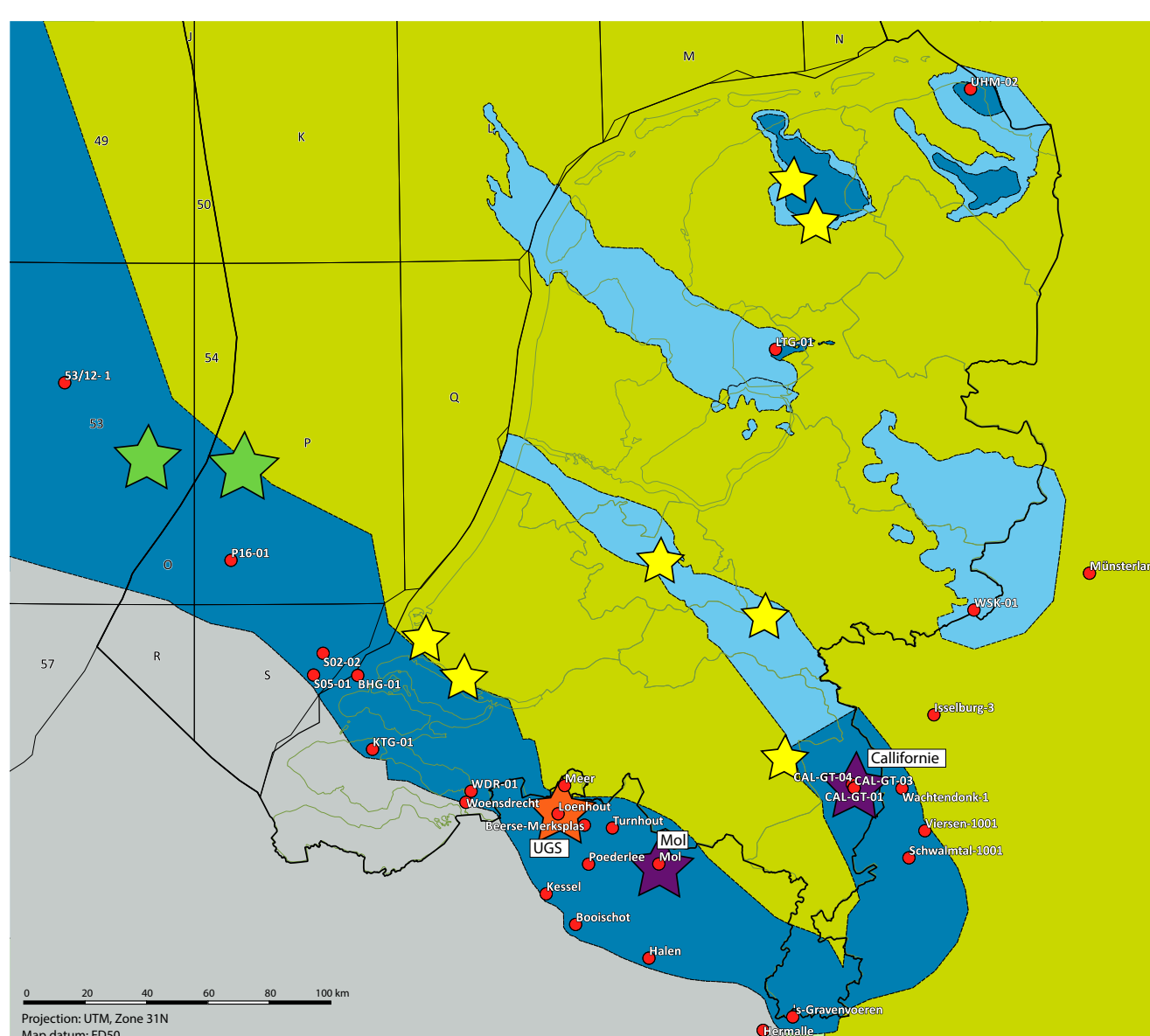

Figure 4.
Distribution map of the Dinantian carbonates (modified from a TNO report on ultra-deep geothermal energy, Boxem et al., 2016).

Simulated exploration gas volume

Simulated prediction of the **volumetric resources** expected to be found in the Netherlands up to the year 2050. This prediction is based on known prospects and leads (PMRS resource classes 8 and 9).
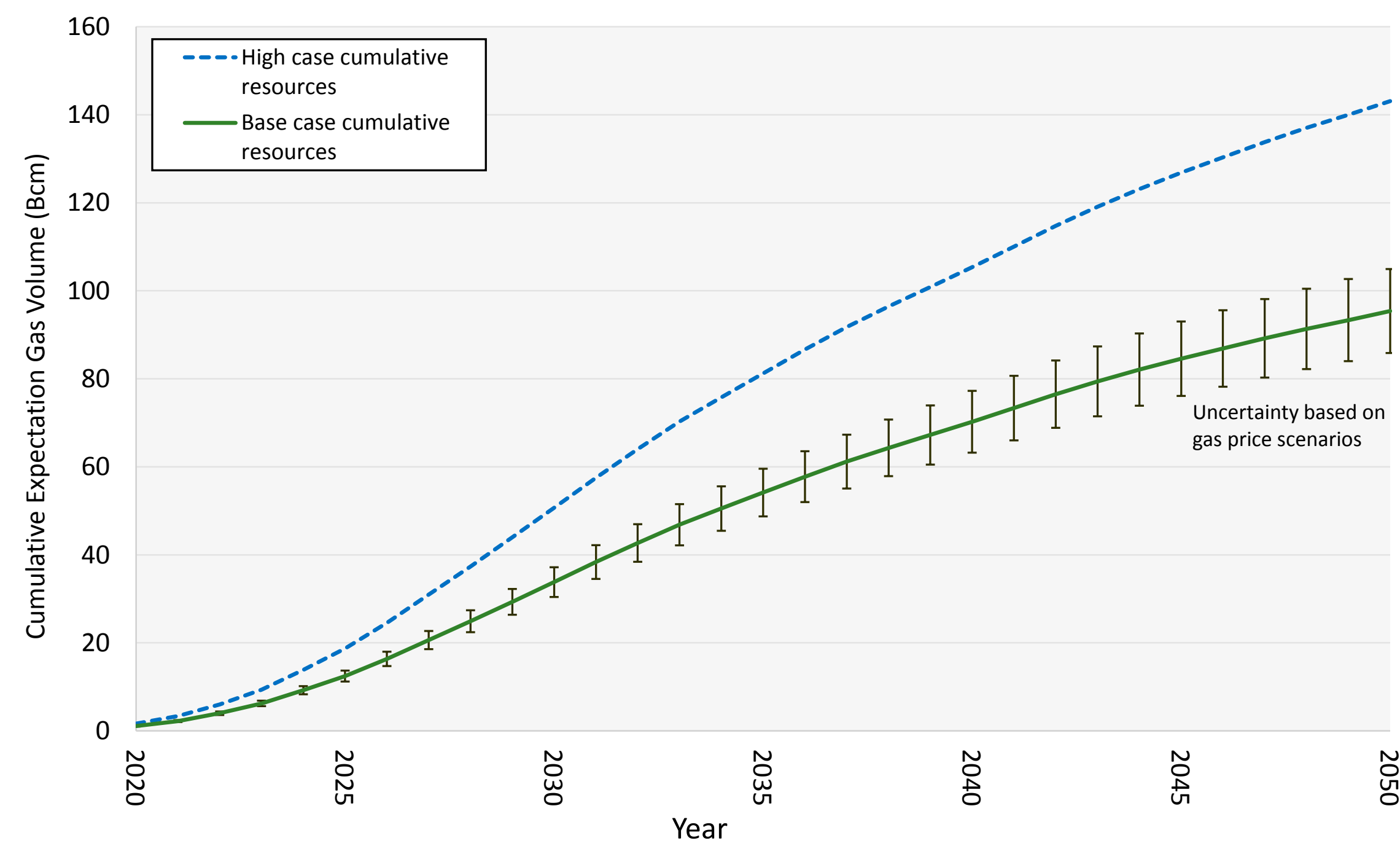

Figure 2.
Gas volumes derived from an exploration simulation using all Dutch prospects and leads known to EBN.

② Zechstein Carbonates build-ups

- **Zechstein Carbonates**: established petroleum play in the Netherlands
- Several undrilled **build-ups** with potential
- A new **Zechstein-2 carbonate distribution and facies map** for the northern Dutch offshore
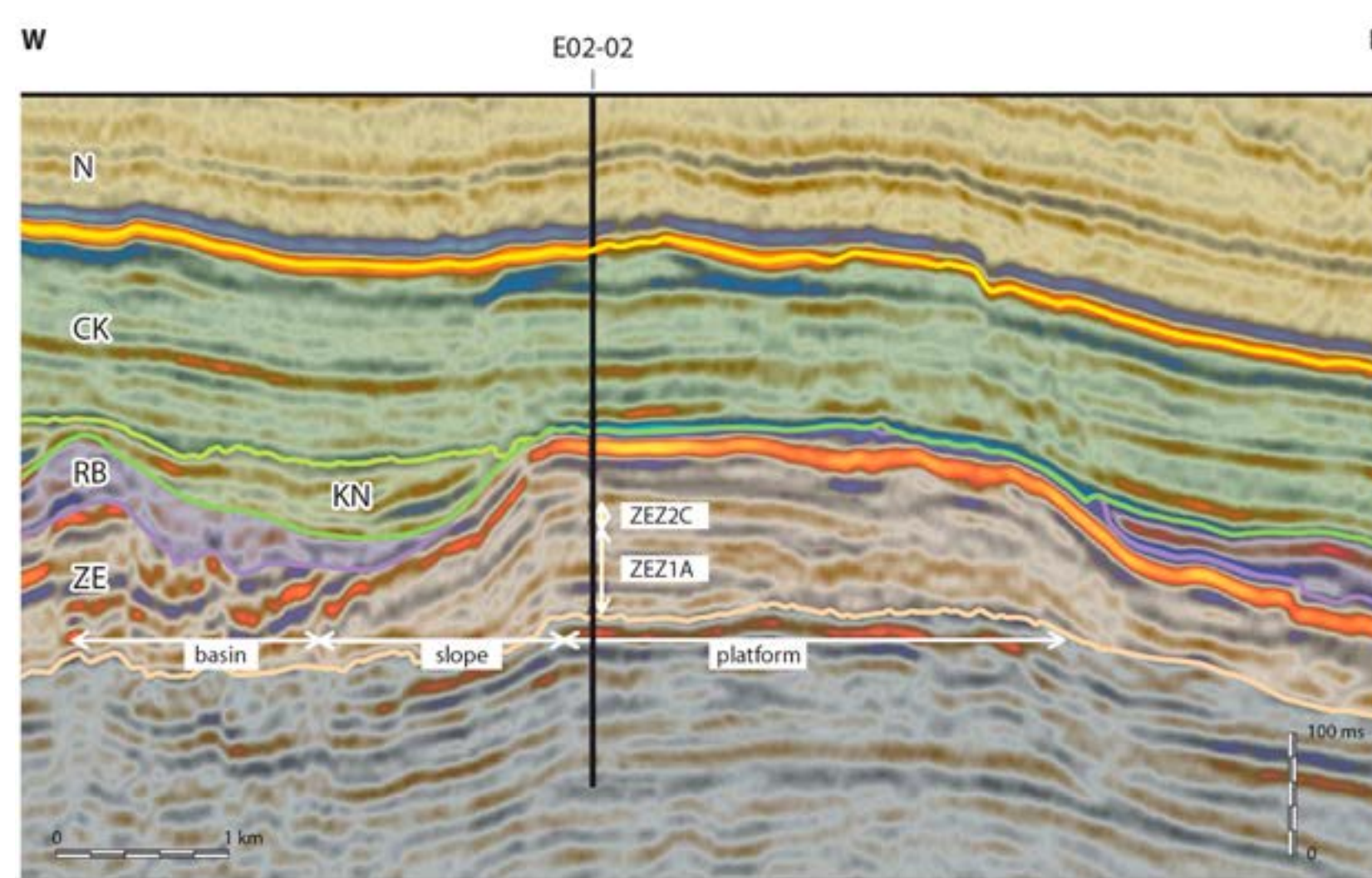- Diverse play including sands and carbonates

Figure 5.   Seismic line across the E02-02 buildup. Illustrating the presence of carbonate build-ups in the DEFAB area.
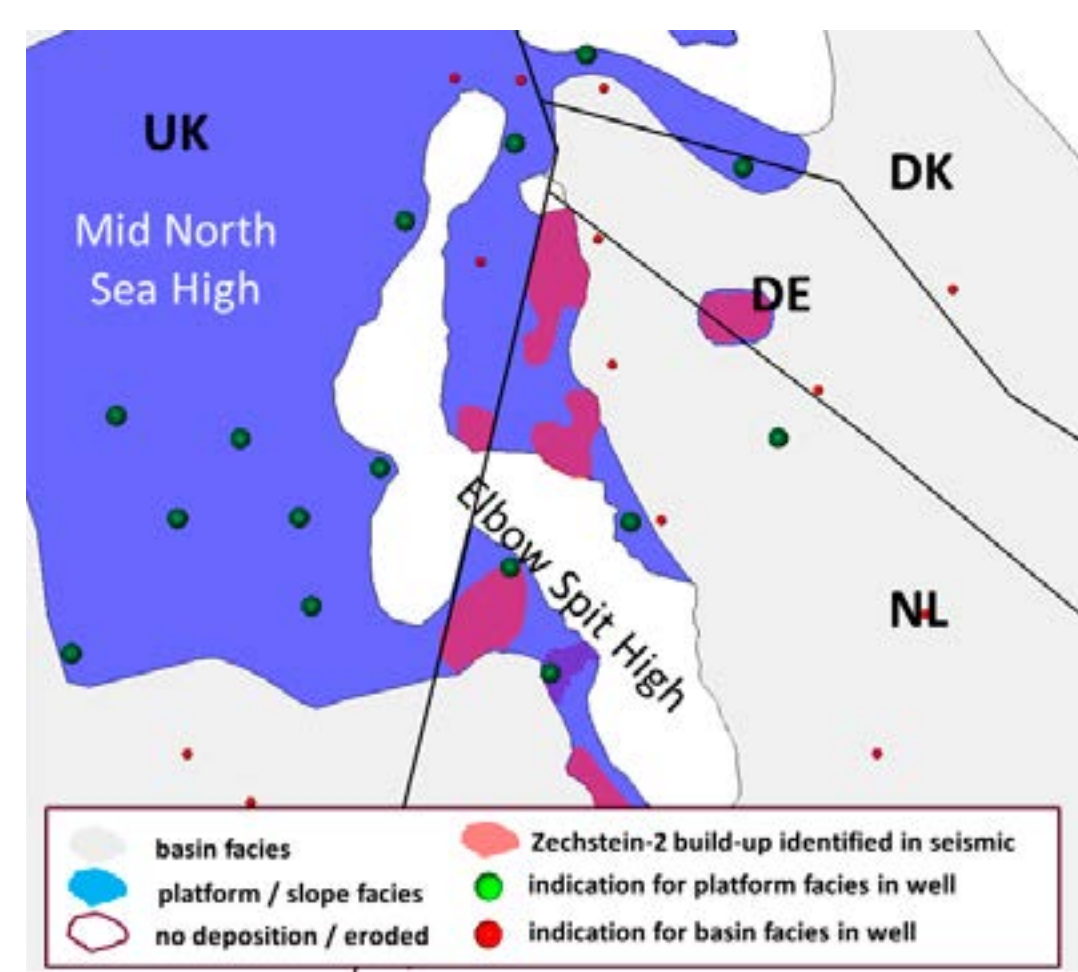
Figure 6.   Zechstein-2 Carbonates distribution.

③ Chalk plays

There are several play types at Chalk level within the North Sea Basin with various trapping types and reservoir facies distribution patterns:
- Structural traps associated with salt domes e.g. Hanze (NL)
- Combined structural/dip closure traps e.g. Adda, Kraka (DK)
- Stratigraphic and/or migration traps e.g. Halfdan (DK), Rembrandt (NL)

Chalk fields

Recently, two Chalk oil fields (Rembrandt and Vermeer) have been discovered.

Lead: B16-Amethyst

The B16-Amethyst prospect is an example of a structural trap which has been formed due to tectonic activity associated with the underlying Zechstein salt dome. This opportunity lies in open acreage.

Figure 7.   Seismic section across the Vermeer and Rembrandt fields (Van Lochem, 2017).

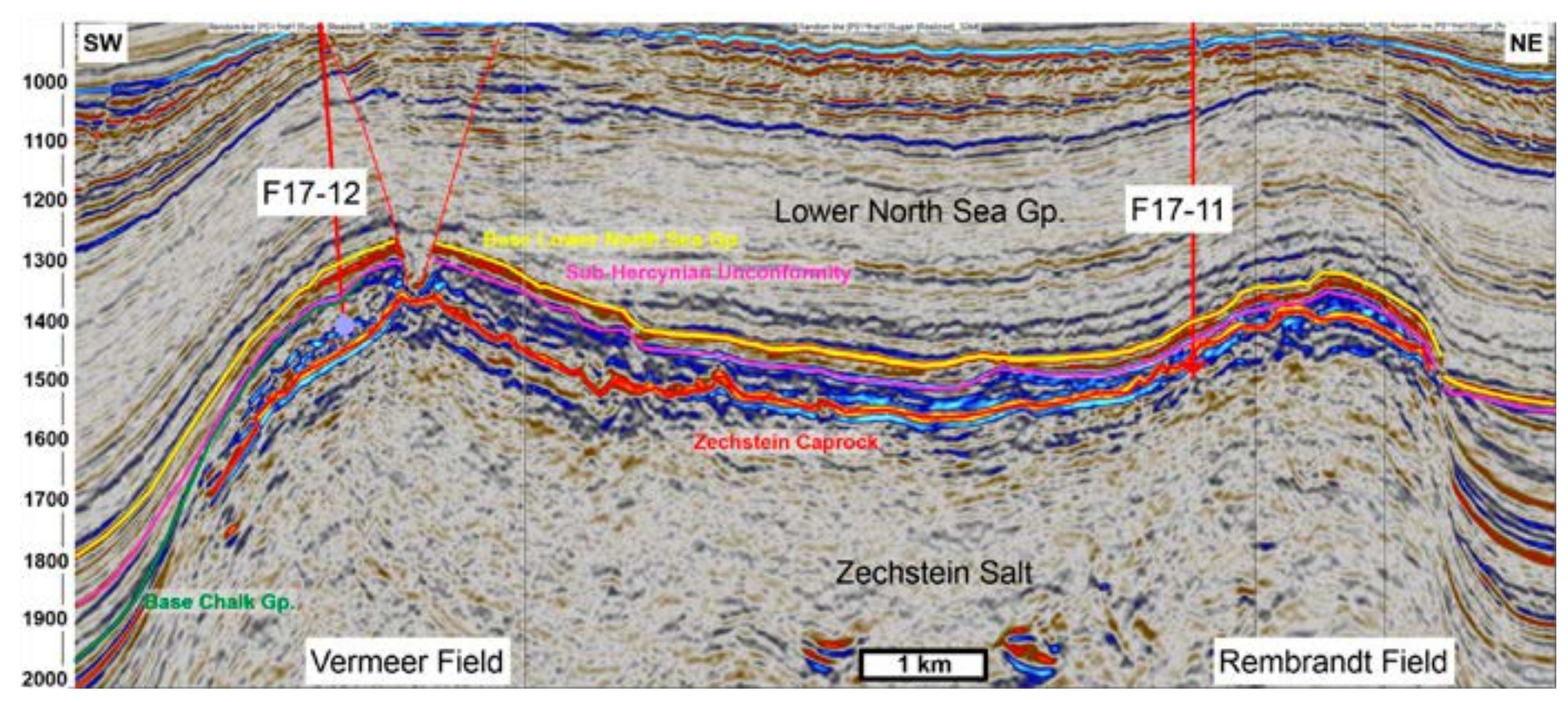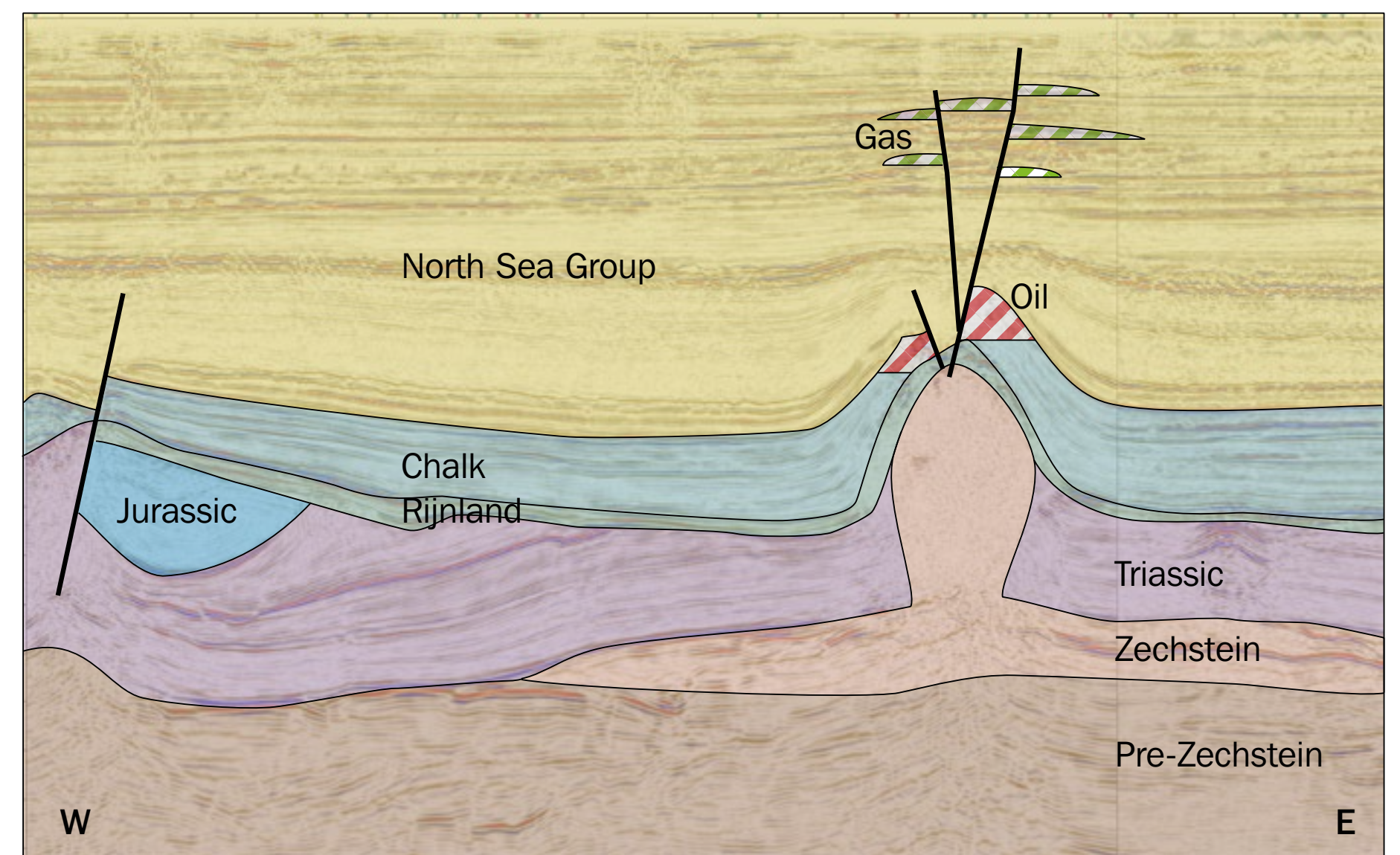| Trap	Large faulted / divided salt diapir closure with multiple stacked targets, shallow gas above
Reservoir	Danian and/or Maastrichtian Chalk
Seal	Tertiary shales
Source	Jurassic Kimmeridge Clay, Westphalien, Namurian, Dinantian coals/shales

Figure 8.   The structural configuration of the B16-Amethyst prospect.