The admittance policy:

for safe and efficient inward and outbound traffic on the Scheldt area
The admittance policy: for safe and efficient inward and outbound traffic on the Scheldt area.

Some Vessels should wait to sail in and out the Scheldt area. This brochure shows that those “slots” have nothing to do with arbitrariness but how tidal slots are composed at the Scheldt Coordination Centre in Flushing. Please visit also the flash animation about the admittance policy on www.vts-scheldt.net via the button “Tidal Window”.

De Gemeenschappelijke Nautische Autoriteit
Kapt. Eric Adan
Assistent hoofd van het Waterdistrict
Kapt. Martin Mesuere
Hoofd cel Nautische zaken
The sun and the moon affect the water masses of the seas and oceans

Due to the relative short distance to the earth, the influence of the moon is dominant as compared to the distant sun.

The origin of tidal movement

Periodical rise and fall is known as High Tide and Low Tide. This wave motion of the water is represented as a tidal graph.
This mutual position of the sun, moon and earth cause Spring Tides

Sun, moon and earth in one line.

As a result, the gravitational forces are enhanced.
Consequently, the water is highest at High Water and lowest at Low Water (largest amplitude).
This mutual position of the sun, moon and earth cause Neap Tides

Earth and moon in one line, the sun at right angles. The gravitational forces of sun and moon counteract each other.

The resulting force is therefore the smallest.

At High Water, the rise is least high and at Low Water, the least low (smallest amplitude).
The tides differ at various places

Gauge readings at different places are not equally high at the same moment. When it is High Water in Ostend, it will only be High Water in Antwerp 2:40 hrs later. Over a period of 25 hours High Water and Low Water are seen twice.
Each place shows a different tidal range

The amplitude (difference between High and Low Water) increases further inland. The closer to Antwerp, the higher the water will reach at High Water and the lower at Low Water.
How is Under Keel Clearance calculated?

Two parameters cause Under Keel Clearance to vary:

1) the height of the tide.
2) the varying bottom profile of the ship’s path.

The combination of both gives Under Keel Clearance.

\[
\text{A} = \text{draught} = 100\% \\
\text{by example: 10 metres}
\]

\[
\text{B} = \text{Under Keel Clearance in metres} \\
\text{by example: 4,3 metres}
\]

\[
\frac{\text{B}}{\text{A}} = \text{Under Keel Clearance in \%} \\
\text{by example: 43 percent}
\]
The bottom of the Scheldt area consists of shallow bars and deeps.

The vessel must cross the bars with sufficient Under Keel (the bottom plate of the ship) Clearance (UKC). A minimum distance is required between keel and bottom. This is minimum Under Keel Clearance.

The imposed minimum Under Keel Clearance depends on the route.

Under Keel Clearance is a safety margin to prevent a vessel from touching the bottom. Apart from tide and bottom profile, the waves also influence the size of the Under Keel Clearance. This entity is defined as a percentage of the draught. Further inland, the influence diminishes. Therefore the percentage of Under Keel Clearance is reduced in the direction of Antwerp.

<table>
<thead>
<tr>
<th>Location</th>
<th>Under Keel Clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vlissingen Rede</td>
<td>15%</td>
</tr>
<tr>
<td>Zandvliet</td>
<td>10%</td>
</tr>
</tbody>
</table>

15% 12.5% 10%
The Under Keel Clearance depends on the draught of the vessel

The deeper the vessel, the quicker the imposed Under Keel Clearance is reached. This means that the tidal window of a vessel becomes smaller as the vessel draws more.
Height of tide and draught determine the tidal window

During a 25 hours tidal period, there is only a restricted time span, in which marginal deep draught vessels can proceed. The deeper the vessel’s draught, the less time to transit.
Planning of inward bound traffic to traverse at the top of the tidal wave

During a rising tide, the tidal wave rolls into the Scheldt area. Adjusting the speed of the vessel with the incoming tidal wave, provides for sufficient Under Keel Clearance when passing the bars during the voyage.
Outward bound traffic proceeds against the tidal wave

For efficient and safe outbound traffic, the ship has to:

1) await sufficient UKC to safely cross the first bar of the route.

2) do efficient navigation in order to cross the last bar with sufficient UKC.

These two respective times provide a tidal window.
Tidal window in relation to admittance policy

In order for deep draught vessels to reach their destinations safely and efficiently, Chief VTS-operators and Nautical Superintendents at the Scheldt Co-ordination Centre calculate tidal windows for the vessels. This tidal window is a time span during which there is sufficient height of tide, taking into account the draught of the vessel. This is done with the help of the Western Scheldt Planner (WESP).