

We need to highlight a mistake in our various representations and discussions with the Applicant around the tide height for the proposed working restriction. We understood that there were 2 potential measures of tide height at Grimsby. However, it transpires that when using the tide tables for Grimsby, there are effectively three reference points for the tide heights:

1. the measured tide height on the Royal Dock Outer Sill;
2. Chart Datum; and
3. Ordnance Datum.

We attach a copy of the General Information provided at the front of the ABP Tide Table which explains the relationship between Chart Datum and Ordnance Datum at Grimsby and shows the additional 1.2m of the Dock Entrance Sill for the Royal Docks.

In our representations and discussions (as set out below), we have referred to the need for a restriction for tides greater than 6.5m above Ordnance Datum (in our Written Representation at paragraphs 10.11 and 10.12, and in our Deadline 2 response at paragraph 2 of EL10 (page 27), and Appendix 1: Intertidal works and mitigation (paragraphs 4 to 7). This is incorrect. The correct value is 6.5m above Chart Datum, which equates to 7.7m measured on the outer sill. Natural England had made a similar point, but correctly referencing Chart Datum, in its Written Submission for Deadline 2 (para 2.51) when they recommended a condition based on tides greater than 6.5m Chart Datum (CD). We had intended to make that same recommendation but confused the terminology.

We apologise for any confusion this has caused and this note sets out our position with the correct references.

We have also taken the opportunity to review the tide figures given in our response, which were previously based on Immingham. This has led to a minor change in the number of high tides, which we have also taken the opportunity to correct for the tides given at Grimsby.

The key text where we have considered tide heights is in Appendix 1 to our Deadline 2 response. This section is set out below, with tracked changes showing where alterations are necessary.

**Revised text:**

**1) The tide height used to restrict working within 1km of the seaward side of the sea wall**

4. At present it is proposed to restrict works on the intertidal zone to high tides that exceed 7.7m as measured at Grimsby that occur between 1 April and 31 May (inclusive) and 1 August and 30 September (inclusive), if works overlap with those of Hornsea Project One. As set out in paragraphs 10.11 and 10.12 of our Written Representation we ask that this figure is amended to 6.5m above ~~ordnance-chart~~ datum. This was the approach that the RSPB requested for Hornsea Project One, and consequently we do not consider that we are asking for a tightening of restrictions here. The problem that arises is that there are two potential measures for tide heights at Grimsby: ABP's tide time tables (the standard

reference in the Humber) include a 1.2m sill, so a 6.5m tide above ordnance-chart datum<sup>1</sup> would be measured at Grimsby as a 7.7m tide<sup>2</sup>. The current wording of the draft DCO (“as measured at Grimsby”) if interpreted literally does provide the necessary restriction at the correct tide height (i.e. 7.7m measured at Grimsby, which is the same as 6.5m above ordnance-chart datum). However, as a result of the availability of tide time tables other than Associated British Ports’, many of which correct their reported heights to above ordnance datum without mention of the 1.2m sill, there is potential for confusion depending on the reference used. The implications of such confusion are significant: By way of comparison of the impacts, in 2015 at 7.7m work would only be discontinued on a total of ~~16-5~~ tides between April and September inclusive, whereas at 6.5m work would be discontinued on ~~129133~~ tides between April and September.<sup>3</sup> It is important to note that high tide restrictions only prevent working within 1km of the seaward side of the sea wall during the two hours either side of a qualifying high tide, so work excavating ducts from the onshore construction compound would be unaffected.<sup>4</sup>

5. A clear commitment to a 6.5m above ordnance-chart datum high tide figure would avoid works in the intertidal period during the spring tides, avoiding the pressures that this would place on high tide roosts close to the pipeline corridor: at neap tides there are alternative roosting sites available.
6. As part of our consideration of the information submitted by the Applicant for Deadline I we have given careful consideration to how the impacts upon the intertidal area could be minimised whilst enabling the Applicant to progress cabling works smoothly. To achieve this we request that all intertidal works are restricted at high tides exceeding 6.5m above ordnance-chart datum. We understand that this represents Natural England’s standard best practice approach for all plans or projects on this area of coastline in order to ensure that there is no adverse effect on the integrity of the Humber Estuary SPA<sup>5</sup>. We are aware that this approach has been used for the intertidal works on the Phillips 66 pipeline(as per Natural England’s letter referred to in the previous sentence), which noted that in practice most construction work would have to cease when the tide exceeded 6m because the working area would be submerged. Careful reference to tide time tables would permit the Applicant to produce a detailed programme of works around the tides: this approach was successfully utilised by Phillips 66 and their contractors are currently reinstating the intertidal zone after installing the pipeline.

<sup>1</sup> For Grimsby tides given at ordnancechart-datum see the UK Hydrographic Office’s Admiralty EasyTide website: <http://www.ukho.gov.uk/easytide/EasyTide/SelectPrediction.aspx?PortID=0172>.

<sup>2</sup> For Grimsby tides given by ABP see <http://www.humber.com/>.

<sup>3</sup> There ~~are~~ 21 tides that exceed 7.7m in August and 4 in April, 4 in August and 10 in September. For 6.5m there are 29-31 in April, 30-31 in May, 35-36 in August and 35 in September. The figures are taken from ABP’s 2015 Grimsby tide tables, based on publicly available tide tables for Immingham, accessible at <http://tides.mobilegeographics.com/calendar/year/2750.html>.

<sup>4</sup> Section 20(4) of the Deemed Licence under the Marine and Coastal Access Act 2009 – Deemed Marine Licences A2 “Transmission Assets” and B2 “Transmission Assets” for Hornsea Project Two (in Schedules I and K to the draft DCO for Hornsea Project Two).

<sup>5</sup> As set out by letter of 20 June 2014 from Natural England to the Environmental Leader of the Tetney Sea-Line Project for Phillips 66 (<https://service58.mimecast.com/mimecast/attachment?account=C28A8&code=59f13bf157abdd6628167e533ee7de88071a4b0a7cefffd175e79badfb1d85a0&download=yes>).

7. The Applicant's note *Accompanied Site Visit Information – Summary of Landfall Works (2 of 7)* handed round at the Examiners' Site Visit on Wednesday 29<sup>th</sup> July 2015, states in relation to "Horizontal Directional Drilling (HDD)" that the cable "ducts could be up to 0.75m in diameter and 100 to 2,500m in length" (page 2). We note that no distances were provided with the entries on Thrust Boring, Pipe Ramming and Auger Boring, nor under the reference to the Exit pits (pages 2 and 3). We suggest that the Applicant's choice of duct length is more likely to influence available construction time in the intertidal zone than the application of a 6.5m tide limit. We would welcome the provision by the Applicant of a plan identifying those areas of the intertidal zone which would be restricted by a 6.5m limit, including a clear indication of the areas which lie above or below 6.5m above ~~ordnance~~ chart datum. It would be helpful for the plan to clearly indicate where the applicant expects the exit pits to be located in relation to these zones, based upon the shortest and longest distances they have given.

## GENERAL INFORMATION

The relationships between the levels of the dock sills, Admiralty Chart Datum and Ordnance Datum (Newlyn) are as follows:-

**HULL** - Admiralty Chart Datum is 3.9 metres below Ordnance Datum (Newlyn), corresponding with zero on the River Gauge and with depths on the Dock Entrance sills as follows:-

Metres

King George Dock - outer sill	5.5
Alexandra Dock - outer sill	2.8
Albert Dock	1.2

**IMMINGHAM** - Admiralty Chart Datum is 3.9 metres below Ordnance Datum (Newlyn), corresponding with zero on the River Gauge and a depth of 7.6 metres on the outer sill.

**GRIMSBY** - Admiralty Chart Datum is 3.9 metres below Ordnance Datum (Newlyn), corresponding with zero on the River Gauge and with depths on the Dock Entrance sills as follows:-

Metres

Royal Dock	1.2
Fish Docks	1.1

**GOOLE** - Admiralty Chart Datum is 1.4 metres below Ordnance Datum (Newlyn), corresponding with zero on the River Gauge and with depths on the Dock Entrance sills as follows:-

Metres

Ocean Lock - outer sill	2.4
Victoria Lock - outer sill	2.3

Arrival draught of vessels is limited to an overall maximum of 5.5 metres but may be exceeded if berths, height of tide and latest charted depths in the River Ouse allow. The Assistant Dock Master, Goole should always be consulted for the latest information in this respect.

**KEADBY** - Admiralty Chart Datum is 0.4 metres below Ordnance Datum (Newlyn) and corresponds with zero on the River Gauge.

### CONSTANTS FOR ASCERTAINING DEPTHS ON SILLS OTHER THAN THOSE GIVEN IN TABLES

In order to ascertain the depths on the inner sills of the following docks, make the allowances specified below from the depths shown for the outer sills:-

**HULL** - King George Dock inner sill, deduct 0.9 metres. (The recognised dock bottom at King George Dock is 0.3 metres higher than the inner sill).

Alexandra Dock inner sill, deduct 0.5 metres.

Albert Dock inner and outer sills are at the same level.

**IMMINGHAM** - Inner sill, deduct 3.7 metres.

**GRIMSBY** - Royal Dock, inner and outer sills are at the same level.

Fish Docks, inner and outer sills are at the same level.

In order to ascertain the depths on the sills of the following docks, make the allowances specified below from the depths shown for the Royal Dock outer sill.

Fish Docks sills, deduct 0.1 metres.

Union Dock sill, deduct 0.2 metres.

### LOCAL NOTICES TO MARINERS AND CHARTS

These can be obtained from the Harbour Master, Humber at the Hull address or from [www.humber.com](http://www.humber.com)

The following charts are available for purchase:-

Annual River Humber Chart (Spurn to Barton Haven)

Bi-monthly Upper Humber Chart (Barton Haven to Burton Stather)

Annual River Trent Chart (Burton Stather to Keadby)

Annual River Ouse Chart (Trent Falls to Skelton Railway Bridge)

Other charts of sensitive areas of the Rivers Humber and Trent are also available.