ABP South Wales Marine Licence Monitoring – LU110

Document Information

Document History and Authorisation		
Title	ABP South Wales Marine Licence Monitoring – LU110	
	Maintenance Dredge Disposal	
Commissioned by	ABP South Wales	
Issue date	February 2026	
Document ref	R.5131	
Project no	R/5743/01	
Date	**Version**	**Revision Details**
06/02/2026	1	Issued for client review
		Accepted as issued for client use

Prepared (PM)	Approved (QM)	Authorised (PD)
Adelle Wigley	Adam Fulford	Natalie Frost
		

Introduction

LU110 has been open since 1988 and is presently licensed for dredge disposal. Among other users, ABP South Wales utilise the site for material extracted from Cardiff Docks and approach channel.

As part of the ongoing site operation and monitoring, repeat bathymetric surveys of the LU110 (Cardiff Grounds) site are regularly carried out by (and on behalf of) ABP South Wales. These monitoring surveys include coverage of the disposal site itself, as well as two extended cross-section transect profiles, running across the site from south to north (Transect 1) and from southwest to northeast (Transect 2) (see Figure 1 for locations and extents).

To support the ongoing monitoring, the bathymetric monitoring survey data has been analysed and comparisons undertaken between successive survey datasets. This analysis includes a difference plot of the disposal site bathymetry between the two most recent surveys, from August 2022 and August 2025, as well as comparison of the two transect profiles between the same survey periods.

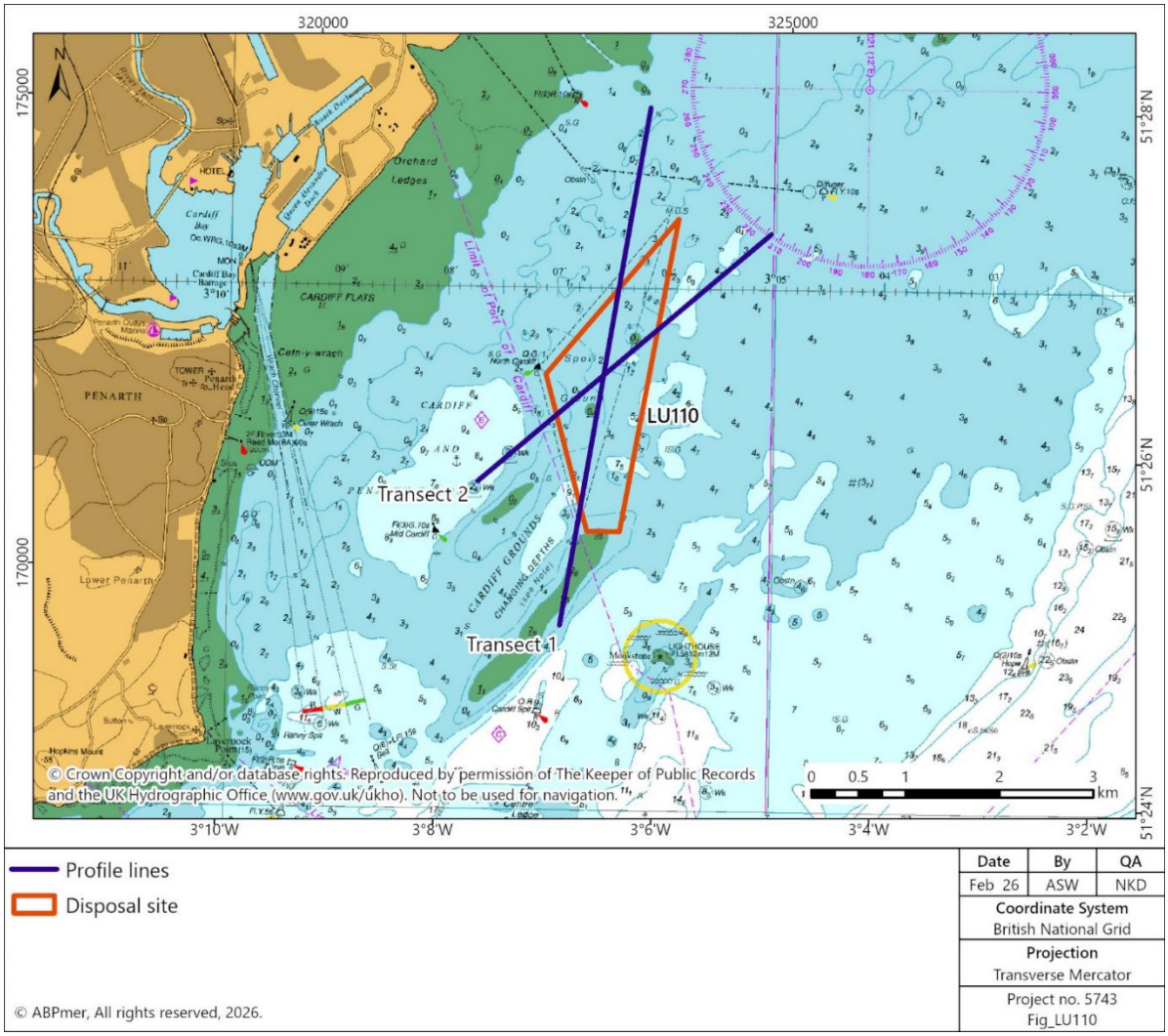

Figure 1. Location of LU110 area of interest

This Note provides the summary findings of the analysis of the monitoring data, which is discussed within the following sections.

Comparison of bathymetric data

To assess the range of variability in bed elevation across (and over the wider area of) the LU110 disposal site, repeat bathymetric survey data has been analysed. Table 1 provides a summary of the bathymetric data assessed as part of the present analysis, in support of the ongoing monitoring. These data are sourced from a combination of singlebeam echo-sounder (SBES) and multibeam echo-sounder (MBES) surveys of the site.

Table 1. Bathymetric datasets used in assessment

Date	Source and date
2020	SBES bathymetric surveys collected on behalf of ABP South Wales August 2020
2022	MBES bathymetric surveys collected on behalf of ABP South Wales August 2022
2025	MBES bathymetric surveys collected on behalf of ABP South Wales August 2025

Each survey dataset covers the LU110 disposal site itself (repeat northeast-southwest survey lines at approximately 100 m line spacing and perpendicular cross-survey lines at lines spacing of around 1,000 m), as well as the two transect profiles shown in Figure 1 (Transect 1 is around 5,600 m in length, whilst Transect 2 is around 4,100 m).

The analysis considers the difference in bed elevation, between the August 2022 and August 2025 surveys, across the LU110 disposal site itself. The bed level change is shown in Figure 2, whereby a negative difference in elevation indicates that the bed is shallower in the 2025 survey than in the 2022 survey, whilst a positive difference indicates the bed has deepened between surveys.

As shown in Figure 2, the analysis of the successive bathymetric datasets indicates a variable pattern of deepening and shallowing across the LU110 disposal site in the four years between surveys. Areas of change to the extreme southern edge of the site are likely a result of shifting elevations over the Cardiff Grounds bank. Across the remainder of the LU110 site, the varying levels of change are typically up to ±0.5 to 1 m. Taken across the whole site, the average magnitude of shallowing is 0.12 m (equating to around 0.05-0.06 m per year).

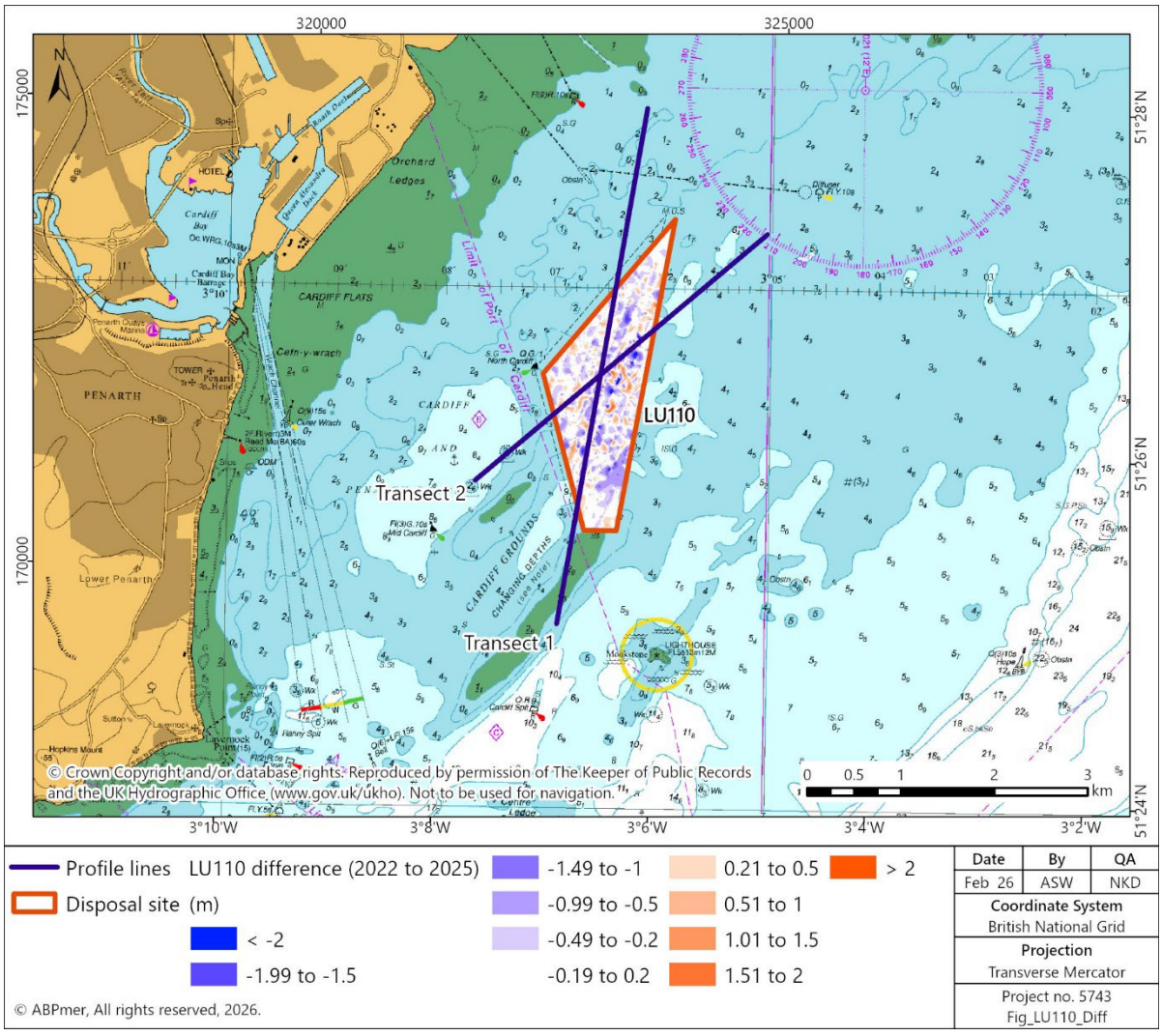

Figure 2. Difference in bed elevation across LU110 between August 2022 and August 2025

To further inform the ongoing monitoring, analysis of the repeat cross-section transect profile data has also been undertaken. The locations of these profiles are shown in Figure 1 and an example of the bathymetric bed elevations from the latest (August 2025) bathymetric survey is shown in Figure 3. This shows a variation in elevation along these transects, ranging from around 10 meters below to 2 meters above chart datum.

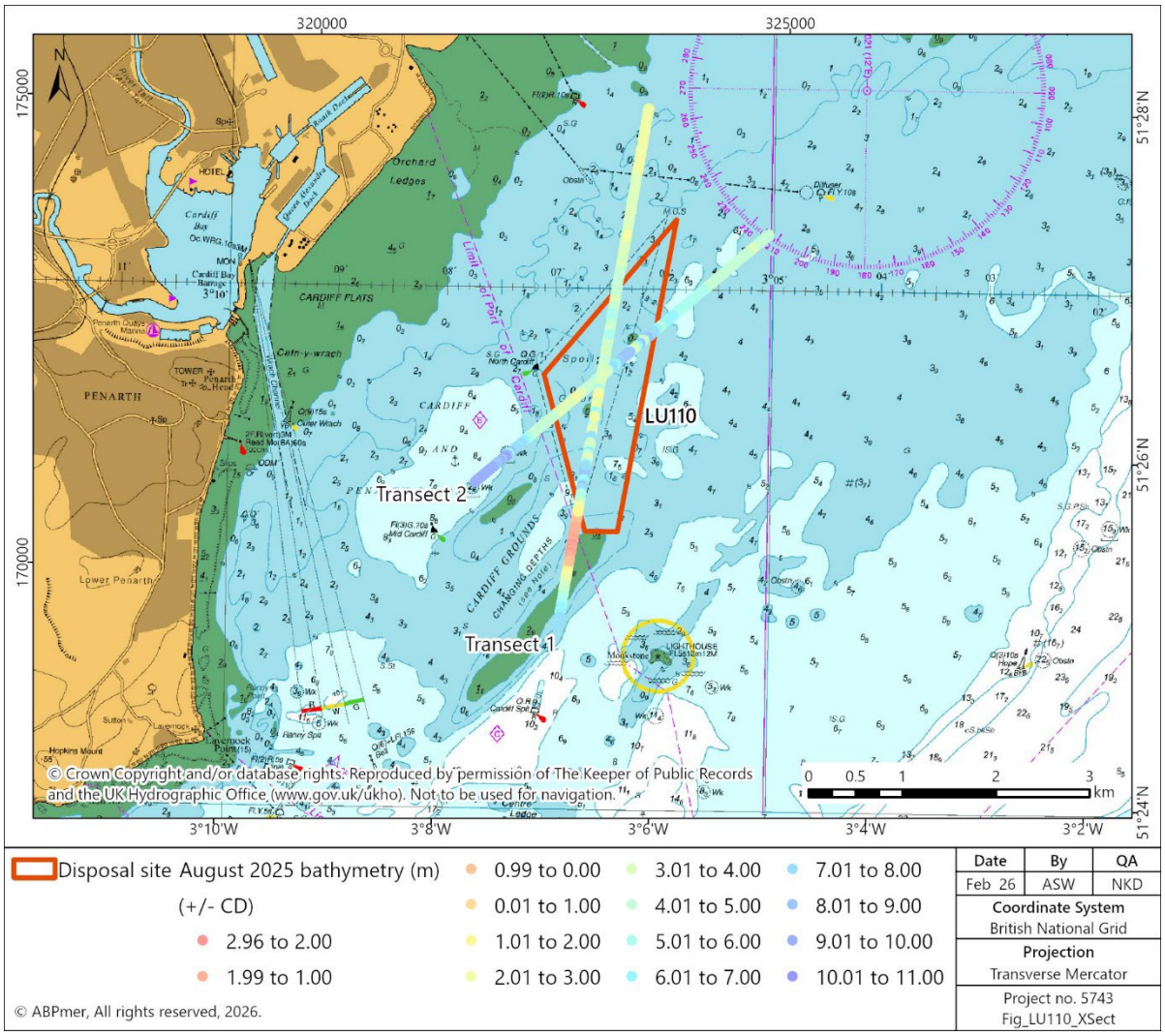

Figure 3. August 2025 bathymetric transect profiles across LU110

Comparison of the 2022 and 2025 bathymetry survey data has been carried out to assess the changes to bathymetry along the two surveyed profiles. The differences in bed elevation along Transects 1 and 2 are shown in Figure 4 and Figure 5, respectively. Generally, the profile comparison shows a variable pattern of change, with some parts of the profiles being shallower in 2025 than in 2022 and other parts being deeper. Overall, the three surveys show very little variation in bed level and generally indicate the same bed features at the same locations and levels (e.g. bed slopes etc.).

In order to provide a more comparable set of metrics for assessing change along each profile, a statistical average of the profile elevation (along the comparable sections of each profile that have been covered in each of the three survey periods) has been calculated. Table 2 summarises the average elevation of each profile, and from each survey period.

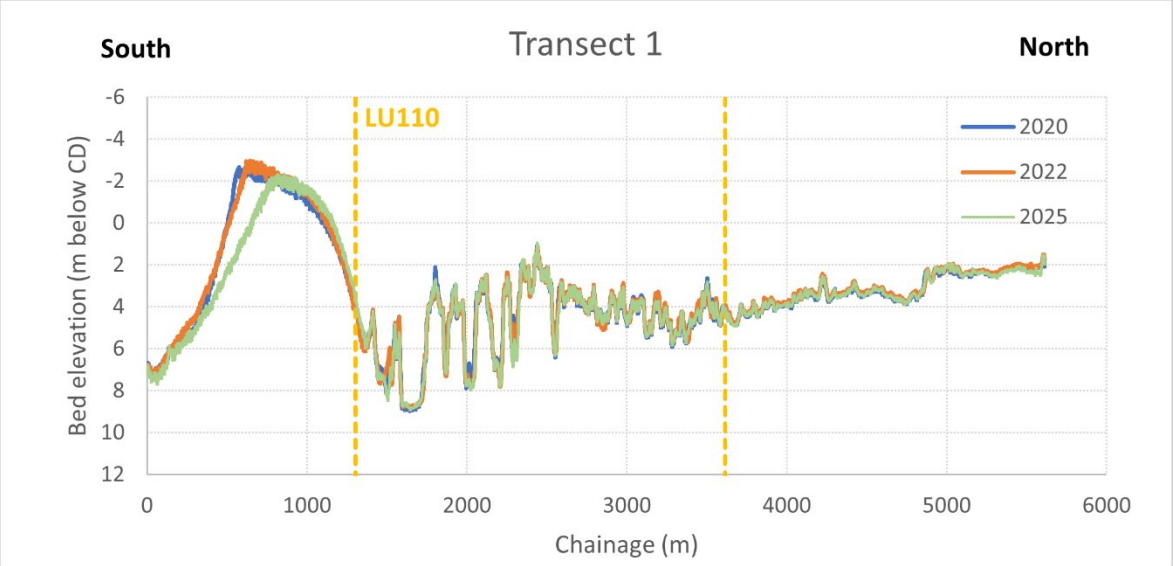

Figure 4. Comparison of bed elevation along Transect 1 between 2020 and 2025

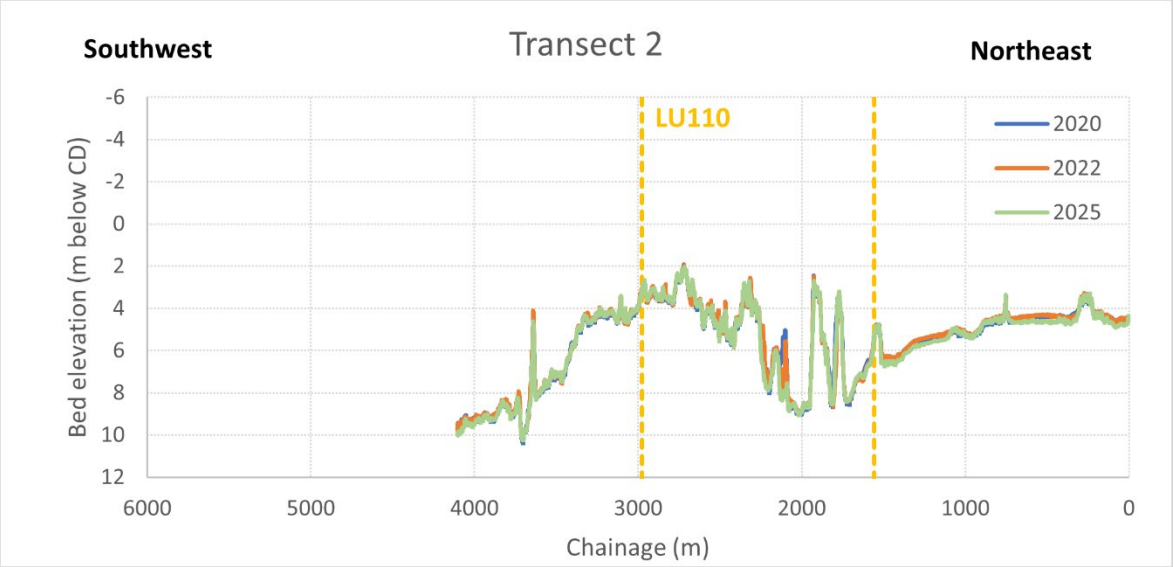

Figure 5. Comparison of bed elevation along Transect 2 between 2020 and 2025

Table 2. Average bed elevation along LU110 Transects 1 and 2

Survey period	Average bed elevation (mCD)	
	Transect 1	Transect 2
2020	-3.38	-5.56
2022	-3.32	-5.53
2025	-3.51	-5.66

From the values in Table 2, it is apparent that the average profile elevation (for both Transects 1 and 2) remains generally similar between each of the survey periods. Along Transect 1, the average elevation varies by 0.19 m between the three survey periods, whilst the equivalent value for Transect 2 is 0.13 m. When comparing the most recent data, it is shown that the average bed elevation in 2025 (for both Transects 1 and 2) is slightly lower (deeper) than that for the profile data extracted from the previous (2020 and 2022) datasets.

Further analysis, considering the change in average elevation just within the disposal site and along the remainder of each Transect reveals similar findings. For Transect 1, the sections within the LU110 site have deepened by 0.03 m between 2022 and 2025; whilst the remainder of Transect 1 (outside of the disposal site) has deepened, on average, by 0.3 m over the same period. For Transect 2, the sections within and outside LU110 have deepened by an average of 0.11 m.

The bathymetric comparisons detailed above indicate that the magnitude of variation within the LU110 site (and across the wider region) is generally small between the two survey periods. Bathymetric change across the site is variable with areas of deepening and shallowing, whilst the relative magnitude of change along the Transect profiles (on average 0.15 m, on average) is similar both within the LU110 site and along the extents of the profile outside of the disposal site (extending 1-2 km up- and down-estuary of the site).

Discussion and summary conclusions

The repeat bathymetric surveys of LU110 (and cross-section transect profiles covering the wider region) have been analysed to assess the changes in bed elevation between 2022 and 2025.

The results of these analyses are summarised below:

- SBES and MBES bathymetric data across the LU110 disposal site reveals only slight changes in bed elevation between the surveys, despite the collective volume of material (from multiple licences) that has been placed there over the intervening period.
- Within LU110, maximum bed level changes are observed along the extreme southern edge, likely associated with changing elevations across Cardiff Grounds bank. Across the majority of the disposal site, varying levels of change are typically up to ±0.5 to 1 m. The average shallowing across the whole site is calculated at 0.12 m between the survey periods.
- When comparing results from the surveys across the wider region, bed elevations between 2022 and 2025 exhibit very little variation across both offshore and nearshore areas.
- Average bed level change across the two Transect profiles is less than ±0.2 m overall, with a slight average deepening both within and outside the LU110 disposal site.
- The small magnitude of variation between surveys indicates that the LU110 disposal site (and the surrounding area) remains dispersive for the spoil material disposed there.

Overall, analysis of the repeat bathymetric survey data indicates very little variation in bed elevation, either within the LU110 disposal site, or across the wider transect profiles extending north-south and northeast-southwest of the site.

Prepared by **ABPmer**
06 February 2026

ABPmer
Quayside Suite, Medina Chambers, Town Quay, Southampton, Hampshire SO14 2AQ
T: +44 (0) 2380 711844 W: www.abpmer.co.uk