



MILFORD HAVEN WATERWAY
ENVIRONMENTAL SURVEILLANCE GROUP

GRŴP CADW GOLWG AMGYLCHEDDOL
AR DDYFRFFORDD ABERDAUGLEDDAU

Provision of advice to the MHWESG on contaminants in the Milford Haven Waterway, Pembrokeshire 2021

**Prepared by
University of Plymouth Enterprise Ltd**



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Haven Waterway, Pembrokeshire**

2021

**A report to the Milford Haven Waterway Environmental Surveillance
Group**

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EXECUTIVE SUMMARY

The work detailed here is a review of contaminants relevant to the Milford Haven Waterway (MHW), providing a recommended list of both typical and emerging contaminants for monitoring quality of water, sediment and biota for the specific setting of the MHW (i.e. its existing and historical industries, as well as its agricultural and urban settings). This document and supplementary material also discuss analytical techniques to support a standardised set of procedures relating to the contaminant list provided.

The key deliverables of the project were the review of available evidence to identify the full range of contaminants relevant to MHW in water, sediment and biota and to document details of these contaminants in a supplementary Excel database. Substances were graded in terms of likelihood of occurrence, and with regard to their presence on established lists of substances of concern, based upon criteria agreed with the Milford Haven Waterway Environmental Surveillance Group (MHWESG). A list of likely analytical procedures for analyses of these substances by commercial laboratories was provided alongside a list of substances recommended for monitoring in MHW.

A wide range of substances is currently included in MHW monitoring programmes, largely underpinned by the extensive monitoring undertaken by Natural Resources Wales (NRW). Based upon available data, evidence was lacking with regard to a number of key, relevant substances in water, sediment and biota, and it was subsequently recommended that future monitoring could include analyses for hexabromocyclododecanes (HBCDD), dioxins and furans and diethylhexylphthalate (DEHP). In addition, perfluorooctane sulfonate (PFOS), which is currently monitored in water, should be considered for monitoring in sediment and biota, given potential for increased partitioning to sediments in saline waters. Future monitoring in deep sediment cores should include the metals (As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Zn), PAHs and PCBs monitored in historic sediment cores alongside additional, legacy substances: the 'drins' (aldrin, dieldrin, endrin), dichlorodiphenyltrichloroethane (DDT),

heptachlor, hexachlorobenzene (HCB), hexachlorocyclohexane (HCH), tributyltin (TBT), polybrominated diphenyl ethers (PBDE) and perfluorooctane sulfonate (PFOS).

Darparu cyngor i MHWESG ar ddifwynwyr yn Nyfrffordd Aberdaugleddau, Sir Benfro

CRYNODEB GWEITHREDOL

Adolygiad yw'r gwaith a gyflwynir yma o ddifwynwyr perthnasol i Ddyfrffordd Aberdaugleddau (DA). Llunir rhestr argymelledig o ddifwynwyr nodweddiadol yn ogystal â difwynwyr sy'n ymddangos o'r newydd er mwyn monitro ansawdd dŵr, gwaddod a biota ar gyfer lleoliad penodol DA (h.y. ei diwydiannau presennol a hanesyddol, yn ogystal â'i lleoliadau amaethyddol a threfol). Mae'r ddogfen hon a'r deunyddiau atodol hefyd yn trafod technegau dadansoddol i gefnogi set o weithdrefnau safonedig mewn perthynas â'r rhestr o ddifwynwyr a ddarparwyd.

Prif ddeilliannau'r prosiect oedd yr adolygiad o'r dystiolaeth sydd ar gael i adnabod yr ystod cyflawn o ddifwynwyr perthnasol i DA mewn dŵr, gwaddod a biota ac i gofnodi manylion y difwynwyr yma mewn data-bas Excel atodol. Cafodd difwynwyr eu graddio yn nhermau pa mor debygol oeddent o ddigwydd ac o safbwynt eu presenoldeb ar restrau a luniwyd ers tro o ddifwynwyr oedd yn peri pryder, yn seiliedig ar griteria y cytunwyd arno gyda Grwp Amgylcheddol Dyfrffordd Aberdaugleddau (MHWESG). Ochr yn ochr â rhestr o sylweddau yr argymhellwyd y dylid eu monitro yn DA, darparwyd rhestr o weithdrefnau dadansoddol tebygol ar gyfer dadansoddi'r sylweddau yma gan labordai masnachol.

Mae ystod eang o sylweddau wedi'u cynnwys ar hyn o bryd yn rhaglenni monitro DA, wedi'u tanategu gan y monitro helaeth gafodd ei wneud gan Gyfoeth Naturiol Cymru (CNC). Yn seilideig ar y data sydd ar gael, roedd prinder tystiolaeth yn achos nifer o sylweddau pwysig a pherthnasol mewn dŵr, gwaddod a biota. Yn dilyn hyn, cafodd ei argymhell y gallai monitro yn y dyfodol gynnwys dadansoddiad ar gyfer hexabromocyclododecanes (HBCDD), diocsidau a ffwrnau a diethylhexylphthalate (DEHP). Dylid hefyd ystyried monitro perfluorooctane sulfonate (PFOS) mewn gwaddod a biota yn hytrach na mewn dŵr yn unig fel sy'n digwydd ar hyn o bryd o ystyried fod potensial o raniad cynyddol i waddodion mewn dŵr hallt. Dylai monitro mewn colofn waddod ddofn yn y dyfodol gynnwys y metalaau canlynol (As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Zn), PAHau a PCBau yn cael eu monitro mewn colofnau gwaddod hanesyddol ochr yn ochr â sylweddau ychwanegol sydd wedi'u hen ddefnyddio: y

'drins' (aldrin, dieldrin, endrin), dichlorodiphenyltrichlorethane (DDT), hexachlorocyclohexane, hexachlorobenzene (HCH), tributyltin (TBT), etherau diphenyl wedi'u polybromineiddio a perfluorooctane sulfonate (PFOS).