

Tidal Lagoon Swansea Bay

Construction Environmental Management Plan Appendix I

Machinery and Dust Method Statement

DCO Requirement 5

Works 7a

May 2020

Document title	CEMP Appendix I Machinery and Dust Method Statement
Document reference	TLSB/CEMP/April20/AppendixI/2.0
Revision number	2.0
Date	25/05/2020

Version history

Revision	Date	Description	Author(s)	Reviewer(s)	Approval
0.1	19/05/2015	Draft	TC	DC	RB
0.2	05/06/2015	First submission for internal review	TC	DC	RB
0.3	09/06/2015	Second submission for internal review	PB	TC	RB
1.0	19/06/2015	First submission to Local Planning Authorities	TC	AH	TLSB
1.1	03/09/2015	Revised following Local Authority comments	TC	AMD	
1.2	01/10/2015	Revised following Local Authority comments	TC	AMD	
2.0	24/04/2020	Final	TC	TCar	RA

Table of Contents

1	Introduction	4
1.1	The development	4
2	Compliance standards	5
2.1	Legislation.....	5
2.2	Responsibilities.....	5
3	Dust sources.....	7
3.1	Land based activities	7
4	General approach	8
4.1	Dust monitoring.....	8
4.2	Visual monitoring	8
4.3	Static and hand held dust monitoring equipment	9
5	Dust monitoring schedule and protocol	10
5.1	Monitoring protocol	10
6	Monitoring locations	11
6.1	Monitoring locations	11
7	Site action levels.....	12
7.1	Site action levels.....	12
8	Specific mitigation measures	13
8.1	Stakeholder communication	13
8.2	Construction vehicle emissions.....	13
8.3	Construction dust and vehicle tracks	13
8.4	Demolition works	14
8.5	Earthworks	14
8.6	Incident mitigation	15

1 Introduction

1.1 The development

- 1.1.1 Tidal Lagoon Swansea Bay (TLSB) will be the world's first purpose built tidal energy lagoon. The generating station will have an installed capacity of 320 Mega Watts (MW) and will enclose part of Swansea Bay, from the eastern side of the River Tawe to the eastern edge of the new Swansea University Bay Campus. In total the seawall will form an approximately 9.5km-long, U-shaped seawall which will encompass approximately 11.5km² of the seabed, foreshore and intertidal area of Swansea Bay.
- 1.1.2 TLSB made an application to the Planning Inspectorate on 7 February 2014 for a Development Consent Order (DCO) for a tidal lagoon (the Project) in Swansea Bay, South Wales. Examination of the application closed on 10 December 2014 and development consent was awarded by the Secretary of State (SoS) on 9 June 2015.
- 1.1.3 The Machinery and Dust Method Statement is a requirement of the Construction Environmental Management Plan (CEMP) and as such has been prepared by the relevant contractors on behalf of TLSB for approval by the relevant planning authorities.
- 1.1.4 This Machinery and Dust Method Statement is applicable to construction activity in works element 7a and in connection with Work 7a (with reference to Part 1A) a), temporary construction works, including workshops and stores, working areas, laydown areas, construction sites, and vehicle parking facilities; f) to the extent shown on the demolition plan, the alteration, removal, clearance, refurbishment, reconstruction, decommissioning and demolition of any buildings and structures within the Order limits; h) lighting columns and lighting; i) safety / emergency points.

2 Compliance standards

2.1 Legislation

2.1.1 The following provisions/guidelines will always be complied with:-

- The Control of Pollution Act 1974 Part IV;
- The Health & Safety at Work Act 1974;
- The Clean Air Act 1993;
- The Environmental Protection Act 1990;
- HSE PPG6;
- “Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites” published by Institute of Air Quality Management (IAQM, and
- European Emission Standards Directive 88/77/EEC.

2.2 Responsibilities

2.2.1 In all cases responsibility for immediate action lies with the person undertaking the works activity. In the event of an incident, they will take the required actions to immediately stop the source and contain the airborne pollution.

2.2.2 The key staff responsible for dealing with incidents are summarised in Table 2.1 and this information together with their contact details will be displayed in prominent locations around the site and will be included in the environmental section of the Site Induction.

Table 2.1 Incident response key staff contact details

Title	Responsibilities
General Foreman (Griffiths)	Receives initial report of incident from site, visits location of incident to ensure all actions taken to stop the source and contain airborne pollution. Reports incident and actions taken to Incident Controller.
Site Manager (Incident Controller) (Griffiths)	Receives report from General Foreman and coordinates resources to undertake actions in accordance with the Dust Mitigation Plan. Informs Contract Manager and Local Authorities Pollution Control Officer of incident and agrees mitigating measures where appropriate.
Environmental Coordinator (TLSB)	Incident Controller informs Environmental Coordinator and Health and Safety Manager who assist in supervision of the mitigating actions.
Health & Safety Manager (Griffiths)	
Environmental Clerk of Works (ECoW) (Griffiths)	Undertakes post incident training and carries out incident reporting/monitoring and completes documentation for the Environmental Management System.
Contract Manager and Local Authorities Pollution Control Officer	Incident Controller provides written confirmation that mitigating actions complete and incident closed out.

- 2.2.3 The Environmental Clerk of Works (ECoW) will undertake post incident training and carry out incident reporting/monitoring and complete documentation for the Environmental Management System (EMS).
- 2.2.4 Written confirmation that suitable mitigation has been actioned provided to the Contract Manager and Overseeing Organisations Pollution Control Officer.

3 Dust sources

3.1 Land based activities

- 3.1.1 Transportation of men and materials – during working hours there will be site-based traffic movements as well as deliveries to site.
- 3.1.2 Earthworks and general construction activities including excavation of pits and trenches.
- 3.1.3 Demolition of existing buildings and other structures.
- 3.1.4 Construction of temporary and permanent access roads.
- 3.1.5 Installation of temporary offices, compounds and laydown areas.
- 3.1.6 Installation of temporary plant and machinery fuelling depots.

4 General approach

4.1 Dust monitoring

4.1.1 Monitoring for dust will be carried out in order to fulfil a number of objectives as indicated in Institute of Air Quality Management: *Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites* these being:

- To ensure that the construction/demolition activities do not give rise to any exceedances of the air quality objectives/limit values for Particulate Matter (PM)₁₀ and/or PM_{2.5}, or any exceedances of recognised threshold criteria for dust deposition/soiling.
- To ensure that the agreed mitigation measures (see Section 8) to control dust emissions are being applied and are effective;
- To provide an “alert” system with regard to increased emissions of dust, and a trigger for cessation of site works or application of additional abatement controls;
- To provide information to support the likely contribution of the site works in the event of complaints; and
- To help to attribute high levels of dust to specific activities on site in order that appropriate action may be taken.

4.2 Visual monitoring

4.2.1 Within the principal contractor’s area, an inspection for visible dust emissions in the vicinity of the site boundary (internal and external) shall be conducted at least three times during each working day. The results of these inspections will be clearly recorded.

4.2.2 Visual monitoring will involve observation of dust deposition onto a surface and dispersion on and off-site. Whilst such observations are necessarily influenced by subjective opinion, the approach is simple to implement, and will be used effectively to minimise problems occurring. The monitoring involves observing both the conditions likely to lead to dust release (weather and nature of construction activity) in addition to the observation of any effects. Visual monitoring for dust will therefore also include perception of the potential for dust release and be associated with procedures described below. Observations will be recorded in a site log.

4.2.3 There are obvious visual signs that the site will be operating at an increased risk of dust release. These signs will be related to:

- Weather (i.e. dry periods with higher wind speeds); and
- Site operations (i.e. activities with increased potential for dust release).

4.2.4 When these conditions are occurring, the nominated representative will increase the frequency of visual assessments of dust release and monitoring of any visible

surface soiling. This will particularly be the case if the prevailing wind is in a direction towards sensitive receptors.

- 4.2.5 The dust assessment will involve the nominated representative surveying the site for evidence of dust release. This will include, for example, observing the movement of vehicles, stockpiling and demolition. It will be immediately obvious if such operations are leading to the release of dust emissions and the size and frequency of such releases. Under such circumstances the nominated representative will undertake further mitigation as defined in Section 8 of this document. This approach is appropriate for identifying the occurrence of short-lived (acute) dust events and allowing immediate action to prevent further releases.

4.3 Static and hand held dust monitoring equipment

- 4.3.1 The equipment listed below will be used for dust monitoring purposes where appropriate.
- 4.3.2 Static glass slides or dust discs/frisbees will be deployed to provide appropriate representative data during proposed construction activities (dust mitigation and monitoring for demolition activities will be covered by specific demolition method statements).
- 4.3.3 Hand-Held Monitors - Turnkey DustMate is a hand-held instrument with a very fast response which has been designed to locate sources of workplace airborne dust and fumes even at very low concentrations. It has a one second time resolution which also allows it to be used as a road-side indicator to identify high pollution vehicles as they pass. The instrument will continuously indicate the concentration of thoracic, inhalable and respirable particles down to 0.1 micrograms per cubic metre. In its environmental mode, it will indicate TSP, PM₁₀, PM_{2.5} and PM₁ concentrations.
- 4.3.4 Portable/Semi-permanent monitors.
- 4.3.5 Turnkey Osiris is a general purpose monitor which can be used as a portable instrument or deployed in a semi-permanent installation.
- 4.3.6 Osiris will continuously indicate the concentration of TSP, PM₁₀, PM_{2.5} and PM₁ particles with a resolution of 0.1 micrograms per cubic metre. In its workplace mode, it will indicate inhalable, thoracic and respirable concentrations. Osiris has achieved the Environment Agency's MCERTS certification, ensuring its accuracy in recording data.
- 4.3.7 An internet-based server is available for Osiris, providing a web interface, camera capability and internet communication in AirQ.
- 4.3.8 Use of Osiris monitoring equipment is not proposed during Phase 1 due to the limited nature of the proposed works (i.e. work 7a and the additional associated development described above).

5 Dust monitoring schedule and protocol

5.1 Monitoring protocol

- 5.1.1 Internal monitoring within the site boundary will be undertaken by TLSB prior to the commencement of the proposed works when readings will be taken adjacent to the existing commercial activities within the Port of Swansea in order to inform on existing atmospheric particulate levels. DustMate readings at these locations will be taken every four hours over a 24-hour period for one week. The results will be recorded and records provided to the Local Authorities (CCSC NPTCBC and SBPHA) representative for future reference.
- 5.1.2 The Turnkey DustMate hand held equipment will be utilised by the Environmental Clerk of Works (ECoW) for measurement immediately adjacent to mobile operational activities.
- 5.1.3 The semi-permanent Turnkey Osiris monitors will not be used during Phase 1. For Phase 2 works they will be located adjacent to access routes, concrete batching plant and car parks and will be checked every four hours by the ECoW either through connection to remote computer equipment or at the station.
- 5.1.4 All readings will be recorded and records provided to the Local Authorities Pollution Control Officer for future reference.
- 5.1.5 Meteorological factors are important as they determine the transport and dilution of pollutants in the atmosphere, influence chemical transformations of species in the air, and affect the mechanisms and rates of removal of pollutants from the atmosphere. Knowledge of wind direction and wind speed is essential for attributing pollution episodes to individual point sources. Meteorological conditions will be subject to diurnal and seasonal variations which can superimpose an effect on those due to variations in the pollutant emission source strength. For these reasons, due regard will be given to assessing and measuring meteorological conditions and emission source details. To this end, on site weather recording equipment will be installed and utilised together with that of the closest Meteorological Office weather station based at Mumbles Head.

6 Monitoring locations

6.1 Monitoring locations

- 6.1.1 The drawing in Appendix A shows the locations of proposed dust monitoring sites outside the proposed working area boundary during Phase 2. It is considered unlikely that external monitoring will be required during Phase 1 works. During Phase 2 continuous monitoring will also be undertaken within the site boundary by use of Turnkey DustMate hand-held and Osiris semi-permanent (or similar) dust monitoring equipment.
- 6.1.2 The hand held equipment will be utilised by the Environmental Clerk of Works (ECoW) for measurement immediately adjacent to operational activities such as crushing or dry weather earthworks.
- 6.1.3 During Phase 2 the semi-permanent Osiris equipment will be sited adjacent to access routes, batching plants, and car parks and will continuously record dust levels at those locations.
- 6.1.4 These Osiris monitors will be checked every four hours by the ECoW either through connection to remote computer equipment or at station.

7 Site action levels

7.1 Site action levels

- 7.1.1 The baseline levels of dust that the Project will be measured against will be governed by the pre-construction sampling and will be confirmed once this sampling is complete. A paper titled 'Assessment of Dust Nuisance' by J S Moorcroft "suggests that the soiling rates in excess of about 20 per cent per week are likely to be considered unacceptable by significant proportion of the population". CCSC, NPTCBC, TLSB and SBPHA will follow these guidelines in their survey and ongoing testing and monitoring.

8 Specific mitigation measures

8.1 Stakeholder communication

- 8.1.1 Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary.
- 8.1.2 Display the regional office contact information.
- 8.1.3 Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- 8.1.4 Make the complaints log available to the local authority when asked.
- 8.1.5 Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- 8.1.6 Hold regular liaison meetings with any other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.

8.2 Construction vehicle emissions

- 8.2.1 A programme to manage air quality during construction will be devised and will include the following:
 - i. Use of catalytic converters and other emissions control devices and regular maintenance of vehicle engines;
 - ii. Where possible, all vehicles will switch off engines when not in use, i.e. minimise idling vehicles; and
 - iii. All employees will have received tool box talks on the requirements to maintain the site free of vehicle and dust emissions wherever possible and of appropriate action in the event of an incident, in line with best practice and the procedures identified in the CEMP.

8.3 Construction dust and vehicle tracks

- 8.3.1 Machinery and dust-causing activities will be located away from sensitive receptors where possible and/or mobile booths for cutting and grinding will be adopted if work cannot be undertaken away from sensitive receptors.
- 8.3.2 All cutting equipment i.e. disc cutters, road saws will have water feed attachment to blade.
- 8.3.3 Construction of site roads will be carried out early enough to avoid the use of haul roads on site, where possible.
- 8.3.4 The speeds of vehicles tracking across unmade surfaces will be reduced to 10mph.

- 8.3.5 Water bowser with spraying equipment will be used as a dust-suppressant on haul routes, where appropriate, during dry weather. Lay-down areas and car parks will be provided with hose connection points at suitable locations in order that all areas may be damped down as required during periods of dry weather.
- 8.3.6 Drop heights will be minimised for delivery of aggregates and loading/offloading of on- site transport.
- 8.3.7 Regular vehicle cleaning will be carried out and, where appropriate, all delivery vehicles carrying materials likely to generate dust during transport to, from or on site shall be securely sheeted.
- 8.3.8 Mud tracked onto the public highway will be cleaned by lorry mounted road sweepers where necessary. Internal tarmacadam delivery access roads will also be maintained by regular sweeping with lorry mounted sweeping equipment together with damping down during periods of dry weather.
- 8.3.9 A programme of wheel washing of vehicles will be instituted.

8.4 Demolition works

- 8.4.1 Agree lines of communication between local authority Pollution control officer and contractor(s) prior to commencement of works and procedure for reporting dust events or complaints from local residents.
- 8.4.2 Demolition will be undertaken in a phased and controlled manner.
- 8.4.3 Regular inspections of works will be undertaken for visible signs of emissions of dust and early application of measures to minimise emissions at source.
- 8.4.4 Considerate location of temporary storage of dusty materials and material transfer operations on land that is not between site access and nearest receptors.
- 8.4.5 Any plant used for the crushing of materials will be issued with a Permit by the Principal Contractor (PC) under the Pollution Prevention and Control Regulations 2000. All work will be carried out in accordance with the conditions of the Permit.
- 8.4.6 Where plant is used to recycle materials, the appropriate license from NRW shall be obtained.
- 8.4.7 Water mist spraying equipment will be installed where appropriate at crusher jaws during dry weather in order to reduce dust emissions.

8.5 Earthworks

- 8.5.1 No earthworks activities are proposed during Phase 1.
- 8.5.2 Geotechnical Investigation (GI) indicates that asbestos may be present on site. All operatives will receive asbestos training in order that they are able to recognise any contamination during activities which require excavation such as earthworks and drainage.

- 8.5.3 In the event that asbestos is discovered then it will be processed in accordance with the Contamination Scheme (Requirement 12) contains remediation measures for asbestos impacted soils.
- 8.5.4 During extended periods of dry weather (especially over holiday periods) additional mitigation measures including extra plant, operatives and dust suppressants to avoid wind-blown dust issues will be implemented both within and outside normal working hours.
- 8.5.5 Long-term stockpiles of material on site without application of measures to stabilise the material surface will be avoided. Stabilisation measures include the application of suppressants such as polymer based binders, sealing with a geotextile liner or seeding any stockpile likely to be undisturbed for more than 13 weeks.
- 8.5.6 All stockpiles on site will be kept below the height of the site boundary of 1.8m.

8.6 Incident mitigation

- 8.6.1 All complaints/reported incidents will be registered and immediately investigated and a report prepared and submitted by the Contractor to the TLSB Environmental Liaison Officer.
- 8.6.2 Mitigating actions will be agreed and put into effect immediately after any complaint/reported incident is received and found to be the result of TLSB construction activities. Written confirmation that suitable mitigation has been actioned, or that the incident has been caused by activities undertaken by others such as commercial activities within the Port of Swansea, shall be provided to the Contract Manager and appropriate Authorities (CCSC, NPTCBC and SBPHA) Pollution Control Officer.