



Tidal Lagoon Swansea Bay

Town & Country Act 1990 (as amended)

275KV Cable Route - Planning Application

Ground Contamination Report

October 2016

Doc Number: TLSB-TLP-C122-XXX-TND-0001

Revision	Author	Checked By	Revision Date
1.0	Simon Reynolds	Alex Blake/Rachel Hall	28/10/2016

Revision No.	Date	Amendment Description	Effective Date
1.0	27/10/2016	Final Issue	28/10/2016
0.1	27/09/2016	Draft Issue	N/A

TABLE 1: REVISION HISTORY

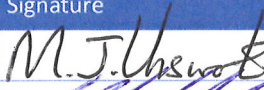
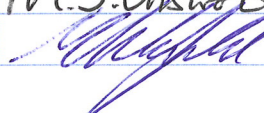
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1. List of Abbreviations

BoP	Balance of Plant
CADW	'To Keep' - Welsh Government's Historic Environment Service
CL:AIRE	Contaminated Land: Applications in the Real Environment
CLR11	Contaminated Land Report 11
CoP	Code of Practice
DCO	Development Consent Order
DoW	Definition of Waste
ER's	Employers Requirements
GGAT	Glamorgan – Gwent Archaeological Trust
GWh	Gigawatt hour
kV	Kilovolt
MW	Megawatt
NG	National Grid
O&M	Operations & Maintenance
QP	Qualified Person
QRA	Quantitative Risk Assessment
TCPA	Town and Country Planning Act
TLSB	Tidal Lagoon Swansea Bay
WYG	White Young & Green

2. Introduction

2.1 Purpose of Report

This report has been compiled to support a planning application under the Town and Country Planning Act 1990 (TCPA) which will seek planning permission for the underground 275kV cable electrical grid connection works required to delivery power generated at the Tidal Lagoon Swansea Bay (TLSB) Turbine House structure to the Baglan Bay National Grid (NG) substation.

This report sets out TLSB's strategy for assessment of ground contamination risk, identifying works completed to date and defines a route map for discharge of subsequent conditions associated with successful conditioned planning consent.

The delivery strategy and document route map is clearly set out within Appendix A.

2.2 The Project

The Project comprises a NG underground cable connection approximately 10km long.

The cable route will run from the Turbine House structure, through the Western sea wall, existing ABP access road, along Fabian way, through the Crymlyn Burrows before crossing underneath the river Neath to connect to the existing NG transmission system via the Baglan Bay substation.

The works associated with the installation of the underground cable connection comprise, trenching, ducting, associated connection chambers and installation of 275kV, earthing and fibre optic cables.

Ground contamination risk will need to be considered across the full length of the cable connection route due to the varying historic and current land uses.

The proposed cable route can been seen within the 'Site Location Plan' that forms part of the application documents

2.3 Project Objectives

The Project objectives are to deliver a permanent 275kV cable connection from TLSB Turbine House to NG Infrastructure, This connection forms a critical part of the TLSB development which comprises the development, financing, design, construction, commissioning, operation and maintenance of a tidal lagoon power station, located in Swansea Bay, South Wales.

2.4 TLSB Development Objectives

TLSB key development objectives are to:

- Generate renewable energy in the form of electricity using the large tidal lagoon in Swansea Bay. The tidal lagoon power station will have up to sixteen (16) turbines and an installed capacity of 320MW, generating at least 500-600 GWh net annual output;
- Deliver an operational life of 120 years;
- **Connect to the National Grid, providing long term guaranteed renewable energy, as other power stations are closed down;**
- Make an important contribution towards UK and European carbon emission reduction targets;
- Provide significant employment and value creation in Wales and wider in the UK through the supply chain and amenities provided;
- Enhance coastal flood protection;
- Create community and tourism opportunities in sports, recreation, education, arts and culture; and
- Provide visitor facilities and other amenities including art, education, mariculture and sporting/ recreational facilities.

2.5 The Development

TLSB will be the world's first purpose built tidal energy lagoon. The generating station will have an installed capacity of 320MW 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.

The TLSB Development briefly comprises:

- A permanent Sea Wall approximately 9.5km-long, will impound approximately 11.5km² of the seabed and 3km of foreshore and intertidal area of Swansea bay;
- The turbines and sluice gates are housed in concrete structures at the south west point of the lagoon. The total length of the turbine house, flow dividing structure and sluice gate structure is approximately 410m long and 63m wide. The power station structure will accommodate up to 16 low head bi-directional Kaplan bulb turbines, up to 6 sluice gates and associated BoP;
- A flow dividing structure is located between the turbine and sluice gate housing structures;
- Onshore development will consist of the construction of a western landfall building comprising space for O&M with the potential for future water sport facilities as well as visitor orientation and information space consented under future TCPA applications;
- External works on existing land will comprise access roads to the western landfall, visitor car parking and soft landscaping as well as associated supporting infrastructure including foul and surface water drainage, lighting, security and installation of associated services.

3. Planning Requirements

3.1 Development Consent Order

TLSB made an application to the Planning Inspectorate on 7 February 2014 for a Development Consent Order (DCO) for a tidal lagoon in Swansea Bay, South Wales. Examination of the application closed on 10 December 2014 and development consent was awarded by the Secretary of State for Energy and Climate Change who made an Order authorising the development on 9 June 2015. The DCO authorises the construction and operation of the generating station itself, and its component parts. These component parts include both offshore and onshore elements of the Project.

The DCO sets out the following requirement related to ground contamination

A Contamination and Remediation Scheme is a requirement of the DCO (DCO Requirement 12) and must be discharged by the relevant planning authorities in consultation with Natural Resources Wales (NRW). As set out in Section 4 below, TLSB have developed a delivery strategy for discharging DCO requirement 12, it is intended that this same strategy be applied to TCPA planning applications outside of the DCO, including the 275kV Cable Route Application.

12.—(1) *Prior to the commencement of each phase of the authorised development a scheme to assess the nature and extent of any contamination on the Order land, and confirmation of whether or not it originates on the Order land must be submitted to and approved by the relevant planning authority in consultation with Natural Resources Wales. The investigation and risk assessment must be undertaken by competent persons in accordance with Land Contamination: A Guide for Developers and the EA/DeFRA Report CLR11 - Model Procedures for Management of Land Contamination and must be submitted as a written report. The written report is to include—*

- (a) a desktop study to identify all previous uses on the Order land and potential contaminants on land and controlled waters. The desktop study must establish a “conceptual site model” (CSM) identifying all plausible pollutant linkages to be assessed;*
- (b) a survey of the extent, scale and nature of contamination;*
- (c) an assessment of the potential risks to—*
 - (i) human health;*
 - (ii) ground waters and surface waters;*
 - (iii) adjoining land;*
 - (iv) property (existing or proposed) including buildings, crops, livestock, pets, woodland and service lines and pipes;*
 - (v) ecological systems; and*
 - (vi) archaeological sites and ancient monuments;*

(d) an appraisal of remedial options, and proposal of the preferred remedial options; and

(e) so far as relevant to land which is the subject of the written report in question, details of how the scheme has taken account of remediation works secured by an agreement under section 106 of the 1990 Act dated 20th November 2009 and made between Neath Port Talbot County Borough Council (1), St Modwen Developments Limited (2), St Modwen Properties PLC (3), BP Chemicals Limited (4) and BP Oil Llandarcy Refinery Limited (5) as well as consultation carried out with Baglan Bay Company Limited (company number 638328).

(2) Prior to the commencement of each phase of the authorised development a remediation scheme to bring the Order land to a condition suitable for the intended use by removing any unacceptable risks to human health, buildings, other property and the natural and historical environment must be submitted to and approved by the relevant planning authority. The remediation scheme must include all relevant works to be undertaken, proposed remediation objectives, remediation criteria and site management procedures. The measures proposed within the remediation scheme must be implemented in accordance with an approved programme of works contained in that scheme.

(3) Prior to operation of the relevant phase of authorised development commencing, a verification report which demonstrates the effectiveness of the agreed remediation works carried out in accordance with this Requirement must be submitted to and approved by the relevant planning authority.

(4) In the event that contamination is found at any time when carrying out the authorised development that was not previously identified, work on the affected area must cease immediately and shall be reported in writing to the relevant planning authority. A Desk Study, Site Investigation, Risk Assessment and where necessary a Remediation Strategy must be undertaken in accordance with Land Contamination: A Guide for Developers. The Desk Study, Site Investigation, Risk Assessment and any Remediation Strategy must be submitted to and approved by the relevant planning authority. Prior to operation of the development, a verification report which demonstrates the effectiveness of the approved remediation must be submitted to and approved by the relevant planning authority.

(5) In this Requirement "Land Contamination - A Guide for Developers" means the document entitled Land Contamination: A Guide for Developers (WLGA, WAG & EAW, 2012) certified as such by the Secretary of State for the purposes of this Order.

A number of elements were excluded from the DCO which included the provision of the 275kV cable route from the Western Landfall of the development to the Baglan Bay substation. A separate TCPA is therefore being sought for the 275kV electrical grid connection works.

3.2 Supporting Materials

In support of a separate planning application for the 275kV cable route TLSB recognise that land contamination impact on the proposed works needs to have been fully considered and in developing strategies, TLSB make reference to the advice as set out in the following documents:

- *Development of Land Affected by Contamination: A Guide for Developers,*

This document aligns with and makes reference to the following:

- *Model Procedures for the Management of Land Contamination – Contaminated land Report 11.*
- *CL:AIRE: The Definition of Waste - Development Industry Code of Practice*

TLSB have followed the advice as set out within these guidance documents and for consistency across the Project, TLSB have set out a single strategy for dealing with potential ground contamination which will be utilised to discharge requirements under the DCO as well as subsequent conditions precedent as a result of separate planning applications under the TCPA.

4. Ground Contamination Delivery Strategy

4.1 Delivery Strategy

TLSB have developed a delivery strategy for discharging DCO requirement 12 – Contamination and Groundwater, TLSB have consulted with the LPA's and NRW on this proposed strategy and to date no adverse comments have been received. It is intended that this same strategy be applied to TCPA planning applications outside of the DCO, including the 275kV Cable Route Application.

All of the documents referenced within section 3.1 follow the same information gathering route map and require the developer to undertake the same initial investigations and reporting route summarised as:

- Risk Assessments– Phase I and II;
- Options Appraisal and Remediation strategy; and
- Implementation and Verification plans.

TLSB intend to follow the overarching frame work of CLR11 in the gathering of information and the development of the necessary documentation up to the options appraisal/remediation strategy stage. It is then intended to utilise the CL:AIRE CoP to deliver the implementation and verification of the remediation strategy via a Materials Management Plan (MMP).

The CL:AIRE CoP sets out a streamlined process with regard to re-use of site won materials and better supports the sustainable and cost effective development of land. In addition it can provide an alternative to Environmental Permits or Waste Exemptions. It is therefore considered that the CL:AIRE summary process set out within Appendix A TLSB – Ground Contamination Delivery Strategy adequately sets out a frame work from which to discharge the relevant conditions associated with a consented planning application.

4.2 Delivery Route Map

The TLSB Ground Contamination Delivery Strategy – set out in a route map can be seen in Appendix A. It can be seen from the accompanying notes that TLSB envisage developing the MMP alongside the appointed contractor to utilise the contractor's experience which will deliver efficiencies into the management and movement of materials as well as the verification process.

5. Procurement

5.1 Commissioned Consultant

Through a pre-qualification process and subsequent competitive tender, TLSB have commissioned White Young & Green (WYG) as Geo-Environmental Consultants to undertake the following scope of works across **ALL** land parcels (see table 1 for details) required to deliver the Project:

- Review and gap analysis of ground investigation works completed to date;
- Production of a Phase I Preliminary Risk Assessment; and
- Recommendations for intrusive investigation, Design of Intrusive works, production of Bill of Quantities and Detailed Specification to inform a competitive tender for the Intrusive works.

5.2 Land Requirements

TLSB have defined the land requirements and developed land parcel references and descriptions of works associated with each parcel as identified in Table 1 below and drawing Ref: TLSB-TLP-PMO-XXX-DWG-063 in Appendix D.

Table 1 – Required Land Parcels

Land Parcel	Description	Project Requirement
Part A	Western Landfall Area ABP Land	Area required for permanent works comprising visitor car parking, associated infrastructure and hard and soft landscaping (Note: building to be constructed on reclaimed and re-engineered foreshore).
Part A	Western landfall Access Road ABP Land	Area required for construction of new permanent access roads over existing. Associated drainage and installation of 11kV & 275kV cables and other services, lighting columns and security as well as associated soft landscaping.
Part A	Permanent Access Road. Dan Morrissey UK Ltd Land	Area required for construction of new permanent access road. Associated drainage and installation of 11kV cables and other services, lighting columns and security as well as associated soft landscaping (Note road runs through middle of parcel east to west).
Part A	Offices Welfare and Parking Dan Morrissey UK Ltd Land	Area's north and south of permanent access road will be required for temporary offices, welfare and car parking comprising hard standings, shallow temporary service installations, security and lighting.
Part B	Contractors laydown area ABP Land	Area required for temporary use as contractor's laydown area will include some hard standings, shallow temporary services installation, security and lighting. Temporary enclosed structures may also be used for fabrication/installation activities, these would be weather tight.

Part C1	Transport Hub ABP Land	Area required for temporary use as a logistics/transport hub with some hard standings, shallow temporary services installation, security and lighting.
Part C2	Eastern Landfall access route St Modwin Land	Permanent Access Road to Eastern Landfall.
Part D	275 Cable route Various Land Owners	Land Required for the installation of 275kV cable electrical grid connection works comprising trenching, ducting, associated connection chambers and installation of 275kV power, earthing and fibre optic cables. Route from TLSB power generating station to National Grid Baglan Bay substation. Location Typically to the South of Fabian Way. Trench dimensions typically 1.55m deep and 600m wide. Location typically to the south of Fabian Way.

5.3 Works completed to date

WYG have completed a Phase 1 Preliminary Risk assessment - Appendix B which comprises the following:

- Project Objectives;
- Detailed Desk Top Study including site Visits and Gap Analysis of previous investigations, identification of potential contaminants, receptors, pathways and pollutant linkages; and
- Outline Conceptual Model.

The executive summary of WYG Ground Conditions Desk Study Report 19th April 2016 has been extracted from the report and is shown in Table 2 below.

Specifically to the **275kV Cable Route** the report sets out a number of recommendations to further inform risk, these have been extracted from the report and are presented using the report nomenclature as below.

10.2 Proposed Scope of Works

It is recommended that the following scope of works is undertaken as an initial phase of investigation in order to address the data gaps detailed above.

10.2.1 Service Location

A Ground Penetrating Radar (GPR) survey should be undertaken along the proposed cable route in order to accurately locate existing services and below ground obstructions. It may also be worthwhile combining additional geophysical techniques

(such as magnetometer or electromagnetic methods) with these works in order to determine the possible presence of UXO prior to intrusive works commencing.

10.2.2 BP Pipelines

Any suspected relic pipelines identified by the GPR survey along the route of the cable should be investigated by hand dug or vacuum extraction trial pits in order to expose and assess the condition of the pipeline and to confirm their depth. Soil samples should be taken and analysed for TPH-CWG and BTEX suites from the soil mass on either side of the pipe and at least one sample from the underlying soil. This assumes that the pipelines are at relatively shallow depths and readily accessible by hand pitting techniques. If the pipelines are present at a greater depth then the investigation techniques may need to be adapted or may not be required at all if it is significantly below the base level of the proposed HV Cable

10.2.5 Ground Conditions and Contamination – Cable Route

Much of the proposed 4.5km long cable route is anticipated to lie in close proximity to existing services. In view of this care needs to be taken to avoid damage to these services and to ensure the health and safety of workers during the ground investigation. Even relic or redundant services need to be protected as they may, in some case, contain residual contamination.

It is considered that the most appropriate option of investigation is to undertake hand dig or vacuum extraction trial pits, supplemented with follow-on hand auguring or window sampling techniques to assess the ground conditions to a depth of at least 2mbgl. It is proposed that this work is initially undertaken at 100m centres along the cable route. Additional targeted investigations may subsequently be required if any areas of concern or significant contamination is found. Ideally the works should seek to prove the base of the Made Ground deposits where this is feasible.

Soil samples should be analysed for a broad suite of common contaminants due to the wide range of historical processes in the area and to inform the assessment of options for re-use of the soil arisings on site. As such it is anticipated that the suite of analysis will include; heavy metals, asbestos, cyanide, FOC, pH value, sulphate, phenol, TPH banded and speciated PAHs. Selected samples demonstrating any significant evidence of petroleum hydrocarbon contamination (based on visual, olfactory evidence or elevated PID readings) should additionally be analysed for TPH-CWG and BTEX and this may be expected to occur where the cable passes along the former BP Transit site.

10.2.11 Horizontal Directional Drilling

Details of the deeper geology on either side of the River Neath is required to inform the directional drilling method. It is recommended that a borehole should be drilled on each side of the river for this purpose. The location and depth of these boreholes should be agreed with the contractor undertaking the directional drilling works.

Table 2 – WYG Executive Summary

The Site	The site comprises land adjacent to Kings Dock and Queens Dock in Swansea Bay and an elongated route (circa 4.5km) for a proposed high voltage electricity cable extending to Baglan near Port Talbot. The majority of the site is currently vacant land and is largely covered by hardstanding. The proposed cable route portion of the site is along the footpath to Fabian Way before passing through the sand dunes at Crymlyn Burrows and then running under the River Neath and connecting into Baglan Energy Park.
Site History	The site has an extensive history of industrial development since the construction of the docks in circa 1918. Land uses on the site have included a timber yard, fish meal works, oil storage tanks, various industrial works, gasworks and railway sidings. Adjacent land uses have comprised further industrial processes including a large chemical works and power station at Baglan.
Geology, Hydrogeology, Hydrology and Radon	The geology underlying the site comprises Made Ground deposits in the vicinity of the western docks and around the Baglan Bay end of the cable route. The underlying superficial geology comprises Marine Beach Deposits with Tidal Flat Deposits and alluvium around the River Neath and some Blown Sand deposits along the central portion of the cable route. The underlying bedrock comprises Coal Measures. The Coal Measures and superficial deposits are classed as Secondary Aquifers. There is no appreciable risk from radon gas or coal mining noted for the site.
Site Setting	The site is located within a predominantly industrial and commercial area, though some residential properties are present proximal to the cable route. There are three waste management facilities and one closed landfill recorded within 250m of the site.
Ground Contamination Assessment.	Significant sources of contamination have been identified based upon the extensive historic industrialisation of the site and surrounding area and in view of information in existing site investigation reports. Key contaminants of concern include heavy metals, asbestos, petroleum hydrocarbons, BTEX and PAHs. There is also a plausible risk of sulphate, cyanide, PCBs, VOCs and SVOCs being present in some areas. Risks to human health and controlled waters have been identified. These risks are predominantly low to moderate; however, some elevated high level risks have also been identified.
Conclusions.	The site has a significant risk from contamination, particularly around the docks and adjacent to former industrial processes such as the BP Transit Site and Baglan Chemical works. It is recommended that a ground investigation is undertaken to further assess and refine the risk assessments in this report.

In conjunction with TLSB, WYG have undertaken the design of the Phase II site investigations works appropriate for each land parcel use and have produced a Specification and Bill of Quantities to allow TLSB to tender for a consultant led Phase II fully interpretive intrusive Ground Investigation Report as well as a Recommendations and Options Appraisal report.

TLSB will develop the Remediation strategy in conjunction with the successful tenderer

The Works undertaken by WYG to date are appended to this report In Appendix C

At the time of writing, TLSB are currently tendering the Phase II site investigation works. It should be noted that TLSB intend utilising the successful Consultant to undertake all the works packages to ensure continuity of developing knowledge across the project and the ER's reflect this.

5.4 Works completed to date summary.

It is considered that as supporting documentation for a planning application, the works undertaken to date, referenced in and attached to this report provide sufficient evidence to the LPA that the site can, where required be successfully remediated and risks associated with ground contamination can be mitigated to an acceptable level and conditional planning permission can be granted.

It is also recognised that approval relating to these works will be conditional and that the further works set out within the route map in Appendix A will be required. Due to programme time frames, TLSB intend progressing the intrusive and interpretive works during the determination period associated with this submission. This will mitigate risks associated with current unknowns and allow time for further iterations of investigation work if deemed appropriate to the nature and scale of the application. These future works are presented in the following sections.

6. Phase II Intrusive Investigation Works

6.1 Scope of Works

TLSB require a consultant led package of works that will discharge DCO requirement 12 and TCPA conditions associated with the various land parcels and nature of the proposed works within each parcel.

An ITT has been developed and sent to shortlisted tenderers and sets out the following requirements;

- Full review of desk top study completed to date;
- Undertake the works and reporting identified within ER's, WYG ground investigation specification and Bill of Quantities;
- Undertake 3D topographical survey work;
- Undertake soakaway testing in accordance with BRE 365 and BS 5930 as appropriate; and
- Undertake third party consultation as deemed necessary to complete the scope of works.

The scope includes all the intrusive work identified with the WYG designed Phase II specification and BoQ in Appendix C, as well as the development of Interpretive reports, quantitative risk assessments and development of options appraisals and remediation strategies.

In addition, TLSB have identified gaps within existing topographical survey information which have been addressed within the ITT to ensure all above ground features across the land parcels are identified with particular attention being paid to tank foundations, above ground pipework, trenches and drainage systems.

Additionally Soakaway tests have also been specified to further inform drainage design and ground water conditions.

6.2 UXO watching Brief

TLSB have previously commissioned BACTEC to undertake an Unexploded Ordnance threat assessment in respect of the Swansea Docks to Baglan area, this report currently recommends that a watching brief is required for intrusive site investigation work and if applicable subsequent remediation works. TLSB have incorporated this requirement into the ITT for the Phase II site investigation works.

TLSB may undertake a further body of work to review in more detail risks associated specifically with the shallow 275kV cable route works and will adjust Phase II Site Investigation requirements as considered appropriate.

Further details in relation to UXO during the construction of the 275kV cable route can be found in the Construction Environmental Management Plan (CEMP).

6.3 Archaeology

TLSB have previously commissioned AECOM to undertake a Written Scheme of Investigation for Terrestrial Heritage Assets, a section of this document relates specifically to the requirement for an archaeological watching brief for the cable trench works within the Crymlyn Burrows. It is anticipated that this requirement will be a condition of any planning consent as a result of consultation with GGAT and Cadw.

TLSB have incorporated this requirement into the ITT for the Phase II site investigation works.

Further details in relation to terrestrial archaeology during the construction of the 275kV cable route can be found in the Construction Environmental Management Plan (CEMP).

6.4 Output.

TLSB have set out the key output requirements required from the Phase II intrusive works within the ITT, these are summarised below.

A combined factual and interpretative report. This shall include assessment and interpretation of ground conditions, geology, hydrogeology, contamination observations, in-ground features and obstructions, geotechnical assessment and environmental risk assessment. The risk assessment shall include screening of laboratory data against appropriate generic assessment criteria in accordance with current guidance. A full risk assessment, adopting the source-pathway-receptor model, shall be included with full evaluation of all contaminant sources.

Based on results of intrusive works, Consultations as appropriate with regulators to define objectives, followed by development of options appraisals and remediation strategy.

This output is not exhaustive and the tenderers are to advise TLSB on additional output necessary to comply with the ITT and the subsequent discharge of DCO and TCPA planning conditions.

TLSB shall submit to LPA's the completed report as necessary to discharge conditions associated with the planning consent.

7. Options Appraisal

7.1 Development

The Options Appraisal is the second stage of the overall process of ground contamination assessment and will be developed based on the completion and outcome of the Phase II site investigation work including any required iterations of the investigation process. The Consultant will develop the site specific remediation objectives for the identified pollutant linkages that have been shown through risk assessment to represent unacceptable risk and where as an outcome of the Phase II investigation a decision has been taken to carry out remediation works. These objectives will be agreed in advance with LPA consultees.

7.2 Output

A list of feasible remediation options will be produced for appraisal in order to establish which are most appropriate for addressing each pollutant linkage. The merits of each option will be assessed by compiling detailed technical information. The evaluation will take account of the best practicable environmental option, cost benefit, site specific constraints and appropriate timescales for remediation, including obtaining likely regulatory requirements and permits.

The options appraisal will establish which option or combination of options will most effectively achieve the remediation objective(s).

8. Remediation Strategy

8.1 Define

TLSB will work closely with the Consultant to define the remediation strategy based on output from the Options Appraisal stage.

The remediation strategy will set out how the remediation option or combination of options, will address pollutant linkages and agreed remediation criteria. The strategy will provide a clear picture of how remediation activities will be planned for, implemented, monitored and verified. Practical issues such as phasing of activities, plans for obtaining appropriate environmental permits, compliance monitoring, contingency plans and mitigation measures etc. will as appropriate be addressed within the remediation strategy.

8.2 Demonstrate

TLSB along with the Consultant will demonstrate to the LPA that the remediation activities will be capable of achieving the agreed remediation criteria, without posing unacceptable risk to third parties or the environment, that appropriate permits will be obtained, contingency plans are in place and mitigation measures will be implemented if there are significant variations from the remediation strategy.

This will be demonstrated through the development of a Materials Management Plan following the CL:AIRE – CoP as set out below.

9. CL:AIRE CoP

9.1 Development

Due to the nature of the existing ground including existing stockpiles, the development requirements for level changes, reclamation works and requirements to meet environmental and sustainability drivers TLSB intend, subject to the finding of the Phase II intrusive works, to deliver an implementation plan for the physical works utilising the CL:AIRE Code of Practice.

TLSB will engage with the chosen contractor to closely develop how the remediation strategy will be implemented within an MMP.

9.2 Materials Management Plan

A MMP will be developed that will translate the remediation strategy into a clear set of activities, that will deliver the overall objectives (remediation, management and other technical) agreed for the project, in accordance with TLSB and regulatory requirements. Consultation with relevant parties is part of the development of the plan. Health, safety and environmental protection procedures will be considered at the outset as an integral part of the work.

As part of the TCPA application for the 275kV cable route, TLSB have produced a draft Construction Environmental Management Plan (CEMP). The CEMP defines the measures required to mitigate the construction of the 275kV cable route so as to prevent significant environmental impacts. The CEMP includes a number of elements which are relevant to the MMP and the MMP will align with relevant sections of the CEMP as appropriate.

The MMP will set out materials tracking systems, contingency arrangements for dealing with unknowns as well as setting out the framework for defining a Verification Plan.

The plan will reflect the complexity of the work as defined by the outcome of the investigation works and options appraisal.

9.3 Qualified Person Sign Off.

TLSB will appoint an independent individual to act as a QP. TLSB will ensure that the appointed QP possesses the attributes required within Appendix 6 of the CoP and is recorded as such on the CL:AIRE register

TLSB shall provide the fully completed MMP and any other necessary information to allow the QP to carry out their duties under the CoP and complete a signed declaration for submission to Natural Resources Wales and TLSB.

TLSB will in turn submit a copy of the QP Declaration onto the LPA's for record purposes and discharge of TCPA pre-commencement conditions.

9.4 Implementation of MMP (Supervision)

Upon Commencement of the works TLSB will mobilise appropriate personnel from their asset assurance team who will ensure that the MMP is complied with and all tracking and contingency arrangements are in place.

It is recognised that there are occasions arising from site activities that may lead to amendments to the MMP, where this is considered the case TLSB ensure that all changes are documented in accordance with the appropriate procedures and that any amendments are appropriately detailed/recorded within the verification plans.

9.5 Verification Report

Upon completion of the Works a verification report will be produced, this will be collated during the works to ensure timely completion.

The verification report will provide a full record of all remediation activities carried out at the site and demonstrate that the agreed remediation criteria and objectives have been achieved and/or furthered, the report will comprise a full audit trail to identify where materials have been placed and to show that materials and waste have gone to the correct destination.

The Verification Report will document any changes that may have been made to the MMP as alterations to the project have been formally made and/or contingency arrangements have been implemented and will report any unexpected contamination which may also result in a review of conceptual model and remediation objectives. TLSB will submit a verification report to the LPA's for record purposes and discharge of relevant TCPA conditions.

9.6 Long Term Monitoring and Maintenance

As a result of the Stage II works the Options Appraisal and Remediation Strategy may set out requirements for long term maintenance and/or monitoring strategies. If

deemed appropriate these will be outlined with the MMP and a separate 'Monitoring and Maintenance Plan' will be produced for submission to the LPA for approval.

10. Summary

TLSB consider that the details set out within this report along with the works completed to date and appended, provide a sufficient level of information to allow the LPA's to be confident that the development site can if appropriate be remediated and should allow the LPA's to Grant planning permission (relative to ground contamination) subject to pre-construction phase conditions.

This report demonstrates that TLSB fully understand that where planning is granted, Land contamination conditions are pre-construction phase conditions ('conditions precedent') and TLSB recognise that there will be a number of key information stages and submissions to the LPA's to ensure that all of stages of the land contamination assessment and remediation process for the site are undertaken prior to the commencement of construction works at the site.

In summary, TLSB believe that this report identifies a robust and coherent approach to dealing with potentially impacted ground conditions associated in support of the 275kV Cable Route planning application.

Appendices

- Appendix A TLSB – Ground Contamination Delivery Strategy – Cable Route
- Appendix B WYG Phase I Preliminary Risk Assessment.
- Appendix C WYG Phase II Designed Specification and BoQ
- Appendix D Drawing 'Ground Contamination -SI Phase 2 Locations and Scope'