



Neath Port Talbot County Borough Council

REMEDIATION STRATEGY

Port Talbot Harbourside





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Port Talbot Harbourside

VERSION 1 – CONFIDENTIAL

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WSP

1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

Phone: +44 2920 769 200

WSP.com



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Checked by	A Irlam	A Irlam	A Irlam	
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1 INTRODUCTION

1.1 INSTRUCTION

WSP UK Ltd. (WSP) is pleased to present the enclosed report in response to request by Neath Port Talbot County Borough Council (NPTCBC) (the client), for the provision of a remedial appraisal and outline remediation strategy for Port Talbot Harbourside, SA13 1RZ (hereinafter referred to as the 'site'). The site location is presented as **Figure 1 (Appendix A)**.

1.2 BACKGROUND

A previous ground investigation conducted by WSP in August 2019 encountered Non-Aqueous Phase Liquid (NAPL) and associated hydrocarbon contamination in the central and western areas of the site. However, due the limited coverage of monitoring wells in this area of the site, additional investigation was recommended to provide further information on the extent of the contamination prior to the preparation of a remediation strategy. These reports are referenced in Section 2.1.

1.3 OBJECTIVES

The main objectives of this assessment have been to:

- i Identify a cost-effective remedial approach to the delivery of the site and agreement with the regulatory authority;
- i Determine reasonable remediation end-goals for the recovery of NAPL; and
- i Provide a basis for constructive client and regulatory discussion (date to be agreed) to the confirmation of an agreed solution.

These works have been instigated to:

- i Address environmental risk, detail methods to remove pollutant linkages and facilitate a development platform;
- i Prevent statutory enforcement with the observed presence of List 1 hazardous hydrocarbons in ground; and
- i To allow for safe future development of the site which limits potential risk to the identified receptors (human health and controlled waters).

1.4 LIMITATIONS

This report is addressed to and may be relied upon by the following party:

- i Neath Port Talbot County Borough Council.

The report shall not be relied upon or transferred to any other parties without the express written authorisation of WSP. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

Where this report summarises information provided from others, WSP cannot offer any guarantees or warranties for the completeness or accuracy of information reviewed.

General limitations of the assessment are included in **Appendix B**.

2 SITE STATUS

2.1 PREVIOUS REPORTS

- i Opus Phase I Desk Study Report, Ref: V-C8602.01-OIC-00-XX-RP-01, Dated July 2017.
- i Opus International Consultants (UK) Ltd, NPT Harbourside Interpretative Geo-environmental Ground Investigation Report, Ref: V-C8602.01/OIC/00/XX/RP/02, Dated September 2017;
- i Opus International Consultants (UK) Ltd, NPT Harbourside – Addendum Ground Gas Letter Report, Ref: V-C8602.01-OIC-20171012-NPTCBC-01, dated October 2017;
- i WSP UK Ltd, Port Talbot Harbourside Generic Quantitative Risk Assessment, Supplementary Site Investigation Report, Ref 62253048-001, Dated September 2019;
- i WSP UK Ltd, Port Talbot Harbourside Controlled Waters Detailed Quantitative Risk Assessment, Ref 62253048-002, Dated February 2020;
- i WSP UK Ltd, Port Talbot Harbourside, Factual Report – Additional Product Investigation, Ref. 62253048-003, dated March 2020; and
- i WSP UK Ltd, Port Talbot Harbourside, Earthworks Specification, Ref. 62253048-005, dated February 2020.

These reports provide a comprehensive summary of site works completed at the site. This Remediation Strategy primarily uses the data contained within the three WSP reports, dating from September 2019. This report should be read in conjunction with these reports, in particular the WSP 2019 and 2020 reports.

2.2 LOCATION

The site is located between Old Dock Road and Harbour Way (A4241) on the southern boundary and Cramic Way to Port Talbot Parkway Railway Station on the northern boundary. The site comprises a roughly rectangular parcel of land which is approximately 2.8 ha in area. The western portion of the site is bound with earth bunds whilst the northern and eastern boundaries are open. The southern boundary is fenced.

The site is centred on approximate Ordnance Survey Grid Reference 276566E 189503N.

A site location plan and boundary is provided within **Appendix A** section of this report, presented as **Figure 1**.

2.3 SITE CONDITIONS

- 2.3.1 A site walkover was carried out by WSP on 16th May 2019 and the following observations were made:
- 2.3.2 The site is located on a section of land which, in general, is relatively flat except for a raised earth bund area, approximately 2.0m in height, in the western area of the site. The site boundary is approximated by large boulders and fencing along its eastern and southern boundaries and soil bunds along the western boundary. The northern site boundary is open onto a public footpath.
- 2.3.3 All buildings previously occupying the site associated with the site's historical use as a Steel and Chemical Works have been demolished but areas of concrete slab, asphalt/tarmacadam surfacing and hardstanding associated with these buildings remain amongst surface vegetation.

2.4 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

Details of the ground conditions encountered during historical investigations are presented in the WSP reports listed in Section 1.3, An exploratory hole location plan is included as **Figure 2 (Appendix A)** for reference. A summary of the ground conditions is provided below.

The geology of the area in its regional context is shown on British Geological Survey 1:63,360 scale plan Sheet 247 and in more detail on 1:10,560 scale sheet SS 78 NE. The site lies just within the southern outcrop of the South Wales Coalfield.

Solid strata of the Llynfi Beds comprising sandstones with interbedded coal seams and minor siltstone and mudstone layers of the Lower Pennant Measures of Carboniferous age underlie Estuarine Alluvium in all the immediate area. Alluvial Fan deposits and Glacial Sand and Gravel are also indicated near the site.

A conjectural fault (Morfa Fault) runs in a general north-west to south-east orientation, which down throw's strata towards the north-east. This fault is seen to pass down through the central reaches of the site.

Made Ground

The Made Ground encountered across the site is predominantly granular and coarse in nature, comprising a mixture of ash, slag, brick, concrete and stone with various inclusions of deleterious material including metal, glass and wood. The thickness of the Made Ground ranges from 1.0m bgl to 3.5m bgl, with an average thickness of 2.0m. Several concrete slabs are noted across the site, both at surface level and encountered at shallow depth.

Superficial Deposits

In most of the exploratory holes that encountered natural strata, variable granular and cohesive superficial deposits were encountered beneath the Made Ground materials.

Alluvial Silt is present in the majority of exploratory hole locations and was encountered directly underlying the Made Ground. The Alluvial Silts were encountered between 1.60m and 4.0m bgl and described as a soft dark grey slightly sandy gravelly silt. Occasional organic material was also encountered.

Alluvial Gravel deposits were encountered in all locations across the site between 1.6m bgl and >10.0m bgl (maximum proven depth) with a maximum strata thickness of >6.20m and generally comprised dark brownish grey sandy slightly silty gravel. The gravel was described as fine to coarse, well rounded to sub-rounded sandstone. High and low cobble content were noted within the majority of boreholes.

Solid Geology

The Opus reports state that a layer of strong, thinly interbedded fine grained, highly weathered sandstone and weak, grey, highly weathered mudstone was encountered in BHH04 from 6.5m bgl to greater than 8.0mbgl, where the borehole was terminated.

Hydrogeology and Hydrology

The nearest surface water features to the site are the Port Talbot Docks which lie approximately 60 m to the south and the River Afan some 370 m to the north-west at its closest distance. A small unnamed pond also lies approximately 80 m south-east of the site.

The Port Talbot Dock maybe in continuity with surrounding groundwaters in the area directly south of the site. However, the dock does include a concrete wall to the west. Information provided by the Marine Operation Supervisor of the Port Talbot Dock has confirmed that the water levels of this dock are managed. The Dock is fed by the River Afan through a Dock Feeder located approximately 570 m west of the site.

Groundwater beneath the site is typically encountered at a depth of approximately 1.5 – 2.5 m bgl beneath the majority of the site, although on the raised earth bund at the west of the site is present at approximately 4.0 – 4.5m bgl, primarily within the Alluvial deposits. Groundwater elevation across the site is typically 4.5 – 5.5 m AOD.

The River Afan flows generally north east to south west and has been classified by the Environment Agency as having a River Quality Objective Grade 1, with a Chemistry General Quality Assessment Grade 'A', i.e. of very good quality that is suitable for salmonid fishery.

Licensed surface water abstractions have not been reported within a 500m radius of the site.

The superficial deposits underlying the site have been classified by the Environment Agency (EA) as a Secondary aquifer (undifferentiated) of high permeability and the bedrock as Secondary 'A' aquifer (permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers).

None of the aquifers beneath the site are currently known to be used for potable water resource. Additionally, no licensed groundwater abstractions have been identified within a 1 km radius of the site and no Groundwater Source Protection Zones (SPZ) are not located within 10 km of the site.

2.5 SUMMARY OF CONTAMINANT DISTRIBUTION

Exploratory locations included within this discussion are included as **Figure 2 (Appendix A)**.

2.5.1 SOIL CONTAMINATION

Opus (September 2017) observed elevated concentrations of benzene above chronic direct contact / inhalation human health screening criteria protective of a commercial worker in shallow soils and Made Ground, across the site. They also reported free phase hydrocarbons in soil trial pit TPH05. This had been excavated within proximity of a known historic tank farm within the western area of the site. Asbestos fibres and debris were identified in the Made Ground soil samples analysed spatially distributed across the site in a non-specific manner, thus it is to be assumed that the majority of the Made Ground is impacted by asbestos, although no bulk asbestos fragments were reportedly identified during the site works.

In August 2019 WSP confirmed further hydrocarbon odours in soil arisings from boreholes BH102, BH103 and BH106 and oil staining in BH104 (located 25 m north of TPH05) and BH105 (located 50 m north-west of TPH05), again within the historic tank farm. Soil laboratory analysis confirmed the presence of Total Petroleum Hydrocarbons (TPH) and BTEX (benzene, toluene, ethylbenzene and xylenes) compounds, with maximum concentrations recorded in BH104 from the smear zone at 3 m bgl with TPH at 15,300 mg/kg and benzene at 195 mg/kg. Total Polycyclic Aromatic Hydrocarbons (PAH) concentrations were also typically detected across the site above their Limits of Detection (LoD) at between 0.146 mg/kg – 75.8 mg/kg primarily from within the shallow Made Ground. Loose asbestos fibres (chrysotile & amosite) were identified in a single sample (BH107,

0.1m bgl). No bulk asbestos fragments were identified. Lead was also encountered at concentrations exceeding the GAC at two locations within the Made Ground stratum.

Soil samples collected at the site during the December 2019 works, were analysed by the laboratory for TPH CWG and BTEX compounds. Of the 10 samples analysed, six samples recorded TPH at below LOD, with a maximum concentration of 1,880mg/kg recorded in TP203A. All other samples recorded concentrations below 400mg/kg.

2.5.2 GROUNDWATER CONTAMINATION

Opus (2017) identified the presence of NAPL on groundwater within TPH05 located towards the west of the site.

Groundwater monitoring in August 2019 following supplementary ground investigation, recorded additional free phase LNAPL in boreholes BHC5 (apparent thickness of 0.03 m) located in the western tank farm and BH104 (apparent thickness of 0.77m) located ~30 m north of BHC5. Laboratory analysis indicated that detections of TPH and BTEX concentrations in groundwater were limited to samples taken from BH105 and BHC5 (maximum TPH 180 mg/l and benzene 64.1 mg/l at BHC5). Detections of PAH compounds were lower in concentration and more widely spread but with maximum concentrations detected in samples taken from BHC5 and BH105. Laboratory analysis of a free product sample retrieved from BH104 indicated that the free phase was a petrol range hydrocarbon between C6-C18 and based on a high-level assessment of hydrocarbon band isotope comparison, was estimated at between 1 and 5 years old.

Further product investigation completed in December 2019 and January 2020, identified LNAPL within BH204A and TP203A, hydrocarbon odours and sheens were also noted on groundwater in BH203. Groundwater samples collected from BH202, BH203 and BH205 recorded TPH concentrations below LOD indicating a limited lateral extent around the primary hotspots. A product sample collected from BH204 was submitted for fingerprint analysis which indicated it was a possibly petrol/kerosene range hydrocarbon (C6-C15) aged at >10 years.

2.5.3 SUMMARY

It is noted that Made Ground at the site potentially contains determinands, particularly asbestos fibres which pose a potential risk to human health receptors; as well as potential elevated concentrations of metal determinands. Due to the inherent heterogeneity of Made Ground deposits, the exact extent of any contamination cannot be accurately delineated, and it should be assumed that any Made Ground present at the site has the potential to cause possible harm to human health receptors unless proven otherwise.

Hydrocarbon contamination of soils and groundwater, including the presence of LNAPL, has been identified within isolated areas at the site, focussing on the western portion of the site around BHC5 and towards the centre around BH104 and BH105. The presence of LNAPL has been identified in these areas, likely associated with the presence of historic tank farms within this area.

Figure 3 and **Figure 4** included in **Appendix A**, highlight the spatial distribution of hydrocarbon contamination observed in soils and groundwater at the site.

2.6 RISK ASSESSMENT RESULTS

GENERIC QUANTITATIVE RISK ASSESSMENT, WSP 2019

Human Health

The primary risk to human health on site is considered to be the inhalation of vapours from impacted soil, groundwater and LNAPL by future users of the commercial premises. Soil concentrations of benzene, naphthalene and aliphatic C8-10 hydrocarbons exceeded a commercial screening at BH104 (3m bgl). The groundwater vapour GAC, protective of indoor commercial workers, screening value for benzene was exceeded in BHC5, combined with the LNAPL recorded in this area of the site (BHC5 and BH104_2019) creates a localised source zone. As it stands without empirical soil vapour monitoring and assessment, the potential risk to human health associated with vapours derived from impacted soil/groundwater/product is considered to be moderate.

In addition, Lead was identified above commercial GAC at two exploratory locations from samples with in the Made Ground, and the presence of asbestos site is considered to pose a potential risk in areas of softstanding.

The proposed future use as a commercial premise with associated vehicle parking will include a capping layer of hardstanding, limiting the potential for direct dermal contact, ingestion or inhalation of contaminated soil particles. Future construction works will need to be planned and implemented in accordance with relevant Health and Safety legislation being cognisant to the presence of contaminating substances within the subsurface. Following construction, the human health risks associated with direct contact/ soil ingestion and inhalation contaminant linkage is considered to be low.

Controlled Waters

The risk to surface water is considered at this stage to be moderate. This is primarily due to the presence of LNAPL. There are no downgradient groundwater monitoring wells beyond the area of impact in borehole BHC5 as it is located on the site boundary. Therefore, it is currently unknown whether NAPL or contaminated groundwater is migrating off-site to the south west.

The risks to both the shallow and deep aquifers on site are considered to be moderate to low. Neither aquifer is currently utilised as a potable water resource and as such the current assessment is conservative with respect to the water quality within the aquifer. In the event that, the aquifer use changes to a more sensitive potable use, then this assessment would need revising. The deeper bedrock groundwater is also considered to be of poor quality with heavy metal contamination due to the nature of the surrounding bedrock (South Wales Lower Coal Measure Formation).

DETAILED QUANTITATIVE RISK ASSESSMENT, WSP 2020

A controlled waters DQRA was completed to further assess potential risks identified at GQRA stage, focussing on dissolved phase concentrations within the groundwater. The DQRA only assessed those risks from the dissolved phase and assumed that the observed LNAPL at the site will be removed/treated.

The DQRA model was set up using the probabilistic modelling software ConSim. Initial model results, from previous investigation works, suggested a potentially unacceptable risk if assuming the Port Talbot Dock to be the critical receptor. Yet in 2019, WSP monitoring of groundwaters have suggested a more westward flow towards the River Afan and Dock Feeder. If consequently assuming this

groundwater flow and selecting the Dock Feeder as the closest receptor in that direction (approximately 570 m west) then risk projections no longer arise. Furthermore, should a component of groundwater flow pass south then dilution ratios in the Port Talbot Dock would likely be very high reducing the potential for the projected dissolved phase risk. This is supported by a lack of hydrocarbon impact in the surface water samples taken from the Port Talbot Dock and the Dock Feeder.

In summary, the Part 2A regime as reflected within planning seeks to avoid disproportionate regulation being applied to contaminated land causing only trivial amounts of pollution to the water environment. A consideration of certainty and reasonableness is expected. Following the removal of the LNAPL, then upon the balance of probabilities dissolved phase contributions to risk based on the data available is considered to be low.

2.7 SUMMARY OF REMAINING CONTAMINANT LINKAGES

In the context of noted exceedances, identified risks at the site and its proposed development, the following contaminant linkages have been identified on site following generic and where required detailed assessment, and require further consideration to mitigate potential risks at the site (Table 2-1). Further information of the pollutant linkages can be found in the reports listed in Section 2.1.

Table 2-1 – Summary of Plausible Contaminant Linkages (PCL)

PCL	Source	Pathway	Receptor*
1	Asbestos and elevated metal concentrations in Made Ground across the site	Inhalation and Ingestion in areas of soft standing	Future site users, neighbours and members of public
2	Elevated hydrocarbon concentrations in soil and NAPL in soil	Inhalation of hydrocarbon vapours (indoors)	Future Site Users
3	Elevated hydrocarbon concentrations in groundwater and NAPL on groundwater	Inhalation of hydrocarbon vapours (indoors)	Future Site Users
4	NAPL on groundwater and in soils	Lateral migration on groundwater	Groundwater beneath the site and surface water features (Port Talbot Docks and River Afan)**

*Construction workers have been excluded from this assessment. It is assumed that potential risks associated with the proposed construction works will be mitigated through adequate risk assessment and method statements, and where required the use of personal protective equipment.

** This is based on the findings of the completed DQRA (WSP, 2020) which indicated that groundwater concentrations at the site do not pose a significant risk to the identified receptors should the NAPL be removed.

Only a single exceedance of groundwater vapour GAC was noted at the site (discounting the presence of LNAPL), represented above as PCL3. Given the concentrations observed at the site and the presence of historic LNAPL at the identified exceedance location (BHC5) being above the solubility limit indicating a proximal NAPL source; the potential contaminant linkage will be dealt with in conjunction with PCL 4.

3 REMEDIAL APPRAISAL AND SELECTION

3.1 REMEDIATION PHILOSOPHY

The proposed remediation has been based on the 'Suitable for Use' approach as advocated by Part IIA of the Environmental Protection Act 1990. The basis of the suitable for use approach is that land should be suitable for its current use and made suitable for any new use as official permission is given for that use. In addition, the requirements for remediation of contaminated land should be limited to the work necessary to prevent unacceptable risks to human health and the environment (including Controlled Waters) in relation to the current use, or officially permitted future use, of the land.

Under Part IIA of the Environmental Protection Act 1990 contaminated land is defined as land where significant harm is being caused or there is a significant possibility of such harm being caused, or where significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused. For significant harm to occur, a significant contaminant linkage must exist i.e. there must be a contamination source, a relevant receptor and a plausible migration pathway, by which the contaminant can cause significant harm to the receptor.

The standard of remediation to be achieved under Part IIA and reflected in planning guidance is summarised below:

- i Ensuring that the linkage is no longer a significant linkage, by doing one or more of the following:
 - Removing or treating the contaminant;
 - Breaking or removing the pathway; or
 - Protecting or removing the receptor.
- i Remedying the effect of any significant harm or pollution of the water environment, which is resulting, or has already resulted from the significant contaminant linkage.

Should these aims not be wholly achievable given the circumstances of a site then a lower standard of remediation is acceptable. This standard should be one which comes as close as practicable to breaking the significant contaminant linkages whilst fully mitigating their harm or pollution caused. Failing that then any measures that mitigate as far as practicable the harm or pollution caused may be acceptable, subject to regulatory review.

3.2 SITE CONTEXT

This chapter sets out how each identified potential contaminant linkage will be dealt with as part of the remediation and/or development works. This is considered to be a high level strategy, and a further detailed implementation plan would need to be supplied for approval by the appointed contractor.

The fundamental factors that govern the future remediation at the site in relation to proposed development works includes the following works:

- Removal of hardstanding from the site surface;
- Removal of obstructions / sub-surface structures from the development footprints where deemed necessary;

- Excavation of soil source material in the areas identified as posing a potential risk to receptors;
- LNAPL removal from open excavations, where required, potentially including the removal of contaminated groundwater where required for dewatering activities; and
- Installation of a capping layer where required to break the pathway of direct soil ingestion/inhalation – either in the form of hardstanding or engineered soft standing.

3.3 ROLES AND RESPONSIBILITIES

At the time of writing, no appointments have been made with regards to the future remediation and/or development of the site. These will be distinguished following the tender process which will be completed by NPTCBC.

3.4 PERMITTING AND LICENSING

The works are likely to be required to be undertaken in accordance with planning conditions imposed by the Local Planning Authority (LPA). At the time of writing, planning has not been granted by the LPA. Any conditions imposed by the LPA will be considered within the remediation works.

In addition to any conditions imposed by the LPA, the below are likely to be required in order to facilitate remediation and development works at the site:

- i Asbestos Management Plan
- i Materials Management Plan
- i Construction Environmental Management Plan
- i Waste Management Plan

All works should also be undertaken in accordance with the previously referenced earthworks specification (WSP, 2020).

3.5 ENABLING WORKS

All known major obstructions/foundations apart from live services are to be removed in the location of any proposed new building.

In these areas all artificially hard materials will be broken out and crushed under an asbestos management plan. Stockpiles will be made, validation testing undertaken, and site won material reused on site where required.

Any obstructions/foundations/structures not previously encountered within the remainder of the site will be removed in a controlled manner given the presence of asbestos. Where any very loose or soft material is present at the base of excavations, removal of material will continue, and any material excavated will be re-engineered to a suitable specification to minimise the risk of future settlement.

3.6 SOURCE REMEDIATION

3.6.1 ASBESTOS AND ELEVATED METALS IN MADE GROUND – PCL1

Asbestos was detected as loose fibres and fibrous debris/cement of chrysotile (white) asbestos in eight of the twenty-two Made Ground soil samples tested as part of previous Opus works. These

were detected at depths ranging from 0.50m bgl to 3.4m bgl. Asbestos (loose fibres) was also detected in BH107 at 0.1 – 0.3m bgl during the August 2019 WSP ground investigation.

Given the presence of loose fibres in numerous sampling locations across the site, a manual picking remediation strategy is not deemed to be suitable, furthermore, the wide spread nature of the asbestos and the depths of Made Ground across the site, would indicate that the bulk removal of asbestos impacted soils from the site, would not be practical.

The most viable approach to the mitigation of the inhalation pathways associated with the asbestos fibres, is to install a cover system in all areas of soft landscaping which should be constructed in accordance with BRE465:2004.

It is the intention for site levels at the site to be raised in accordance with the works information (as produced by NPTCBC). All material imported onto the site for site raising should be in accordance with the criteria stated in the approved earthwork specification (WSP, 2020).

The earthworks scope would broadly consist of the following:

- i Removal of the necessary Made Ground and appropriate stockpiling for waste classification and disposal, or characterisation for suitability for reuse.
- i Bulk fill where required.
- i Installation of a 600mm capping layer to raise land to 7.50m AOD comprising:
 - 150mm compacted granular 'no dig' layer;
 - 300mm chemically suitable fill or sub-soil material (e.g. 6F2/6F5); and
 - 150mm chemically suitable top-soil (if required).

Any Made Ground material removed from current areas of softstanding may be re-used below the proposed highways or new units, should the proposed final levels across the site require any bulk fill material. This would have to be to be geotechnically and chemically suitable, prior to the emplacement.

3.6.2 PETROLEUM HYDROCARBONS IN SOILS – PCL2

Elevated petroleum hydrocarbons and observed NAPL have been identified within BH104, BH204A, BHC5, TP203 and TPH05 as presented on **Figure 3 (Appendix A)**. In addition to potential human health risks associated with the inhalation of vapour, free phase visual and olfactory evidence of impact in the soils suggests that there could be leaching from the sorbed phased in the soil into the shallow groundwater.

Image 3-1 shows approximate areas of hydrocarbon contamination that have been identified at the site, also included as **Figure 5 (Appendix A)**.

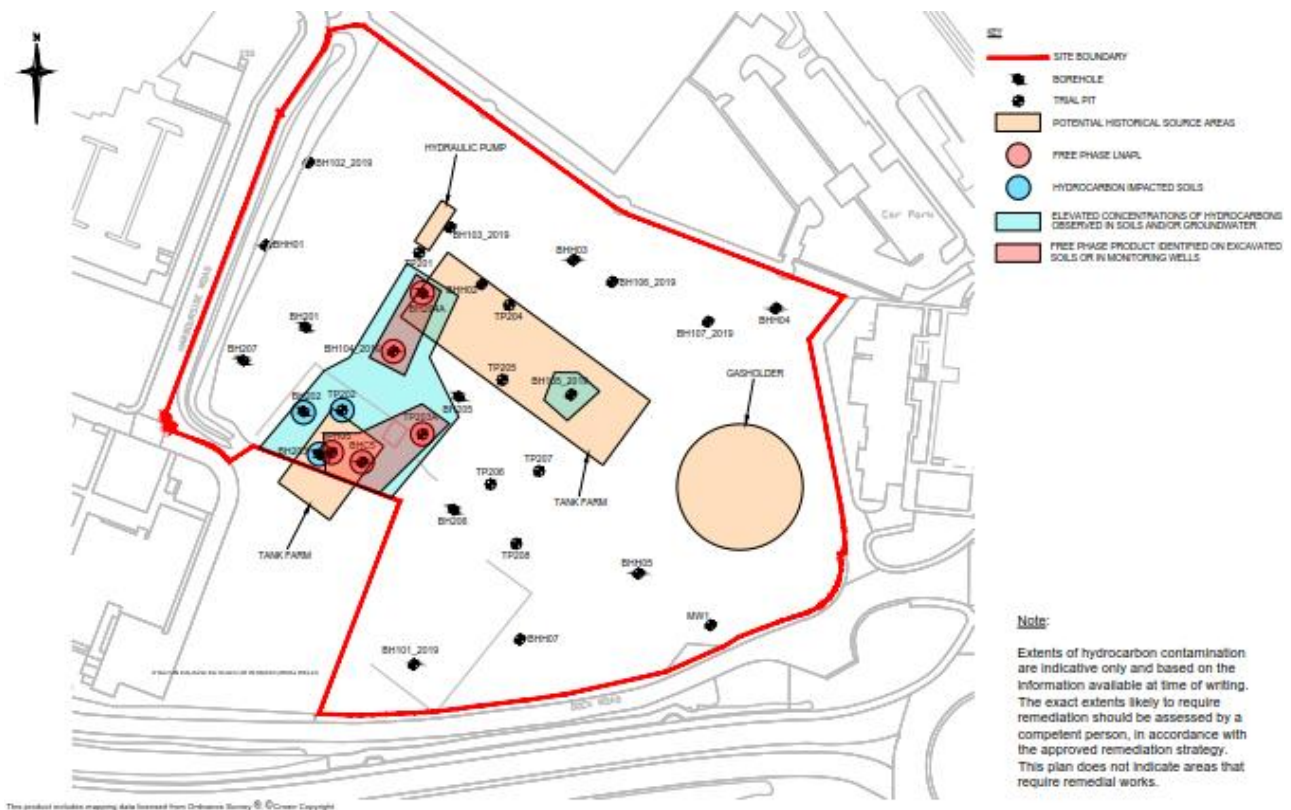


Image 3-1 - Approximate Extents of Hydrocarbon Contamination Identified (see Figure 5)

As a result, WSP recommend that the area of observed NAPL in soils is subject to the following remedial activities to be protective of groundwater:

- i Vertical and lateral delineation during site enabling works;
- i Excavation of the impacted soils and disposal off site as a hazardous waste; and,
- i Chemical validation of the remaining soil on site to prove that the impacted material has been removed.

The exact extents of the impacted soils shall be determined with the use visual inspections complemented with a Photoionization Detector (PID), which will provide in situ field screening of the levels of volatile organic compounds (VOCs) within the soils.

Details of the required verification testing for the soils remaining on site following removal of the contaminated materials are contained in Section 6. Following removal of the hydrocarbon impacted soils to the satisfaction of the Supervising Engineer, the excavations shall be backfilled with chemically and geotechnically suitable material which have been approved for use in advance of the backfilling by the Supervising Engineer. The soils may comprise existing suitable on-site soils or imported soils that have been suitably inspected and tested. The excavations shall not be backfilled by the Contractor without the express permission of the Supervising Engineer.

Backfill for Remedial Excavation

On completion of the remediation works as described above any excavations beneath the proposed units will be backfilled with a suitable material that conforms to the specification for construction within that sector of the site. All works should be completed in accordance with the approved

Earthworks Specification (WSP, 2020) and be in accordance with the minimum undrained shear strength requirements stated therein.

Any soils to be imported to the site, should be chemically analysed prior to importation, or stockpiled in a 'quarantine area' until the chemical testing results are analysed, and are deemed suitable for use. All imported soils should be tested in accordance with the approved earthworks specification (WSP, 2020).

3.6.3 FREE PHASE LNAPL IN SOIL AND GROUNDWATER – PCL3&4

Free phase LNAPL was identified in the recent investigation works at BH104, BH204A, BHC5 and TP203A at depths ranging between 1.85m bgl to 2.13m bgl. A maximum LNAPL thickness of 0.73m was observed in BH104.

The laboratory testing results identified a carbon fraction range of C6-C15, indicating that the free phase LNAPL is potentially volatile and potentially poses a risk to the inhalation of vapours (in indoor air) as well as a risk to controlled waters receptors.

Based on the abovementioned requirement for hydrocarbon impacted soil removal, and the shallow nature of LNAPL/groundwater at the site (circa 2.5m bgl); the option for LNAPL recovery within open excavations is considered to be a viable option. On this basis, two potential techniques for LNAPL removal on groundwater have been summarised below.

- i LNAPL Product Skimming - Removal of free product using product skimming pumps or manually from open trenches or excavations without total fluids abstraction. Can be vacuum enhanced with soil vapour extraction; and
- i Total Fluids Removal/ Hydraulic Management - Pumping total fluids from wells or excavations to improve recovery rates but focussed on free product removal and treatment. LNAPL Product Skimming

Skimming recovery systems use selective collection devices (skimmers) to collect LNAPL floating on the water table. Skimming is typically undertaken utilising a combination of density and hydrophobic devices. This is achieved through a floating filter that is designed to sink in LNAPL but float in water and constructed of oleophilic/hydrophobic mesh with a high affinity for non-polar hydrocarbons and the ability to reject polar molecules such as water. This filter mechanism is usually connected to a pneumatic pump for transfer of recovered LNAPL to the surface. The pumps may be controlled by a timer or manually.

Total fluids pumping generally uses low shear, pneumatically driven pumps to abstract both groundwater and LNAPL. The amount of groundwater recovered is controlled by both hydrogeological conditions at the site and the position at which the pump is set. The abstraction of groundwater enables a gradient toward the well to be maintained and encourage a flow of NAPL to the well. The abstracted fluids are separated at surface, the NAPL is collected for disposal whilst groundwater is treated to a suitable standard before being discharged to an appropriate point. Use of total fluid systems generally accelerates NAPL recovery whilst offering secondary benefits to groundwater treatment.

A summary of the abovementioned technologies and the key advantages and disadvantages is presented in Table 3-1.

Table 3-1 – LNAPL Removal Appraisal - Groundwater

Approach	Advantages	Disadvantages
Product Skimming)	Direct, robust technique. Physically targets the contamination source. With careful selection of filters will minimise groundwater removal. Can be deployed in open excavations or trenches	Effectiveness highly dependent on pump positioning. Does not target the unsaturated zone unless vacuum enhanced. Can lower the groundwater table if not operated carefully.
Total Fluids Extraction	Simple technique. All separation and treatment takes place above ground so is easily controllable. Can be deployed in open excavations or trenches	Lowering the groundwater level can create a product “smear zone” which can exacerbate soil contamination or present rebound issues. Requires discharge of treated effluent Does not target the unsaturated zone.

Estimation of Recovery Rates

Baildown product recovery rates at the site have proved inconclusive; and it is considered likely that given the variable ground conditions observed that recovery rates would be locally impacted by the immediate surrounding geology. Based on the proposed use of excavations to complete LNAPL removal rather than recovery wells, the variable ground conditions are considered to be less of an issue.

3.6.4 LNAPL REMEDIAL SELECTION

Based on the above review of best available technologies and with the additional requirement to remove an area of hydrocarbon impacted soil, the below is recommended in order to allow the most effective removal of LNAPL observed at the site:

- i Excavation of hydrocarbon impacted soils to below the water table;
- i Installation of a LNAPL recovery system within open excavations;
- i Maintaining open excavations in the areas identified and ongoing product recovery until the observed NAPL has all been removed or for as long as is reasonably practicable; and
- i If required, ongoing LNAPL removing from dedicated recovery boreholes installed following soil removal works and backfill of excavation.

All LNAPL and impacted groundwater generated as part of the product recovery works shall either be treated or disposed of in accordance with waste regulations.

3.7 PROTECTION OF SERVICES

Prior to carrying out any excavations, the Contractor shall identify the presence of all underground services. During excavation the Contractor shall take the measures necessary to adequately protect and support retained underground services and structures within the zone of influence of excavations (including boundary features). Any damage occurring shall be rectified by the Contractor at their own cost.

3.8 CONTINGENCY PLAN

Should any significantly impacted material be encountered during the development, then it should be excavated and stockpiled on an impermeable material and sampled and tested for an appropriate range of determinands.

Once the laboratory analysis of the material is available an assessment should be undertaken to determine whether it can be retained on-site (Material Management Plan will be required) or whether it should be disposed off-site.

Depending on the nature of any such impact it may be necessary to undertake validation testing of the excavation faces in order to demonstrate that no such materials are left in-situ.

3.9 ENVIRONMENTAL PROTECTION MEASURES

The remedial work shall be carried out with the minimum amount of disturbance and inconvenience to the neighbouring occupants and the general public. The site should be securely fenced from the general public to prevent unauthorised access or trespassing. Any excavations should be fenced off and labelled.

The Contractor shall take all measures necessary to minimise potential adverse impacts on the local environment. This may include measures to suppress the emission of dust and odours during the remedial works to minimise nuisance to neighbouring occupants and the general public.

Care shall be taken to ensure that no significant amounts of sediment are allowed to enter surface water drains or possible surface watercourses.

Wheel cleaning and road sweeping may be required in wet weather conditions to prevent soils being transported on the roads around the site.

Any temporary storage of fuels will be in double skinned tanks or bunded tanks (capable of containing at least 110% of the tank volume) in accordance with good working practices to minimise any potential spillages.

Any complaints relating directly to the soil remediation works shall be recorded in a complaint register and dealt with immediately by the Contractor. The Contractor shall without delay inform the Engineer of any and all such occurrences and of the subsequent actions taken to ensure appropriate measures are put in place to rectify the nuisance and prevent further occurrences or similar complaints.

3.10 WASTE MANAGEMENT

All waste materials generated as part of the remediation works shall be the responsibility of the appointed contractor.

Waste arisings generated as part of remediation and development works shall be dealt with in accordance with the CL:AIRE published guidance 'The Definition of Waste: Development Industry Code of Practice' (2011) and in accordance with the Waste Framework Directive (2008).

The production of a Materials Management Plan (MMP) will help to ensure that the above matters are considered, and a correct determination is made in relation to the nature of the materials.

Any discharge licences associated with the dewatering of excavations and any other activities on site will be the responsibility of the appointed contractor.

A waste management plan shall be submitted to the client for approval prior to commencement.

3.11 REMEDIAL END POINTS

The standard for remediation should be one that comes as close as practicable to breaking the significant contaminant linkages whilst fully mitigating the harm or pollution caused. Failing that then any measures that mitigate as far as practicable the harm or pollution caused may be acceptable, subject to regulatory review.

WSP would propose to undertake product recovery/clean-up operations to the below criteria:

- i The point where asymptotic recovery is achieved should an insitu application be deployed. Such conditions indicate that all readily recoverable product has been recovered based upon the limitations of the technology and the remainder is trapped in pore spaces which are not easily accessible/presenting a risk. At this point the volume of effort expended also often presents a law of diminishing returns i.e. with more hydrocarbons used in the technology process than actually recovered from the soils beyond this point its delivery is no longer sustainable. It is important to recognise that the rate of free product recovery typically exhibits a logarithmic decrease with time. The rate of decrease can be quite variable even on the same site due to heterogeneities in the soil which influence residual saturation and relative permeability.

In seeking to understand the environmental footprint of the remediation then monitoring should also include consideration of:

- i Energy efficiency;
- i Water intensity;
- i Material intensity; and
- i Stewardship including greenhouse gas emissions.

4 OUTLINE VERIFICATION PLAN

4.1 PCL1 – ASBESTOS & METALS IN MADE GROUND

General Made Ground is not considered to be suitable for use within landscape areas in its current form and WSP would consider that a 600mm chemically suitable cover system (as specified in Section 3.3.1) and to remove the excess of the Made Ground to a suitable waste management facility, or if applicable for re-use under highways or development plots in accordance with an approved materials management plan. All waste consignment notes are to be kept by the contractor and copies provided to the Supervising Engineer upon request.

Any soils to be imported to the site, should be chemically analysed prior to importation, or stockpiled in a 'quarantine area' until the chemical testing results are analysed, and the Supervising Engineer determines their suitability. All imported soils should be tested in accordance with the approved earthworks specification (WSP, 2020)

The imported topsoil and subsoil shall comprise 'as-dug' natural materials or reworked natural soils with minimal content of foreign / man-made materials. The topsoil and subsoil shall be obtained wherever possible from a single source (preferably).

For each proposed source of topsoil and subsoil to be used on the site, a minimum of three representative samples per source and a sample every 500m³ thereafter, should be collected by the Supervising Engineer during the inspection of the source and tested to demonstrate that the source is suitable for use within a commercial setting. The purpose of the inspection is to ensure that the proposed source comprises chemically inert material with limited potential for contamination to be incorporated.

The soil samples from the proposed sources of imported topsoil and subsoil shall be submitted to the laboratory by the Supervising Engineer and tested for the range of contaminants listed in the Earthworks Specification (WSP 2020). The laboratory testing shall be carried out at a UKAS / MCERTS accredited laboratory. If one of the determinants (or alternatively 95% upper confidence limits) exceeds the specified remediation criteria, then the Supervising Engineer will reject the proposed source of the soil.

Upon installation of the cover system, the Supervising Engineer will attend site and validate the thicknesses and physical composition of the cover system and take photographic evidence to determine if the system has been installed in line with the engineer's specification.

4.2 PCL2 - REMOVAL OF HYDROCARBON IMPACTED SOILS

The removal of the identified area of hydrocarbon impacted soils (BH104, BH204A, TP203A, and BHC5/TPH05) shall be undertaken during the site remediation works stage and monitored full time by the Supervising Engineer. Samples of the soil surrounding and beneath the hydrocarbon impacted soils shall be collected for laboratory analysis to verify that the remaining soils are suitable for retention at the site.

A minimum of five soil samples shall be collected from each remedial excavation (one base, four sides) following removal of the obvious hydrocarbon impacted materials and tested in the laboratory to verify that the remaining soils are suitable for retention. Excavation side samples shall be taken from the approximate groundwater resting level / smear zone. For larger excavations, the sampling

density shall not be lower than one sample per 5m length (wall samples) and one sample per 25m² (base sample). The samples shall be analysed for the following determinands at the laboratory:

- i Total petroleum hydrocarbon (TPH) by Criteria Working Group (CWG) method;
- i Polycyclic aromatic hydrocarbons (PAHs);
- i Benzene, toluene, ethylbenzene and xylene (BTEX);
- i Phenols; and
- i Hexavalent chromium; and,
- i Total organic carbon (TOC).

The laboratory testing shall be carried out at the UKAS / MCERTS accredited laboratory. The results of the laboratory verification testing shall be assessed with reference to the respective remediation criteria set out in **Appendix C**.

If the recorded concentrations detected are below their respective acceptance criteria, then it is considered that no further actions would be required. If, however, the results exceed the above acceptance criteria, then either further remedial works would be required or alternatively it may be necessary to carry out additional risk assessment works to generate revised remedial targets for any such area of concern and the results assessed against these revised remedial targets as appropriate. If further risk assessment works are required, the details would be presented to the Regulators for approval as a revision to this Remediation Strategy.

The removal of the hydrocarbon impacted soils shall be carried out under the full-time direction and to the satisfaction of the Supervising Engineer. The exact extents of the impacted soils shall be determined with the use of a Photoionization Detector (PID), which will provide in situ data of the levels of volatile organic compounds (VOCs) within the soil and volatilising into the air. When the extents of the impacted soils are established and verification samples from the sides and base of the hydrocarbon hotspot collected, the excavation will be approved by the Supervising Engineer for backfilling. The excavations shall be backfilled with chemically and geotechnically suitable soils which have been approved for use by the Supervising Engineer.

4.3 PCL3&4 - FREE PHASE LNAPL

The contractor will ensure that all visible signs of LNAPL are removed from the target area (BH104, BH204A, BHC5/TPH05 and TP203A). Post-work monitoring will be conducted at regular intervals over a month to ensure no residual free phase LNAPL remains on site.

It is anticipated that decommissioning of several boreholes will be required to facilitate source removal works, including the excavation of impacted soils and removal of NAPL in groundwater. Where required, boreholes will be decommissioned in accordance with reference to published guidance to prevent the creation of preferential pathways. Following the source removal works, a suitable monitoring network will be installed to confirm the absence of LNAPL within the identified areas.

Groundwater level monitoring comprising dipping of wells with an oil/water interface probe will be completed weekly for a period of at least three months to confirm the absence of LNAPL at the identified locations.

Following completion of the monitoring works, groundwater samples will be collected from the dedicated monitoring wells to confirm that concentrations of hydrocarbons are lower than the solubility limit and that there are no proximal NAPL sources. Two rounds of groundwater sampling

shall be completed as a minimum at least two weeks apart. Groundwater samples shall be analysed for the following determinands:

- i Total petroleum hydrocarbon (TPH) by Criteria Working Group (CWG) method; and
- i Benzene, toluene, ethylbenzene and xylene (BTEX).

4.4 SOIL SAMPLING FREQUENCY

In accordance with the current requirements of the regulatory authorities, validation samples will be collected from all materials that are to either be subject to movement (if any) under the protocols outlined within this Remediation Strategy, or for materials to be imported onto site to facilitate the proposed commercial development.

Any site won materials should be tested in accordance with the protocols outlined in this remediation strategy with the criteria represented in **Appendix C** and as presented in the Earthworks Specification (WSP, 2020).

Soil samples destined for chemical analysis will be collected at regular intervals in appropriate sampling containers. All samples will subsequently be stored in cooled boxes prior to submission to the UKAS / MCERTS accredited laboratory for analysis.

All samples will be collected using appropriate PPE and sampling equipment that will be replaced at each sampling location.

Where materials are found to contain concentrations of potential contaminants at levels in excess of the site-specific screening criteria (**Appendix C**) and/or the criteria set out in the Earthworks Specification (WSP, 2020), WSP will undertake further assessment and recommendations on the appropriate use for the material in question, which may involve the disposal of such materials off-site to a suitable waste management facility.

Imported fill material should be tested in accordance with the approved Earthworks Specification (WSP 2020).

5 VALIDATION REPORT

5.1 REPORT

Upon completion of the remedial works, a remediation validation report shall be prepared by the contractor, detailing the extent of the remedial works carried out. Details of the quantities of any materials disposed off-site shall also be included in the report. The report will also include information on the sources of any imported soils along with chemical analysis results to demonstrate that the materials are chemically suitable.

The validation report will include the following:

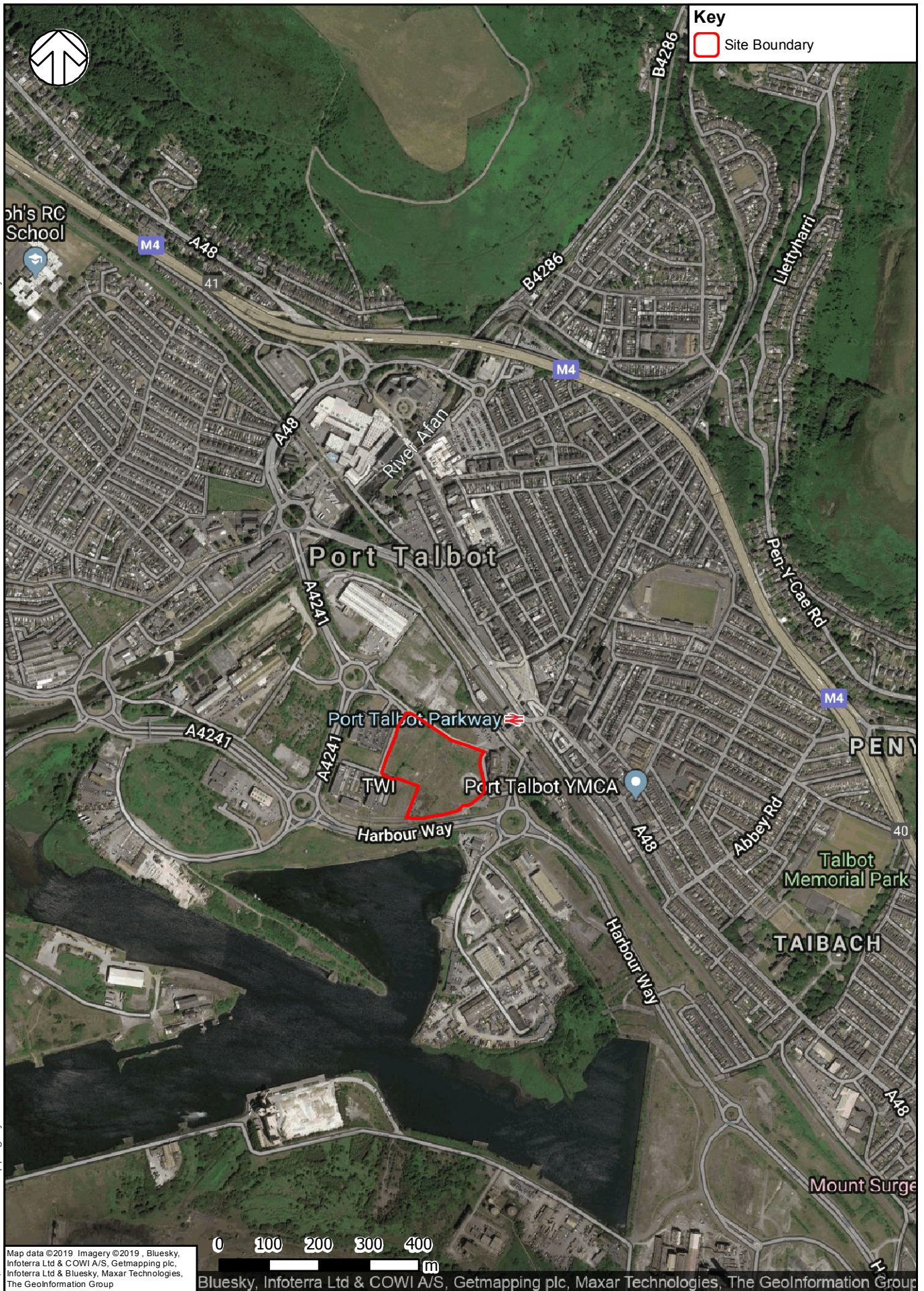
- i Copy of Consignment Notes relating to the movement of wastes to a licensed waste management facility;
- i Details of the destination and the quantities of any materials disposed off-site;
- i Confirmation that the full extent of unsuitable soil has been removed from the site;
- i Detailed drawings showing all sampling locations for chemical analysis;
- i Chemical test results;
- i Photographs of the cover systems within the areas of soft landscaping;
- i Information on the sources of the certifiably clean topsoil and subsoil imported (if required), together with chemical analysis results to demonstrate that the materials are chemically suitable;
- i Groundwater monitoring and sampling results; and,
- i Revised Conceptual Site Model.

The remediation validation report shall be submitted to NPTCBC and NRW for their review and approval.

Appendix A

FIGURES







KEY

SITE BOUNDARY

PHASE 1 - HISTORIC OPUS EXPLORATORY HOLE

PHASE 2 - WSP EXPLORATORY HOLE (AUGUST 2019)

PHASE 3 - WSP EXPLORATORY HOLE (DECEMBER 2019)

POTENTIAL HISTORICAL SOURCE AREAS

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Rev	Date	Description	By	Chk	App	Notes
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Kings Orchard
1 Queen Street
Bristol BS2 0HQ

Tel: 44-(0)1179-306200

Client:
NEATH PORT TALBOT COUNTY BOROUGH COUNCIL

Project:
PORT TALBOT HARBOURSIDE

Title:
EXPLORATORY HOLE LOCATION PLAN ALL PHASES

Drawn: CEW		Checked: RE	
Designed: RE		Approved:	
Date: 24/02/2020	Scale: 1:1000	A3	Sheet:
Project Number:		Drawing Number:	
62253048		FIGURE 2	
		Revision:	
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Rev	Date	Description	By	Chk	App	Notes
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Kings Orchard
1 Queen Street
Bristol BS2 0HQ



Tel: 44-(0)1179-306200

Client:
NEATH PORT TALBOT COUNTY BOROUGH COUNCIL
Project:
PORT TALBOT HARBOURSIDE

Title:
HYDROCARBON CONCENTRATIONS OBSERVED IN SOIL - 2019 INVESTIGATION WORKS

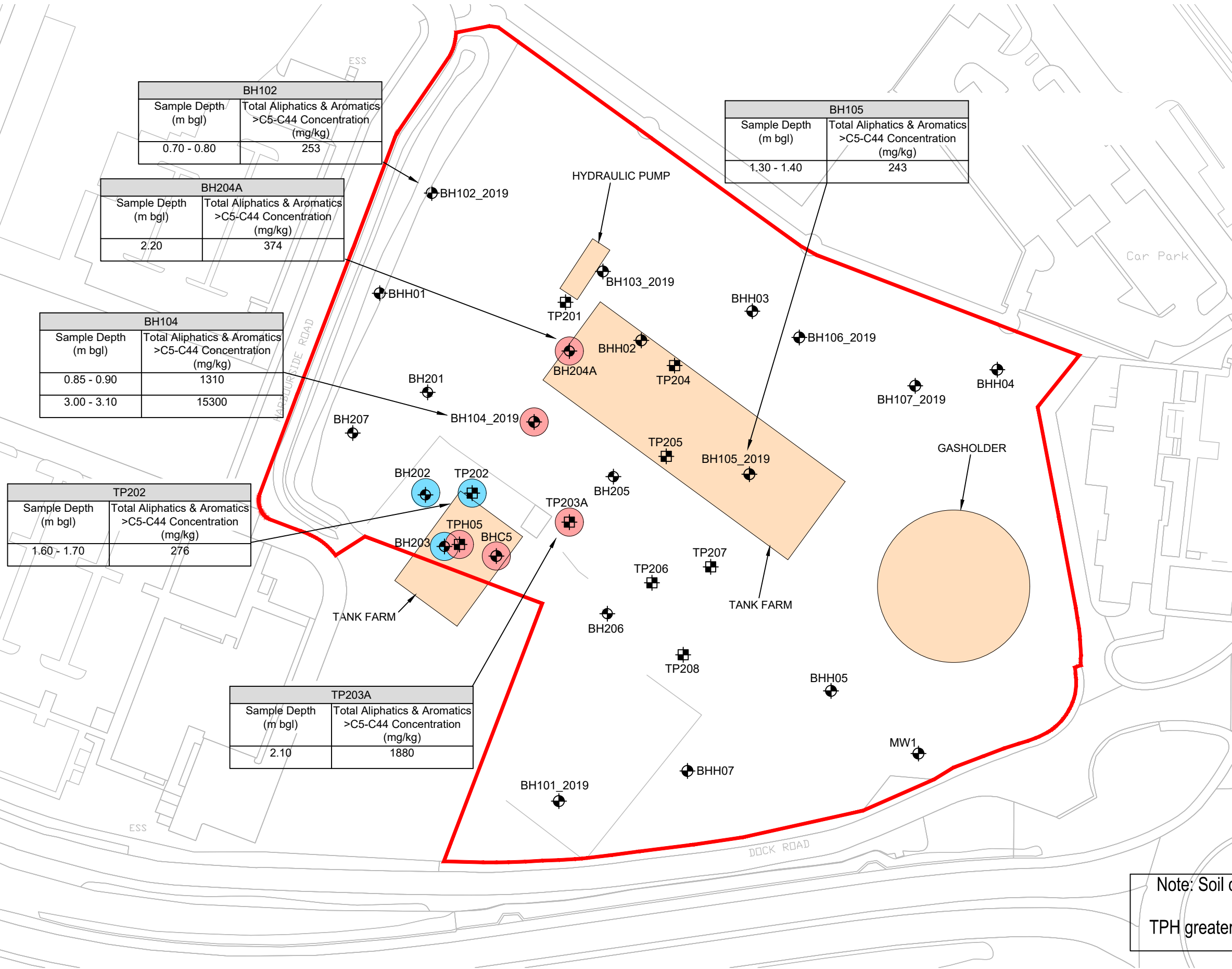
Drawn: CEW	Checked: RE
Designed: RE	Approved:
Date: 12/03/2020	Scale: 1:1000 A3 Sheet:
Project Number: 62253048	Drawing Number: FIGURE 3
Revision:	

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KEY

- SITE BOUNDARY
- BOREHOLE
- TRIAL PIT
- POTENTIAL HISTORICAL SOURCE AREAS
- FREE PHASE LNAPL
- HYDROCARBON IMPACTED SOILS



Note: Soil concentrations of exploratory locations of TPH greater than 100mg/kg included only



KEY

- SITE BOUNDARY
- BOREHOLE
- TRIAL PIT
- POTENTIAL HISTORICAL SOURCE AREAS
- FREE PHASE LNAPL

BH204A	
Date	09/01/19
LNAPL Thickness (m)	0.28

BH104					
Date	21/08/19	18/09/19	24/09/19	27/09/19	09/01/19
LNAPL Thickness (m)	0.77	0.53	0.62	0.78	0.73

BH105	
Sample Date	Total Aliphatics & Aromatics >C5-C44 Concentration (ug/l)
23/08/2019	5,080
18/09/2019	6,630

BHC5	
Date	21/08/19
LNAPL Thickness (m)	0.03

BHC5	
Sample Date	Total Aliphatics & Aromatics >C5-C44 Concentration (ug/l)
21/08/2019	180,000

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Rev	Date	Description	By	Chk	App	Notes
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Kings Orchard
1 Queen Street
Bristol BS2 0HQ

Tel: 44-(0)1179-306200

Client:
NEATH PORT TALBOT COUNTY BOROUGH COUNCIL

Project:
PORT TALBOT HARBOURSIDE

Title:
LNAPL DISTRIBUTION AND HYDROCARBON CONCENTRATIONS IN GROUNDWATER

Drawn: CEW		Checked: RE	
Designed: RE		Approved:	
Date: 12/03/2020	Scale: 1:1000	A3	Sheet:
Project Number:		Drawing Number:	Revision:
62253048		FIGURE 4	
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Note:
Groundwater samples have not been collected from BH201, BH206 & BH207

All other groundwater samples collected at the site from the dedicated monitoring network as part of the 2019/2020 sampling events recorded concentrations of TPH (C5-C35) at below the laboratory limit of detection.

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Rev	Date	Description	By	Chk	App	Notes
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Kings Orchard
1 Queen Street
Bristol BS2 0HQ

Tel: 44-(0)1179-306200

Client:

NEATH PORT TALBOT COUNTY
BOROUGH COUNCIL

Project:

PORT TALBOT HARBOURSIDE

Title:

INDICATIVE
HYDROCARBON
CONTAMINATION
DISTRIBUTION

Drawn: CEW		Checked: RE	
Designed: RE		Approved:	
Date: May 2020	Scale: 1:1000	A3	Sheet:
Project Number:		Drawing Number:	Revision:
62253048		FIGURE 5	
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KEY

- SITE BOUNDARY
- BOREHOLE
- TRIAL PIT
- POTENTIAL HISTORICAL SOURCE AREAS
- FREE PHASE LNAPL
- HYDROCARBON IMPACTED SOILS
- ELEVATED CONCENTRATIONS OF HYDROCARBONS OBSERVED IN SOILS AND/OR GROUNDWATER
- FREE PHASE PRODUCT IDENTIFIED ON EXCAVATED SOILS OR IN MONITORING WELLS

Note:

Extents of hydrocarbon contamination are indicative only and based on the information available at time of writing. The exact extents likely to require remediation should be assessed by a competent person, in accordance with the approved remediation strategy. This plan does not indicate areas that require remedial works.

Appendix B

LIMITATIONS



REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.
3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.
4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.
6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.
7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.
8. WSP UK Limited does not warrant work / data undertaken / provided by others.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:
 - i. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
 - ii. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.
10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.
11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.
12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.
13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.
14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.
15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.
16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values. Specific assumptions associated

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.
18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.
19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.
20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.
22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.



REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

- 24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.
- 25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

- 26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

- 27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.
- 28. The data is presented and will be compared with assessment criteria.

Appendix C

REMEDIATION VALIDATION CRITERIA

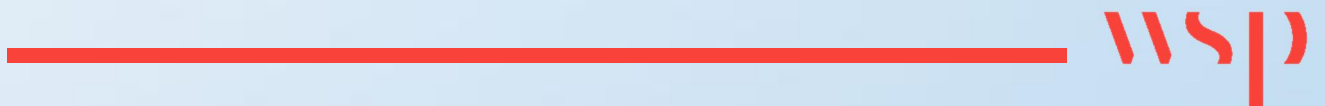


Table C-1 – Remediation Criteria for the Soils Protective of the Controlled Waters

Determinand	Maximum Acceptable Soil Concentration (mg/kg)
Hexavalent Chromium	1.2
Benzene	1.0
Toluene	0.557
Ethylbenzene	0.450
Total Xylenes	1.0
Naphthalene	0.4
Phenol	2.9

The above remediation criteria assume the following:

- i NAPL containing soils are to be removed or treated at the site
- i Soil with visual or olfactory evidence on hydrocarbon impact are to be removed or treated at the site.
- i Soil with PID level above 500ppm are to be removed or treated at the site.

Appendix D

REMEDIATION CRITERIA SUPPORTING INFORMATION



REMEDIATION CRITERIA

Generic Quantitative Risk Assessment (GQRA) has suggested a risk from both soils and groundwaters to potentially dependent surface waters.

A DQRA was consequently undertaken using the probabilistic modelling software ConSim (Version 2.5)¹ that considered the contaminant fate and transport to surface waters of those contaminants suggestive of priority concern.

The principal contaminant linkages (identified initially through the GQRA) were modelled as two separate scenarios within ConSim. The first scenario focussed upon the risk to surface waters posed by lateral migration of organic contaminants to the Dock Feeder and the second to the Port Talbot Dock (closest water feature to the site).

These model projections have suggested that dilution and natural attenuation may be enough in reducing risks to surface waters to acceptable levels. To reiterate DQRA projections have included:

- i The assumption that the surface waters intercept or receive groundwater flow from below the site. A definitive linkage has been assumed solely based on the precautionary principle;
- i No dilution in the receiving surface waters. The Remedial Targets Methodology notes that the precautionary approach is to:
 - Set the compliance point within the groundwater body immediately upgradient of the watercourse;
 - Fix the target groundwater concentration as equal to the target concentration in the watercourse (e.g. the relevant environmental standard).

This means that the environmental standard cannot be compromised regardless of how much groundwater enters the watercourse.

- i Inclusion of a degree of conservatism in parameter selection when site specific data has not been available.

Furthermore, it is likely (although unproven) that some biodegradation may also occur in the sorbed phase. Turning on sorbed phase degradation in the DQRA would have the further effect of reducing the projected concentrations.

However as described in the DQRA an apparent thickness of LNAPL has been observed. It and any evidence of residual NAPL were assumed during the DQRA to be removed. However, during NAPL removal and site development Site Specific Assent Criteria (SSAC) will be needed to support the removal. Remaining soils will consequently be validated using the remediation/validation criteria (SSAC_{soil}) derived herein.

¹ Contamination Impact on Groundwater: Simulation by Monte Carlo Method. ConSim manual: Environment Agency R&D Publication 132

The existing DQRA models have consequently been adapted to assist in the derivation of the Site-Specific Assessment Criteria (SSAC) for controlled waters. The principle assumption being the adoption of the existing model parameters unless stated otherwise within the following sections.

Note

- i SSAC have only been generated for those analytes that were considered in the DQRA and had been initially identified as a potential concern by GQRA;
- i Occasional extreme outliers in concentration exist in the reported data suggestive of NAPL but such are to be removed/treated at site. Remedial intervention must seek to be cognisant of all outlier concentrations;
- i ConSim as applied in the DQRA is a probabilistic model. Parameter uncertainty (and to some extent conceptual and model uncertainty) is dealt with by allowing the specification of a range of values for each input parameter rather than a single number. However, the model does not back calculate a soil source remedial target concentration (SSAC) protective of a given receptor. Instead source concentrations must be iterated, and the model repeated until the concentration at a receptor is deemed as acceptable, in this case to below its AA-EQS pre dilution in receiving waters;
- i Finally, SSAC must also be suitably protective of human health albeit only SSAC protective of controlled waters are discussed in this Appendix.

GENERAL CONTEXT AND MODEL ASSUMPTIONS

The DQRA concluded that the most likely receptor for the site was the Dock Feeder, however the Port Talbot Dock (closest water feature to the site) has also been included in the derivation of the SSAC to adopt a precautionary approach.

Widespread changes in site grade, ground improvement together with the targeted excavation and removal of contaminants for treatment and reuse is proposed. A Materials Management Plan (MMP) will presumably be deployed yet for now the precise placement of reused soils remains uncertain beyond an understanding of general area. Risk calculations applied in generating SSAC should consequently be based on the random sampling of different locations inclusive of 1001 different model simulations. Such an approach should be protective of materials placement at any location within the site area (distance from surface waters). A single soil source equivalent to the entire site area has consequently been assumed allowing reuse anywhere within its perimeter. Good practice would however be to place soils at greatest distance from the receptor.

The model soil source has next been assumed to be equivalent to the depth of the made ground based on observations of the distribution of contaminant mass.

The observed contamination is a passive input resulting from some previous activity that has now ceased i.e. has already entered the water environment and hence source terms should be depleting (NAPL to be removed). In seeking to be reasonable then a calculated declining source has been included. Calculated declining source is based on the partition coefficients entered in the Source Inventory and Source Details of ConSim. The model then internally calculates the degree of wash out and the reduction in the source concentration through time.

Areas of site are to be excavated and subject to re-compaction presumably in accordance with a compaction specification based on design loadings. The latter has yet to be detailed however such

will likely reduce air, water and effective porosities together with infiltration. Quantifying such changes for model inclusion would at this time be subjective and as such have been ignored. This has been a conservative assumption.

Aquifer properties have remained the same as within the DQRA and details of the model input parameters are included in the DQRA report. Additional model input parameters and contaminant properties are included in Tables D.3 and D.4 respectively.

A summary of our SSAC model assumptions and limitations are listed below. These assumptions have lent a precautionary component to the derivation of the SSAC;

- i The source has been represented by the Made Ground and as a single source area (conservative as uncontaminated soils will also exist in this area);
- i Source properties have been based on an average engineering soil without consideration of compaction and changes in porosity;
- i The sandy gravels within the Alluvium deposits present the most likely groundwater pathway therefore, unsaturated and saturated aquifer parameters have been based on a sandy gravel;
- i The groundwater flow directions towards the west Dock Feeder and south Port Talbot Dock have both been assessed in the models, despite groundwater level monitoring suggesting a westerly flow (Dock Feeder);
- i The source is depleting, limited by its solubility and rates of partitioning;
- i Visual/olfactory evidence of residual NAPL and free product NAPL are to be treated/removed from both soil and groundwater;
- i Unimpeded hydraulic connection between the groundwater and the surface waters, yet the Port Talbot Dock is known to be lined to the west albeit some areas its wall has collapsed;
- i No dilution in the receiving waters; and
- i No attenuation in the hyporheic zone.

Input Correlations and Time Projections

The following correlations have been also included within the model so that relationships between interdependent parameters may be realistically modelled:

- i Lateral vs longitudinal dispersion (+8.0 correlation);
- i Aquifer hydraulic gradient vs hydraulic conductivity (-0.8 correlation);
- i Aquifer effective porosity vs hydraulic conductivity (+0.8 correlation);
- i Hydraulic conductivity vs longitudinal dispersion (+0.8 correlation);
- i Infiltration vs saturated thickness (+0.8 correlation); and
- i Infiltration vs unsaturated thickness (-0.8 correlation)

Each model simulation has been used to project receptor contaminant concentrations at 50, 300 and 1000 years After Present (AP) as per the DQRA.

SSAC_{soil} Model Results

Results including proposed SSAC_{soil} are presented in Tables D.1 to D.2. Note again that the single SSAC_{soil} area applied will ultimately include both natural soils and reworked made ground i.e. most materials will potentially be uncontaminated. Consequently, representation of an SSAC_{soil} area by use of a single elevated concentration could be considered precautionary. Model source

concentrations have been iterated until they have been identified to be protective of the pre dilution AA-EQS for surface waters.

Results of the projected groundwater concentrations are shown as 95 percentiles, meaning that 95 % of the values from 1001 iterations are lower than the 95%ile.

Projected groundwater concentrations have been screened against their relevant AA-EQS and presented in Table D-2 for the Port Talbot Dock and Dock Feeder respectively. Model outputs are included in Appendix D.

Table D-1 – Projected Concentrations (95% of values less than) at Port Talbot Dock and 50, 300 and 1000 years (AP)

Determinand	SSAC _{SOIL} (mg/kg)	Max Conc. Observed on site* (mg/kg)	Geometric mean (mg/kg)	AA- EQS (µg/l)	95 %ile Projected Concentration (µg/l)		
					50 years AP	300 years AP	1000 years AP
Benzene	1.15	2.21	0.01	10	9.77	0.025	2.21E-08
Hexavalent Chromium	2	<LOD	NA	3.4	NR	NR	3.20
Ethylbenzene	4.7	0.45	0.005	20	19.5	2.25	0.092
Naphthalene	0.38	12	0.238	2	1.82	0.525	0.055
Phenol	30^	2.9	0.301	7.7	0.007	0.007	0.007
Toluene	18.5	0.557	0.007	74	64.4	1.81	0.005
Xylene	7.4	1.742	0.014	30	3.29	0.548	0.35

* excluding boreholes containing NAPL

^ Projected concentrations limited by maximum solubility

NR: not detected at receptor

Table D-2 – Projected Concentrations (95% of values less than) at the Dock Feeder and 50, 300 and 1000 years (AP)

Determinand	Source Concentration (mg/kg)	AA-EQS (µg/l)	95 %ile Projected Concentration (µg/l)		
			50 years AP	300 years AP	1000 years AP
Benzene	1.15	10	0.161	2.79E-04	1.76E-10
Hexavalent Chromium	2	3.4	NR	NR	NR
Ethylbenzene	4.7	20	NR	4.86E-03	1.21E-04
Naphthalene	0.38	2	NR	5.39E-03	3.25E-04
Phenol	30^	7.7	2.95E-07	2.94E-07	2.94E-07
Toluene	18.5	74	2.30E-07	2.86E-03	3.01E-06
Xylene	7.4	30	NR	0.012	3.00E-04

Sensitivity Assessment

The sensitivity function within ConSim indicates that the projected concentrations are controlled mainly by rates of degradation, infiltration and source thickness. Yet:

- i the degradation rates used in the model have been taken from literature data for aerobic conditions selected based on measured field observations of dissolved oxygen and redox;
- i infiltration has been based on regional rainfall data while reasonably assuming future hardstanding at 80% of the area of the site; while
- i source thickness has included the entire range of the observed made ground thickness as taken from the borehole logs.

CONCLUSIONS

Our initial GQRA identified exceedances of statutory surface water Environment Quality Standards (AA-EQS) in groundwater but pre-dilution in receiving surface waters and not accounting for attenuation between the site and surface waters. A Detailed Quantitative Risk Assessment for controlled waters was subsequently delivered to provide a less inherently conservative and more site-specific assessment of the observed hazard inclusive of transport. Overall the DQRA has indicated that risks to controlled waters (surface waters) are low based on the available data. Yet SSAC are still required in order to support the remediation of free and residual NAPL seen on site. Adopting in part a precautionary approach then SSAC_{soil} protective of the Port Talbot Dock are consequently recommended given the proximity of this receptor. These SSAC_{soil} are summarised in Appendix C.

Project: Port Talbot Harbourside

Project Number: 60053048

Project Details

Title: Port Talbot Harbourside

Project Number: 60053048

Prepared By: A Jimenez

Date: 2020-02-21 15:25:51

Client Name: Neath Port Talbot County Borough Council

Comments:

Consim version 2.05

Simulation Level

Level 3

Simulation Parameters

Iterations 1001

Timeslices:50, 300, 1000

Water Quality Standard

No Standard

Project: Port Talbot Harbourside**Project Number: 60053048****Source**

Whole site MG

Dry Bulk Density [g/cm³] TRIANGULAR(1.28,1.6,1.92)

Air Filled Porosity [fraction] UNIFORM(0.144,0.18)

Water Filled Porosity [fraction] UNIFORM(0.016,0.02)

Thickness [m] TRIANGULAR(1,2.14,4)

Fraction of Organic Carbon [%] TRIANGULAR(0.17,1.19,3.83)

Contaminated Land

Declining Source Term

Overall Unsaturated Zone Thickness [m] UNIFORM(0.01,1)

Infiltration

Infiltration [mm/year] NORMAL(255,36.51)

Source Inventory:*Benzene*

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(1.15)

Organic

koc [ml/g] TRIANGULAR(64.96,81.2,97.44)

Calculate kd

Henry's Law Constant TRIANGULAR(0.18,0.225,0.27)

Maximum Solubility [mg/l] TRIANGULAR(1424,1780,2136)

Chromium

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(2)

Inorganic

Partition Coefficient [ml/g] TRIANGULAR(53.6,67,80.4)

Maximum Solubility [mg/l] TRIANGULAR(352000,440000,528000)

Ethylbenzene

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(4.7)

Organic

koc [ml/g] TRIANGULAR(429.6,537,644.4)

Calculate kd

Henry's Law Constant TRIANGULAR(0.286,0.358,0.429)

Maximum Solubility [mg/l] TRIANGULAR(121.3,152,182.4)

Naphthalene

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(0.38)

Organic

koc [ml/g] TRIANGULAR(675.2,844,1012)

Calculate kd

Henry's Law Constant TRIANGULAR(0.0139,0.0174,0.02)

Maximum Solubility [mg/l] TRIANGULAR(24.8,31,37.2)

Phenol

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(30)

Organic

koc [ml/g] TRIANGULAR(66.4,83,99.6)

Calculate kd

Henry's Law Constant TRIANGULAR(209600,262000,314400)

Maximum Solubility [mg/l] TRIANGULAR(74400,93000,111600)

Project: Port Talbot Harbourside

Project Number: 60053048

<i>Toluene</i>	
Measured as Total Concentration in Soil	Concentration [mg/kg] SINGLE(18.5)
Organic	
koc [ml/g] TRIANGULAR(187.2,234,280)	Calculate kd
Henry's Law Constant TRIANGULAR(0.2192,0.274,0.3288)	Maximum Solubility [mg/l] TRIANGULAR(412,515,618)
<i>Xylene</i>	
Measured as Total Concentration in Soil	Concentration [mg/kg] SINGLE(7.4)
Organic	
koc [ml/g] TRIANGULAR(489,612,734)	Calculate kd
Henry's Law Constant TRIANGULAR(0.236,0.295,0.354)	Maximum Solubility [mg/l] TRIANGULAR(128,160,192)

Project: Port Talbot Harbourside

Project Number: 60053048

Unsaturated Pathway: Unsaturated Pathway

Active

Porous Medium

Thickness [m] UNIFORM(0.01,1)

Dry Bulk Density [g/cm³] UNIFORM(1.37,2.19)

Vertical Dispersivity [m] UNIFORM(0.001,0.1)

Fraction of Organic Carbon [%] TRIANGULAR(0.2,0.27,0.38)

Water Filled Porosity [fraction] UNIFORM(0.02,0.03)

Unsaturated Conductivity [m/s] LOGTRIANGULAR(2.89e-006,5.6e-005,0.0001)

Unsaturated Pathway Contaminants*Benzene*

koc [ml/g] TRIANGULAR(64.96,81.2,97.44)

Calculate kd

Chromium

Partition Coefficient [ml/g] TRIANGULAR(53.6,67,80.4)

Ethylbenzene

koc [ml/g] TRIANGULAR(429.6,537,644.4)

Calculate kd

Naphthalene

koc [ml/g] TRIANGULAR(675.2,844,1012)

Calculate kd

Phenol

koc [ml/g] TRIANGULAR(66.4,83,99.6)

Calculate kd

Toluene

koc [ml/g] TRIANGULAR(187.2,234,280)

Calculate kd

Xylene

koc [ml/g] TRIANGULAR(489,612,734)

Calculate kd

Project: Port Talbot Harbourside

Project Number: 60053048

Aquifer Pathway

Thickness [m] UNIFORM(5.5,15)

Dry Bulk Density [g/cm³] UNIFORM(1.37,2.19)

Fraction of Organic Carbon [%] TRIANGULAR(0.2,0.27,0.38)

Calculated Mixing Zone Thickness

Hydraulic Conductivity [m/s] TRIANGULAR(2.89e-006,5.6e-005,0.0001)

Effective Porosity [fraction] UNIFORM(0.14,0.21)

Hydraulic Gradient TRIANGULAR(0.002,0.006,0.008)

Groundwater Flow Direction (degrees), 270.00

Longitudinal Dispersivity [m] TRIANGULAR(57,67,77)

Lateral Dispersivity [m] TRIANGULAR(39.9,46.9,53.9)

Contaminant Inventory*Benzene*

koc [ml/g] TRIANGULAR(64.96,81.2,97.44)

Calculate kd

Simulate Degradation in Dissolved Phase only

Half-life [years] UNIFORM(0.137,0.959)

Chromium

Partition Coefficient [ml/g] TRIANGULAR(53.6,67,80.4)

Simulate Degradation in Dissolved Phase only

Half-life [years] SINGLE(9e+029)

Ethylbenzene

koc [ml/g] TRIANGULAR(429.6,537,644.4)

Calculate kd

Simulate Degradation in Dissolved Phase only

Half-life [years] LOGUNIFORM(0.137,0.548)

Naphthalene

koc [ml/g] TRIANGULAR(675.2,844,1012)

Calculate kd

Simulate Degradation in Dissolved Phase only

Half-life [years] LOGUNIFORM(0.274,0.822)

Phenol

koc [ml/g] TRIANGULAR(66.4,83,99.6)

Calculate kd

Simulate Degradation in Dissolved Phase only

Half-life [years] LOGUNIFORM(0.027,0.274)

Toluene

koc [ml/g] TRIANGULAR(187.2,234,280)

Calculate kd

Simulate Degradation in Dissolved Phase only

Half-life [years] LOGUNIFORM(0.055,0.548)

Xylene

koc [ml/g] TRIANGULAR(489,612,734)

Calculate kd

Simulate Degradation in Dissolved Phase only

Half-life [years] LOGUNIFORM(0.137,0.548)

Project: Port Talbot Harbourside

Project Number: 60053048

Receptor

Port Talbot Dock	X 276540.000000	Y 189346.000000
BH101 - Centinel	X 276541.645000	Y 189427.592000
MW1- Centinel	X 276633.210000	Y 189439.703000
Dock Feeder	X 275853.000000	Y 189516.000000
Whole site MG Receptor	X 276460.293268	Y 189505.081697

Input Correlations

lat-long	0.8
n-K	0.8
K-long disp	0.8
i-K	-0.8
inf- sat thick	0.8
inf-unst thickness	-0.8

Whole site MG - Benzene*Concentration at Source [mg/l] - 50 years*

05% of values less than 0.00047072	10% of values less than 0.00252601	25% of values less than 0.0190039
50% of values less than 0.0584731	75% of values less than 0.128738	90% of values less than 0.190615
Minimum 0.00000000	Maximum 0.327444	
Mean 0.0806644	SD 0.0728065	Variance 0.00530078

Concentration at Source [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 2.96164E-011
50% of values less than 1.33802E-007	75% of values less than 3.60317E-005	90% of values less than 0.000756162
Minimum 0.00000000	Maximum 0.0176954	
Mean 0.000394708	SD 0.00153529	Variance 2.35712E-006

Concentration at Source [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 3.90557E-015	90% of values less than 1.28669E-010
Minimum 0.00000000	Maximum 1.06149E-005	
Mean 3.83142E-008	SD 4.69342E-007	Variance 2.20282E-013

Whole site MG - Chromium*Concentration at Source [mg/l] - 50 years*

05% of values less than 0.024946	10% of values less than 0.0254546	25% of values less than 0.0265947
50% of values less than 0.0280779	75% of values less than 0.0298403	90% of values less than 0.0317124
Minimum 0.0231119	Maximum 0.0359616	
Mean 0.0283189	SD 0.00232107	Variance 5.38738E-006

Concentration at Source [mg/l] - 300 years

05% of values less than 0.0159574	10% of values less than 0.0174708	25% of values less than 0.0195894
50% of values less than 0.0216454	75% of values less than 0.023759	90% of values less than 0.0255594
Minimum 0.0110039	Maximum 0.0313595	
Mean 0.0215478	SD 0.00318316	Variance 1.01325E-005

Concentration at Source [mg/l] - 1000 years

05% of values less than 0.00381562	10% of values less than 0.00511908	25% of values less than 0.00753979
50% of values less than 0.0104784	75% of values less than 0.0139282	90% of values less than 0.0161765
Minimum 0.000897924	Maximum 0.0213725	
Mean 0.0106776	SD 0.00423053	Variance 1.78974E-005

Whole site MG - Ethylbenzene*Concentration at Source [mg/l] - 50 years*

05% of values less than 0.199023	10% of values less than 0.218926	25% of values less than 0.259072
50% of values less than 0.328041	75% of values less than 0.417782	90% of values less than 0.506302
Minimum 0.00429366	Maximum 1.23493	
Mean 0.350484	SD 0.124444	Variance 0.0154863

Concentration at Source [mg/l] - 300 years

05% of values less than 0.000343409	10% of values less than 0.00217621	25% of values less than 0.0159428
50% of values less than 0.0455503	75% of values less than 0.0920664	90% of values less than 0.131575
Minimum 0.00000000	Maximum 0.220544	
Mean 0.0579167	SD 0.0494928	Variance 0.00244954

Concentration at Source [mg/l] - 1000 years

05% of values less than 2.34847E-012	10% of values less than 1.17198E-009	25% of values less than 2.75136E-006
50% of values less than 0.000157178	75% of values less than 0.00241101	90% of values less than 0.0118894
Minimum 0.00000000	Maximum 0.0653815	
Mean 0.00334477	SD 0.00733176	Variance 5.37547E-005

Whole site MG - Naphthalene*Concentration at Source [mg/l] - 50 years*

05% of values less than 0.0120431	10% of values less than 0.0130267	25% of values less than 0.0156976
50% of values less than 0.0203284	75% of values less than 0.0265361	90% of values less than 0.0329331
Minimum 0.00299893	Maximum 0.101891	
Mean 0.022013	SD 0.00873155	Variance 7.624E-005

Concentration at Source [mg/l] - 300 years

05% of values less than 0.000353866	10% of values less than 0.00105437	25% of values less than 0.00304742
50% of values less than 0.00550682	75% of values less than 0.00833264	90% of values less than 0.0103413
Minimum 1.40135E-012	Maximum 0.016964	
Mean 0.00575435	SD 0.00352478	Variance 1.24241E-005

Concentration at Source [mg/l] - 1000 years

05% of values less than 2.7704E-009	10% of values less than 1.28163E-007	25% of values less than 1.17077E-005
50% of values less than 0.00015822	75% of values less than 0.000767382	90% of values less than 0.00211822
Minimum 0.000000000	Maximum 0.00599914	
Mean 0.000628467	SD 0.000962562	Variance 9.26525E-007

Whole site MG - Phenol*Concentration at Source [mg/l] - 50 years*

05% of values less than 0.000917402	10% of values less than 0.000959686	25% of values less than 0.00104021
50% of values less than 0.00113554	75% of values less than 0.00125597	90% of values less than 0.00136529
Minimum 0.000743261 0.00144115	Maximum 0.00167784	
Mean 0.00115376	SD 0.000158417	Variance 2.50959E-008

Concentration at Source [mg/l] - 300 years

05% of values less than 0.000916923	10% of values less than 0.000959087	25% of values less than 0.00103979
50% of values less than 0.00113507	75% of values less than 0.00125493	90% of values less than 0.00136437
Minimum 0.000742306 0.00143972	Maximum 0.00167619	
Mean 0.00115292	SD 0.000158226	Variance 2.50354E-008

Concentration at Source [mg/l] - 1000 years

05% of values less than 0.000915582	10% of values less than 0.000957576	25% of values less than 0.00103779
50% of values less than 0.00113343	75% of values less than 0.001252	90% of values less than 0.00136189
Minimum 0.000739638 0.00143573	Maximum 0.00167156	
Mean 0.00115057	SD 0.000157696	Variance 2.48681E-008

05% of values less than 0.455908

10% of values less than 0.836096

25% of values less than 1.29823

50% of values less than 1.7399

75% of values less than 2.21683

90% of values less than 2.71943

Minimum 8.12861E-005 3.07435

Maximum 5.3782

Mean 1.76131

SD 0.761917

Variance 0.580517

05% of values less than 1.65579E-007

10% of values less than 8.15948E-006

25% of values less than 0.00118303

50% of values less than 0.0173536

75% of values less than 0.106471

90% of values less than 0.307816

Minimum Ores less than 0.422022

Maximum 0.95374

Mean 0.0913743

SD 0.148126

Variance 0.0219413

05% of values less than 0

10% of values less than 0

25% of values less than 2.10274E-012

50% of values less than 3.73027E-008

75% of values less than 3.145E-005

90% of values less than 0.00124169

Minimum Ones less than 0.00404344

Maximum 0.0770241

Mean 0.000980846

SD 0.0048164

Variance 2.31977E-005

Whole site MG - Xylene*Concentration at Source [mg/l] - 50 years*

05% of values less than 0.292983	10% of values less than 0.316055	25% of values less than 0.380455
50% of values less than 0.483274	75% of values less than 0.61658	90% of values less than 0.766121
Minimum 0.0255884	Maximum 1.98047	
Mean 0.517684	SD 0.18848	Variance 0.0355246

Concentration at Source [mg/l] - 300 years

05% of values less than 0.00133382	10% of values less than 0.00632135	25% of values less than 0.034984
50% of values less than 0.0824203	75% of values less than 0.153409	90% of values less than 0.208197
Minimum 6.52674E-014	Maximum 0.353149	
Mean 0.0982697	SD 0.0762788	Variance 0.00581845

Concentration at Source [mg/l] - 1000 years

05% of values less than 1.01663E-010	10% of values less than 3.0735E-008	25% of values less than 1.62374E-005
50% of values less than 0.000623872	75% of values less than 0.00609095	90% of values less than 0.0251896
Minimum 0.0000000000000000	Maximum 0.105469	
Mean 0.00691444	SD 0.0137348	Variance 0.000188645

Whole site MG - Benzene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.000401946	10% of values less than 0.00460262	25% of values less than 0.0188145
50% of values less than 0.0409917	75% of values less than 0.0684795	90% of values less than 0.0879792
Minimum 0.000000000	Maximum 0.145507	
Mean 0.0443209	SD 0.0308575	Variance 0.000952187

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.00481938	10% of values less than 0.0740314	25% of values less than 0.317336
50% of values less than 0.715743	75% of values less than 1.1838	90% of values less than 1.5406
Minimum 0.000000000	Maximum 2.58877	
Mean 0.778411	SD 0.555361	Variance 0.308425

Whole site MG - Chromium

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.000401946	10% of values less than 0.00460262	25% of values less than 0.0188145
50% of values less than 0.0409917	75% of values less than 0.0684795	90% of values less than 0.0879792
Minimum 0.000000000	Maximum 0.145507	
Mean 0.0443209	SD 0.0308575	Variance 0.000952187

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 1.22888	10% of values less than 20.2572	25% of values less than 86.7214
50% of values less than 195.205	75% of values less than 321.518	90% of values less than 424.628
Minimum 0.000000000	Maximum 721.439	
Mean 212.841	SD 150.121	Variance 22536.3

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Ethylbenzene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.000401946	10% of values less than 0.00460262	25% of values less than 0.0188145
50% of values less than 0.0409917	75% of values less than 0.0684795	90% of values less than 0.0879792
Minimum 0.000000000	Maximum 0.145507	
Mean 0.0443209	SD 0.0308575	Variance 0.000952187

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.0284835	10% of values less than 0.477927	25% of values less than 1.89569
50% of values less than 4.47268	75% of values less than 7.35335	90% of values less than 9.61923
Minimum 0.000000000	Maximum 15.8359	
Mean 4.87555	SD 3.50565	Variance 12.2896

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Naphthalene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.000401946	10% of values less than 0.00460262	25% of values less than 0.0188145
50% of values less than 0.0409917	75% of values less than 0.0684795	90% of values less than 0.0879792
Minimum 0.000000000	Maximum 0.145507	
Mean 0.0443209	SD 0.0308575	Variance 0.000952187

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.0477422	10% of values less than 0.701339	25% of values less than 3.02102
50% of values less than 7.08463	75% of values less than 11.5673	90% of values less than 15.5152
Minimum 0.000000000	Maximum 27.3401	
Mean 7.64626	SD 5.50932	Variance 30.3526

Whole site MG - Phenol

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.000401946	10% of values less than 0.00460262	25% of values less than 0.0188145
50% of values less than 0.0409917	75% of values less than 0.0684795	90% of values less than 0.0879792
Minimum 0.000000000	Maximum 0.145507	
Mean 0.0443209	SD 0.0308575	Variance 0.000952187

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.00420387	10% of values less than 0.0723137	25% of values less than 0.32549
50% of values less than 0.722305	75% of values less than 1.20183	90% of values less than 1.57155
Minimum 0.000000000	Maximum 2.64618	
Mean 0.790461	SD 0.566417	Variance 0.320828

Whole site MG - Toluene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.000401946	10% of values less than 0.00460262	25% of values less than 0.0188145
50% of values less than 0.0409917	75% of values less than 0.0684795	90% of values less than 0.0879792
Minimum 0.000000000	Maximum 0.145507	
Mean 0.0443209	SD 0.0308575	Variance 0.000952187

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.0125119	10% of values less than 0.206819	25% of values less than 0.84962
50% of values less than 1.94859	75% of values less than 3.22063	90% of values less than 4.29161
Minimum 0.000000000	Maximum 7.49682	
Mean 2.14402	SD 1.5452	Variance 2.38765

Whole site MG - Xylene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.000401946	10% of values less than 0.00460262	25% of values less than 0.0188145
50% of values less than 0.0409917	75% of values less than 0.0684795	90% of values less than 0.0879792
Minimum 0.000000000	Maximum 0.145507	
Mean 0.0443209	SD 0.0308575	Variance 0.000952187

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0.0387385	10% of values less than 0.511535	25% of values less than 2.12682
50% of values less than 5.0766	75% of values less than 8.34515	90% of values less than 11.0429
Minimum 0.000000000	Maximum 18.3767	
Mean 5.54406	SD 3.99642	Variance 15.9714

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Benzene*Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years*

05% of values less than 0.0005142	10% of values less than 0.00281434	25% of values less than 0.0195022
50% of values less than 0.0609865	75% of values less than 0.133258	90% of values less than 0.194808
Minimum 0.0000000	Maximum 0.334759	
Mean 0.083096	SD 0.0742421	Variance 0.00551189

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 3.16381E-011
50% of values less than 1.35554E-007	75% of values less than 3.73797E-005	90% of values less than 0.000758573
Minimum 0.0000000	Maximum 0.0179091	
Mean 0.000400926	SD 0.0015558	Variance 2.4205E-006

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 4.03156E-015	90% of values less than 1.34496E-010
Minimum 0.0000000	Maximum 1.06488E-005	
Mean 3.87149E-008	SD 4.72771E-007	Variance 2.23513E-013

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Chromium*Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.0197706
Minimum 0.0242671	Maximum 0.0311962	
Mean 0.00353379	SD 0.00815756	Variance 6.65458E-005

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.0196489	75% of values less than 0.0227191	90% of values less than 0.0251557
Minimum 0.026285	Maximum 0.0311803	
Mean 0.0152028	SD 0.0101099	Variance 0.00010221

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 0.00501361	10% of values less than 0.00656738	25% of values less than 0.00969594
50% of values less than 0.0130921	75% of values less than 0.0167754	90% of values less than 0.0194531
Minimum 0.00169952	Maximum 0.0262492	
Mean 0.0131568	SD 0.00487921	Variance 2.38067E-005

Whole site MG - Ethylbenzene*Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years*

05% of values less than 0.205239	10% of values less than 0.226992	25% of values less than 0.267979
50% of values less than 0.341573	75% of values less than 0.439574	90% of values less than 0.545738
Minimum 0.0137169	Maximum 1.55796	
Mean 0.367979	SD 0.13621	Variance 0.0185533

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0.000361483	10% of values less than 0.00248685	25% of values less than 0.0165789
50% of values less than 0.0470913	75% of values less than 0.0946196	90% of values less than 0.134829
Minimum 0.0000000	Maximum 0.22324	
Mean 0.0596589	SD 0.0504636	Variance 0.00254658

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 2.41284E-012	10% of values less than 1.31934E-009	25% of values less than 2.89044E-006
50% of values less than 0.000163469	75% of values less than 0.00250275	90% of values less than 0.0120588
Minimum 0.0000000	Maximum 0.0667854	
Mean 0.00340772	SD 0.00744225	Variance 5.53871E-005

Whole site MG - Naphthalene*Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years*

05% of values less than 0.0123397	10% of values less than 0.0134557	25% of values less than 0.0161358
50% of values less than 0.0210785	75% of values less than 0.0279564	90% of values less than 0.0354409
Minimum 0.00915384	Maximum 0.129513	
Mean 0.0232073	SD 0.00986414	Variance 9.73013E-005

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0.000357841	10% of values less than 0.00118426	25% of values less than 0.00316602
50% of values less than 0.00572616	75% of values less than 0.00861505	90% of values less than 0.0106835
Minimum 4.63547E-012	Maximum 0.0172741	
Mean 0.00595648	SD 0.00360327	Variance 1.29836E-005

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 2.9382E-009	10% of values less than 1.34845E-007	25% of values less than 1.22612E-005
50% of values less than 0.000163012	75% of values less than 0.000789954	90% of values less than 0.00213993
Minimum 0.000000000	Maximum 0.0061279	
Mean 0.000642536	SD 0.000978812	Variance 9.58072E-007

Whole site MG - Phenol*Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years*

05% of values less than 0.000917405	10% of values less than 0.000959691	25% of values less than 0.00104021
50% of values less than 0.00113554	75% of values less than 0.00125597	90% of values less than 0.0013653
Minimum 0.000743262	Maximum 0.00167785	
Mean 0.00115376	SD 0.000158418	Variance 2.50961E-008

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0.000916926	10% of values less than 0.000959092	25% of values less than 0.00103979
50% of values less than 0.00113507	75% of values less than 0.00125493	90% of values less than 0.00136438
Minimum 0.000742307	Maximum 0.00167619	
Mean 0.00115292	SD 0.000158226	Variance 2.50356E-008

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 0.000915585	10% of values less than 0.000957576	25% of values less than 0.0010378
50% of values less than 0.00113343	75% of values less than 0.001252	90% of values less than 0.0013619
Minimum 0.000739639	Maximum 0.00167156	
Mean 0.00115058	SD 0.000157697	Variance 2.48682E-008

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Toluene*Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years*

05% of values less than 0.509366	10% of values less than 0.868142	25% of values less than 1.3472
50% of values less than 1.79897	75% of values less than 2.28029	90% of values less than 2.82607
Minimum 0.000255378	Maximum 5.43027	
Mean 1.83368	SD 0.786394	Variance 0.618415

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 1.67491E-007	10% of values less than 9.19476E-006	25% of values less than 0.00119594
50% of values less than 0.0177525	75% of values less than 0.109121	90% of values less than 0.314194
Minimum 0.000000000	Maximum 0.974403	
Mean 0.0933828	SD 0.150612	Variance 0.0226839

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 2.29092E-012
50% of values less than 3.83304E-008	75% of values less than 3.20134E-005	90% of values less than 0.00127576
Minimum 0.000000000	Maximum 0.0772559	
Mean 0.000994977	SD 0.00487183	Variance 2.37347E-005

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Xylene*Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years*

05% of values less than 0.30518	10% of values less than 0.326445	25% of values less than 0.394741
50% of values less than 0.500233	75% of values less than 0.649718	90% of values less than 0.794919
Minimum 0.082593	Maximum 2.50322	
Mean 0.544217	SD 0.208338	Variance 0.0434046

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0.0014269	10% of values less than 0.00706954	25% of values less than 0.0366759
50% of values less than 0.0862884	75% of values less than 0.15858	90% of values less than 0.211042
Minimum 2.09879E-013	Maximum 0.357469	
Mean 0.101362	SD 0.0778001	Variance 0.00605286

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 1.07651E-010	10% of values less than 3.15977E-008	25% of values less than 1.70434E-005
50% of values less than 0.000644709	75% of values less than 0.00633943	90% of values less than 0.0256594
Minimum 0.000000000000000	Maximum 0.107733	
Mean 0.00705171	SD 0.0139528	Variance 0.000194681

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Benzene*Diluted Concentration [mg/l] Unsaturated Pathway - 50 years*

05% of values less than 0.000169306	10% of values less than 0.000970593	25% of values less than 0.00618687
50% of values less than 0.0180382	75% of values less than 0.037816	90% of values less than 0.0540131
Minimum 0.000000000	Maximum 0.162191	
Mean 0.0238797	SD 0.0218573	Variance 0.00047774

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 9.53576E-012
50% of values less than 3.66008E-008	75% of values less than 9.61337E-006	90% of values less than 0.000227356
Minimum 0.000000000	Maximum 0.00479335	
Mean 0.000102796	SD 0.000400947	Variance 1.60758E-007

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 1.221E-015	90% of values less than 3.92425E-011
Minimum 0.000000000	Maximum 2.5564E-006	
Mean 9.78641E-009	SD 1.21359E-007	Variance 1.47281E-014

Project: Port Talbot Harbourside

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Whole site MG - Chromium*Diluted Concentration [mg/l] Unsaturated Pathway - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.00555501
Minimum 0.00745337	Maximum 0.0196395	
Mean 0.00111992	SD 0.0027612	Variance 7.62424E-006

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00517604	75% of values less than 0.00700796	90% of values less than 0.00907242
Minimum 0.0102261	Maximum 0.0184327	
Mean 0.00471098	SD 0.00359617	Variance 1.29324E-005

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 0.00154256	10% of values less than 0.00199211	25% of values less than 0.00267157
50% of values less than 0.0036628	75% of values less than 0.00491499	90% of values less than 0.00632481
Minimum 0.000440045	Maximum 0.014045	
Mean 0.00395734	SD 0.00183698	Variance 3.37449E-006

Whole site MG - Ethylbenzene*Diluted Concentration [mg/l] Unsaturated Pathway - 50 years*

05% of values less than 0.0522851	10% of values less than 0.0605518	25% of values less than 0.0756534
50% of values less than 0.101259	75% of values less than 0.132368	90% of values less than 0.181754
Minimum 0.0055014	Maximum 0.420073	
Mean 0.112568	SD 0.0542986	Variance 0.00294834

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0.000147462	10% of values less than 0.00073851	25% of values less than 0.00534062
50% of values less than 0.0133848	75% of values less than 0.0268991	90% of values less than 0.0378341
Minimum 0.0000000	Maximum 0.111088	
Mean 0.0172213	SD 0.0150221	Variance 0.000225663

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 8.15404E-013	10% of values less than 3.79387E-010	25% of values less than 9.56066E-007
50% of values less than 5.11635E-005	75% of values less than 0.00067527	90% of values less than 0.00322841
Minimum 0.0000000	Maximum 0.0185021	
Mean 0.000915667	SD 0.00201114	Variance 4.04468E-006

Whole site MG - Naphthalene*Diluted Concentration [mg/l] Unsaturated Pathway - 50 years*

05% of values less than 0.00300679	10% of values less than 0.0035104	25% of values less than 0.00445536
50% of values less than 0.00622593	75% of values less than 0.00855399	90% of values less than 0.0122614
Minimum 0.00184946 and 0.0144591	Maximum 0.0257002	
Mean 0.00716093	SD 0.00381072	Variance 1.45216E-005

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0.000129674	10% of values less than 0.000345338	25% of values less than 0.000947432
50% of values less than 0.0015902	75% of values less than 0.00235967	90% of values less than 0.00317866
Minimum 1.85914E-012 and 0.0039827	Maximum 0.00794117	
Mean 0.00175508	SD 0.00116587	Variance 1.35926E-006

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 9.19881E-010	10% of values less than 4.66848E-008	25% of values less than 3.96534E-006
50% of values less than 4.68922E-005	75% of values less than 0.000235164	90% of values less than 0.000564064
Minimum 0.000745408	Maximum 0.00205694	
Mean 0.000176386	SD 0.000268532	Variance 7.21092E-008

Whole site MG - Phenol*Diluted Concentration [mg/l] Unsaturated Pathway - 50 years*

05% of values less than 0.000197042	10% of values less than 0.000218602	25% of values less than 0.000263767
50% of values less than 0.000337558	75% of values less than 0.000420678	90% of values less than 0.000516664
Minimum 0.000121113	Maximum 0.00115981	
Mean 0.000356848	SD 0.00012881	Variance 1.65921E-008

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0.000196952	10% of values less than 0.000218445	25% of values less than 0.000263569
50% of values less than 0.000337478	75% of values less than 0.000420183	90% of values less than 0.000516262
Minimum 0.000121074	Maximum 0.00115882	
Mean 0.000356579	SD 0.000128677	Variance 1.65578E-008

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 0.000196699	10% of values less than 0.000217852	25% of values less than 0.000263073
50% of values less than 0.000337072	75% of values less than 0.000419077	90% of values less than 0.00051465
Minimum 0.000120973	Maximum 0.00115606	
Mean 0.000355829	SD 0.000128305	Variance 1.64622E-008

Whole site MG - Toluene*Diluted Concentration [mg/l] Unsaturated Pathway - 50 years*

05% of values less than 0.169723	10% of values less than 0.254323	25% of values less than 0.370331
50% of values less than 0.50604	75% of values less than 0.677967	90% of values less than 0.901826
Minimum 0.000102424	Maximum 2.38071	
Mean 0.550941	SD 0.290777	Variance 0.0845515

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 6.43421E-008	10% of values less than 3.17409E-006	25% of values less than 0.000384873
50% of values less than 0.00558011	75% of values less than 0.0332438	90% of values less than 0.0801878
Minimum 0.000000000	Maximum 0.303564	
Mean 0.0255946	SD 0.0414589	Variance 0.00171884

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 7.46693E-013
50% of values less than 1.20842E-008	75% of values less than 8.93492E-006	90% of values less than 0.000341646
Minimum 0.000000000	Maximum 0.0185465	
Mean 0.000254234	SD 0.00122702	Variance 1.50557E-006

Whole site MG - Xylene*Diluted Concentration [mg/l] Unsaturated Pathway - 50 years*

05% of values less than 0.0742463	10% of values less than 0.0856506	25% of values less than 0.110806
50% of values less than 0.148092	75% of values less than 0.19741	90% of values less than 0.272843
Minimum 0.02136961	Maximum 0.587719	
Mean 0.16681	SD 0.0819544	Variance 0.00671653

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0.000521959	10% of values less than 0.00243318	25% of values less than 0.0109928
50% of values less than 0.0249229	75% of values less than 0.0435485	90% of values less than 0.0611681
Minimum 8.4176E-014	Maximum 0.165555	
Mean 0.0294667	SD 0.0236393	Variance 0.000558814

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 3.49838E-011	10% of values less than 9.97299E-009	25% of values less than 5.58342E-006
50% of values less than 0.00018563	75% of values less than 0.0017945	90% of values less than 0.00651571
Minimum 0.000000000	Maximum 0.0324433	
Mean 0.00190504	SD 0.00379852	Variance 1.44288E-005

Project: Port Talbot Harbourside

Project Number: 60053048

Benzene*Unretarded Travel Time to Port Talbot Dock [years]*

05% of values less than 0.00508804	10% of values less than 0.0158796	25% of values less than 0.048174
50% of values less than 0.236961	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 289710	SD 453855	Variance 2.05984E+011

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.0940396	10% of values less than 0.264321	25% of values less than 0.767574
50% of values less than 1.69889	75% of values less than 2.80626E+006	90% of values less than 3.56885E+006
Minimum 0.es less than 3.92878E+006	Maximum 5.54554E+006	
Mean 975245	SD 1.55711E+006	Variance 2.4246E+012

Chromium*Unretarded Travel Time to Port Talbot Dock [years]*

05% of values less than 0.00508804

10% of values less than 0.0158796

25% of values less than 0.048174

50% of values less than 0.236961

75% of values less than 1E+006

90% of values less than 1E+006

Minimum 0.es less than 1E+006

Maximum 1E+006

Mean 289710

SD 453855

Variance 2.05984E+011

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 23.555

10% of values less than 72.3354

25% of values less than 203.584

50% of values less than 425.207

75% of values less than 5.53238E+008

90% of values less than 7.38172E+008

Minimum 0.es less than 8.33701E+008

Maximum 1.08383E+009

Mean 2.02112E+008

SD 3.25076E+008

Variance 1.05674E+017

Ethylbenzene*Unretarded Travel Time to Port Talbot Dock [years]*

05% of values less than 0.00508804	10% of values less than 0.0158796	25% of values less than 0.048174
50% of values less than 0.236961	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 289710	SD 453855	Variance 2.05984E+011

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.584429	10% of values less than 1.6976	25% of values less than 4.59825
50% of values less than 9.72309	75% of values less than 1.23593E+007	90% of values less than 1.8089E+007
Minimum 0.es less than 2.00632E+007	Maximum 3.03944E+007	
Mean 4.81597E+006	SD 7.81838E+006	Variance 6.1127E+013

Naphthalene*Unretarded Travel Time to Port Talbot Dock [years]*

05% of values less than 0.00508804

10% of values less than 0.0158796

25% of values less than 0.048174

50% of values less than 0.236961

75% of values less than 1E+006

90% of values less than 1E+006

Minimum 0.es less than 1E+006

Maximum 1E+006

Mean 289710

SD 453855

Variance 2.05984E+011

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.818342

10% of values less than 2.50435

25% of values less than 7.43877

50% of values less than 15.7178

75% of values less than 1.98437E+007

90% of values less than 2.73256E+007

Minimum 0.es less than 3.10207E+007

Maximum 4.30242E+007

Mean 7.38417E+006

SD 1.19912E+007

Variance 1.4379E+014

Phenol*Unretarded Travel Time to Port Talbot Dock [years]*

05% of values less than 0.00508804

10% of values less than 0.0158796

25% of values less than 0.048174

50% of values less than 0.236961

75% of values less than 1E+006

90% of values less than 1E+006

Minimum 0.00508804

Maximum 1E+006

Mean 289710

SD 453855

Variance 2.05984E+011

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.0983338

10% of values less than 0.274731

25% of values less than 0.772096

50% of values less than 1.70892

75% of values less than 2.79078E+006

90% of values less than 3.56941E+006

Minimum 0.00508804

Maximum 4.93967E+006

Mean 980152

SD 1.56377E+006

Variance 2.44539E+012

Toluene*Unretarded Travel Time to Port Talbot Dock [years]*

05% of values less than 0.00508804

10% of values less than 0.0158796

25% of values less than 0.048174

50% of values less than 0.236961

75% of values less than 1E+006

90% of values less than 1E+006

Minimum 0.00508804

Maximum 1E+006

Mean 289710

SD 453855

Variance 2.05984E+011

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.231983

10% of values less than 0.740923

25% of values less than 2.05065

50% of values less than 4.27084

75% of values less than 6.05545E+006

90% of values less than 8.40369E+006

Minimum 0.231983

Maximum 1.29892E+007

Mean 2.25914E+006

SD 3.64458E+006

Variance 1.32829E+013

Xylene*Unretarded Travel Time to Port Talbot Dock [years]*

05% of values less than 0.00508804

10% of values less than 0.0158796

25% of values less than 0.048174

50% of values less than 0.236961

75% of values less than 1E+006

90% of values less than 1E+006

Minimum 0.es less than 1E+006

Maximum 1E+006

Mean 289710

SD 453855

Variance 2.05984E+011

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.678029

10% of values less than 1.83388

25% of values less than 5.30182

50% of values less than 11.2657

75% of values less than 1.39932E+007

90% of values less than 2.05406E+007

Minimum 0.es less than 2.2713E+007

Maximum 3.21673E+007

Mean 5.419E+006

SD 8.79122E+006

Variance 7.72856E+013

Benzene*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000394467	75% of values less than 0.00266808	90% of values less than 0.00734166
Minimum 0.000000000	Maximum 0.0599825	
Mean 0.00257452	SD 0.00555498	Variance 3.08578E-005

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 3.25548E-012	75% of values less than 8.67385E-008	90% of values less than 7.93072E-006
Minimum 0.000000000	Maximum 0.00124279	
Mean 1.21197E-005	SD 7.42275E-005	Variance 5.50972E-009

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 2.19181E-013
Minimum 0.000000000	Maximum 5.62031E-007	
Mean 1.28202E-009	SD 1.95827E-008	Variance 3.8348E-016

Chromium*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.0013E-005	Maximum 0.00351766	
Mean 3.56384E-005	SD 0.000280265	Variance 7.85487E-008

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0.000153829	90% of values less than 0.00106294
Minimum 0.00195515	Maximum 0.00880346	
Mean 0.000317535	SD 0.000859236	Variance 7.38287E-007

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000294403	75% of values less than 0.000915668	90% of values less than 0.0016623
Minimum 0.00237429	Maximum 0.00645741	
Mean 0.000613947	SD 0.000866156	Variance 7.50227E-007

Ethylbenzene*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00303258	75% of values less than 0.00912307	90% of values less than 0.0256989
Minimum 0.00000000	Maximum 0.210216	
Mean 0.00927643	SD 0.0179991	Variance 0.000323968

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000195815	75% of values less than 0.00125432	90% of values less than 0.00335243
Minimum 0.00000000	Maximum 0.0369828	
Mean 0.00141232	SD 0.00343379	Variance 1.17909E-005

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 5.47286E-008	75% of values less than 1.64785E-005	90% of values less than 0.000144191
Minimum 0.00000000	Maximum 0.00729368	
Mean 7.75666E-005	SD 0.000382647	Variance 1.46419E-007

Naphthalene*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000272383	75% of values less than 0.000820996	90% of values less than 0.00204706
Minimum 0.000000000	Maximum 0.0134976	
Mean 0.000728061	SD 0.00128287	Variance 1.64576E-006

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 6.11518E-005	75% of values less than 0.000208592	90% of values less than 0.000488166
Minimum 0.000000000	Maximum 0.00286863	
Mean 0.000183621	SD 0.00034565	Variance 1.19474E-007

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 2.60097E-007	75% of values less than 1.05072E-005	90% of values less than 4.8099E-005
Minimum 0.000000000	Maximum 0.000857049	
Mean 1.83793E-005	SD 5.54737E-005	Variance 3.07733E-009

Project: Port Talbot Harbourside

Project Number: 60053048

Phenol*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 1.77762E-006	75% of values less than 1.17627E-005	90% of values less than 4.56986E-005
Minimum 0.000102279	Maximum 0.000459753	
Mean 1.79568E-005	SD 4.63652E-005	Variance 2.14973E-009

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 1.77689E-006	75% of values less than 1.17518E-005	90% of values less than 4.56739E-005
Minimum 0.000102199	Maximum 0.000459314	
Mean 1.79435E-005	SD 4.63283E-005	Variance 2.14631E-009

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 1.77483E-006	75% of values less than 1.17214E-005	90% of values less than 4.5605E-005
Minimum 0.000101977	Maximum 0.000458085	
Mean 1.79062E-005	SD 4.62253E-005	Variance 2.13678E-009

Project: Port Talbot Harbourside

Project Number: 60053048

Toluene*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.0060918	75% of values less than 0.033332	90% of values less than 0.101142
Minimum 0.005 less than 0.188163	Maximum 0.73241	
Mean 0.0386264	SD 0.0871141	Variance 0.00758888

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 1.17619E-005	75% of values less than 0.000504283	90% of values less than 0.0037554
Minimum 0.005 less than 0.00790426	Maximum 0.116521	
Mean 0.00181426	SD 0.00731334	Variance 5.34849E-005

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 1.20475E-013	75% of values less than 3.03091E-008	90% of values less than 4.94649E-006
Minimum 0.005 less than 2.33754E-005	Maximum 0.00401882	
Mean 2.08319E-005	SD 0.000182945	Variance 3.3469E-008

Xylene*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00373943	75% of values less than 0.0140972	90% of values less than 0.0393228
Minimum 0.00000000	Maximum 0.298557	
Mean 0.013816	SD 0.0268185	Variance 0.000719233

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000417354	75% of values less than 0.00215708	90% of values less than 0.00633519
Minimum 0.00000000	Maximum 0.0592828	
Mean 0.00240565	SD 0.00558357	Variance 3.11763E-005

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 3.40808E-007	75% of values less than 4.21113E-005	90% of values less than 0.000317123
Minimum 0.00000000	Maximum 0.0126822	
Mean 0.000153553	SD 0.000680748	Variance 4.63418E-007

Project: Port Talbot Harbourside

Project Number: 60053048

Benzene*Unretarded Travel Time to BH101 - Centinel [years]*

05% of values less than 0.00568841	10% of values less than 0.0161603	25% of values less than 0.0483164
50% of values less than 0.252346	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 300699	SD 458791	Variance 2.10489E+011

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.0940396	10% of values less than 0.273543	25% of values less than 0.776211
50% of values less than 1.69889	75% of values less than 2.84603E+006	90% of values less than 3.58117E+006
Minimum 0.es less than 3.95324E+006	Maximum 5.54554E+006	
Mean 1.01572E+006	SD 1.57972E+006	Variance 2.49553E+012

Chromium*Unretarded Travel Time to BH101 - Centinel [years]*

05% of values less than 0.00568841	10% of values less than 0.0161603	25% of values less than 0.0483164
50% of values less than 0.252346	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.00568841	Maximum 1E+006	
Mean 300699	SD 458791	Variance 2.10489E+011

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 23.555	10% of values less than 74.8616	25% of values less than 207.514
50% of values less than 429.934	75% of values less than 5.6975E+008	90% of values less than 7.51999E+008
Minimum 0.00568841	Maximum 1.08383E+009	
Mean 2.10541E+008	SD 3.29837E+008	Variance 1.08793E+017

Ethylbenzene*Unretarded Travel Time to BH101 - Centinel [years]*

05% of values less than 0.00568841	10% of values less than 0.0161603	25% of values less than 0.0483164
50% of values less than 0.252346	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.00568841	Maximum 1E+006	
Mean 300699	SD 458791	Variance 2.10489E+011

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.584429	10% of values less than 1.70347	25% of values less than 4.6867
50% of values less than 9.88642	75% of values less than 1.28646E+007	90% of values less than 1.82597E+007
Minimum 0.00568841	Maximum 3.03944E+007	
Mean 5.01165E+006	SD 7.927E+006	Variance 6.28374E+013

Naphthalene*Unretarded Travel Time to BH101 - Centinel [years]*

05% of values less than 0.00568841	10% of values less than 0.0161603	25% of values less than 0.0483164
50% of values less than 0.252346	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 300699	SD 458791	Variance 2.10489E+011

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.818342	10% of values less than 2.6218	25% of values less than 7.56907
50% of values less than 15.8479	75% of values less than 2.01166E+007	90% of values less than 2.77264E+007
Minimum 0.es less than 3.11004E+007	Maximum 4.30242E+007	
Mean 7.68164E+006	SD 1.21488E+007	Variance 1.47593E+014

Phenol*Unretarded Travel Time to BH101 - Centinel [years]*

05% of values less than 0.00568841	10% of values less than 0.0161603	25% of values less than 0.0483164
50% of values less than 0.252346	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.00568841	Maximum 1E+006	
Mean 300699	SD 458791	Variance 2.10489E+011

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.0983338	10% of values less than 0.288047	25% of values less than 0.796068
50% of values less than 1.75159	75% of values less than 2.8407E+006	90% of values less than 3.59078E+006
Minimum 0.0983338	Maximum 4.93967E+006	
Mean 1.01959E+006	SD 1.58448E+006	Variance 2.51059E+012

Toluene*Unretarded Travel Time to BH101 - Centinel [years]*

05% of values less than 0.00568841	10% of values less than 0.0161603	25% of values less than 0.0483164
50% of values less than 0.252346	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 300699	SD 458791	Variance 2.10489E+011

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.231983	10% of values less than 0.744777	25% of values less than 2.08829
50% of values less than 4.44811	75% of values less than 6.15082E+006	90% of values less than 8.45205E+006
Minimum 0.es less than 9.29712E+006	Maximum 1.29892E+007	
Mean 2.35474E+006	SD 3.70254E+006	Variance 1.37088E+013

Xylene*Unretarded Travel Time to BH101 - Centinel [years]*

05% of values less than 0.00568841	10% of values less than 0.0161603	25% of values less than 0.0483164
50% of values less than 0.252346	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 300699	SD 458791	Variance 2.10489E+011

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.678029	10% of values less than 1.86849	25% of values less than 5.42076
50% of values less than 11.4028	75% of values less than 1.44731E+007	90% of values less than 2.08252E+007
Minimum 0.es less than 2.29454E+007	Maximum 3.21673E+007	
Mean 5.65013E+006	SD 8.92975E+006	Variance 7.97404E+013

Benzene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00161519	75% of values less than 0.00771419	90% of values less than 0.0174903
Minimum 0.0es less than 0.0247309	Maximum 0.0823263	
Mean 0.00598399	SD 0.0101712	Variance 0.000103453

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 2.2369E-011	75% of values less than 3.10379E-007	90% of values less than 2.82044E-005
Minimum 0.0es less than 0.000104044	Maximum 0.00196108	
Mean 3.01046E-005	SD 0.000159524	Variance 2.5448E-008

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 6.18062E-013
Minimum 0.0es less than 1.70974E-010	Maximum 1.16225E-006	
Mean 3.51202E-009	SD 4.81884E-008	Variance 2.32212E-015

Chromium*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.00012485	Maximum 0.0130538	
Mean 0.000118441	SD 0.000758604	Variance 5.7548E-007

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0.000887809	90% of values less than 0.00301572
Minimum 0.00487179	Maximum 0.0110963	
Mean 0.000843196	SD 0.00174988	Variance 3.0621E-006

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00122586	75% of values less than 0.00209149	90% of values less than 0.0032778
Minimum 0.00411604	Maximum 0.00939755	
Mean 0.00137778	SD 0.00148145	Variance 2.1947E-006

Ethylbenzene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.0108207	75% of values less than 0.0280679	90% of values less than 0.0631151
Minimum 0.0000000	Maximum 0.31062	
Mean 0.0225628	SD 0.0343079	Variance 0.00117703

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000919607	75% of values less than 0.00408029	90% of values less than 0.00922775
Minimum 0.0000000	Maximum 0.0462222	
Mean 0.00337225	SD 0.00626267	Variance 3.9221E-005

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 3.26339E-007	75% of values less than 4.6067E-005	90% of values less than 0.000431262
Minimum 0.0000000	Maximum 0.00866612	
Mean 0.00018566	SD 0.000686846	Variance 4.71758E-007

Naphthalene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00100925	75% of values less than 0.0023397	90% of values less than 0.00440844
Minimum 0.00000000	Maximum 0.0198469	
Mean 0.00174099	SD 0.00239964	Variance 5.75829E-006

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000211687	75% of values less than 0.000568338	90% of values less than 0.00115613
Minimum 0.00000000	Maximum 0.00534651	
Mean 0.000431236	SD 0.00063443	Variance 4.02501E-007

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 1.66073E-006	75% of values less than 3.58397E-005	90% of values less than 0.000127769
Minimum 0.00000000	Maximum 0.000964685	
Mean 4.32823E-005	SD 0.000104188	Variance 1.08551E-008

Phenol*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 7.67273E-006	75% of values less than 4.91247E-005	90% of values less than 0.000145194
Minimum 0.00024717	Maximum 0.000677913	
Mean 4.62481E-005	SD 8.99578E-005	Variance 8.09241E-009

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 7.66836E-006	75% of values less than 4.90965E-005	90% of values less than 0.000145097
Minimum 0.000247066	Maximum 0.000676934	
Mean 4.62127E-005	SD 8.98832E-005	Variance 8.07899E-009

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 7.65614E-006	75% of values less than 4.90176E-005	90% of values less than 0.000144829
Minimum 0.000246775	Maximum 0.000674201	
Mean 4.61138E-005	SD 8.96746E-005	Variance 8.04153E-009

Toluene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.0287246	75% of values less than 0.115147	90% of values less than 0.276035
Minimum 0.0287246	Maximum 1.40343	
Mean 0.0946652	SD 0.163839	Variance 0.0268433

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 5.46303E-005	75% of values less than 0.00205911	90% of values less than 0.0113863
Minimum 0.022443	Maximum 0.141586	
Mean 0.00434142	SD 0.013529	Variance 0.000183033

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 8.32992E-013	75% of values less than 1.04912E-007	90% of values less than 1.46123E-005
Minimum 0.00831534	Maximum 0.00831534	
Mean 5.31014E-005	SD 0.000399078	Variance 1.59263E-007

Xylene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.016283	75% of values less than 0.0410033	90% of values less than 0.0941345
Minimum 0.0000000000000000	Maximum 0.448924	
Mean 0.0336556	SD 0.0513106	Variance 0.00263278

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00153843	75% of values less than 0.00697138	90% of values less than 0.0168919
Minimum 0.0000000000000000	Maximum 0.0879811	
Mean 0.00581954	SD 0.0104314	Variance 0.000108814

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 1.75279E-006	75% of values less than 0.000124388	90% of values less than 0.000852019
Minimum 0.0000000000000000	Maximum 0.0132054	
Mean 0.00037491	SD 0.00124042	Variance 1.53864E-006

Benzene*Unretarded Travel Time to MW1- Centinel [years]*

05% of values less than 0.0291367	10% of values less than 0.0596448	25% of values less than 1E+006
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 840160	SD 366641	Variance 1.34426E+011

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 0.518118	10% of values less than 0.992492	25% of values less than 2.69851E+006
50% of values less than 3.17218E+006	75% of values less than 3.63164E+006	90% of values less than 4.05925E+006
Minimum 0.es less than 4.28764E+006	Maximum 5.54554E+006	
Mean 2.8262E+006	SD 1.33489E+006	Variance 1.78192E+012

Chromium*Unretarded Travel Time to MW1- Centinel [years]*

05% of values less than 0.0291367	10% of values less than 0.0596448	25% of values less than 1E+006
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 840160	SD 366641	Variance 1.34426E+011

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 139.66	10% of values less than 276.791	25% of values less than 5.29742E+008
50% of values less than 6.44992E+008	75% of values less than 7.61984E+008	90% of values less than 8.52163E+008
Minimum 0.es less than 9.12646E+008	Maximum 1.121E+009	
Mean 5.7997E+008	SD 2.80894E+008	Variance 7.89015E+016

Ethylbenzene*Unretarded Travel Time to MW1- Centinel [years]*

05% of values less than 0.0291367	10% of values less than 0.0596448	25% of values less than 1E+006
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 840160	SD 366641	Variance 1.34426E+011

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 3.09809	10% of values less than 6.68609	25% of values less than 1.22198E+007
50% of values less than 1.52521E+007	75% of values less than 1.8182E+007	90% of values less than 2.09966E+007
Minimum 0.es less than 2.27843E+007	Maximum 3.19893E+007	
Mean 1.39243E+007	SD 6.96649E+006	Variance 4.8532E+013

Naphthalene*Unretarded Travel Time to MW1- Centinel [years]*

05% of values less than 0.0291367

10% of values less than 0.0596448

25% of values less than 1E+006

50% of values less than 1E+006

75% of values less than 1E+006

90% of values less than 1E+006

Minimum 0.es less than 1E+006

Maximum 1E+006

Mean 840160

SD 366641

Variance 1.34426E+011

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 4.95136

10% of values less than 10.0616

25% of values less than 1.88513E+007

50% of values less than 2.34107E+007

75% of values less than 2.81595E+007

90% of values less than 3.24644E+007

Minimum 0.es less than 3.54137E+007

Maximum 4.83197E+007

Mean 2.13589E+007

SD 1.0683E+007

Variance 1.14127E+014

Phenol*Unretarded Travel Time to MW1- Centinel [years]*

05% of values less than 0.0291367	10% of values less than 0.0596448	25% of values less than 1E+006
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 840160	SD 366641	Variance 1.34426E+011

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 0.498773	10% of values less than 1.04845	25% of values less than 2.75001E+006
50% of values less than 3.20456E+006	75% of values less than 3.68315E+006	90% of values less than 4.07775E+006
Minimum 0.es less than 4.33397E+006	Maximum 5.528E+006	
Mean 2.86267E+006	SD 1.34989E+006	Variance 1.8222E+012

Toluene*Unretarded Travel Time to MW1- Centinel [years]*

05% of values less than 0.0291367	10% of values less than 0.0596448	25% of values less than 1E+006
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 840160	SD 366641	Variance 1.34426E+011

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 1.42909	10% of values less than 2.71081	25% of values less than 5.88985E+006
50% of values less than 7.17138E+006	75% of values less than 8.48866E+006	90% of values less than 9.51798E+006
Minimum 0.es less than 1.05424E+007	Maximum 1.41296E+007	
Mean 6.51278E+006	SD 3.19134E+006	Variance 1.01847E+013

Xylene*Unretarded Travel Time to MW1- Centinel [years]*

05% of values less than 0.0291367	10% of values less than 0.0596448	25% of values less than 1E+006
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 840160	SD 366641	Variance 1.34426E+011

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 3.60116	10% of values less than 7.32693	25% of values less than 1.38172E+007
50% of values less than 1.71661E+007	75% of values less than 2.08039E+007	90% of values less than 2.3585E+007
Minimum 0.es less than 2.56709E+007	Maximum 3.62912E+007	
Mean 1.56781E+007	SD 7.85404E+006	Variance 6.1686E+013

Benzene*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.00617398
Minimum 0.0187401	Maximum 0.0690677	
Mean 0.00249365	SD 0.0082621	Variance 6.82622E-005

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 1.05242E-009
Minimum 2.24022E-006	Maximum 0.00330075	
Mean 1.38364E-005	SD 0.000137704	Variance 1.89624E-008

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 2.75295E-017	Maximum 9.97655E-007	
Mean 1.24008E-009	SD 3.17474E-008	Variance 1.0079E-015

Chromium*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.005 less than 0	Maximum 0.00559974	
Mean 3.99027E-005	SD 0.000331314	Variance 1.09769E-007

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.000565524
Minimum 0.004 less than 0.00400318	Maximum 0.0114279	
Mean 0.000418863	SD 0.00141493	Variance 2.00202E-006

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.00236081
Minimum 0.003 less than 0.00334121	Maximum 0.0100664	
Mean 0.000490419	SD 0.00129966	Variance 1.68912E-006

Ethylbenzene*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.047735
Minimum 0.0684622	Maximum 0.305157	
Mean 0.0109372	SD 0.031246	Variance 0.000976311

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.00537248
Minimum 0.0125407	Maximum 0.0454123	
Mean 0.00165197	SD 0.00535825	Variance 2.87108E-005

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 6.25042E-006
Minimum 0.000259854	Maximum 0.00863166	
Mean 9.15267E-005	SD 0.000544293	Variance 2.96255E-007

Naphthalene*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.003311
Minimum 0.00470283	Maximum 0.0220535	
Mean 0.000763327	SD 0.00226087	Variance 5.11152E-006

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.000775886
Minimum 0.00130736	Maximum 0.00463995	
Mean 0.000183667	SD 0.00053118	Variance 2.82152E-007

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 1.11352E-005
Minimum 0.000105774	Maximum 0.00113077	
Mean 1.90532E-005	SD 8.67528E-005	Variance 7.52605E-009

Phenol*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.000105094
Minimum 0.000174644	Maximum 0.000714393	
Mean 2.4357E-005	SD 6.86725E-005	Variance 4.71591E-009

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.000105043
Minimum 0.000174508	Maximum 0.000713887	
Mean 2.43398E-005	SD 6.86233E-005	Variance 4.70916E-009

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.000104899
Minimum 0.000174128	Maximum 0.000712474	
Mean 2.42917E-005	SD 6.84858E-005	Variance 4.6903E-009

Project: Port Talbot Harbourside

Project Number: 60053048

Toluene*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.197799
Minimum 0.029331	Maximum 1.44205	
Mean 0.0456326	SD 0.134088	Variance 0.0179795

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.00086999
Minimum 0.0101823	Maximum 0.173955	
Mean 0.00214896	SD 0.0111149	Variance 0.000123542

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 7.25041E-011
Minimum 1.17479E-006	Maximum 0.00844648	
Mean 2.5073E-005	SD 0.000316463	Variance 1.00149E-007

Xylene*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.0684031
Minimum 0.05 less than 0.103107	Maximum 0.464524	
Mean 0.0159968	SD 0.0469798	Variance 0.0022071

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.00999216
Minimum 0.05 less than 0.0193902	Maximum 0.0670207	
Mean 0.00265751	SD 0.00823404	Variance 6.77995E-005

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 2.50213E-005
Minimum 0.05 less than 0.000587882	Maximum 0.0151163	
Mean 0.000184625	SD 0.00106008	Variance 1.12378E-006

Project: Port Talbot Harbourside

Project Number: 60053048

Benzene*Unretarded Travel Time to Dock Feeder [years]*

05% of values less than 7.02061	10% of values less than 7.66152	25% of values less than 8.56704
50% of values less than 9.81477	75% of values less than 11.7649	90% of values less than 14.3764
Minimum 5.78872s than 15.7992	Maximum 28.6975	
Mean 10.543	SD 2.96504	Variance 8.79146

Retarded Travel Time to Dock Feeder [years]

05% of values less than 21.8683	10% of values less than 24.0866	25% of values less than 28.0982
50% of values less than 33.629	75% of values less than 40.8608	90% of values less than 51.6224
Minimum 17.3724s than 59.996	Maximum 116.738	
Mean 36.1884	SD 12.3466	Variance 152.439

Chromium*Unretarded Travel Time to Dock Feeder [years]*

05% of values less than 7.02061	10% of values less than 7.66152	25% of values less than 8.56704
50% of values less than 9.81477	75% of values less than 11.7649	90% of values less than 14.3764
Minimum 5.78872s than 15.7992	Maximum 28.6975	
Mean 10.543	SD 2.96504	Variance 8.79146

Retarded Travel Time to Dock Feeder [years]

05% of values less than 4391.82	10% of values less than 4846.23	25% of values less than 5711.17
50% of values less than 6864.9	75% of values less than 8675.09	90% of values less than 10713.5
Minimum 3280.22s than 12694.5	Maximum 24947.9	
Mean 7482.83	SD 2693.73	Variance 7.25616E+006

Ethylbenzene*Unretarded Travel Time to Dock Feeder [years]*

05% of values less than 7.02061	10% of values less than 7.66152	25% of values less than 8.56704
50% of values less than 9.81477	75% of values less than 11.7649	90% of values less than 14.3764
Minimum 5.78872s than 15.7992	Maximum 28.6975	
Mean 10.543	SD 2.96504	Variance 8.79146

Retarded Travel Time to Dock Feeder [years]

05% of values less than 101.629	10% of values less than 113.001	25% of values less than 132.138
50% of values less than 166.533	75% of values less than 207.363	90% of values less than 262.538
Minimum 72.9722s than 308.729	Maximum 652.781	
Mean 179.678	SD 69.1666	Variance 4784.02

Naphthalene*Unretarded Travel Time to Dock Feeder [years]*

05% of values less than 7.02061	10% of values less than 7.66152	25% of values less than 8.56704
50% of values less than 9.81477	75% of values less than 11.7649	90% of values less than 14.3764
Minimum 5.78872s than 15.7992	Maximum 28.6975	
Mean 10.543	SD 2.96504	Variance 8.79146

Retarded Travel Time to Dock Feeder [years]

05% of values less than 158.299	10% of values less than 172.338	25% of values less than 203.687
50% of values less than 251.251	75% of values less than 322.495	90% of values less than 397.464
Minimum 115.116s than 481.773	Maximum 1060.41	
Mean 275.519	SD 104.488	Variance 10917.7

Phenol*Unretarded Travel Time to Dock Feeder [years]*

05% of values less than 7.02061	10% of values less than 7.66152	25% of values less than 8.56704
50% of values less than 9.81477	75% of values less than 11.7649	90% of values less than 14.3764
Minimum 5.78872s than 15.7992	Maximum 28.6975	
Mean 10.543	SD 2.96504	Variance 8.79146

Retarded Travel Time to Dock Feeder [years]

05% of values less than 22.765	10% of values less than 24.1088	25% of values less than 28.2555
50% of values less than 33.7889	75% of values less than 42.3931	90% of values less than 51.803
Minimum 15.0715s than 60.3384	Maximum 116.993	
Mean 36.6154	SD 12.3845	Variance 153.376

Toluene*Unretarded Travel Time to Dock Feeder [years]*

05% of values less than 7.02061	10% of values less than 7.66152	25% of values less than 8.56704
50% of values less than 9.81477	75% of values less than 11.7649	90% of values less than 14.3764
Minimum 5.78872s than 15.7992	Maximum 28.6975	
Mean 10.543	SD 2.96504	Variance 8.79146

Retarded Travel Time to Dock Feeder [years]

05% of values less than 49.2037	10% of values less than 53.5308	25% of values less than 63.5398
50% of values less than 77.3523	75% of values less than 96.546	90% of values less than 121.262
Minimum 31.8708s than 143.471	Maximum 287.234	
Mean 83.8279	SD 30.8475	Variance 951.565

Xylene*Unretarded Travel Time to Dock Feeder [years]*

05% of values less than 7.02061	10% of values less than 7.66152	25% of values less than 8.56704
50% of values less than 9.81477	75% of values less than 11.7649	90% of values less than 14.3764
Minimum 5.78872s than 15.7992	Maximum 28.6975	
Mean 10.543	SD 2.96504	Variance 8.79146

Retarded Travel Time to Dock Feeder [years]

05% of values less than 113.271	10% of values less than 125.665	25% of values less than 150.458
50% of values less than 187.397	75% of values less than 233.682	90% of values less than 297.924
Minimum 82.8384s than 350.372	Maximum 640.319	
Mean 202.317	SD 76.0743	Variance 5787.3

Benzene*Concentration at Dock Feeder [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 8.76808E-008
50% of values less than 5.84924E-006	75% of values less than 4.1983E-005	90% of values less than 0.000107604
Minimum 0.000161499	Maximum 0.000541809	
Mean 3.62504E-005	SD 7.04347E-005	Variance 4.96105E-009

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 3.75032E-020	25% of values less than 1.46594E-015
50% of values less than 6.92903E-012	75% of values less than 1.4287E-009	90% of values less than 4.20145E-008
Minimum 0.000279616E-007	Maximum 1.50521E-005	
Mean 8.59773E-008	SD 6.01612E-007	Variance 3.61937E-013

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 9.30762E-020	90% of values less than 2.0555E-015
Minimum 0.000176796E-013	Maximum 9.36235E-010	
Mean 3.83385E-012	SD 4.61643E-011	Variance 2.13114E-021

Chromium*Concentration at Dock Feeder [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Ethylbenzene*Concentration at Dock Feeder [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.0000000000000000	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 1.16938E-011	25% of values less than 8.66372E-010
50% of values less than 2.50588E-008	75% of values less than 4.62394E-007	90% of values less than 2.29629E-006
Minimum 0.0000000000000000	Maximum 4.44883E-005	
Mean 9.77E-007	SD 3.21762E-006	Variance 1.03531E-011

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 1.37286E-017	10% of values less than 2.5002E-015	25% of values less than 4.92546E-013
50% of values less than 5.12331E-011	75% of values less than 2.24864E-009	90% of values less than 3.52008E-008
Minimum 0.0000000000000000	Maximum 3.20786E-006	
Mean 3.55891E-008	SD 2.03611E-007	Variance 4.14573E-014

Naphthalene*Concentration at Dock Feeder [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.0000000000000000	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 7.84236E-008	75% of values less than 8.1177E-007	90% of values less than 3.06551E-006
Minimum 0.0000000000000000	Maximum 2.4951E-005	
Mean 9.96339E-007	SD 2.32438E-006	Variance 5.40275E-012

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 1.34071E-012	10% of values less than 1.42399E-011	25% of values less than 3.59258E-010
50% of values less than 3.71449E-009	75% of values less than 2.81531E-008	90% of values less than 1.5632E-007
Minimum 0.0000000000000000	Maximum 2.31971E-006	
Mean 5.73471E-008	SD 1.6765E-007	Variance 2.81065E-014

Phenol*Concentration at Dock Feeder [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 2.39437E-022
50% of values less than 1.17473E-016	75% of values less than 1.20961E-012	90% of values less than 7.74585E-011
Minimum 0.0es less than 2.95046E-010	Maximum 1.10478E-008	
Mean 8.08054E-011	SD 4.97487E-010	Variance 2.47493E-019

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 1.23912E-026	10% of values less than 2.76018E-024	25% of values less than 2.44739E-020
50% of values less than 4.94302E-016	75% of values less than 1.61554E-012	90% of values less than 8.12988E-011
Minimum 0.0es less than 2.94878E-010	Maximum 1.1032E-008	
Mean 8.12124E-011	SD 4.96926E-010	Variance 2.46935E-019

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 1.23569E-026	10% of values less than 2.74893E-024	25% of values less than 2.43807E-020
50% of values less than 4.93284E-016	75% of values less than 1.61036E-012	90% of values less than 8.11584E-011
Minimum 0.0es less than 2.94409E-010	Maximum 1.09879E-008	
Mean 8.10132E-011	SD 4.95377E-010	Variance 2.45399E-019

Toluene*Concentration at Dock Feeder [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.00104565	Maximum 0.00104565	
Mean 3.54046E-006	SD 4.33005E-005	Variance 1.87493E-009

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 1.55557E-018	10% of values less than 3.44654E-017	25% of values less than 2.72009E-014
50% of values less than 9.42415E-011	75% of values less than 3.39545E-008	90% of values less than 7.01077E-007
Minimum 0.00104565	Maximum 8.96563E-005	
Mean 9.0773E-007	SD 4.9798E-006	Variance 2.47985E-011

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 3.53238E-022
50% of values less than 4.03024E-017	75% of values less than 3.56766E-013	90% of values less than 2.68642E-010
Minimum 0.00104565	Maximum 2.32326E-006	
Mean 7.03201E-009	SD 8.36986E-008	Variance 7.00546E-015

Xylene*Concentration at Dock Feeder [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.0es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 7.66193E-013	25% of values less than 7.77859E-010
50% of values less than 4.09915E-008	75% of values less than 8.74271E-007	90% of values less than 5.47634E-006
Minimum 0.0es less than 1.16985E-005	Maximum 4.71042E-005	
Mean 1.93473E-006	SD 5.34972E-006	Variance 2.86195E-011

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 3.8967E-016	10% of values less than 1.59187E-014	25% of values less than 3.15084E-012
50% of values less than 1.58041E-010	75% of values less than 6.84834E-009	90% of values less than 7.76839E-008
Minimum 0.0es less than 3.00186E-007	Maximum 5.77846E-006	
Mean 6.29596E-008	SD 3.13394E-007	Variance 9.82157E-014

Project: Port Talbot Harbourside

Project Number: 60053048

Benzene*Unretarded Travel Time to Whole site MG Receptor [years]*

05% of values less than 0.0191096	10% of values less than 0.0385731	25% of values less than 0.164337
50% of values less than 0.727097	75% of values less than 1.38395	90% of values less than 1.91702
Minimum 0.0000000	Maximum 4.90604	
Mean 0.867766	SD 0.782227	Variance 0.611879

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.301427	10% of values less than 0.593906	25% of values less than 1.34331
50% of values less than 2.94814	75% of values less than 5.21002	90% of values less than 7.18679
Minimum 0.0000000	Maximum 18.3697	
Mean 3.55324	SD 2.81498	Variance 7.92414

Chromium*Unretarded Travel Time to Whole site MG Receptor [years]*

05% of values less than 0.0191096	10% of values less than 0.0385731	25% of values less than 0.164337
50% of values less than 0.727097	75% of values less than 1.38395	90% of values less than 1.91702
Minimum 0.05 less than 2.26288	Maximum 4.90604	
Mean 0.867766	SD 0.782227	Variance 0.611879

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 82.497	10% of values less than 153.457	25% of values less than 330.8
50% of values less than 656.496	75% of values less than 1094.85	90% of values less than 1548.03
Minimum 0.05 less than 1892.94	Maximum 4449.15	
Mean 782.978	SD 600.063	Variance 360076

Project: Port Talbot Harbourside

Project Number: 60053048

Ethylbenzene*Unretarded Travel Time to Whole site MG Receptor [years]*

05% of values less than 0.0191096	10% of values less than 0.0385731	25% of values less than 0.164337
50% of values less than 0.727097	75% of values less than 1.38395	90% of values less than 1.91702
Minimum 0.0000000	Maximum 4.90604	
Mean 0.867766	SD 0.782227	Variance 0.611879

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 1.76662	10% of values less than 3.44475	25% of values less than 7.87856
50% of values less than 15.0996	75% of values less than 26.1597	90% of values less than 37.2216
Minimum 0.0000000	Maximum 87.6499	
Mean 18.5849	SD 14.5946	Variance 213.002

Project: Port Talbot Harbourside

Project Number: 60053048

Naphthalene*Unretarded Travel Time to Whole site MG Receptor [years]*

05% of values less than 0.0191096	10% of values less than 0.0385731	25% of values less than 0.164337
50% of values less than 0.727097	75% of values less than 1.38395	90% of values less than 1.91702
Minimum 0.0000000	Maximum 4.90604	
Mean 0.867766	SD 0.782227	Variance 0.611879

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 2.67173	10% of values less than 5.21405	25% of values less than 11.9049
50% of values less than 23.7456	75% of values less than 40.3728	90% of values less than 57.7537
Minimum 0.0000000	Maximum 129.54	
Mean 28.6948	SD 22.2815	Variance 496.465

Phenol*Unretarded Travel Time to Whole site MG Receptor [years]*

05% of values less than 0.0191096	10% of values less than 0.0385731	25% of values less than 0.164337
50% of values less than 0.727097	75% of values less than 1.38395	90% of values less than 1.91702
Minimum 0.0000000	Maximum 4.90604	
Mean 0.867766	SD 0.782227	Variance 0.611879

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.285743	10% of values less than 0.576247	25% of values less than 1.38157
50% of values less than 2.99785	75% of values less than 5.28722	90% of values less than 7.2754
Minimum 0.0000000	Maximum 18.3895	
Mean 3.60274	SD 2.83874	Variance 8.05844

Project: Port Talbot Harbourside

Project Number: 60053048

Toluene*Unretarded Travel Time to Whole site MG Receptor [years]*

05% of values less than 0.0191096	10% of values less than 0.0385731	25% of values less than 0.164337
50% of values less than 0.727097	75% of values less than 1.38395	90% of values less than 1.91702
Minimum 0.0000000	Maximum 4.90604	
Mean 0.867766	SD 0.782227	Variance 0.611879

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.803851	10% of values less than 1.53508	25% of values less than 3.48502
50% of values less than 7.08113	75% of values less than 12.0611	90% of values less than 17.028
Minimum 0.0000000	Maximum 39.5531	
Mean 8.54536	SD 6.68598	Variance 44.7023

Xylene*Unretarded Travel Time to Whole site MG Receptor [years]*

05% of values less than 0.0191096	10% of values less than 0.0385731	25% of values less than 0.164337
50% of values less than 0.727097	75% of values less than 1.38395	90% of values less than 1.91702
Minimum 0.05 less than 2.26288	Maximum 4.90604	
Mean 0.867766	SD 0.782227	Variance 0.611879

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 2.01963	10% of values less than 3.78212	25% of values less than 8.65058
50% of values less than 17.606	75% of values less than 29.9116	90% of values less than 42.0363
Minimum 0.05 less than 50.8278	Maximum 107.99	
Mean 20.9905	SD 16.3401	Variance 267

Benzene*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 2.80263E-005	10% of values less than 0.000153267	25% of values less than 0.000807019
50% of values less than 0.00281417	75% of values less than 0.00727509	90% of values less than 0.0135359
Minimum 0.000000000	Maximum 0.0619572	
Mean 0.00534617	SD 0.00698465	Variance 4.87853E-005

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 1.76638E-012
50% of values less than 7.25468E-009	75% of values less than 1.59581E-006	90% of values less than 3.11868E-005
Minimum 0.000000000	Maximum 0.00115063	
Mean 2.10294E-005	SD 8.70961E-005	Variance 7.58572E-009

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 1.7306E-016	90% of values less than 6.76657E-012
Minimum 0.000000000	Maximum 5.49379E-007	
Mean 1.65038E-009	SD 2.0953E-008	Variance 4.39028E-016

Chromium*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.0000000000000000	Maximum 0.00862201	
Mean 1.90189E-005	SD 0.000287655	Variance 8.27457E-008

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.00156296
Minimum 0.0000000000000000	Maximum 0.00875057	
Mean 0.000401066	SD 0.00102123	Variance 1.0429E-006

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00149308	75% of values less than 0.00220794	90% of values less than 0.00288361
Minimum 0.0000000000000000	Maximum 0.00729944	
Mean 0.00144707	SD 0.00123738	Variance 1.53111E-006

Ethylbenzene*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 0.000546525	10% of values less than 0.00140476	25% of values less than 0.00363273
50% of values less than 0.0101888	75% of values less than 0.0212898	90% of values less than 0.0385713
Minimum 0.000000000	Maximum 0.150112	
Mean 0.0163001	SD 0.0188439	Variance 0.000355093

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 1.48545E-005	10% of values less than 5.19181E-005	25% of values less than 0.000253772
50% of values less than 0.00103549	75% of values less than 0.00280079	90% of values less than 0.00650634
Minimum 0.000000000	Maximum 0.0329111	
Mean 0.0024563	SD 0.00397087	Variance 1.57678E-005

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 9.6081E-014	10% of values less than 4.44265E-011	25% of values less than 6.45047E-008
50% of values less than 4.24928E-006	75% of values less than 5.78113E-005	90% of values less than 0.000280649
Minimum 0.000000000	Maximum 0.005286	
Mean 0.000127225	SD 0.000407391	Variance 1.65967E-007

Naphthalene*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0.000422328
50% of values less than 0.00106873	75% of values less than 0.00196596	90% of values less than 0.00342183
Minimum 0.000000000	Maximum 0.0101336	
Mean 0.00145749	SD 0.00152781	Variance 2.33419E-006

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 2.39701E-005	10% of values less than 4.73881E-005	25% of values less than 0.000110115
50% of values less than 0.000250567	75% of values less than 0.000473628	90% of values less than 0.00084044
Minimum 9.80469E-013	Maximum 0.00294291	
Mean 0.0003715	SD 0.000399936	Variance 1.59949E-007

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 1.97092E-010	10% of values less than 7.93881E-009	25% of values less than 6.6172E-007
50% of values less than 8.26394E-006	75% of values less than 3.50818E-005	90% of values less than 9.71245E-005
Minimum 0.000000000	Maximum 0.000811335	
Mean 3.56608E-005	SD 7.29651E-005	Variance 5.32391E-009

Phenol*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 7.70965E-009	10% of values less than 4.56313E-008	25% of values less than 4.87053E-007
50% of values less than 4.92044E-006	75% of values less than 2.29918E-005	90% of values less than 6.09994E-005
Minimum 4.87676E-0110.00010672	Maximum 0.000365319	
Mean 2.18627E-005	SD 4.26066E-005	Variance 1.81532E-009

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 7.70655E-009	10% of values less than 4.55797E-008	25% of values less than 4.86694E-007
50% of values less than 4.91684E-006	75% of values less than 2.29829E-005	90% of values less than 6.09486E-005
Minimum 4.87216E-0110.000106494	Maximum 0.000365083	
Mean 2.18457E-005	SD 4.25719E-005	Variance 1.81237E-009

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 7.69789E-009	10% of values less than 4.54356E-008	25% of values less than 4.85689E-007
50% of values less than 4.90676E-006	75% of values less than 2.29579E-005	90% of values less than 6.08066E-005
Minimum 4.85932E-0110.000105862	Maximum 0.000364422	
Mean 2.17983E-005	SD 4.2475E-005	Variance 1.80413E-009

Toluene*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 0.000200153	10% of values less than 0.000876834	25% of values less than 0.00581325
50% of values less than 0.0284083	75% of values less than 0.0782906	90% of values less than 0.165988
Minimum 2.42403E-006 0.234654	Maximum 0.690851	
Mean 0.0624945	SD 0.0918485	Variance 0.00843614

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 2.68643E-009	10% of values less than 7.58921E-008	25% of values less than 6.35532E-006
50% of values less than 0.000165075	75% of values less than 0.00160506	90% of values less than 0.00732999
Minimum 0.000165075	Maximum 0.119394	
Mean 0.00278646	SD 0.00823221	Variance 6.77692E-005

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 2.73366E-014
50% of values less than 3.53239E-010	75% of values less than 3.16089E-007	90% of values less than 1.53263E-005
Minimum 0.000165075	Maximum 0.00336384	
Mean 2.64204E-005	SD 0.000167831	Variance 2.81674E-008

Xylene*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0.00136344	25% of values less than 0.00557992
50% of values less than 0.0154156	75% of values less than 0.0329245	90% of values less than 0.0558774
Minimum 0.00000000	Maximum 0.257133	
Mean 0.0247698	SD 0.0292961	Variance 0.000858259

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 3.60589E-005	10% of values less than 0.000120207	25% of values less than 0.000492335
50% of values less than 0.00192147	75% of values less than 0.00508446	90% of values less than 0.0106713
Minimum 2.37328E-014	Maximum 0.0565981	
Mean 0.0042073	SD 0.00638548	Variance 4.07744E-005

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 5.28105E-012	10% of values less than 6.56604E-010	25% of values less than 4.33762E-007
50% of values less than 1.5009E-005	75% of values less than 0.000125853	90% of values less than 0.000709907
Minimum 0.00000000	Maximum 0.0116137	
Mean 0.000257254	SD 0.000785402	Variance 6.16856E-007

Aquifer Flow [m³/yr]

Whole site MG

05% of values less than 6981.82	10% of values less than 8915.98	25% of values less than 12189.9
50% of values less than 16964.3	75% of values less than 22560	90% of values less than 28168
Minimum 1918.38s than 30587.6	Maximum 40456.7	
Mean 17659.8	SD 7260.43	Variance 5.27138E+007

Project: Port Talbot Harbourside

Project Number: 60053048

Project Details

Title: Port Talbot Harbourside

Project Number: 60053048

Prepared By: A Jimenez

Date: 2020-02-21 15:17:09

Client Name: Neath Port Talbot County Borough Council

Comments:

Consim version 2.05

Simulation Level

Level 3

Simulation Parameters

Iterations 1001

Timeslices:50, 300, 1000

Water Quality Standard

User Defined

Project: Port Talbot Harbourside

Project Number: 60053048

Source

Whole site MG

Dry Bulk Density [g/cm³] TRIANGULAR(1.28,1.6,1.92)

Air Filled Porosity [fraction] UNIFORM(0.144,0.18)

Water Filled Porosity [fraction] UNIFORM(0.016,0.02)

Thickness [m] TRIANGULAR(1,2.14,4)

Fraction of Organic Carbon [%] TRIANGULAR(0.17,1.19,3.83)

Contaminated Land

Declining Source Term

Overall Unsaturated Zone Thickness [m] UNIFORM(0.01,1)

Infiltration

Infiltration [mm/year] NORMAL(255,36.51)

Source Inventory:*Benzene*

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(1.15)

Organic

K_{oc} [ml/g] TRIANGULAR(64.96,81.2,97.44)Calculate K_d

Henry's Law Constant TRIANGULAR(0.18,0.225,0.27)

Maximum Solubility [mg/l] TRIANGULAR(1424,1780,2136)

Chromium

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(2)

Inorganic

Partition Coefficient [ml/g] TRIANGULAR(53.6,67,80.4)

Maximum Solubility [mg/l] TRIANGULAR(352000,440000,528000)

Ethylbenzene

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(4.7)

Organic

K_{oc} [ml/g] TRIANGULAR(429.6,537,644.4)Calculate K_d

Henry's Law Constant TRIANGULAR(0.286,0.358,0.429)

Maximum Solubility [mg/l] TRIANGULAR(121.3,152,182.4)

Naphthalene

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(0.38)

Organic

K_{oc} [ml/g] TRIANGULAR(675.2,844,1012)Calculate K_d

Henry's Law Constant TRIANGULAR(0.0139,0.0174,0.02)

Maximum Solubility [mg/l] TRIANGULAR(24.8,31,37.2)

Phenol

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(30)

Organic

K_{oc} [ml/g] TRIANGULAR(66.4,83,99.6)Calculate K_d

Henry's Law Constant TRIANGULAR(209600,262000,314400)

Maximum Solubility [mg/l] TRIANGULAR(74400,93000,111600)

Project: Port Talbot Harbourside

Project Number: 60053048

Toluene

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(18.5)

Organic

K_{oc} [ml/g] TRIANGULAR(187.2,234,280)Calculate K_d

Henry's Law Constant TRIANGULAR(0.2192,0.274,0.3288)

Maximum Solubility [mg/l] TRIANGULAR(412,515,618)

Xylene

Measured as Total Concentration in Soil

Concentration [mg/kg] SINGLE(7.4)

Organic

K_{oc} [ml/g] TRIANGULAR(489,612,734)Calculate K_d

Henry's Law Constant TRIANGULAR(0.236,0.295,0.354)

Maximum Solubility [mg/l] TRIANGULAR(128,160,192)

Project: Port Talbot Harbourside

Project Number: 60053048

Unsaturated Pathway: Unsaturated Pathway

Active

Porous Medium

Thickness [m] UNIFORM(0.01,1)

Dry Bulk Density [g/cm³] UNIFORM(1.37,2.19)

Vertical Dispersivity [m] UNIFORM(0.001,0.1)

Fraction of Organic Carbon [%] TRIANGULAR(0.2,0.27,0.38)

Water Filled Porosity [fraction] UNIFORM(0.02,0.03)

Unsaturated Conductivity [m/s] LOGTRIANGULAR(2.89e-006,5.6e-005,0.0001)

Unsaturated Pathway Contaminants*Benzene*

koc [ml/g] TRIANGULAR(64.96,81.2,97.44)

Calculate kd

Chromium

Partition Coefficient [ml/g] TRIANGULAR(53.6,67,80.4)

Ethylbenzene

koc [ml/g] TRIANGULAR(429.6,537,644.4)

Calculate kd

Naphthalene

koc [ml/g] TRIANGULAR(675.2,844,1012)

Calculate kd

Phenol

koc [ml/g] TRIANGULAR(66.4,83,99.6)

Calculate kd

Toluene

koc [ml/g] TRIANGULAR(187.2,234,280)

Calculate kd

Xylene

koc [ml/g] TRIANGULAR(489,612,734)

Calculate kd

Project: Port Talbot Harbourside

Project Number: 60053048

Aquifer Pathway

Thickness [m] UNIFORM(5.5,15)

Dry Bulk Density [g/cm³] UNIFORM(1.37,2.19)

Fraction of Organic Carbon [%] TRIANGULAR(0.2,0.27,0.38)

Calculated Mixing Zone Thickness

Hydraulic Conductivity [m/s] TRIANGULAR(2.89e-006,5.6e-005,0.0001)

Effective Porosity [fraction] UNIFORM(0.14,0.21)

Hydraulic Gradient TRIANGULAR(0.002,0.006,0.008)

Groundwater Flow Direction (degrees), 180.00

Longitudinal Dispersivity [m] TRIANGULAR(6,16,26)

Lateral Dispersivity [m] TRIANGULAR(4.2,11.2,18.2)

Contaminant Inventory*Benzene*

koc [ml/g] TRIANGULAR(64.96,81.2,97.44)

Calculate kd

Simulate Degradation in Dissolved Phase only

Halflife [years] UNIFORM(0.137,0.959)

Chromium

Partition Coefficient [ml/g] TRIANGULAR(53.6,67,80.4)

Simulate Degradation in Dissolved Phase only

Halflife [years] SINGLE(9e+029)

Ethylbenzene

koc [ml/g] TRIANGULAR(429.6,537,644.4)

Calculate kd

Simulate Degradation in Dissolved Phase only

Halflife [years] LOGUNIFORM(0.137,0.548)

Naphthalene

koc [ml/g] TRIANGULAR(675.2,844,1012)

Calculate kd

Simulate Degradation in Dissolved Phase only

Halflife [years] LOGUNIFORM(0.274,0.822)

Phenol

koc [ml/g] TRIANGULAR(66.4,83,99.6)

Calculate kd

Simulate Degradation in Dissolved Phase only

Halflife [years] LOGUNIFORM(0.027,0.274)

Toluene

koc [ml/g] TRIANGULAR(187.2,234,280)

Calculate kd

Simulate Degradation in Dissolved Phase only

Halflife [years] LOGUNIFORM(0.055,0.548)

Project: Port Talbot Harbourside

Project Number: 60053048

Xylene

koc [ml/g] TRIANGULAR(489,612,734)

Calculate kd

Simulate Degradation in Dissolved Phase only

Halflife [years] LOGUNIFORM(0.137,0.548)

Project: Port Talbot Harbourside

Project Number: 60053048

Receptor

Port Talbot Dock	X 276540.000000	Y 189346.000000
BH101 - Centinel	X 276541.645000	Y 189427.592000
MW1- Centinel	X 276633.210000	Y 189439.703000
Dock Feeder	X 275853.000000	Y 189516.000000
Whole site MG Receptor	X 276544.773394	Y 189407.630038

Input Correlations

lat-long	0.8
n-K	0.8
K-long disp	0.8
i-K	-0.8
inf- sat thick	0.8
inf-unst thickness	-0.8

Whole site MG - Benzene

Concentration at Source [mg/l] - 50 years

05% of values less than 0.000302782	10% of values less than 0.00241607	25% of values less than 0.019752
50% of values less than 0.0582364	75% of values less than 0.130191	90% of values less than 0.183934
Minimum 4.05034E-012 0.220963	Maximum 0.345511	
Mean 0.079552	SD 0.0720088	Variance 0.00518527

Concentration at Source [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 4.43345E-011
50% of values less than 9.59078E-008	75% of values less than 2.33852E-005	90% of values less than 0.000462223
Minimum 0.00144661	Maximum 0.0302574	
Mean 0.000310111	SD 0.00151136	Variance 2.2842E-006

Concentration at Source [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 6.63689E-016	90% of values less than 3.30223E-011
Minimum 0.00155454E-009	Maximum 7.06218E-005	
Mean 8.89E-008	SD 2.24425E-006	Variance 5.03667E-012

Whole site MG - Chromium*Concentration at Source [mg/l] - 50 years*

05% of values less than 0.0246004	10% of values less than 0.0252444	25% of values less than 0.0266345
50% of values less than 0.02819	75% of values less than 0.0299381	90% of values less than 0.0315623
Minimum 0.022657	Maximum 0.0353343	
Mean 0.0283423	SD 0.00242416	Variance 5.87657E-006

Concentration at Source [mg/l] - 300 years

05% of values less than 0.0159588	10% of values less than 0.0174279	25% of values less than 0.0195573
50% of values less than 0.0218101	75% of values less than 0.0236988	90% of values less than 0.0253507
Minimum 0.0115507	Maximum 0.0298801	
Mean 0.0215884	SD 0.00319192	Variance 1.01884E-005

Concentration at Source [mg/l] - 1000 years

05% of values less than 0.00371474	10% of values less than 0.0051137	25% of values less than 0.00767301
50% of values less than 0.0106776	75% of values less than 0.0139297	90% of values less than 0.016473
Minimum 0.000868588	Maximum 0.0223526	
Mean 0.0107346	SD 0.0042048	Variance 1.76804E-005

Whole site MG - Ethylbenzene*Concentration at Source [mg/l] - 50 years*

05% of values less than 0.202781	10% of values less than 0.221791	25% of values less than 0.26456
50% of values less than 0.335735	75% of values less than 0.426426	90% of values less than 0.52369
Minimum 0.0218615	Maximum 0.924412	
Mean 0.357762	SD 0.125116	Variance 0.015654

Concentration at Source [mg/l] - 300 years

05% of values less than 0.000358767	10% of values less than 0.00248491	25% of values less than 0.0157449
50% of values less than 0.0441677	75% of values less than 0.0911182	90% of values less than 0.128164
Minimum 3.59694E-013	Maximum 0.232657	
Mean 0.0574536	SD 0.0491522	Variance 0.00241594

Concentration at Source [mg/l] - 1000 years

05% of values less than 2.65874E-012	10% of values less than 2.69986E-009	25% of values less than 2.48531E-006
50% of values less than 0.000137278	75% of values less than 0.00240007	90% of values less than 0.0101747
Minimum 0.05 less than 0.017738	Maximum 0.0619973	
Mean 0.00301453	SD 0.00670716	Variance 4.49861E-005

Whole site MG - Naphthalene

Concentration at Source [mg/l] - 50 years

05% of values less than 0.0124494	10% of values less than 0.0135457	25% of values less than 0.0161921
50% of values less than 0.0209217	75% of values less than 0.0271415	90% of values less than 0.0335583
Minimum 0.00791807an 0.0382013	Maximum 0.0643249	
Mean 0.0225799	SD 0.00850296	Variance 7.23003E-005

Concentration at Source [mg/l] - 300 years

05% of values less than 0.000331952	10% of values less than 0.0010326	25% of values less than 0.00300071
50% of values less than 0.00564254	75% of values less than 0.00831989	90% of values less than 0.0106916
Minimum 4.6246E-009n 0.011914	Maximum 0.0187793	
Mean 0.00579421	SD 0.00356022	Variance 1.26752E-005

Concentration at Source [mg/l] - 1000 years

05% of values less than 1.40516E-009	10% of values less than 1.24038E-007	25% of values less than 1.09439E-005
50% of values less than 0.00013835	75% of values less than 0.000774306	90% of values less than 0.00186383
Minimum 0.ies less than 0.00244244	Maximum 0.00569015	
Mean 0.000583723	SD 0.000904512	Variance 8.18141E-007

Whole site MG - Phenol

Concentration at Source [mg/l] - 50 years

05% of values less than 0.000902809	10% of values less than 0.000943975	25% of values less than 0.00103037
50% of values less than 0.00113023	75% of values less than 0.00124319	90% of values less than 0.00134754
Minimum 0.0007621231 0.00143138	Maximum 0.00177163	
Mean 0.00114108	SD 0.000158045	Variance 2.49781E-008

Concentration at Source [mg/l] - 300 years

05% of values less than 0.000902308	10% of values less than 0.000943266	25% of values less than 0.00103008
50% of values less than 0.00112931	75% of values less than 0.00124263	90% of values less than 0.00134637
Minimum 0.0007618981 0.0014308	Maximum 0.00176987	
Mean 0.00114026	SD 0.000157849	Variance 2.49163E-008

Concentration at Source [mg/l] - 1000 years

05% of values less than 0.000900904	10% of values less than 0.000941156	25% of values less than 0.00102784
50% of values less than 0.00112674	75% of values less than 0.00124107	90% of values less than 0.00134248
Minimum 0.0007606331 0.00142754	Maximum 0.00176497	
Mean 0.00113797	SD 0.000157307	Variance 2.47456E-008

Whole site MG - Toluene

Concentration at Source [mg/l] - 50 years

05% of values less than 0.477086	10% of values less than 0.795842	25% of values less than 1.30116
50% of values less than 1.77947	75% of values less than 2.28875	90% of values less than 2.81773
Minimum 0.00107942an 3.07908	Maximum 4.93314	
Mean 1.79926	SD 0.781936	Variance 0.611423

Concentration at Source [mg/l] - 300 years

05% of values less than 8.81237E-008	10% of values less than 6.93619E-006	25% of values less than 0.00131179
50% of values less than 0.0161087	75% of values less than 0.105574	90% of values less than 0.282434
Minimum 0.es less than 0.398335	Maximum 0.898838	
Mean 0.0839874	SD 0.138407	Variance 0.0191564

Concentration at Source [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 3.18461E-012
50% of values less than 2.44075E-008	75% of values less than 2.10222E-005	90% of values less than 0.000781508
Minimum 0.es less than 0.00317393	Maximum 0.0472339	
Mean 0.000683325	SD 0.00347432	Variance 1.20709E-005

Whole site MG - Xylene*Concentration at Source [mg/l] - 50 years*

05% of values less than 0.307886	10% of values less than 0.330213	25% of values less than 0.391855
50% of values less than 0.498296	75% of values less than 0.632711	90% of values less than 0.762201
Minimum 0.0565292	Maximum 1.45774	
Mean 0.52972	SD 0.185683	Variance 0.0344783

Concentration at Source [mg/l] - 300 years

05% of values less than 0.00139131	10% of values less than 0.0070177	25% of values less than 0.0336994
50% of values less than 0.0845905	75% of values less than 0.154697	90% of values less than 0.208797
Minimum 5.23528E-011	Maximum 0.370397	
Mean 0.0978406	SD 0.0762904	Variance 0.00582023

Concentration at Source [mg/l] - 1000 years

05% of values less than 1.07545E-010	10% of values less than 3.27771E-008	25% of values less than 1.37314E-005
50% of values less than 0.000490483	75% of values less than 0.00572605	90% of values less than 0.0210882
Minimum 0.000000000	Maximum 0.104635	
Mean 0.00628531	SD 0.0127618	Variance 0.000162864

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Benzene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.00506657	25% of values less than 0.0170097
50% of values less than 0.0419819	75% of values less than 0.0675331	90% of values less than 0.0873898
Minimum 0.0955755	Maximum 0.166031	
Mean 0.044284	SD 0.0307817	Variance 0.000947516

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.0863497	25% of values less than 0.2869
50% of values less than 0.707232	75% of values less than 1.16774	90% of values less than 1.5798
Minimum 1.79026	Maximum 3.04545	
Mean 0.773761	SD 0.563142	Variance 0.317129

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Chromium

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.00506657	25% of values less than 0.0170097
50% of values less than 0.0419819	75% of values less than 0.0675331	90% of values less than 0.0873898
Minimum 0.0955755	Maximum 0.166031	
Mean 0.044284	SD 0.0307817	Variance 0.000947516

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 25.069	25% of values less than 82.6046
50% of values less than 196.196	75% of values less than 322.121	90% of values less than 406.771
Minimum 0.476.6	Maximum 865.672	
Mean 211.212	SD 151.863	Variance 23062.5

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Ethylbenzene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.00506657	25% of values less than 0.0170097
50% of values less than 0.0419819	75% of values less than 0.0675331	90% of values less than 0.0873898
Minimum 0.0955755	Maximum 0.166031	
Mean 0.044284	SD 0.0307817	Variance 0.000947516

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.548807	25% of values less than 1.83133
50% of values less than 4.40983	75% of values less than 7.29089	90% of values less than 9.95016
Minimum 0.11.1976	Maximum 20.3042	
Mean 4.87856	SD 3.56226	Variance 12.6897

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Naphthalene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.00506657	25% of values less than 0.0170097
50% of values less than 0.0419819	75% of values less than 0.0675331	90% of values less than 0.0873898
Minimum 0.0955755	Maximum 0.166031	
Mean 0.044284	SD 0.0307817	Variance 0.000947516

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.814661	25% of values less than 2.90256
50% of values less than 6.95663	75% of values less than 11.511	90% of values less than 15.0406
Minimum 0.175811	Maximum 30.1578	
Mean 7.61843	SD 5.57435	Variance 31.0734

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Phenol

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.00506657	25% of values less than 0.0170097
50% of values less than 0.0419819	75% of values less than 0.0675331	90% of values less than 0.0873898
Minimum 0.05 less than 0.0955755	Maximum 0.166031	
Mean 0.044284	SD 0.0307817	Variance 0.000947516

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.0885164	25% of values less than 0.302299
50% of values less than 0.729545	75% of values less than 1.18498	90% of values less than 1.5864
Minimum 0.05 less than 1.81308	Maximum 3.00266	
Mean 0.792068	SD 0.576248	Variance 0.332062

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Toluene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.00506657	25% of values less than 0.0170097
50% of values less than 0.0419819	75% of values less than 0.0675331	90% of values less than 0.0873898
Minimum 0.0955755	Maximum 0.166031	
Mean 0.044284	SD 0.0307817	Variance 0.000947516

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.228543	25% of values less than 0.792859
50% of values less than 1.96007	75% of values less than 3.19048	90% of values less than 4.24974
Minimum 0.06281	Maximum 8.52682	
Mean 2.1415	SD 1.56467	Variance 2.4482

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Xylene

Unretarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.00506657	25% of values less than 0.0170097
50% of values less than 0.0419819	75% of values less than 0.0675331	90% of values less than 0.0873898
Minimum 0.0955755	Maximum 0.166031	
Mean 0.044284	SD 0.0307817	Variance 0.000947516

Retarded Travel Time to Base of Unsaturated Zone Unsaturated Pathway [years]

05% of values less than 0	10% of values less than 0.601873	25% of values less than 2.04233
50% of values less than 5.11814	75% of values less than 8.317	90% of values less than 10.9633
Minimum 0.12.717	Maximum 23.1187	
Mean 5.5305	SD 4.05336	Variance 16.4297

Whole site MG - Benzene

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years

05% of values less than 0.000367651	10% of values less than 0.00269134	25% of values less than 0.0206645
50% of values less than 0.0609239	75% of values less than 0.13289	90% of values less than 0.186905
Minimum 6.91547E-012 0.227061	Maximum 0.345511	
Mean 0.0819816	SD 0.0735967	Variance 0.00541648

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 4.85191E-011
50% of values less than 1.01944E-007	75% of values less than 2.44365E-005	90% of values less than 0.000478468
Minimum 0.00147122	Maximum 0.0305785	
Mean 0.000315893	SD 0.00153359	Variance 2.35191E-006

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 6.63689E-016	90% of values less than 3.40007E-011
Minimum 0.00157161E-009	Maximum 7.13712E-005	
Mean 8.99151E-008	SD 2.26807E-006	Variance 5.14412E-012

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Chromium

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.0196097
Minimum 0.0246773	Maximum 0.0345172	
Mean 0.00352235	SD 0.00822879	Variance 6.7713E-005

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.0200636	75% of values less than 0.0230588	90% of values less than 0.0251501
Minimum 0.0262747	Maximum 0.0322968	
Mean 0.0153556	SD 0.0102436	Variance 0.000104931

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 0.00512783	10% of values less than 0.00650288	25% of values less than 0.00971028
50% of values less than 0.0132207	75% of values less than 0.0167677	90% of values less than 0.0191114
Minimum 0.00167466	Maximum 0.0264013	
Mean 0.0131673	SD 0.00481282	Variance 2.31633E-005

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Ethylbenzene

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years

05% of values less than 0.21378	10% of values less than 0.229158	25% of values less than 0.276608
50% of values less than 0.349893	75% of values less than 0.449672	90% of values less than 0.550551
Minimum 0.038497 than 0.624786	Maximum 1.01181	
Mean 0.37573	SD 0.134608	Variance 0.0181193

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0.000389491	10% of values less than 0.00264835	25% of values less than 0.0168667
50% of values less than 0.0457933	75% of values less than 0.0944166	90% of values less than 0.13086
Minimum 6.34057E-013 0.153841	Maximum 0.242528	
Mean 0.0591984	SD 0.0502118	Variance 0.00252122

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 2.74893E-012	10% of values less than 2.75875E-009	25% of values less than 2.64726E-006
50% of values less than 0.000142562	75% of values less than 0.00245746	90% of values less than 0.0103744
Minimum 0.0es less than 0.0180989	Maximum 0.0626266	
Mean 0.00307754	SD 0.00682684	Variance 4.66057E-005

Whole site MG - Naphthalene

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years

05% of values less than 0.0128426	10% of values less than 0.0139811	25% of values less than 0.0167295
50% of values less than 0.0220571	75% of values less than 0.0284689	90% of values less than 0.0363751
Minimum 0.01021461	Maximum 0.0755132	
Mean 0.0238172	SD 0.00948322	Variance 8.99315E-005

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0.000359158	10% of values less than 0.00109971	25% of values less than 0.00321555
50% of values less than 0.00583616	75% of values less than 0.00852285	90% of values less than 0.0109025
Minimum 6.32621E-009	Maximum 0.0196887	
Mean 0.00599762	SD 0.00364093	Variance 1.32563E-005

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 1.46168E-009	10% of values less than 1.37379E-007	25% of values less than 1.14243E-005
50% of values less than 0.000143128	75% of values less than 0.000800396	90% of values less than 0.00191287
Minimum 0.000000000	Maximum 0.00574774	
Mean 0.000597646	SD 0.000922584	Variance 8.51161E-007

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Phenol

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years

05% of values less than 0.000902813	10% of values less than 0.000943975	25% of values less than 0.00103037
50% of values less than 0.00113023	75% of values less than 0.00124319	90% of values less than 0.00134754
Minimum 0.000762124	Maximum 0.00177163	
Mean 0.00114108	SD 0.000158045	Variance 2.49783E-008

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0.000902311	10% of values less than 0.000943266	25% of values less than 0.00103008
50% of values less than 0.00112931	75% of values less than 0.00124263	90% of values less than 0.00134638
Minimum 0.000761899	Maximum 0.00176988	
Mean 0.00114027	SD 0.00015785	Variance 2.49165E-008

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 0.000900907	10% of values less than 0.000941163	25% of values less than 0.00102784
50% of values less than 0.00112674	75% of values less than 0.00124107	90% of values less than 0.00134249
Minimum 0.000760633	Maximum 0.00176498	
Mean 0.00113798	SD 0.000157308	Variance 2.47458E-008

Whole site MG - Toluene

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years

05% of values less than 0.525191	10% of values less than 0.847909	25% of values less than 1.35944
50% of values less than 1.83843	75% of values less than 2.3653	90% of values less than 2.9591
Minimum 0.00188855	Maximum 5.15211	
Mean 1.87319	SD 0.803715	Variance 0.645958

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 9.44142E-008	10% of values less than 7.41967E-006	25% of values less than 0.0014298
50% of values less than 0.0167107	75% of values less than 0.108837	90% of values less than 0.29021
Minimum 0.00000000	Maximum 0.908117	
Mean 0.085961	SD 0.14116	Variance 0.0199263

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 3.44741E-012
50% of values less than 2.57232E-008	75% of values less than 2.16044E-005	90% of values less than 0.00080028
Minimum 0.00000000	Maximum 0.0477215	
Mean 0.000695578	SD 0.00352716	Variance 1.24408E-005

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Xylene

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 50 years

05% of values less than 0.316102	10% of values less than 0.342081	25% of values less than 0.40661
50% of values less than 0.520646	75% of values less than 0.659421	90% of values less than 0.825212
Minimum 0.103158	Maximum 1.59585	
Mean 0.557179	SD 0.202255	Variance 0.0409072

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 300 years

05% of values less than 0.00140587	10% of values less than 0.007422	25% of values less than 0.0358943
50% of values less than 0.0877924	75% of values less than 0.159584	90% of values less than 0.214869
Minimum 9.55364E-011	Maximum 0.38827	
Mean 0.100935	SD 0.0779649	Variance 0.00607852

Concentration at Base of Unsaturated Zone Unsaturated Pathway [mg/l] - 1000 years

05% of values less than 1.14069E-010	10% of values less than 3.58239E-008	25% of values less than 1.44556E-005
50% of values less than 0.000501401	75% of values less than 0.00593894	90% of values less than 0.0216683
Minimum 0.000000000	Maximum 0.105696	
Mean 0.00642255	SD 0.0130039	Variance 0.000169102

Whole site MG - Benzene*Diluted Concentration [mg/l] Unsaturated Pathway - 50 years*

05% of values less than 0.000129057	10% of values less than 0.000801812	25% of values less than 0.00608331
50% of values less than 0.017719	75% of values less than 0.0353245	90% of values less than 0.0512744
Minimum 1.64393E-012 0.0630534	Maximum 0.124578	
Mean 0.0231769	SD 0.0213464	Variance 0.000455668

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 1.24272E-011
50% of values less than 2.98343E-008	75% of values less than 6.60754E-006	90% of values less than 0.000134249
Minimum 0.000373381	Maximum 0.00701397	
Mean 8.46166E-005	SD 0.000431756	Variance 1.86413E-007

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 1.91694E-016	90% of values less than 8.98094E-012
Minimum 0.000373381	Maximum 1.60275E-005	
Mean 2.22955E-008	SD 5.15452E-007	Variance 2.6569E-013

Whole site MG - Chromium*Diluted Concentration [mg/l] Unsaturated Pathway - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.00516191
Minimum 0.00725363	Maximum 0.0165915	
Mean 0.00107249	SD 0.00266141	Variance 7.08308E-006

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00514766	75% of values less than 0.0070498	90% of values less than 0.00883327
Minimum 0.00975657	Maximum 0.0193883	
Mean 0.00461591	SD 0.00347233	Variance 1.20571E-005

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 0.00150336	10% of values less than 0.00193733	25% of values less than 0.0026917
50% of values less than 0.00359915	75% of values less than 0.00482068	90% of values less than 0.0062715
Minimum 0.00040462	Maximum 0.0125152	
Mean 0.00387245	SD 0.00171088	Variance 2.92712E-006

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Ethylbenzene

Diluted Concentration [mg/l] Unsaturated Pathway - 50 years

05% of values less than 0.0514283	10% of values less than 0.0618423	25% of values less than 0.0775375
50% of values less than 0.101434	75% of values less than 0.133704	90% of values less than 0.175002
Minimum 0.00915143an 0.209092	Maximum 0.397263	
Mean 0.111665	SD 0.0493938	Variance 0.00243975

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0.000124712	10% of values less than 0.000825307	25% of values less than 0.00506465
50% of values less than 0.0140522	75% of values less than 0.0252848	90% of values less than 0.0361197
Minimum 1.50727E-013 0.0434311	Maximum 0.0869149	
Mean 0.0168089	SD 0.0146824	Variance 0.000215574

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 8.33121E-013	10% of values less than 7.30868E-010	25% of values less than 8.99755E-007
50% of values less than 4.30086E-005	75% of values less than 0.000693343	90% of values less than 0.00276978
Minimum 0.0es less than 0.00437331	Maximum 0.0211782	
Mean 0.000833842	SD 0.0019193	Variance 3.68372E-006

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Naphthalene

Diluted Concentration [mg/l] Unsaturated Pathway - 50 years

05% of values less than 0.00309535	10% of values less than 0.00364427	25% of values less than 0.00475147
50% of values less than 0.00633644	75% of values less than 0.0085446	90% of values less than 0.0114999
Minimum 0.00183567an 0.0139336	Maximum 0.0267828	
Mean 0.00711754	SD 0.00348414	Variance 1.21392E-005

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0.000120086	10% of values less than 0.000337497	25% of values less than 0.000933302
50% of values less than 0.00163234	75% of values less than 0.00238298	90% of values less than 0.00307198
Minimum 1.67312E-009 0.00357187	Maximum 0.00782667	
Mean 0.0017285	SD 0.00110991	Variance 1.23191E-006

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 5.06011E-010	10% of values less than 4.46321E-008	25% of values less than 3.85293E-006
50% of values less than 4.48642E-005	75% of values less than 0.000224869	90% of values less than 0.000506776
Minimum 0.es less than 0.000683709	Maximum 0.00218673	
Mean 0.00016408	SD 0.000258708	Variance 6.693E-008

Whole site MG - Phenol

Diluted Concentration [mg/l] Unsaturated Pathway - 50 years

05% of values less than 0.000188349	10% of values less than 0.000210783	25% of values less than 0.00025248
50% of values less than 0.000324572	75% of values less than 0.000418994	90% of values less than 0.00050465
Minimum 0.00013237an 0.000571778	Maximum 0.00101686	
Mean 0.000346423	SD 0.000123242	Variance 1.51886E-008

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0.000188264	10% of values less than 0.00021072	25% of values less than 0.000252302
50% of values less than 0.000324361	75% of values less than 0.000418856	90% of values less than 0.000504143
Minimum 0.000132326n 0.00057124	Maximum 0.00101605	
Mean 0.000346164	SD 0.000123111	Variance 1.51563E-008

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 0.000188025	10% of values less than 0.000210542	25% of values less than 0.000251805
50% of values less than 0.000323795	75% of values less than 0.000418052	90% of values less than 0.000502724
Minimum 0.000132204n 0.000569736	Maximum 0.00101376	
Mean 0.000345442	SD 0.000122746	Variance 1.50665E-008

Project: Port Talbot Harbourside

Project Number: 60053048

Whole site MG - Toluene

Diluted Concentration [mg/l] Unsaturated Pathway - 50 years

05% of values less than 0.171695	10% of values less than 0.258907	25% of values less than 0.381464
50% of values less than 0.514067	75% of values less than 0.685696	90% of values less than 0.876832
Minimum 0.000448944	Maximum 2.16322	
Mean 0.547995	SD 0.265132	Variance 0.0702948

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 3.44295E-008	10% of values less than 2.2108E-006	25% of values less than 0.000363022
50% of values less than 0.0051304	75% of values less than 0.0304959	90% of values less than 0.0746741
Minimum 0.000000000	Maximum 0.361932	
Mean 0.0235599	SD 0.0397591	Variance 0.00158079

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 9.1654E-013
50% of values less than 7.61392E-009	75% of values less than 5.88781E-006	90% of values less than 0.000224295
Minimum 0.000000000	Maximum 0.0203646	
Mean 0.000192182	SD 0.0011166	Variance 1.2468E-006

Whole site MG - Xylene

Diluted Concentration [mg/l] Unsaturated Pathway - 50 years

05% of values less than 0.0752866	10% of values less than 0.0905997	25% of values less than 0.113495
50% of values less than 0.151937	75% of values less than 0.197588	90% of values less than 0.265109
Minimum 0.0277127	Maximum 0.555463	
Mean 0.165878	SD 0.0744137	Variance 0.0055374

Diluted Concentration [mg/l] Unsaturated Pathway - 300 years

05% of values less than 0.000506794	10% of values less than 0.00221543	25% of values less than 0.0104616
50% of values less than 0.0248439	75% of values less than 0.0421344	90% of values less than 0.0588749
Minimum 2.56651E-011 0.0690174	Maximum 0.139703	
Mean 0.0287877	SD 0.0230549	Variance 0.00053153

Diluted Concentration [mg/l] Unsaturated Pathway - 1000 years

05% of values less than 3.36809E-011	10% of values less than 1.13724E-008	25% of values less than 4.37135E-006
50% of values less than 0.000155289	75% of values less than 0.00169849	90% of values less than 0.0057025
Minimum 0.0es less than 0.00850427	Maximum 0.0384093	
Mean 0.00174138	SD 0.00363522	Variance 1.32148E-005

Project: Port Talbot Harbourside

Project Number: 60053048

Benzene

Unretarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.962074	10% of values less than 1.18394	25% of values less than 1.65155
50% of values less than 2.26807	75% of values less than 2.91288	90% of values less than 3.61412
Minimum 0.532803 than 4.04649	Maximum 9.4728	
Mean 2.34981	SD 0.972631	Variance 0.946012

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 3.57731	10% of values less than 4.36676	25% of values less than 6.02011
50% of values less than 8.09579	75% of values less than 10.5562	90% of values less than 13.3997
Minimum 1.72057s than 15.1178	Maximum 29.6774	
Mean 8.58233	SD 3.68862	Variance 13.6059

Project: Port Talbot Harbourside

Project Number: 60053048

Chromium

Unretarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.962074	10% of values less than 1.18394	25% of values less than 1.65155
50% of values less than 2.26807	75% of values less than 2.91288	90% of values less than 3.61412
Minimum 0.532803 than 4.04649	Maximum 9.4728	
Mean 2.34981	SD 0.972631	Variance 0.946012

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 765.022	10% of values less than 911.632	25% of values less than 1267.13
50% of values less than 1677.58	75% of values less than 2249.09	90% of values less than 2861.32
Minimum 336.483s than 3267.42	Maximum 5973.28	
Mean 1820.62	SD 800.114	Variance 640182

Project: Port Talbot Harbourside

Project Number: 60053048

Ethylbenzene

Unretarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.962074	10% of values less than 1.18394	25% of values less than 1.65155
50% of values less than 2.26807	75% of values less than 2.91288	90% of values less than 3.61412
Minimum 0.532803 than 4.04649	Maximum 9.4728	
Mean 2.34981	SD 0.972631	Variance 0.946012

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 17.972	10% of values less than 21.4695	25% of values less than 29.8308
50% of values less than 40.8203	75% of values less than 53.6982	90% of values less than 69.617
Minimum 8.71253s than 79.8623	Maximum 153.013	
Mean 43.7213	SD 19.7409	Variance 389.703

Project: Port Talbot Harbourside

Project Number: 60053048

Naphthalene

Unretarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.962074	10% of values less than 1.18394	25% of values less than 1.65155
50% of values less than 2.26807	75% of values less than 2.91288	90% of values less than 3.61412
Minimum 0.532803 than 4.04649	Maximum 9.4728	
Mean 2.34981	SD 0.972631	Variance 0.946012

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 26.1644	10% of values less than 33.6651	25% of values less than 46.1645
50% of values less than 61.5281	75% of values less than 81.8777	90% of values less than 107.704
Minimum 12.264ss than 121.976	Maximum 228.275	
Mean 66.977	SD 30.1007	Variance 906.052

Project: Port Talbot Harbourside

Project Number: 60053048

Phenol

Unretarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.962074	10% of values less than 1.18394	25% of values less than 1.65155
50% of values less than 2.26807	75% of values less than 2.91288	90% of values less than 3.61412
Minimum 0.532803 than 4.04649	Maximum 9.4728	
Mean 2.34981	SD 0.972631	Variance 0.946012

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 3.58843	10% of values less than 4.40998	25% of values less than 6.14863
50% of values less than 8.198	75% of values less than 10.7265	90% of values less than 13.7925
Minimum 1.75052s than 15.3266	Maximum 29.6118	
Mean 8.74753	SD 3.78891	Variance 14.3558

Project: Port Talbot Harbourside

Project Number: 60053048

Toluene

Unretarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.962074	10% of values less than 1.18394	25% of values less than 1.65155
50% of values less than 2.26807	75% of values less than 2.91288	90% of values less than 3.61412
Minimum 0.532803 than 4.04649	Maximum 9.4728	
Mean 2.34981	SD 0.972631	Variance 0.946012

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 8.21928	10% of values less than 10.2363	25% of values less than 14.0622
50% of values less than 18.6988	75% of values less than 24.7844	90% of values less than 31.3977
Minimum 4.01395s than 35.8701	Maximum 68.9509	
Mean 20.1987	SD 8.93364	Variance 79.8099

Project: Port Talbot Harbourside

Project Number: 60053048

Xylene

Unretarded Travel Time to Port Talbot Dock [years]

05% of values less than 0.962074	10% of values less than 1.18394	25% of values less than 1.65155
50% of values less than 2.26807	75% of values less than 2.91288	90% of values less than 3.61412
Minimum 0.532803 than 4.04649	Maximum 9.4728	
Mean 2.34981	SD 0.972631	Variance 0.946012

Retarded Travel Time to Port Talbot Dock [years]

05% of values less than 19.3574	10% of values less than 24.7362	25% of values less than 33.9899
50% of values less than 45.974	75% of values less than 60.4215	90% of values less than 79.09
Minimum 9.38849s than 89.1358	Maximum 163.81	
Mean 49.2697	SD 22.3123	Variance 497.837

Benzene*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 5.18369E-006	10% of values less than 2.18831E-005	25% of values less than 0.000142426
50% of values less than 0.000980216	75% of values less than 0.00317612	90% of values less than 0.00659156
Minimum 2.38975E-012 0.00977278	Maximum 0.0229498	
Mean 0.00237178	SD 0.00345284	Variance 1.19221E-005

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 0	10% of values less than 1.08044E-018	25% of values less than 6.58485E-013
50% of values less than 1.3491E-009	75% of values less than 2.75524E-007	90% of values less than 7.15594E-006
Minimum 0.0es less than 2.52557E-005	Maximum 0.000774002	
Mean 6.86959E-006	SD 4.22891E-005	Variance 1.78837E-009

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 7.36506E-018	90% of values less than 4.62997E-013
Minimum 0.0es less than 2.21905E-011	Maximum 1.3128E-006	
Mean 1.83356E-009	SD 4.25339E-008	Variance 1.80913E-015

Project: Port Talbot Harbourside

Project Number: 60053048

Chromium

Concentration at Port Talbot Dock [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.00196994
Minimum 0.es less than 0.00320873	Maximum 0.00656104	
Mean 0.000384592	SD 0.00110039	Variance 1.21086E-006

Ethylbenzene

Concentration at Port Talbot Dock [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000898182	75% of values less than 0.00454428	90% of values less than 0.0120039
Minimum 0.0195593	Maximum 0.0730052	
Mean 0.0039927	SD 0.00711041	Variance 5.0558E-005

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 7.80052E-007	10% of values less than 2.76157E-006	25% of values less than 1.94026E-005
50% of values less than 0.000149832	75% of values less than 0.000564758	90% of values less than 0.00144489
Minimum 1.11722E-013 0.00225654	Maximum 0.00812924	
Mean 0.000515016	SD 0.000955655	Variance 9.13277E-007

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 2.66684E-014	10% of values less than 7.42272E-012	25% of values less than 6.97612E-009
50% of values less than 3.26543E-007	75% of values less than 6.99011E-006	90% of values less than 4.37337E-005
Minimum 0.0195593	Maximum 0.000651885	
Mean 1.94557E-005	SD 6.71388E-005	Variance 4.50762E-009

Naphthalene*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0.00026579	90% of values less than 0.0011022
Minimum 0.00182262	Maximum 0.00687036	
Mean 0.000324161	SD 0.000743226	Variance 5.52385E-007

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 3.83356E-006	10% of values less than 9.12298E-006	25% of values less than 2.66107E-005
50% of values less than 7.40014E-005	75% of values less than 0.000183052	90% of values less than 0.000388315
Minimum 5.19151E-010	Maximum 0.00161377	
Mean 0.000143171	SD 0.000180297	Variance 3.25069E-008

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 5.09538E-011	10% of values less than 2.72631E-009	25% of values less than 1.2146E-007
50% of values less than 1.84348E-006	75% of values less than 1.0225E-005	90% of values less than 2.88701E-005
Minimum 0.00558577E-005	Maximum 0.000485101	
Mean 1.1609E-005	SD 2.85701E-005	Variance 8.16248E-010

Phenol*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 2.13582E-015	10% of values less than 9.87229E-014	25% of values less than 7.9909E-011
50% of values less than 1.84001E-008	75% of values less than 4.53379E-007	90% of values less than 2.76453E-006
Minimum 3.85231E-024 6.76405E-006	Maximum 8.06118E-005	
Mean 1.2678E-006	SD 4.60635E-006	Variance 2.12185E-011

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 2.13486E-015	10% of values less than 9.8682E-014	25% of values less than 7.98428E-011
50% of values less than 1.83873E-008	75% of values less than 4.53018E-007	90% of values less than 2.76305E-006
Minimum 3.85128E-024 6.75891E-006	Maximum 8.05565E-005	
Mean 1.26684E-006	SD 4.60301E-006	Variance 2.11877E-011

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 2.13219E-015	10% of values less than 9.85673E-014	25% of values less than 7.96577E-011
50% of values less than 1.83514E-008	75% of values less than 4.52006E-007	90% of values less than 2.75889E-006
Minimum 3.84841E-024 6.74455E-006	Maximum 8.04017E-005	
Mean 1.26417E-006	SD 4.59367E-006	Variance 2.11018E-011

Project: Port Talbot Harbourside

Project Number: 60053048

Toluene

Concentration at Port Talbot Dock [mg/l] - 50 years

05% of values less than 7.5622E-008	10% of values less than 9.09517E-007	25% of values less than 5.82407E-005
50% of values less than 0.00194269	75% of values less than 0.0121316	90% of values less than 0.0364768
Minimum 0.es less than 0.0644038	Maximum 0.253355	
Mean 0.0124258	SD 0.0263585	Variance 0.000694768

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 1.52983E-011	10% of values less than 5.21576E-010	25% of values less than 5.54058E-008
50% of values less than 5.74028E-006	75% of values less than 0.00011029	90% of values less than 0.000728541
Minimum 0.es less than 0.00181345	Maximum 0.0209002	
Mean 0.000392862	SD 0.00154783	Variance 2.39577E-006

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 2.30611E-016
50% of values less than 6.61409E-012	75% of values less than 5.28209E-009	90% of values less than 5.61615E-007
Minimum 0.es less than 4.88572E-006	Maximum 0.000725767	
Mean 2.57477E-006	SD 2.67578E-005	Variance 7.15982E-010

Xylene*Concentration at Port Talbot Dock [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000578147	75% of values less than 0.00598777	90% of values less than 0.0171347
Minimum 0.000578147	Maximum 0.0943989	
Mean 0.00544717	SD 0.0110865	Variance 0.000122911

Concentration at Port Talbot Dock [mg/l] - 300 years

05% of values less than 1.11542E-006	10% of values less than 5.68587E-006	25% of values less than 3.58558E-005
50% of values less than 0.000233641	75% of values less than 0.000974548	90% of values less than 0.00264383
Minimum 1.02159E-012	Maximum 0.0196611	
Mean 0.000966411	SD 0.00193028	Variance 3.72596E-006

Concentration at Port Talbot Dock [mg/l] - 1000 years

05% of values less than 4.22438E-013	10% of values less than 1.37905E-010	25% of values less than 3.26645E-008
50% of values less than 1.18717E-006	75% of values less than 1.57639E-005	90% of values less than 0.000111603
Minimum 0.000273378	Maximum 0.00162427	
Mean 4.58112E-005	SD 0.000148254	Variance 2.19793E-008

Project: Port Talbot Harbourside

Project Number: 60053048

Chromium

Unretarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.0612608	10% of values less than 0.16612	25% of values less than 0.62144
50% of values less than 1.13276	75% of values less than 1.75079	90% of values less than 2.55293
Minimum 0.05 less than 4.6299	Maximum 1E+006	
Mean 48952.2	SD 215873	Variance 4.66013E+010

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 170.909	10% of values less than 296.187	25% of values less than 590.083
50% of values less than 945.767	75% of values less than 1389.98	90% of values less than 2059.04
Minimum 0.05 less than 3741.23	Maximum 1.11788E+009	
Mean 3.41115E+007	SD 1.53858E+008	Variance 2.36723E+016

Project: Port Talbot Harbourside

Project Number: 60053048

Ethylbenzene

Unretarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.0612608	10% of values less than 0.16612	25% of values less than 0.62144
50% of values less than 1.13276	75% of values less than 1.75079	90% of values less than 2.55293
Minimum 0.05 less than 4.6299	Maximum 1E+006	
Mean 48952.2	SD 215873	Variance 4.66013E+010

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 3.93392	10% of values less than 6.91161	25% of values less than 13.8561
50% of values less than 22.4721	75% of values less than 33.6649	90% of values less than 49.0491
Minimum 0.05 less than 88.0073	Maximum 2.56339E+007	
Mean 800613	SD 3.6279E+006	Variance 1.31616E+013

Naphthalene

Unretarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.0612608	10% of values less than 0.16612	25% of values less than 0.62144
50% of values less than 1.13276	75% of values less than 1.75079	90% of values less than 2.55293
Minimum 0.05 less than 4.6299	Maximum 1E+006	
Mean 48952.2	SD 215873	Variance 4.66013E+010

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 6.24403	10% of values less than 10.566	25% of values less than 21.173
50% of values less than 35.0264	75% of values less than 51.1098	90% of values less than 74.7537
Minimum 0.05 less than 149.754	Maximum 4.09224E+007	
Mean 1.20275E+006	SD 5.45655E+006	Variance 2.9774E+013

Project: Port Talbot Harbourside

Project Number: 60053048

Phenol

Unretarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.0612608	10% of values less than 0.16612	25% of values less than 0.62144
50% of values less than 1.13276	75% of values less than 1.75079	90% of values less than 2.55293
Minimum 0.0es less than 4.6299	Maximum 1E+006	
Mean 48952.2	SD 215873	Variance 4.66013E+010

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.696911	10% of values less than 1.14737	25% of values less than 2.71045
50% of values less than 4.47474	75% of values less than 6.72932	90% of values less than 9.88194
Minimum 0.0es less than 19.7888	Maximum 5.58665E+006	
Mean 162530	SD 728703	Variance 5.31009E+011

Project: Port Talbot Harbourside

Project Number: 60053048

Toluene

Unretarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.0612608	10% of values less than 0.16612	25% of values less than 0.62144
50% of values less than 1.13276	75% of values less than 1.75079	90% of values less than 2.55293
Minimum 0.05 less than 4.6299	Maximum 1E+006	
Mean 48952.2	SD 215873	Variance 4.66013E+010

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 1.74402	10% of values less than 3.04781	25% of values less than 6.37328
50% of values less than 10.629	75% of values less than 15.3758	90% of values less than 21.852
Minimum 0.05 less than 42.9847	Maximum 1.18561E+007	
Mean 370141	SD 1.66626E+006	Variance 2.77643E+012

Xylene

Unretarded Travel Time to BH101 - Centinel [years]

05% of values less than 0.0612608	10% of values less than 0.16612	25% of values less than 0.62144
50% of values less than 1.13276	75% of values less than 1.75079	90% of values less than 2.55293
Minimum 0.es less than 4.6299	Maximum 1E+006	
Mean 48952.2	SD 215873	Variance 4.66013E+010

Retarded Travel Time to BH101 - Centinel [years]

05% of values less than 4.24042	10% of values less than 7.7066	25% of values less than 15.6371
50% of values less than 25.8959	75% of values less than 37.9062	90% of values less than 54.9949
Minimum 0.05 less than 107.98	Maximum 3.3424E+007	
Mean 898418	SD 4.07302E+006	Variance 1.65895E+013

Benzene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 1.00065E-010	10% of values less than 2.77383E-005	25% of values less than 0.000527743
50% of values less than 0.0027118	75% of values less than 0.00836242	90% of values less than 0.0172099
Minimum 0.0es less than 0.0241614	Maximum 0.0607412	
Mean 0.00618162	SD 0.00865478	Variance 7.49053E-005

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 4.00201E-013
50% of values less than 3.78969E-009	75% of values less than 8.93852E-007	90% of values less than 2.45726E-005
Minimum 0.0es less than 8.57979E-005	Maximum 0.00276096	
Mean 1.91866E-005	SD 0.000120818	Variance 1.4597E-008

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 1.91707E-017	90% of values less than 9.70032E-013
Minimum 0.0es less than 4.95105E-011	Maximum 6.44418E-006	
Mean 7.36459E-009	SD 2.04281E-007	Variance 4.17307E-014

Chromium*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0.00460222	
Mean 2.11105E-005	SD 0.000232895	Variance 5.42403E-008

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.000334708
Minimum 0.es less than 0.00337163	Maximum 0.00847204	
Mean 0.000362533	SD 0.00124976	Variance 1.56191E-006

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.001117	75% of values less than 0.00314796	90% of values less than 0.00452551
Minimum 0.es less than 0.00536021	Maximum 0.0132377	
Mean 0.00172918	SD 0.00199934	Variance 3.99736E-006

Ethylbenzene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 7.51596E-005	25% of values less than 0.00276009
50% of values less than 0.00961551	75% of values less than 0.0232182	90% of values less than 0.0497038
Minimum 0.es less than 0.0740321	Maximum 0.194434	
Mean 0.0190012	SD 0.0260526	Variance 0.00067874

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 1.56359E-011	10% of values less than 1.16842E-005	25% of values less than 0.00015727
50% of values less than 0.000895548	75% of values less than 0.00283206	90% of values less than 0.00711061
Minimum 0.es less than 0.0118108	Maximum 0.0359557	
Mean 0.00266537	SD 0.00471064	Variance 2.21902E-005

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 2.13881E-013	25% of values less than 2.31948E-008
50% of values less than 2.17188E-006	75% of values less than 4.70661E-005	90% of values less than 0.000289494
Minimum 0.es less than 0.000597107	Maximum 0.00424685	
Mean 0.000113668	SD 0.000356297	Variance 1.26947E-007

Naphthalene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00100089	75% of values less than 0.00231231	90% of values less than 0.00422166
Minimum 0.es less than 0.00570635	Maximum 0.0210939	
Mean 0.00163334	SD 0.00203001	Variance 4.12094E-006

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 2.50212E-009	10% of values less than 2.31901E-005	25% of values less than 9.64469E-005
50% of values less than 0.000241879	75% of values less than 0.000548021	90% of values less than 0.00113269
Minimum 0.es less than 0.00150719	Maximum 0.0032557	
Mean 0.000428792	SD 0.000511911	Variance 2.62053E-007

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 3.99888E-010	25% of values less than 3.37889E-007
50% of values less than 5.9643E-006	75% of values less than 3.56454E-005	90% of values less than 0.000110635
Minimum 0.es less than 0.000183495	Maximum 0.000592701	
Mean 3.72063E-005	SD 7.68832E-005	Variance 5.91103E-009

Phenol*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 2.66999E-017	10% of values less than 3.10616E-011	25% of values less than 2.58877E-008
50% of values less than 1.38272E-006	75% of values less than 1.63013E-005	90% of values less than 6.99382E-005
Minimum 0.000122095	Maximum 0.000410329	
Mean 2.33689E-005	SD 5.53802E-005	Variance 3.06697E-009

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 2.6659E-017	10% of values less than 3.1036E-011	25% of values less than 2.58784E-008
50% of values less than 1.38187E-006	75% of values less than 1.62948E-005	90% of values less than 6.99097E-005
Minimum 0.000122035	Maximum 0.000410101	
Mean 2.3351E-005	SD 5.53378E-005	Variance 3.06227E-009

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 2.6545E-017	10% of values less than 3.09645E-011	25% of values less than 2.58525E-008
50% of values less than 1.37778E-006	75% of values less than 1.62767E-005	90% of values less than 6.98298E-005
Minimum 0.000121869	Maximum 0.000409462	
Mean 2.33008E-005	SD 5.52192E-005	Variance 3.04916E-009

Toluene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 4.19366E-008	10% of values less than 4.27278E-005	25% of values less than 0.00197846
50% of values less than 0.0216062	75% of values less than 0.0775651	90% of values less than 0.192788
Minimum 0.es less than 0.32664	Maximum 0.895175	
Mean 0.0678578	SD 0.114859	Variance 0.0131926

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 1.42977E-009	25% of values less than 1.09349E-006
50% of values less than 9.40955E-005	75% of values less than 0.00107057	90% of values less than 0.00526919
Minimum 0.es less than 0.0136987	Maximum 0.0931332	
Mean 0.00251761	SD 0.00796319	Variance 6.34124E-005

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 5.85194E-016
50% of values less than 1.10066E-010	75% of values less than 8.30549E-008	90% of values less than 8.50853E-006
Minimum 0.es less than 4.02907E-005	Maximum 0.00413393	
Mean 1.54843E-005	SD 0.000148404	Variance 2.20236E-008

Xylene*Concentration at BH101 - Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0.00290453
50% of values less than 0.0132697	75% of values less than 0.0347775	90% of values less than 0.0796723
Minimum 0.es less than 0.113869	Maximum 0.344306	
Mean 0.0276567	SD 0.0385328	Variance 0.00148478

Concentration at BH101 - Centinel [mg/l] - 300 years

05% of values less than 3.52074E-010	10% of values less than 2.78589E-005	25% of values less than 0.000354404
50% of values less than 0.00146111	75% of values less than 0.00522519	90% of values less than 0.013044
Minimum 0.es less than 0.0205004	Maximum 0.0599117	
Mean 0.00462413	SD 0.00797792	Variance 6.36473E-005

Concentration at BH101 - Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 5.59413E-012	25% of values less than 1.48614E-007
50% of values less than 9.41704E-006	75% of values less than 9.84306E-005	90% of values less than 0.000647945
Minimum 0.es less than 0.00131267	Maximum 0.0087642	
Mean 0.000246438	SD 0.000758975	Variance 5.76044E-007

Project: Port Talbot Harbourside

Project Number: 60053048

Benzene

Unretarded Travel Time to MW1- Centinel [years]

05% of values less than 0.0520063	10% of values less than 0.132394	25% of values less than 0.557117
50% of values less than 1.07236	75% of values less than 1.7184	90% of values less than 3.34514
Minimum 0.0520063	Maximum 1E+006	
Mean 95905	SD 294607	Variance 8.6793E+010

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 0.566444	10% of values less than 1.16741	25% of values less than 2.39625
50% of values less than 4.16273	75% of values less than 6.54256	90% of values less than 14.0698
Minimum 0.0520063	Maximum 5.15722E+006	
Mean 321660	SD 1.00547E+006	Variance 1.01097E+012

Project: Port Talbot Harbourside

Project Number: 60053048

Chromium

Unretarded Travel Time to MW1- Centinel [years]

05% of values less than 0.0520063	10% of values less than 0.132394	25% of values less than 0.557117
50% of values less than 1.07236	75% of values less than 1.7184	90% of values less than 3.34514
Minimum 0.0520063	Maximum 1E+006	
Mean 95905	SD 294607	Variance 8.6793E+010

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 142.102	10% of values less than 280.077	25% of values less than 538.783
50% of values less than 902.841	75% of values less than 1388.29	90% of values less than 3045.77
Minimum 0.0520063	Maximum 1.11788E+009	
Mean 6.7054E+007	SD 2.10862E+008	Variance 4.44627E+016

Ethylbenzene

Unretarded Travel Time to MW1- Centinel [years]

05% of values less than 0.0520063	10% of values less than 0.132394	25% of values less than 0.557117
50% of values less than 1.07236	75% of values less than 1.7184	90% of values less than 3.34514
Minimum 0.000000E+000	Maximum 1E+006	
Mean 95905	SD 294607	Variance 8.6793E+010

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 3.38871	10% of values less than 6.52855	25% of values less than 12.7376
50% of values less than 21.5176	75% of values less than 33.6711	90% of values less than 69.5909
Minimum 0.000000E+000	Maximum 2.63988E+007	
Mean 1.59745E+006	SD 5.04663E+006	Variance 2.54685E+013

Project: Port Talbot Harbourside

Project Number: 60053048

Naphthalene*Unretarded Travel Time to MW1- Centinel [years]*

05% of values less than 0.0520063	10% of values less than 0.132394	25% of values less than 0.557117
50% of values less than 1.07236	75% of values less than 1.7184	90% of values less than 3.34514
Minimum 0.05 less than 1E+006	Maximum 1E+006	
Mean 95905	SD 294607	Variance 8.6793E+010

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 5.25637	10% of values less than 10.3348	25% of values less than 19.4332
50% of values less than 33.3006	75% of values less than 51.7774	90% of values less than 104.474
Minimum 0.05 less than 2.46693E+007	Maximum 4.20574E+007	
Mean 2.45852E+006	SD 7.82789E+006	Variance 6.12759E+013

Phenol

Unretarded Travel Time to MW1- Centinel [years]

05% of values less than 0.0520063	10% of values less than 0.132394	25% of values less than 0.557117
50% of values less than 1.07236	75% of values less than 1.7184	90% of values less than 3.34514
Minimum 0.0520063	Maximum 1E+006	
Mean 95905	SD 294607	Variance 8.6793E+010

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 0.590034	10% of values less than 1.16293	25% of values less than 2.43769
50% of values less than 4.19171	75% of values less than 6.51141	90% of values less than 14.1788
Minimum 0.590034	Maximum 5.58665E+006	
Mean 327736	SD 1.02701E+006	Variance 1.05475E+012

Project: Port Talbot Harbourside

Project Number: 60053048

Toluene

Unretarded Travel Time to MW1- Centinel [years]

05% of values less than 0.0520063	10% of values less than 0.132394	25% of values less than 0.557117
50% of values less than 1.07236	75% of values less than 1.7184	90% of values less than 3.34514
Minimum 0.0520063	Maximum 1E+006	
Mean 95905	SD 294607	Variance 8.6793E+010

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 1.49327	10% of values less than 3.00515	25% of values less than 5.75436
50% of values less than 9.86955	75% of values less than 15.3298	90% of values less than 33.2299
Minimum 0.0520063	Maximum 1.20895E+007	
Mean 756781	SD 2.38961E+006	Variance 5.71022E+012

Project: Port Talbot Harbourside

Project Number: 60053048

Xylene

Unretarded Travel Time to MW1- Centinel [years]

05% of values less than 0.0520063	10% of values less than 0.132394	25% of values less than 0.557117
50% of values less than 1.07236	75% of values less than 1.7184	90% of values less than 3.34514
Minimum 0.0520063	Maximum 1E+006	
Mean 95905	SD 294607	Variance 8.6793E+010

Retarded Travel Time to MW1- Centinel [years]

05% of values less than 3.74749	10% of values less than 7.39901	25% of values less than 14.2062
50% of values less than 24.3701	75% of values less than 37.6027	90% of values less than 82.9033
Minimum 0.0520063	Maximum 3.3424E+007	
Mean 1.80586E+006	SD 5.74429E+006	Variance 3.29968E+013

Benzene*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 6.0407E-009	25% of values less than 0.000300755
50% of values less than 0.00213958	75% of values less than 0.00735255	90% of values less than 0.018121
Minimum 0.000000000	Maximum 0.0625277	
Mean 0.00600919	SD 0.00910147	Variance 8.28367E-005

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 1.10187E-014
50% of values less than 1.00029E-009	75% of values less than 5.39553E-007	90% of values less than 2.11323E-005
Minimum 0.000000000	Maximum 0.00558217	
Mean 2.1832E-005	SD 0.000199184	Variance 3.96742E-008

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 4.84716E-018	90% of values less than 6.83223E-013
Minimum 0.000000000	Maximum 1.3029E-005	
Mean 1.38628E-008	SD 4.12058E-007	Variance 1.69792E-013

Chromium

Concentration at MW1- Centinel [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.0000000000000000	Maximum 0.0070299	
Mean 4.92756E-005	SD 0.000461626	Variance 2.13098E-007

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0.0014508
Minimum 0.0000000000000000	Maximum 0.00970597	
Mean 0.000442855	SD 0.00141527	Variance 2.00299E-006

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.00107871	75% of values less than 0.00326713	90% of values less than 0.00460321
Minimum 0.0000000000000000	Maximum 0.0126617	
Mean 0.0017861	SD 0.00204278	Variance 4.17296E-006

Ethylbenzene*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0.00169822
50% of values less than 0.00839624	75% of values less than 0.0273335	90% of values less than 0.0578129
Minimum 0.es less than 0.0787034	Maximum 0.200663	
Mean 0.0201021	SD 0.0277188	Variance 0.000768334

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 2.62863E-009	25% of values less than 9.33147E-005
50% of values less than 0.000713261	75% of values less than 0.00305094	90% of values less than 0.00779506
Minimum 0.es less than 0.0115254	Maximum 0.0329073	
Mean 0.00270549	SD 0.00475394	Variance 2.25999E-005

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 5.10772E-009
50% of values less than 1.54698E-006	75% of values less than 3.69268E-005	90% of values less than 0.000302973
Minimum 0.es less than 0.000652879	Maximum 0.00824597	
Mean 0.000124363	SD 0.000473856	Variance 2.2454E-007

Naphthalene*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000884486	75% of values less than 0.00261947	90% of values less than 0.00494665
Minimum 0.es less than 0.00625946	Maximum 0.0131918	
Mean 0.00173213	SD 0.00213995	Variance 4.57937E-006

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 2.28076E-007	25% of values less than 5.42083E-005
50% of values less than 0.000212446	75% of values less than 0.000592341	90% of values less than 0.00115071
Minimum 0.es less than 0.00155277	Maximum 0.00333591	
Mean 0.000425883	SD 0.000534368	Variance 2.8555E-007

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 1.19542E-018	25% of values less than 1.26997E-007
50% of values less than 4.00326E-006	75% of values less than 2.88309E-005	90% of values less than 0.000124031
Minimum 0.es less than 0.000190398	Maximum 0.00108175	
Mean 3.74477E-005	SD 8.74616E-005	Variance 7.64953E-009

Phenol*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 5.00386E-014	25% of values less than 1.97123E-008
50% of values less than 1.41511E-006	75% of values less than 2.07226E-005	90% of values less than 9.07692E-005
Minimum 0.es less than 0.000156361	Maximum 0.00042538	
Mean 2.73331E-005	SD 6.08151E-005	Variance 3.69848E-009

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 5.0008E-014	25% of values less than 1.97041E-008
50% of values less than 1.41447E-006	75% of values less than 2.07055E-005	90% of values less than 9.06951E-005
Minimum 0.es less than 0.000156243	Maximum 0.000424931	
Mean 2.73108E-005	SD 6.07586E-005	Variance 3.6916E-009

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 4.99224E-014	25% of values less than 1.96812E-008
50% of values less than 1.41186E-006	75% of values less than 2.06577E-005	90% of values less than 9.04879E-005
Minimum 0.es less than 0.000155912	Maximum 0.000423676	
Mean 2.72484E-005	SD 6.06006E-005	Variance 3.67243E-009

Toluene

Concentration at MW1- Centinel [mg/l] - 50 years

05% of values less than 0	10% of values less than 3.93364E-007	25% of values less than 0.00125093
50% of values less than 0.0174147	75% of values less than 0.0912164	90% of values less than 0.225172
Minimum 0.05 less than 0.33837	Maximum 0.759636	
Mean 0.0729151	SD 0.119189	Variance 0.0142061

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 4.21103E-007
50% of values less than 7.70801E-005	75% of values less than 0.00102406	90% of values less than 0.00603282
Minimum 0.0es less than 0.014045	Maximum 0.162545	
Mean 0.00259415	SD 0.00886695	Variance 7.86228E-005

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 1.69545E-017
50% of values less than 3.61225E-011	75% of values less than 5.39746E-008	90% of values less than 7.93751E-006
Minimum 0.0es less than 3.8027E-005	Maximum 0.00854172	
Mean 2.21777E-005	SD 0.000289271	Variance 8.36775E-008

Xylene*Concentration at MW1- Centinel [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0.00188605
50% of values less than 0.0111427	75% of values less than 0.0404596	90% of values less than 0.0880185
Minimum 0.es less than 0.121556	Maximum 0.275569	
Mean 0.0293745	SD 0.0406755	Variance 0.00165449

Concentration at MW1- Centinel [mg/l] - 300 years

05% of values less than 0	10% of values less than 1.21687E-008	25% of values less than 0.000201125
50% of values less than 0.00126427	75% of values less than 0.00540234	90% of values less than 0.0148372
Minimum 0.es less than 0.0216319	Maximum 0.0543586	
Mean 0.0047075	SD 0.00804732	Variance 6.47594E-005

Concentration at MW1- Centinel [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 3.60108E-008
50% of values less than 5.83742E-006	75% of values less than 8.21751E-005	90% of values less than 0.000605008
Minimum 0.es less than 0.00150737	Maximum 0.017233	
Mean 0.000263842	SD 0.000942549	Variance 8.88398E-007

Unretarded Travel Time to Dock Feeder [years]

05% of values less than 0.0305166	10% of values less than 0.0713856	25% of values less than 0.360747
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.05 less than 1E+006	Maximum 1E+006	
Mean 541459	SD 498527	Variance 2.48529E+011

Retarded Travel Time to Dock Feeder [years]

05% of values less than 0.464649	10% of values less than 0.794289	25% of values less than 1.88623
50% of values less than 2.66091E+006	75% of values less than 3.37753E+006	90% of values less than 3.9088E+006
Minimum 0.es less than 4.19232E+006	Maximum 5.57016E+006	
Mean 1.83341E+006	SD 1.73796E+006	Variance 3.0205E+012

Chromium

Unretarded Travel Time to Dock Feeder [years]

05% of values less than 0.0305166	10% of values less than 0.0713856	25% of values less than 0.360747
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 541459	SD 498527	Variance 2.48529E+011

Retarded Travel Time to Dock Feeder [years]

05% of values less than 110.529	10% of values less than 195.913	25% of values less than 441.97
50% of values less than 5.12032E+008	75% of values less than 7.00144E+008	90% of values less than 8.14406E+008
Minimum 0.es less than 8.82244E+008	Maximum 1.14881E+009	
Mean 3.74846E+008	SD 3.58679E+008	Variance 1.2865E+017

Ethylbenzene

Unretarded Travel Time to Dock Feeder [years]

05% of values less than 0.0305166	10% of values less than 0.0713856	25% of values less than 0.360747
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.000000E+000	Maximum 1E+006	
Mean 541459	SD 498527	Variance 2.48529E+011

Retarded Travel Time to Dock Feeder [years]

05% of values less than 2.56328	10% of values less than 4.53233	25% of values less than 10.2854
50% of values less than 1.2026E+007	75% of values less than 1.65152E+007	90% of values less than 2.0251E+007
Minimum 0.000000E+000	Maximum 2.9548E+007	
Mean 9.07529E+006	SD 8.78492E+006	Variance 7.71748E+013

Unretarded Travel Time to Dock Feeder [years]

25% of values less than 0.360747

90% of values less than 1E+006

Maximum 1E+006

Variance 2.48529E+011

25% of values less than 15.9887

90% of values less than 3.07241E+007

Maximum 4.65971E+007

Variance 1.83574E+014

Unretarded Travel Time to Dock Feeder [years]

25% of values less than 0.360747

90% of values less than 1E+006

Maximum 1E+006

Variance 2.48529E+011

25% of values less than 1.90553

90% of values less than 3.97517E+006

Maximum 5.6164E+006

Variance 3.14506E+012

Toluene

Unretarded Travel Time to Dock Feeder [years]

05% of values less than 0.0305166	10% of values less than 0.0713856	25% of values less than 0.360747
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.000000E+000	Maximum 1E+006	
Mean 541459	SD 498527	Variance 2.48529E+011

Retarded Travel Time to Dock Feeder [years]

05% of values less than 1.18321	10% of values less than 2.10641	25% of values less than 4.64371
50% of values less than 5.73533E+006	75% of values less than 7.84691E+006	90% of values less than 9.33467E+006
Minimum 0.000000E+000	Maximum 1.28307E+007	
Mean 4.25465E+006	SD 4.09612E+006	Variance 1.67782E+013

Xylene

Unretarded Travel Time to Dock Feeder [years]

05% of values less than 0.0305166	10% of values less than 0.0713856	25% of values less than 0.360747
50% of values less than 1E+006	75% of values less than 1E+006	90% of values less than 1E+006
Minimum 0.es less than 1E+006	Maximum 1E+006	
Mean 541459	SD 498527	Variance 2.48529E+011

Retarded Travel Time to Dock Feeder [years]

05% of values less than 3.00237	10% of values less than 5.3775	25% of values less than 11.6061
50% of values less than 1.34345E+007	75% of values less than 1.88882E+007	90% of values less than 2.28064E+007
Minimum 0.es less than 2.54265E+007	Maximum 3.68226E+007	
Mean 1.02901E+007	SD 1.00387E+007	Variance 1.00775E+014

Benzene

Concentration at Dock Feeder [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Chromium

Concentration at Dock Feeder [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Ethylbenzene

Concentration at Dock Feeder [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Naphthalene

Concentration at Dock Feeder [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Phenol

Concentration at Dock Feeder [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Toluene

Concentration at Dock Feeder [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Xylene

Concentration at Dock Feeder [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Concentration at Dock Feeder [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0	
Mean 0	SD 0	Variance 0

Project: Port Talbot Harbourside

Project Number: 60053048

Benzene

Unretarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.120315	10% of values less than 0.309057	25% of values less than 0.758314
50% of values less than 1.35542	75% of values less than 1.88227	90% of values less than 2.51404
Minimum 0.05 less than 2.9078	Maximum 6.40602	
Mean 1.39603	SD 0.851009	Variance 0.724216

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.935062	10% of values less than 1.54874	25% of values less than 3.27248
50% of values less than 5.00857	75% of values less than 7.09597	90% of values less than 9.45938
Minimum 0.05 less than 10.6678	Maximum 20.4391	
Mean 5.35467	SD 3.09441	Variance 9.5754

Project: Port Talbot Harbourside

Project Number: 60053048

Chromium

Unretarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.120315	10% of values less than 0.309057	25% of values less than 0.758314
50% of values less than 1.35542	75% of values less than 1.88227	90% of values less than 2.51404
Minimum 0.0es less than 2.9078	Maximum 6.40602	
Mean 1.39603	SD 0.851009	Variance 0.724216

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 231.536	10% of values less than 366.994	25% of values less than 702.637
50% of values less than 1079.71	75% of values less than 1517.7	90% of values less than 2030.64
Minimum 0.0es less than 2355.02	Maximum 4647.78	
Mean 1156.68	SD 663.985	Variance 440876

Project: Port Talbot Harbourside

Project Number: 60053048

Ethylbenzene

Unretarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.120315	10% of values less than 0.309057	25% of values less than 0.758314
50% of values less than 1.35542	75% of values less than 1.88227	90% of values less than 2.51404
Minimum 0.05 less than 2.9078	Maximum 6.40602	
Mean 1.39603	SD 0.851009	Variance 0.724216

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 5.35763	10% of values less than 8.21602	25% of values less than 16.6583
50% of values less than 25.3535	75% of values less than 36.0411	90% of values less than 48.9539
Minimum 0.05 less than 55.8111	Maximum 115.904	
Mean 27.6805	SD 16.1633	Variance 261.252

Project: Port Talbot Harbourside

Project Number: 60053048

Naphthalene

Unretarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.120315	10% of values less than 0.309057	25% of values less than 0.758314
50% of values less than 1.35542	75% of values less than 1.88227	90% of values less than 2.51404
Minimum 0.05 less than 2.9078	Maximum 6.40602	
Mean 1.39603	SD 0.851009	Variance 0.724216

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 7.89517	10% of values less than 12.8606	25% of values less than 25.8211
50% of values less than 39.0718	75% of values less than 54.8997	90% of values less than 75.4578
Minimum 0.05 less than 87.5041	Maximum 172.916	
Mean 42.4365	SD 24.618	Variance 606.048

Phenol

Unretarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.120315	10% of values less than 0.309057	25% of values less than 0.758314
50% of values less than 1.35542	75% of values less than 1.88227	90% of values less than 2.51404
Minimum 0.0es less than 2.9078	Maximum 6.40602	
Mean 1.39603	SD 0.851009	Variance 0.724216

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.979211	10% of values less than 1.57664	25% of values less than 3.31732
50% of values less than 5.06239	75% of values less than 7.27139	90% of values less than 9.54908
Minimum 0.0es less than 11.0798	Maximum 22.3135	
Mean 5.46022	SD 3.16937	Variance 10.0449

Project: Port Talbot Harbourside

Project Number: 60053048

Toluene

Unretarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.120315	10% of values less than 0.309057	25% of values less than 0.758314
50% of values less than 1.35542	75% of values less than 1.88227	90% of values less than 2.51404
Minimum 0.0es less than 2.9078	Maximum 6.40602	
Mean 1.39603	SD 0.851009	Variance 0.724216

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 2.34999	10% of values less than 3.86295	25% of values less than 7.69511
50% of values less than 11.9252	75% of values less than 16.8566	90% of values less than 22.5018
Minimum 0.0es less than 25.2333	Maximum 48.631	
Mean 12.7278	SD 7.3643	Variance 54.233

Xylene

Unretarded Travel Time to Whole site MG Receptor [years]

05% of values less than 0.120315	10% of values less than 0.309057	25% of values less than 0.758314
50% of values less than 1.35542	75% of values less than 1.88227	90% of values less than 2.51404
Minimum 0.0es less than 2.9078	Maximum 6.40602	
Mean 1.39603	SD 0.851009	Variance 0.724216

Retarded Travel Time to Whole site MG Receptor [years]

05% of values less than 5.8161	10% of values less than 9.18848	25% of values less than 18.5766
50% of values less than 29.0364	75% of values less than 41.596	90% of values less than 55.6398
Minimum 0.0es less than 62.9352	Maximum 124.083	
Mean 31.1855	SD 18.1757	Variance 330.358

Project: Port Talbot Harbourside

Project Number: 60053048

Benzene

Concentration at Whole site MG Receptor [mg/l] - 50 years

05% of values less than 1.99282E-005	10% of values less than 8.9041E-005	25% of values less than 0.000494326
50% of values less than 0.00244079	75% of values less than 0.00725356	90% of values less than 0.0147
Minimum 1.84303E-012 0.0214281	Maximum 0.0603942	
Mean 0.00541623	SD 0.00760208	Variance 5.77916E-005

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 0	10% of values less than 3.61309E-018	25% of values less than 1.69849E-012
50% of values less than 4.13283E-009	75% of values less than 9.25472E-007	90% of values less than 2.07193E-005
Minimum 0.0es less than 7.15342E-005	Maximum 0.00341566	
Mean 1.86024E-005	SD 0.000140243	Variance 1.96682E-008

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 2.85608E-017	90% of values less than 1.08224E-012
Minimum 0.0es less than 8.81891E-011	Maximum 4.56363E-006	
Mean 6.33097E-009	SD 1.48766E-007	Variance 2.21313E-014

Chromium*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0	Maximum 0.00745486	
Mean 1.85546E-005	SD 0.000292723	Variance 8.56865E-008

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0	90% of values less than 0
Minimum 0.es less than 0.00274008	Maximum 0.00822608	
Mean 0.00027694	SD 0.00109683	Variance 1.20304E-006

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0	75% of values less than 0.00283773	90% of values less than 0.00425547
Minimum 0.es less than 0.00504331	Maximum 0.00924267	
Mean 0.00145774	SD 0.00190925	Variance 3.64522E-006

Ethylbenzene*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 0	10% of values less than 9.0051E-005	25% of values less than 0.00191756
50% of values less than 0.00709044	75% of values less than 0.0195173	90% of values less than 0.0462639
Minimum 0.0648617	Maximum 0.177935	
Mean 0.0159802	SD 0.0231789	Variance 0.000537262

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 5.55681E-006	10% of values less than 2.34411E-005	25% of values less than 0.000131172
50% of values less than 0.000720032	75% of values less than 0.00220567	90% of values less than 0.00540695
Minimum 1.1578E-013n 0.0100161	Maximum 0.0325083	
Mean 0.00210222	SD 0.00378884	Variance 1.43553E-005

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 1.16709E-013	10% of values less than 4.42307E-011	25% of values less than 4.35135E-008
50% of values less than 1.78692E-006	75% of values less than 3.46833E-005	90% of values less than 0.000223316
Minimum 0.000465824	Maximum 0.00767447	
Mean 9.21086E-005	SD 0.000366503	Variance 1.34324E-007

Naphthalene*Concentration at Whole site MG Receptor [mg/l] - 50 years*

05% of values less than 0	10% of values less than 0	25% of values less than 0
50% of values less than 0.000681852	75% of values less than 0.00196304	90% of values less than 0.00359878
Minimum 0.00524018	Maximum 0.0155416	
Mean 0.00137493	SD 0.00194135	Variance 3.76886E-006

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 1.42888E-005	10% of values less than 3.19164E-005	25% of values less than 8.71722E-005
50% of values less than 0.000204169	75% of values less than 0.000494473	90% of values less than 0.000937492
Minimum 7.39366E-010 0.001292	Maximum 0.00280029	
Mean 0.000369279	SD 0.000436599	Variance 1.90619E-007

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 1.46999E-010	10% of values less than 7.34227E-009	25% of values less than 4.41761E-007
50% of values less than 5.21414E-006	75% of values less than 3.00664E-005	90% of values less than 8.71141E-005
Minimum 0.000155257	Maximum 0.00129729	
Mean 3.20792E-005	SD 7.60965E-005	Variance 5.79068E-009

Phenol

Concentration at Whole site MG Receptor [mg/l] - 50 years

05% of values less than 2.89073E-012	10% of values less than 1.15242E-010	25% of values less than 1.82358E-008
50% of values less than 7.50199E-007	75% of values less than 1.04123E-005	90% of values less than 4.21008E-005
Minimum 1.85465E-019 9.57685E-005	Maximum 0.000439685	
Mean 1.65059E-005	SD 4.36678E-005	Variance 1.90687E-009

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 2.88827E-012	10% of values less than 1.15194E-010	25% of values less than 1.82245E-008
50% of values less than 7.49986E-007	75% of values less than 1.04052E-005	90% of values less than 4.20731E-005
Minimum 1.85416E-019 9.56902E-005	Maximum 0.00043883	
Mean 1.64929E-005	SD 4.36302E-005	Variance 1.9036E-009

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 2.8814E-012	10% of values less than 1.15058E-010	25% of values less than 1.8193E-008
50% of values less than 7.49389E-007	75% of values less than 1.03851E-005	90% of values less than 4.19956E-005
Minimum 1.85278E-019 9.55016E-005	Maximum 0.000436445	
Mean 1.64567E-005	SD 4.35255E-005	Variance 1.89447E-009

Toluene

Concentration at Whole site MG Receptor [mg/l] - 50 years

05% of values less than 7.99254E-006	10% of values less than 7.22264E-005	25% of values less than 0.00150134
50% of values less than 0.0157043	75% of values less than 0.0621192	90% of values less than 0.147905
Minimum 5.76307E-010 0.246896	Maximum 0.772572	
Mean 0.0530985	SD 0.0927281	Variance 0.0085985

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 3.48571E-010	10% of values less than 1.68886E-008	25% of values less than 1.07379E-006
50% of values less than 6.74755E-005	75% of values less than 0.000736432	90% of values less than 0.00380878
Minimum 0.00103834	Maximum 0.105923	
Mean 0.00193073	SD 0.0071702	Variance 5.14118E-005

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 0	10% of values less than 0	25% of values less than 6.30615E-015
50% of values less than 1.17386E-010	75% of values less than 4.74939E-008	90% of values less than 5.61959E-006
Minimum 0.00282163E-005	Maximum 0.00524766	
Mean 1.59643E-005	SD 0.000194697	Variance 3.79069E-008

Xylene

Concentration at Whole site MG Receptor [mg/l] - 50 years

05% of values less than 0	10% of values less than 0	25% of values less than 0.00161993
50% of values less than 0.00943378	75% of values less than 0.0277157	90% of values less than 0.064687
Minimum 0.00000000	Maximum 0.302656	
Mean 0.0230263	SD 0.0350667	Variance 0.00122967

Concentration at Whole site MG Receptor [mg/l] - 300 years

05% of values less than 1.34301E-005	10% of values less than 4.20972E-005	25% of values less than 0.000270032
50% of values less than 0.00114564	75% of values less than 0.00406272	90% of values less than 0.0100931
Minimum 1.98315E-012	Maximum 0.0563011	
Mean 0.00371619	SD 0.00663723	Variance 4.40529E-005

Concentration at Whole site MG Receptor [mg/l] - 1000 years

05% of values less than 1.71221E-012	10% of values less than 7.54093E-010	25% of values less than 2.31142E-007
50% of values less than 7.20662E-006	75% of values less than 7.11302E-005	90% of values less than 0.000496523
Minimum 0.00000000	Maximum 0.0140538	
Mean 0.000202052	SD 0.000737916	Variance 5.4452E-007

Aquifer Flow [m³/yr]

Whole site MG

05% of values less than 7743.92	10% of values less than 9392.59	25% of values less than 12365.6
50% of values less than 17537.4	75% of values less than 23021.5	90% of values less than 28302
Minimum 1625.12s than 31859.5	Maximum 42707	
Mean 18176.9	SD 7496.76	Variance 5.62014E+007

Table D.3: Model Input Parameters

Parameter	Unit	Distribution type	Range			Justification
			Minimum	Expected	Maximum	
source dimensions						
Cell length	m	Single		200		Based on whole site area
Cell width	m	Single		200		Based on whole site area
Infiltration						
Infiltration	mm/yr	Uniform	mean 255		SD 35.51	Based on a mean annual rainfall of 2128 mm (Marcroft Weir Gaunging Station at River Afan (SS7719100)) with 40% evapotranspiration and 80% hardstanding.
Soil source						
Air filled porosity		Uniform	0.144		0.18	Standard engineering soil values, R&D technical Report P13
Water filled porosity		Uniform	0.016		0.02	Standard engineering soil values, R&D technical Report P13
Thickness	m	Triangular	1	2.14	4	Thickness of Made Ground based on log information. All Made ground assumed as source.
Longitudinal dispersivity	m	Triangular	0.1	0.214	0.4	10% of pathway length, being the thickness of the source layer
Bulk Density	kg/l	Triangular	1.28	1.6	1.92	Standard engineering soil values, R&D technical Report P13, ± 20% variability
FOC	%	Triangular	0.17	1.19	3.83	Maximum, geomean and minimum FOC values of 33 No. uncontaminated Made Ground samples from Opus data. Consistent with literature data from an engineering soil R&D technical Report P13, 1%
Unsaturated pathway						
Thickness	m	Uniform	0.01		1	Based on difference between the base of the MG and the GW level. Data taken from borehole logs and groundwater monitoring results, see DQRA October 2019 report.
Water filled porosity		Uniform	0.02		0.03	Based on sand and gravel values (Alluvium lithology), R&D technical Report P13
Unsaturated Hydraulic conductivity	m/s	Log triangular	2.89E-06	5.60E-05	1.00E-04	Assumes same as aquifer, conservative assumption
Vertical dispersivity	m	Uniform	0.001		0.1	10% of unsaturated pathway length
Density	kg/l	Uniform	1.37		2.19	Alluvium lithology, gravelly sand and gravels, based ConSim help files
Saturated pathway						
Thickness	m	Uniform	6		15	Based on the depth between water table and top of bedrock observed in boreholes and an estimate based on the wetter perimeter of the Dock. See DQRA October 2019 report.
Mixing Zone	m		model calculated			
Hydraulic conductivity	m/s	Log triangular	2.89E-06	5.60E-05	1.00E-04	Minimum and maximum values based on literature data (Waters et al), and likely value based on geomean of slug tests results. See DQRA October 2019 report.
Hydraulic gradient	-	Triangular	0.002	0.006	0.008	Based on four groundwater monitoring results from between August and September 2019. See DQRA October 2019 report.
Effective Porosity	fraction	Uniform	0.14		0.21	Based on 60% of total porosity from Domenico and Schwartz 1990 for a coarse gravel. See DQRA October 2019 report.
Density	kg/l	Uniform	1.37		2.19	Gravelly sand and gravels based ConSim help files, See DQRA October 2019 report.
CP	m	Single	570			Based on distance from site source to the Dock Feeder in a west direction.
			60			Based on distance from site source to the Port Talbot Dock in a south direction.
FOC	%	Triangular	0.2	0.27	0.38	Geomean of 6 soil saturated samples and 20% variability See DQRA October 2019 report.
Longitudinal dispersivity	m	Triangular	57	67	77	10% of the pathway Dock Feeder model
			6	16	26	Port Talbot Dock model

Table D.3: Model Input Parameters

Parameter	Unit	Distribution type	Range			Justification
			Minimum	Expected	Maximum	
Lateral dispersivity	m	Triangular	39.9	46.9	53.9	30% of the longitudinal dispersivity Dock Feeder model

Table D.4: Contaminants Properties

Determinands	Source (SSAC)	half Life		Henry's Law		Koc/Kd		Solubility	
	(mg/l)	(years)	Reference	(unitless)	Reference	(l/kg)	Reference	(mg/l)	Reference
Naphthalene	S (3.8E-01)	LU (2.74E-01, 8.22E-01)	1	T (1.39E-02, 1.74E-02, 2.0E-2)	2	T (6.75E+02, 8.44E+02, 1.01E+03)	2	T (2.48E+01, 3.10E+01, 3.72E+01)	2
Benzene	S (1.15E+00)	LU (1.37E-01, 9.59E-01)	1	T (1.8E-01, 2.25E-01, 2.7E-01)	2	T (6.49E+01, 8.44E+02, 9.74E+01)	2	T (1.42E+03, 1.78E+03, 2.13E+03)	2
Toluene	S (1.85E+01)	LU (5.48E-02, 5.48E-01)	1	T (2.19E-01, 2.74E-01, 3.28E-01)	2	T (1.87E+02, 2.34E+02, 2.80E+02)	2	T (4.12E+02, 5.15E+02, 6.18E+02)	2
Ethylbenzene	S (4.7E+00)	LU (1.37E-01, 5.48E-01)	1	T (2.86E-01, 3.58E-01, 4.29E-01)	2	T (4.29E+02, 5.37E+02, 6.44E+02)	2	T (1.21E+02, 1.52E+02, 1.82E+02)	2
Xylenes	S (7.4E+00)	LU (1.37E-01, 5.48E-01)	1	T (2.36E-01, 2.95E-01, 3.54E-01)	2	T (4.89E+02, 6.1E+02, 7.34E+02)	2	T (1.28E+02, 1.60E+02, 1.92E+02)	2
Hexavalent chromium	S (2.0E+00)	S(9.00E+30)	conservative	N/A	N/A	S (6.70E+01)	4	T (3.52E+05, 4.40E+05, 5.28E+05)	6
Phenol	S (3.0E+01)	LU (2.74E-02, 2.74E-01)	1	T (2.09E+05, 2.62E+05, 3.14E+05)	3	T (6.64E+01, 8.3E+01, 9.96E+01)	3	T (7.74E+04, 9.30E+04, 1.11E+05)	5

LU - Log Uniform Distribution
S - Single Distribution
T - Triangular Distribution
LT - Log Triangular Distribution

1 The Effects of Contaminant Concentration on the Potential for Natural Attenuation R & D Technical Report P2-228/TR
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4 Golder Associates; communication with Ian Miller at Golder office, Washington D.C. 25/5/95
5 Fetter,C.W.,1988; Applied Hydrogeology. Prentice Hall. pp. 458
6 USEPA, 1989 (October). EPA/540/2-89/057. Determining Soil Response Action Levels Based on Potential Contaminant Migration to Groundwater: A Compendium of Examples. Office of Emergency and Remedial Respons



1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

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