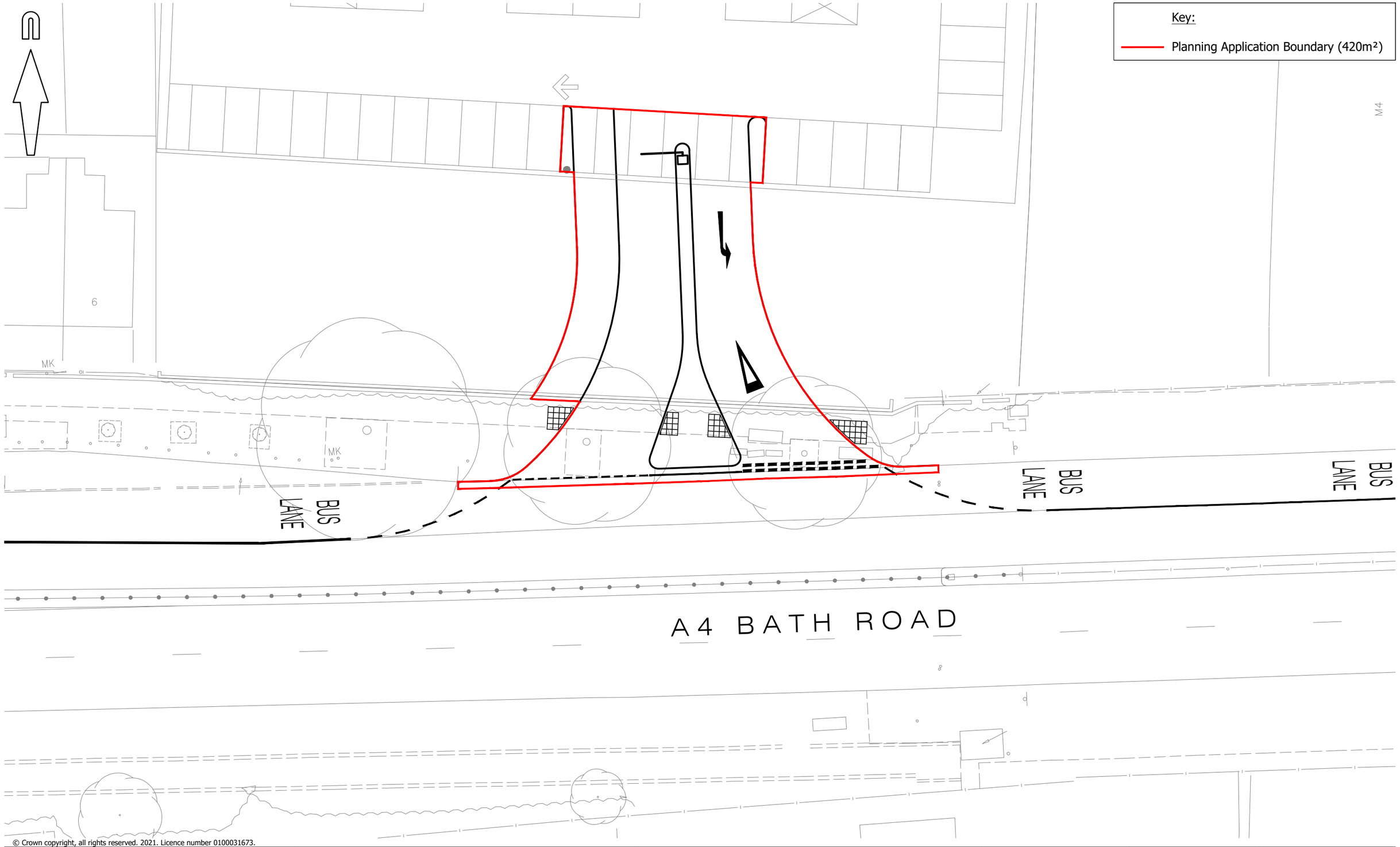
Mayer Brown Limited. March 2021. 'NCP Car Park, A4 Bath Road, Heathrow. Site Location Plan' Drawing Number: MBSL201222-08, Revision P2, prepared for Heathrow NCP Property Limited.



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client
HEATHROW NCP PROPERTY LTD

project
NCP CAR PARK, A4 BATH ROAD, HEATHROW

title
SITE LOCATION PLAN

scale	drawn by	checked by
1:250 @ A3	JME	AP

date	cad file	suitability	rev.
MARCH 2021	MBSK210222		P2

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MBSK210222-08

Appendix E

Preliminary Geotechnical Risk Register

Geotechnical Hazard Identification – Desk Study Stage

Potential geotechnical hazards have been assessed in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and CD 622. The following pages set out the identified geotechnical risks and hazards which are associated with the proposed development and establish the approach which is to be taken to manage the risks including the geotechnical input and analysis.

Table E.1 is a preliminary assessment of possible geotechnical hazards at the site at Desk Study stage. This information is used to assist with site investigation design.

Table E.1: Possible geotechnical hazards

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Uncontrolled Made Ground (variable strength and compressibility).	Made Ground has been recorded on site in the previous ground investigation and is known to range in thickness and composition.	✓	-
Soft / loose compressible ground (low strength and high settlement potential).	Made Ground is likely to have a varying strength and thickness, which may result in differential settlement when loaded. The underlying Langley Silt Member is recorded as 'soft' in the previous ground investigation undertaken by TRC in 2021.	✓	-
Shrink swell of the clay fraction of soils under the influence of vegetation.	Shrink swell has not been identified as a risk on site by the Groundsure report. The London Clay Formation, which is known to be at risk of shrink swell, is considered too deep to be within the influence of vegetation.	-	✓
Variable lateral and vertical changes in ground conditions.	Made Ground has been recorded on site in the previous ground investigation and is known to range in thickness and composition.	✓	-
High sulfates present in the soils.	Shallow soils within the Langley Silt Member and Taplow Gravel Member are considered low in sulphate content and have been classified as DS-1 AC-1 by TRC. The underlying London Clay Formation contains selenite, which could affect deep foundations if constructed. Made Ground may contain high sulfate concentrations. This was not previously tested by TRC.	✓	-
Adverse chemical ground conditions, (e.g. expansive slag).	Made Ground was not noted to contain significant adverse constituents. However, due to the variable nature of this material, there is still a possibility expansive adverse ground conditions are present in this stratum.	✓	-
Obstructions.	Obstructions associated with the sites historical use are likely to be encountered on site.	✓	-

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Existing below ground structures to remain (on or off-site tunnels, foundations, basements, and adjacent sub-structures).	Existing services may be required to be retained as part of the proposed development. This should be considered in the design process. In addition, a bridge is present at the eastern site boundary which crosses Tunnel Road East. Foundations of this structure will need to be considered as part of the future works.	✓	-
Shallow groundwater.	Perched groundwater has been encountered in the previous ground investigation undertaken by TRC in 2021. This is not considered to be present in significant quantities and is unlikely to be laterally continuous, however, should still be considered further.	✓	-
Changing groundwater conditions.	Seasonal changes in groundwater levels and conditions are anticipated on site.	✓	-
Risk from erosion.	The site is not within close proximity to surface water bodies that may cause erosion on site.	-	✓
Risk from flooding.	The site is within a Flood Zone 1 with a low probability of flooding from rivers/sea.	-	✓
Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls.	Running sands have not been identified as a potential risk on site. However, loose Made Ground may be present at thicknesses up to 4m on site. These may collapse upon excavation in deepened areas.	✓	-
Slope stability issues – general slopes.	The site is generally flat, therefore on-site slopes are not considered an issue. Nevertheless, the site bounds an embankment leading down to Tunnel Road East, which was constructed in a road cutting. Damage to this feature will need to be considered when redeveloping on site.	✓	-
Slope stability issues – retaining walls.	Hydrock are not aware of any retaining walls on site or in the neighbouring land.	-	✓
Earthworks – settlement (due to placement of fill on soft / loose ground).	Should earthworks be required, placement of new fill on the soft/loose Made Ground and soft underlying silts will need to be considered. However, Hydrock are not aware of any significant earthworks being undertaken as part of the proposed development.	-	✓
Earthworks – poor bearing capacity of new fill.	Should earthworks be required, placement of new fill comprising material from the	-	✓

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
	soft/loose Made Ground, ground improvement/ stabilisation may be required. However, Hydrock are not aware of any significant earthworks being undertaken as part of the proposed development.		
Earthworks – unsuitability of site won material to be reused as fill.	Should earthworks be required, contaminated or low strength soils will need to be removed and not reused as part of the new engineered fill, which will need to be considered. However, Hydrock are not aware of any significant earthworks being undertaken as part of the proposed development.	-	✓
Solution features in Chalk.	Chalk is at significant depths below the site – in excess of 80m bgl. As such, solution features, cavities and dissolution surfaces will not pose threat to the site.	-	✓
Cavities in the Superficial Deposits due to solution features.		-	✓
Dissolution (associated with "wet rock head").		-	✓
Brine extraction.	There are no records of brine extraction being undertaken on site or in the surrounding region.	-	✓
Mining.	Mine workings have not been recorded within the site boundary but gravel pits and a potential clay quarry have been identified on the historical OS maps and within the Groundsure data report. This should be considered when undertaking works on site.	✓	-
Cambered ground with gulls possibly present.	There is no record of previous mass movement on the site or in the surrounding area.	-	✓
Relict Slip Surfaces.		-	✓
Solifluction.		-	✓
Problematic soils (silts and rewetting etc.).	The Langley Silt Member is known to underly the site. This may cause issues if excavated during foundation construction or if it is reworked within any engineered fill.	✓	-

Appendix F

Plausible Source-Pathway-Receptor Contaminant Linkages

Summary of Potential Contaminant Linkages

Table F.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in CLR 11 and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland et al 2001) but with the addition of a 'no linkage' category (See Table F.1). More details are given in the relevant Hydrock methodology, referenced in Appendix G, including descriptions of typical examples of probability and consequences.

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table F.1: Consequence versus probability assessment.

		Consequence			
Probability		Severe	Medium	Mild	Minor
	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Very low risk
	No Linkage	No risk			

Table F.2: Exposure model – preliminary risk assessment of source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
On-site Sources:							
Made Ground, associated with the sites former use as a school and car park, possibly including elevated concentrations of metals, metalloids, polycyclic aromatic hydrocarbons (PAH) and total petroleum hydrocarbons (TPH) And Hydrocarbon fuels, lubricants and solvents that have leaked from vehicles/plant associated with the former car park, school and agricultural activities.	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	There is Made Ground below the entire site, which has been proven to contain elevated concentrations of metals, PAH and TPH. The Langley Silt Member likely restricts contamination in the Made Ground from leaching into the underlying Principal Aquifer within the Taplow Gravel Member. However, the site currently comprises hardstanding. The proposed development will increase the area of soft landscaping and therefore infiltration and the risk of leaching into the sensitive aquifers below the site.	The majority of the site will be covered by buildings or hardstanding, reducing the risk in these areas. However, contact with these materials is likely in landscaped areas of Public Open Space. Mitigation measures will be required in landscaped areas to break the SPR linkage.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Likely	Medium	Moderate		Petroleum hydrocarbons were identified during the initial round of testing undertaken by TRC in 2021. This was determined by TRC to be due to inadequate sampling methods. Further assessment will be required to ensure leaching into the Principal Aquifer is not occurring. If hydrocarbon contamination is detected within the controlled waters, mitigation may be required prior to construction.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Made Ground, associated with the sites former use as a school and car park, possibly including elevated concentrations of metals, metalloids, polycyclic aromatic hydrocarbons (PAH) and total petroleum hydrocarbons (TPH) and Hydrocarbon fuels, lubricants and solvents that have leaked from vehicles/plant associated with the former car park, school and agricultural activities	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Low likelihood	Medium	Low	There is Made Ground below the entire site, which has been proven to contain elevated concentrations of metals, PAH and TPH. The site currently comprises hardstanding. The proposed development will increase the area of soft landscaping and therefore infiltration, reducing the amount of run-off into surface water systems.	
	Base flow from contaminated groundwater.		Low likelihood	Medium	Low	The Taplow Gravel Member is a Principal Aquifer capable of providing base flow to offsite systems. If contamination is encountered in this groundwater body, remediation may be required. This will need to be proven by further testing.	
	Root uptake (metals/ metalloids)	Landscape planting	Likely	Minor	Very Low	There is Made Ground below the entire site. Whilst root uptake is possible in gardens and areas of Public Open Space (POS) the concentrations of metals are not likely to be significantly elevated with regard to plant growth. Whilst the site does not present a significant risk to plant growth, the site is presently covered by hardstanding and, as such, subsoil and topsoil will need to be imported to increase the landscaped areas as proposed.	
	Direct contact (PAH)	Water supply pipes.	Likely	Medium	Moderate	There is Made Ground below the entire site, and there are PAH and petroleum hydrocarbons at levels in excess of the GAC. Direct contact with buried water supply pipes is therefore likely. Mitigation measures will be required to break the SPR linkage.	
	Vapours	Site users.	Likely	Medium	Moderate	Made Ground is present below the site, which has been proven to contain hydrocarbons that could volatilise to produce vapours.	Testing for volatile organic compounds will be required to determine the risk to site end users and neighbours. Mitigation in the form of a vapour membrane may be required.
		Neighbours.	Low likelihood	Medium	Low		

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Made Ground, potentially containing asbestos fibres and ACM from the demolition of the former school structures and/or the use of imported fill	Inhalation of fugitive dust.	Site users.	Likely	Severe	Very High	There is Made Ground below the entire site, and ACM and asbestos fibres have been proven to be present in the soil.	The majority of the site will be covered by buildings or hardstanding, reducing the risk in these areas. However, contact with these materials is likely in landscaped areas of Public Open Space. Mitigation measures will be required to break the SPR linkage.
		Neighbours.	Low likelihood	Severe	Moderate		The risk of significant generation of dust is likely only during site development process and can therefore be controlled. Suppression should be included in control measures. There is ACM present on site, so works to be undertaken in accordance with CAR 2012.
Coal tar, potentially present in the bituminous bound pavements present in the form of roads.	Ingestion, inhalation or direct contact.	Site users.	Low likelihood	Medium	Low	Road surfacing is present on site which pre-dates the 1980's. As such, there is potential that coal tar was used in the road surfacing material. Hydrock is not aware of any testing for coal tar on the surfacing. Underlying soils have been found to contain PAH at one location on site.	It is assumed that this road surfacing will be removed as part of the proposed development, reducing the risk to site end users.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Coal tar, potentially present in the bituminous bound pavements present in the form of roads.	Leaching through unsaturated zone.	Groundwater and possible abstractors.	Low likelihood	Medium	Low	The Langley Silt Member likely restricts contamination in the Made Ground from leaching into the underlying Principal Aquifer within the Taplow Gravel Member. In addition, it is presumed that the old road surfacing will be removed as part of the proposed development, preventing further leaching (if occurring at present).
	Base flow from contaminated groundwater.	Aquatic ecosystems.	Low likelihood	Medium	Low	
	Surface run-off.	Surface water and possible abstractors.	Low likelihood	Medium	Low	It is assumed that this road surfacing will be removed as part of the proposed development, preventing further run-off of coal tars (if present in the current surfacing). If coal tars have leached into the underlying Made Ground material, contact may be possible in landscaped areas. Mitigation measures may be required to break the SPR linkage
Ground gases (carbon dioxide and methane) from organic materials in the Made Ground below the site.	Migration, build up and asphyxiation.	Site users.	Likely	Medium to Severe	Moderate to High	Ground gas monitoring undertaken by TRC (2021) has indicated elevated concentrations of carbon dioxide in the Made Ground. Mitigation measures are required for carbon dioxide in accordance with CS2 conditions based on the current dataset. However, sufficient monitoring has not been undertaken in line with CIRIA C665. As such, additional monitoring will be required prior to development.
		Neighbours.		Medium	Moderate	
Ground gases (methane) from organic materials in the Made Ground.	Migration, build up and explosion.	Site users.	Unlikely	Medium to Severe	Very low to Low	Ground gas monitoring undertaken as part of the TRC (2021) investigation indicates that negligible methane is present on site. As such, the risk is considered low using the present dataset. However, sufficient monitoring has not been undertaken in line with CIRIA C665. As such, additional monitoring will be required prior to development.
		Neighbours.				
		Buildings on site.				
		Buildings on adjacent sites.				

Continued…

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Asbestos fibres from insulation or asbestos-containing materials in the existing buildings.	Fugitive dust.	On Site	Likely	Severe	High	Asbestos may be present in existing buildings on site, which could not be accessed during the walkover survey. Careful removal will be required from buildings during demolition. However, removal under controlled conditions should limit release of fibres to the air and the ground.
		Neighbours.	Unlikely	Severe	Low	
Off-site Sources:						
Leachate from landfilled waste (inert and non-hazardous waste) used to infill the former quarry at Harmondsworth Lane Landfill	Ingestion, inhalation or direct contact.	Site users.	Low likelihood	Medium	Low	This landfill is over 200m away from the site and based on information provided by the local council, the waste has been suitably encased and is regularly maintained by the operator. As such, it is considered at low likelihood that contaminants from this landfill are migrating into the site. Should contaminants originating from this facility be identified on site, the creating of a clean capping system should prevent receptors contacting affected materials on site. Hardstanding and buildings will create sufficient cover across the majority of the site. In landscaped areas, imported topsoil/subsoil may be required to break the SRP linkage.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low	
	Base flow from contaminated groundwater.	Aquatic ecosystems. Surface water and possible abstractors.	Low likelihood	Medium	Low	
	Surface run-off.		Low likelihood	Medium	Low	
Continued…						

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Quarry backfill, associated with the former gravel pits, infilled ponds and potential clay pit within the local area, possibly including metals, metalloids, PAH and petroleum hydrocarbons	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	There is Made Ground below the entire site, which has been proven to contain elevated concentrations of metals, PAH and TPH. These may have originated from off-site gravel pits.	The majority of the site will be covered by buildings or hardstanding, reducing the risk in these areas. However, contact with these materials is likely in landscaped areas of Public Open Space. Mitigation measures will be required in landscaped areas to break the SPR linkage.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Low likelihood	Medium	Low	The proposed development will increase the area of soft landscaping and therefore infiltration, reducing the amount of run-off into surface water systems.	
	Base flow from contaminated groundwater.		Low likelihood	Medium	Low	The Taplow Gravel Member is a Principal Aquifer capable of providing base flow from offsite systems.	The overlying Langley Silt Member, an Unproductive Strata, caps the main groundwater body, preventing contamination of the overlying soils via base flow.
	Direct contact (PAH)	Water supply pipes.	Likely	Medium	Moderate	Elevated concentrations of PAH and TPH have been recorded in the soils on site, which may originate from this source. Direct contact with buried water supply pipes is therefore likely. Mitigation measures will be required to break the SPR linkage.	

Continued…

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Quarry backfill, associated with the former gravel pits, infilled ponds and potential clay pit within the local area, possibly including metals, metalloids, PAH and petroleum hydrocarbons	Root uptake (metals/ metalloids)	Landscape planting	Likely	Minor	Very Low	Elevated metal concentrations have been recorded in the soils on site, which may originate from this source. Whilst root uptake is possible in gardens and areas of Public Open Space (POS) the concentrations of metals are not likely to be significantly elevated with regard to plant growth. Whilst the site does not present a significant risk to plant growth, the site is presently covered by hardstanding and, as such, subsoil and topsoil will need to be imported to increase the landscaped areas as proposed.	
	Vapours	Site users	Unlikely	Medium	Very Low	Vapours released from this source is unlikely to affect the site due to distance.	
Hydrocarbon fuels, lubricants and solvents from spillages/leakages at the petrol stations, depots, works, landfill, airport and potential fuel tanks recorded within 500m of the site	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	Elevated concentrations of PAH and TPH have been recorded in the soils on site. These may have originated from off-site gravel pits.	The majority of the site will be covered by buildings or hardstanding, reducing the risk in these areas. However, contact with these materials is likely in landscaped areas of Public Open Space. Mitigation measures will be required in landscaped areas to break the SPR linkage.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
Continued…							

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Hydrocarbon fuels, lubricants and solvents from spillages/leakages at the petrol stations, depots, works, landfill, airport and potential fuel tanks recorded within 500m of the site	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Low likelihood	Medium	Low	The proposed development will increase the area of soft landscaping and therefore infiltration, reducing the amount of run-off into surface water systems.	
	Base flow from contaminated groundwater.		Low likelihood	Medium	Low	The Taplow Gravel Member is a Principal Aquifer capable of providing base flow from offsite systems.	The overlying Langley Silt Member, an Unproductive Strata, caps the main groundwater body, preventing contamination of the overlying soils via base flow.
	Direct contact (PAH)	Water supply pipes.	Likely	Medium	Moderate	Elevated concentrations of PAH and TPH have been recorded in the soils on site, which may originate from this source. Direct contact with buried water supply pipes is therefore likely. Mitigation measures will be required to break the SPR linkage.	
	Vapours	Site users	Unlikely	Medium	Very Low	Vapours released from this source is unlikely to affect the site due to distance.	
PFOS from firefighting foam used at the neighbouring fire station associated with Heathrow Airport, approximately 250m south of the site	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	Firefighting foam, including PFOS, may have been used at Heathrow Airport or the neighbouring fire station. Hydrock is not aware of any testing for PFOS in the soils/groundwater on site. However, PFOS has been recorded in the local surface water catchment area based on the Environment Agency data. It is recommended that additional testing is undertaken to identify whether PFOS is a risk to the site.	The majority of the site will be covered by buildings or hardstanding, reducing the risk in these areas. However, contact with these materials is likely in landscaped areas of Public Open Space. Mitigation measures will be required in landscaped areas to break the SPR linkage.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
PFOS from firefighting foam used at the neighbouring fire station associated with Heathrow Airport, approximately 250m south of the site	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Unlikely	Medium	Very Low	Surface run-off of PFOS is unlikely to occur on site as the source is down topographical gradient from the land.	
	Base flow from contaminated groundwater.		Low likelihood	Medium	Low	The Taplow Gravel Member is a Principal Aquifer capable of providing base flow from offsite systems.	The overlying Langley Silt Member, an Unproductive Strata, caps the main groundwater body, preventing contamination of the overlying soils via base flow.
Contamination from sewage in the filter beds that were historically present approximately 250m east of the site, potentially containing elevated metals, detergents, inorganic and organic contaminants and possibly (although unlikely) pathogenic contaminants such as faecal coliforms	Ingestion, inhalation or direct contact.	Site users.	Likely	Medium	Moderate	There is Made Ground below the entire site, which has been proven to contain elevated concentrations of metals, PAH and TPH. These may have originated from this off-site source.	The majority of the site will be covered by buildings or hardstanding, reducing the risk in these areas. However, contact with these materials is likely in landscaped areas of Public Open Space. Mitigation measures will be required in landscaped areas to break the SPR linkage.
	Inhalation of fugitive dust.	Neighbours.	Low likelihood	Medium	Low		The risk of significant generation of dust is likely only during site development process and can therefore be controlled.
	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Low likelihood	Medium	Low	The proposed development will increase the area of soft landscaping and therefore infiltration, reducing the amount of run-off into surface water systems.	

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Contamination from sewage in the filter beds that were historically present approximately 250m east of the site, potentially containing elevated metals, detergents, inorganic and organic contaminants and possibly (although unlikely) pathogenic contaminants such as faecal coliforms	Base flow from contaminated groundwater.	Aquatic ecosystems. Surface water and possible abstractors.	Low likelihood	Medium	Low	The Taplow Gravel Member is a Principal Aquifer capable of providing base flow from offsite systems.	The overlying Langley Silt Member, an Unproductive Strata, caps the main groundwater body, preventing contamination of the overlying soils via base flow.
	Root uptake (metals/ metalloids)	Landscape planting	Likely	Minor	Very Low	Elevated metal concentrations have been recorded in the soils on site, which may originate from this source. Whilst root uptake is possible in gardens and areas of Public Open Space (POS) the concentrations of metals are not likely to be significantly elevated with regard to plant growth. Whilst the site does not present a significant risk to plant growth, the site is presently covered by hardstanding and, as such, subsoil and topsoil will need to be imported to increase the landscaped areas as proposed.	
Ground gases (carbon dioxide and methane) from the nearby gas valve compound and from organic materials in the backfill to the former quarries and ponds, now filled, located within the surrounding region.	Migration, build up and asphyxiation.	Site users.	Likely	Medium to Severe	Moderate to High	Ground gas monitoring undertaken by TRC (2021) has indicated elevated concentrations of carbon dioxide in the Made Ground, which could have originated from these sources. Mitigation measures are required for carbon dioxide in accordance with CS2 conditions based on the current dataset. However, sufficient monitoring has not been undertaken in line with CIRIA C665. As such, additional monitoring will be required prior to development.	
		Neighbours.		Medium	Moderate		
Continued…							

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Ground gases (carbon dioxide and methane) from the nearby gas valve compound and from organic materials in the backfill to the former quarries and ponds, now filled, located within the surrounding region.	Migration, build up and explosion.	Site users. Neighbours. Buildings on site. Buildings on adjacent sites.	Unlikely	Medium to Severe	Very low to Low	Ground gas monitoring undertaken as part of the TRC (2021) investigation indicates that negligible methane is present on site. As such, the risk is considered low using the present dataset. However, sufficient monitoring has not been undertaken in line with CIRIA C665. As such, additional monitoring will be required prior to development.
PCBs and oils from transformers in the electricity sub-station on site	Ingestion, inhalation or direct contact.	Site users.	Unlikely	Medium	Very Low	PCBs and oils associated with electricity substations have a low mobility and do not readily dissolve in water. As such, it is unlikely that these substances would be able to migrate to site and pose threat to site end users, despite the close proximity of these features to the site.
	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Unlikely	Medium	Very Low	
	Base flow of contaminated groundwater		Unlikely	Medium	Very Low	
	Root uptake	Landscape planting	Unlikely	Minor	Very Low	

Appendix G

Hydrock Methodologies

This appendix provides additional background information on certain approaches and methods used by Hydrock Consultants Limited in the preparation of this report.

The following Hydrock Methodologies apply to this report. These are not included, but are available on request by quoting the methodology reference, revision and date.

Reference	Name	Revision	Date
001	Desk Study	001	30/07/2018