



Harrow Estates Plc

REMEDIATION STRATEGY - DEMOLITION PHASE 4 NORTH

Woodford Aerodrome





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Woodford Aerodrome

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1 INTRODUCTION

1.1 AUTHORISATION

WSP was instructed by Harrow Estates Plc (Harrow Estates) to produce a Remediation Strategy for Demolition Phase 4 (DP4) within the former Woodford Aerodrome site. The site location is provided in Figure 1, Appendix A.

The enclosed Remediation Strategy is for the proposed Residential Area and Commercial Area within Demolition Phase 4, collectively named DP4 North (the site). A separate Remediation Strategy will be produced for the proposed Agricultural Area in the southwest of DP4 (named DP4 South). The residential, commercial and agricultural areas are indicated on Figure 2 in Appendix A.

This Remediation Strategy is based on the WSP Geo-environmental Assessment Report, dated 16 December 2014 and the WSP Ground Gas Assessment dated 28 May 2015 (detailed in Section 1.3).

This Remediation Strategy will need to be submitted for approval to Stockport Council.

1.2 DEVELOPMENT PROPOSALS

The former Woodford Aerodrome is being prepared by Harrow Estates for predominantly residential development in four sequential phases, referred to as Demolition Phases 1, 2, 3 and 4 (DP1 to DP4). Remediation strategies and Remediation Completion Reports have already been prepared for DP1, DP2 and DP3 and residential development is largely complete in DP1 and DP2, with works ongoing in DP3 at the time of writing.

The illustrative masterplan (included in Appendix A) provides an indication of the redevelopment plans for the entire Woodford Aerodrome site, (reference PC1161.GA.3013 revision 2 dated 09 October 2013).

A programme of earthworks is due to commence in DP4 North in mid-2021, with works in DP4 South following later.

1.3 PREVIOUS REPORTS AND BACKGROUND

The former Woodford Aerodrome has been subject to a number of soil and groundwater investigations within all four demolition phases. The associated investigation reports and details of their contents are provided below:

Site Wide Assessment

- BAE Systems Environmental (BAE) Desk Study for Potential Contamination, dated October 2011 (reference A0787-00-R2-1 (BAE, 2011).
- BAE Phase 1 Assessment of Ground and Ground Water Conditions, dated April 2012 (reference A1065-00-R2-1). This investigation comprised the drilling and excavation of the BAE BH1/TP1 series of boreholes and trial pits.
- Wessex Archaeology (2012). Land at Woodford Aerodrome, Woodford, Greater Manchester, Detailed Gradiometer Report, dated October 2012, reference 86610.02.
- 6 Alpha Associates (2011). Preliminary Unexploded Ordnance (UXO) Risk Assessment, dated 23 November 2011, reference P2653.

- CGMS Consulting, Heritage Assessment. Woodford Aerodrome, dated September 2013, reference PC/RS/13781.
- Nuclear Technologies (NT) Woodford Aerodrome Radiological Desk Study Draft A, dated 10 December 2014, reference NT 722501526 R1307 FINAL (commissioned by WSP and presented in WSP's December 2014 report).
- WSP, Geo-environmental Assessment report, dated 16 December 2014, reference 70004430/10193(1) (referred to as the 'WSP 2014 report'). This targeted investigation comprised the drilling and excavation of the BH101/WS101/TP101 series of boreholes, window samples and trial pits across the Woodford Aerodrome site to investigate potential concern (APC) in relation to ground contamination from potentially contaminative historical uses of the site; APC21 to APC35 are located within Demolition Phase 4. The report includes details of the intrusive investigation that was completed within and around the APCs and identifies areas of the site where remediation or further investigation is considered necessary on the basis of the proposed end use. The report has been submitted to Stockport Council by Harrow Estates as part of the planning process.
- WSP, Ground Gas Assessment, Woodford Aerodrome, reference 70004430/10382(1), dated 28 May 2015 (referred to as the 'WSP Gas Report'). This included further ground gas data and a revised assessment.

Demolition Phase 1

- WSP, Remediation Strategy Demolition Phase 1, dated 20 February 2015, reference 70004430/0280(3).
- WSP, Woodford Remediation Completion Report – Demolition Phase 1, WSP Review, dated 26 May 2016 (DP1 Completion Report).

Demolition Phase 2

- WSP, Further works addendum letter report for Demolition Phase 2, reference 70008760/10112, dated May 2015. This report includes details of further intrusive investigation works completed in DP2.
- WSP, Remediation Strategy – Demolition Phase 2, dated 18 May 2015, reference 70004430/10346(3). This presented the remediation strategy for Demolition Phase 2.
- WSP | Parsons Brinckerhoff, Woodford Aerodrome – Remediation Completion Report for Harrow Demolition Phase 2, reference 70008760/10542 rev01, dated 27 July 2016.

Demolition Phase 3

- WSP | Parsons Brinckerhoff, Woodford Aerodrome Demolition Phase 3 – Supplementary Interpretive Site Investigation Addendum Letter Report, reference 70008760/10533, dated 15 August 2016. This letter report includes details of further intrusive investigation works completed in DP3 in order to update the conceptual site model for DP3.

Demolition Phase 4

Additional intrusive investigation and monitoring works were undertaken by WSP in February and March 2021 in the Agricultural Area, according to the recommendations within the WSP 2014 report. However, no further works were completed in DP4 North.



Materials Management Plan

It is understood that the Materials Management Plan for the development is being managed by others. Verification of the MMP activities will also be completed by the MMP author.

1.4 REMEDIATION STRATEGY OBJECTIVES

The objectives of this Remediation Strategy are as follows:

- To present the remedial measures in relation to contaminated soil and perched groundwater that are required prior to the Residential Area and Commercial Area in DP4 North being handed over for redevelopment.
- To describe how the remediation works shall be carried out, validated and reported.
- To facilitate discharge of the contaminated land planning condition number 3 provided by Stockport Council, given below:

'No development (excluding demolition) shall take place until a detailed remediation scheme for the relevant phase or sub-phase has been submitted to, and approved in writing by, the local planning authority to bring the relevant part of the site to a condition suitable for a residential led mixed-use development (as proposed by planning permission DC053832) by removing unacceptable risks to human health, buildings and other property and the natural and historical environment. The scheme to be submitted shall specify but not be limited to:

- *the proposed remediation objectives and remediation criteria;*
- *all remedial works to be undertaken including the quantities of materials to be removed from and imported to the development site; and,*
- *the proposals for sourcing and testing all materials imported to the site including testing schedules, sampling frequencies and actual and allowable contaminant concentrations (as determined by appropriate risk assessment in accordance with the document "Model Procedures for the Management of Land Contamination" [CLR11]).'*

1.5 CONFIDENTIALITY STATEMENT

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

Harrow Estates plc, Bridgemere House, Chester Road, Preston Brook, WA7 3BD

This report has been prepared for the sole use and reliance of the above-named party and 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. This report needs to be read and used in full.

1.6 REPORT LIMITATIONS

The Remediation Strategy has been produced for DP4 North based on the results of previous intrusive site investigations. Whilst every effort was made to target areas of potential concern during these investigations, there remains the possibility that hot spots of previously unidentified contamination are present beneath the site. General limitations of the Remediation Strategy are included in Appendix D.

2 SITE SETTING INFORMATION

Attribute	Details
Site Name	DP4 North (Residential Area and Commercial Area)
Site Address	Part of the former Woodford Aerodrome site, Chester Road, Woodford, Stockport, SK7 1QR (the wider site)
Site Location	The Woodford Aerodrome site is located south of the village of Woodford, approximately 6.5km south of Stockport. A site location plan is presented as Figure 1.
Coordinates, British National Grid	389701, 382671
Site Area and Access	<p>The Woodford Aerodrome site comprises approximately 100 Hectares. The DP4 area comprises approximately 34 Hectares in the southwest of the aerodrome site, located to the south of the former southeast-northwest orientated runway. DP4 and the boundary of the entire former Woodford Aerodrome site are indicated on Figure 2 in Appendix A.</p> <p>The location of the boundary between DP3 and DP4 (i.e. the northern edge of the DP4 boundary) was moved to the south prior to issue of the DP3 validation report; with the result that a strip of land along the northern periphery of DP4 became part of DP3 for validation purposes. Details of the boundary change are provided in Appendix B. This report applies to the revised DP4 boundary.</p>
Brief Site Description	<p>DP4 is approximately triangular with boundaries along three sides. During aerodrome operation the majority of the DP4 area was occupied by two runways, located along the northern boundary and across the west, surrounded by grassed areas, with taxi-ways and other ancillary areas / hardstanding / various small buildings around the eastern and southwestern peripheries. A number of aircraft hangars, maintenance facilities and large areas of hardstanding / apron were located at the southern tip of the area.</p> <p>The eastern edge of the Commercial Area contains the recently redeveloped Avro Heritage Centre building with external Vulcan Bomber display and an operational commercial building (Building 54), currently occupied by CAE (formerly Oxford Aviation).</p> <p>Demolition of former buildings in DP4 South has been taking place since the end of 2020 and was ongoing at the time of writing. Hardstanding in the area was largely still intact at the time of writing.</p> <p>Shird Fold Farm Brook forms DP4's eastern boundary. It joins Red Brook in the south, which forms the southern boundary before diverting from the boundary towards the southwest. The watercourses are approximately 2m below site level at the boundaries.</p> <p>Ground levels generally fall to the south / southwest. At the time of the 2014 investigation there were several large mounds at the southern end of the CAE building in the east, which were investigated in 2014. The mounds appeared to be present and intact in March 2021.</p>

Attribute	Details
Previous Site Use and Areas of Potential Concern	<p>The site has an aviation history dating back to the 1920s, prior to which the site was undeveloped. Prior to closure in 2011, BAE Systems operated the site for the assembly of aircraft.</p> <p>The Areas of Potential Concern (APCs) relating to potentially contaminative historical activities within DP4 North are listed below; both are located within the commercial area in the east:</p> <ul style="list-style-type: none"> · APC21 – above ground gas oil and diesel storage tanks · APC23 – mound of soil in the commercial area
Environmental Setting	<p>The former Woodford Aerodrome site is underlain by a mixture of superficial deposits, including Glacial Till and Alluvium, over bedrock comprising Sherwood Sandstone (Principal Aquifer). The superficial deposits were found to be highly variable in composition and consistency.</p> <p>A shallow groundwater body is present in the superficial deposits, with an inferred southerly flow direction and possible continuity with adjacent surface watercourses that run along the eastern and southern boundaries. Shallow groundwater is likely perched in places with limited connectivity through cohesive soils.</p> <p>In the south of the site the shallow groundwater body possibly merges with the deeper water table in the Sherwood Sandstone. Groundwater flow in the Sherwood Sandstone is to the west, towards a potable groundwater abstraction approximately 1km to the west.</p> <p>There may be some degree of hydraulic connectivity between the two units.</p> <p>The site is located within a Source Protection Zone (SPZ) III (Total Catchment), associated with two groundwater abstractions; the centres of the SPZ I (Inner Zone) for each abstraction are located approximately 1.5km west and 2km south and of the site boundary.</p> <p>Ground levels fall gently towards the south, towards Red Brook in the south. Red Brook flows south, eventually joining the River Dean.</p>

3 SUMMARY OF 2014 / 2015 INVESTIGATION FINDINGS FOR DP4 NORTH

3.1 PREVIOUS INFORMATION

The exploratory hole location plan from the WSP 2014 Report and BAE and WSP exploratory hole logs are included in Appendix C.

3.2 GROUND CONDITIONS

Previous BAE and WSP investigations within the DP4 North boundary encountered surface materials of either natural topsoil (to depths of approximately 0.5m bgl) (below ground level) or Made Ground (generally to depths of 0.2m bgl to 1m bgl). Made Ground was slightly deeper in places and was most consistently shallowest in the grassed areas in the east of DP4 North. The Made Ground generally comprises concrete or asphalt surfacing over sandy, occasionally cobbly gravel of sandstone with varying amounts of ash, clinker and brick.

The underlying natural soils typically comprise medium dense fine and medium sand and firm to stiff slightly sandy slightly gravelly clay (Glacial Till), with occasional organic matter (not interpreted as Glacial Till). The material was silty in places and soft clay layers were encountered at various depths to a maximum proven depth of 12.8m bgl (BH109). These soft layers are particularly evident in the central part of DP4 (adjacent to the south of DP4 North), where an area of peat was encountered between 0.25m bgl (WS166) and 2.60m bgl (TP138).

Drift deposits were proven to the maximum depth of drilling in the northern part of DP4 (14m bgl). The Wilmslow Sandstone Formation was proven in one location (8.20m bgl in BH106 in the south of DP4) recovered as very dense reddish-brown fine sand to a depth of 9.06m bgl.

The mound of material in the Commercial Area (south of the CAE building) comprised gravelly sand with varying amounts of broken brick, concrete, asphalt and occasional rebar.

3.3 GROUNDWATER CONDITIONS

Generally two groundwater units have been identified beneath DP4; an upper unit within the superficial sands (till / alluvium) and a lower unit present in the deeper superficial sands and underlying sandstone, separated by lower permeability materials. There may be some degree of hydraulic connectivity between the two units. Shallow groundwater is likely perched in places with limited connectivity through cohesive soils.

The groundwater flow direction of the upper body is inferred to be towards the south / southeast (gradient 0.008) (towards Shird Fold Farm Brook) and the lower body towards the west (gradient 0.003). The two groundwater bodies appear to converge in the south of DP4.

Groundwater depths and volumes within the Made Ground / superficial deposits are variable, with perched water located within granular materials and groundwater in monitoring wells recorded at depths of approximately 0.5m to several metres below ground level (m bgl).

3.4 ASBESTOS IN SOILS

During the WSP investigation completed in 2014 (across DP1 to DP4), representative samples (72no. of Made Ground and 13no. of topsoil including 33 from DP4) were screened for the presence

of asbestos fibres and asbestos containing materials (ACM); of these, 76 samples were found not to contain asbestos. Asbestos fibres comprising chrysotile or amosite were identified in the remaining nine samples; two of the 'asbestos positive' samples were from DP4 North as follows:

- Residential area: TP139 (0.1m bgl Made Ground) and TP174 ('trace' amounts, i.e. one or two fibres, from 0.1m bgl in topsoil).

3.5 CONTAMINATION ASSESSMENT

Visual and olfactory evidence of soil and groundwater contamination was not encountered in DP4 North. The generic quantitative risk assessments for human health and controlled waters identified no unacceptable chemical concentrations in soil or groundwater in DP4 North, indicating that remedial measures are not required in relation to soil / groundwater in this area.

On the basis of chemical contamination (and asbestos content) the mounded material in the south of the commercial area is suitable for re-use within the residential redevelopment. If evidence of contamination is encountered during handling this material, further characterisation and assessment will be required.

3.6 GROUND GAS

The majority of DP4 has been classified according to CIRIA C665 as CIRIA 1 / NHBC Green, for which new buildings do not require specific gas protection measures (Areas R2 and A1). The gas risk areas are indicated on Figure 3 in Appendix A. However, the WSP Gas Report identified several areas in which specific measures to protect new properties from ground gas ingress are required based on the proposed residential / agricultural layout; one is within the residential area (Area R3) and one encroaches on the boundary of the residential area (Area A4). Further details on Areas R3 and A4, which have implications for the residential area are provided below:

- Area R3 (approximately 1.5Ha) is classified as Amber 2 / Characteristic Situation 3 due to the presence of peat within superficial deposits and based on gas monitoring results from one monitoring well (WS179). The WSP Gas Report suggested that given the substantial size of this area, additional investigation / gas risk assessment is required to confirm the northern extent of Area R3 and the level of gas protection required.
- Area A4 adjacent to the southern boundary of the Residential Area is classified as Amber 2 / CIRIA 1; therefore, gas protection measures are required for properties in this area. Area A4 was defined according to the presence of peat deposits within the superficial soils. Area A4 is largely within the Agricultural Area; however, given the proximity of the Residential Area in DP4 North it is recommended that confirmatory investigation and gas monitoring is completed at this boundary to confirm gas protection requirements for DP4 North properties in the vicinity of this boundary.

It is important to note that for the purposes of this data summary the classification of Area A1 has been reviewed and amended from CIRIA 2 to CIRIA 1.

3.7 SUMMARY

The potentially complete pollutant linkages in DP4 North are summarised in Table 1 along with recommended further works, the details of which are provided in Section 4.

Table 1: Woodford Aerodrome DP4 North – Summary of Complete Contaminant Linkages, Further Works and Recommendations

APC	Location	Reported in 2014 Report			Action Taken After 2014 Report	
		Source	Pathway / Receptor	Recommended Action	Additional Information	Further Work / Remedial Action
No specific APC	Gas Risk Area R3 (see Figure 3 Appendix A)	Hazardous ground gases	Inhalation by construction workers, future site users	Await additional WSP gas monitoring data for confirmation of recommended ground gas protection measures.	WSP Gas Report 2015 confirmed CIRIA Characteristic Situation 3 (for no sub-floor void) or Amber 2 (with clear ventilated sub-floor void) for Area R3. The WSP Gas Report 2015 recommended additional assessment to delineate Area R3; no further works have taken place to date.	Supplementary gas monitoring and risk assessment required for Area R3 and Area A3 to confirm gas mitigation measures– see Section 4.
No specific APC	Gas Risk Area A3 (adjacent to south of Residential Area) (see Figure 3 Appendix A)	Hazardous ground gases (associated with peat soils)	Inhalation (future residents within residential area to north of Area A3)	Await additional WSP gas monitoring data for confirmation of recommended ground gas protection measures	WSP Gas Report 2015 confirmed that a ground gas classification of Characteristic Situation 2 applies to Gas Area A3, which is adjacent to the southern boundary of the Residential Area. Therefore basic gas protection measures are required for properties along the southern boundary of the Residential Area. The WSP Gas Report 2015 recommended additional assessment to delineate Area A3; no further works have taken place to date.	
No specific APC	Across site	Asbestos fibres occasionally found within Made Ground plus one sample of natural topsoil contained trace amounts	Inhalation by construction workers, future site users	Implement procedures during ground disturbance works within Made Ground that will minimise the generation of airborne dust. Complete confirmatory screening and quantification analysis on soils cut or excavated from these areas to determine most appropriate future use or disposal route for the soils.	No further investigation completed	No additional recommendations to those provided in 2014.

4 DP4 NORTH REMEDIATION STRATEGY

4.1 INTRODUCTION

This Remediation Strategy for DP4 North presents the works required to mitigate the risks identified in Table 1 and prevent additional risks being created during preliminary earthworks activities and redevelopment.

Based on the available information, the only DP4 North-specific remedial actions identified are related to risks from hazardous ground gases in the Residential Area.

The Remediation Strategy shall be revised as required if additional risks are identified during earthworks / redevelopment works and following any further works to delineate the gas risk areas.

A Remediation Summary Plan showing areas referred to in this section is presented as Figure 3 in Appendix A.

4.2 RESPONSIBILITIES

Earthworks Contractor

The earthworks contractor is responsible for undertaking earthworks in DP4 North in accordance with the Remediation Strategy.

The earthworks contractor shall engage the nominated environmental consultant if suspected contamination is encountered.

Environmental Consultant

The nominated Environmental Consultant shall respond to ground / groundwater contamination issues when informed / alerted by the contractor during earthworks / redevelopment, which could include the following:

- Characterisation of contamination, if encountered, and assessment of associated risks and required mitigation / remediation.
- Advising on appropriate remedial / materials management / disposal options for contaminated materials, if encountered.
- Preparation of the Verification Report to confirm works were completed in accordance with the DP4 North Remediation Strategy.

Future Developer

The future developer will be responsible for:

- Ensuring the relevant parts of this Remediation Strategy are complied with (e.g. provision of imported soil, installation of gas protection measures).
- Preparing the remediation completion / validation report for properties constructed in DP4 North.

4.3 AWARENESS, GOOD HYGIENE AND PERSONAL PROTECTIVE EQUIPMENT

All persons engaged in site redevelopment activities shall be made aware of the Remediation Strategy and the potential hazards associated with ground conditions at the site.

It is recommended that all works are conducted in accordance with the Health and Safety Executive publication entitled “Protection of Workers and the General Public during the Development of Contaminated Land”, 1991.

Site workers shall use appropriate personal protective equipment (e.g. gloves) when handling or working within Made Ground materials or other potentially contaminated soils. It may be necessary for personnel observing or supervising the excavation of contaminated soils (if encountered) to use respiratory protective equipment to filter out hazardous hydrocarbon vapours.

A high standard of basic hygiene should be maintained on site and a non-smoking and eating policy within the working area should be adopted, with designated clean areas set aside for these activities.

4.4 DUST MITIGATION

Site methods and procedures employed during ground works shall aim to minimise disturbance and dust generation from handling / storing Made Ground materials, to minimise liberation of asbestos fibres – e.g. avoid dropping materials from height, crushing away from neighbouring properties. Given the large size of DP4 there is opportunity to complete this work well away from neighbours, including new occupants in DP3.

Regular visual monitoring of dust levels shall be carried out and damping down of site roads and work areas shall be employed if excessive dust levels are being generated in the vicinity of neighbouring properties.

If suspected asbestos containing materials (e.g. pieces of corrugated asbestos cement) are encountered during works, an asbestos specialist should be consulted to confirm if the material is asbestos and provide advice on management of the material. Any encountered suspected asbestos containing material should not be disturbed, be thoroughly delineated and removed in an appropriate manner to a designated area away from the work area to prevent dust generation from vehicle movements – to be advised by the specialist.

The material should be taken offsite for disposal at landfill by an appropriately licensed contractor.

4.5 POTENTIALLY UNIDENTIFIED CONTAMINATION

During earthworks and site redevelopment, workers shall remain vigilant to the possible presence of previously unidentified contamination in all parts of the site.

This could comprise:

- Staining and / or odours in soils indicating oils / fuels / solvents / other chemicals.
- Colouration / sheens / odours related to perched groundwater.
- Suspected asbestos containing materials (e.g. buried fragments of corrugated asbestos cement)

- Evidence of buried aircraft waste, including luminescent aircraft dials (potential for radiological contamination).
- Significant areas of buried ash or remnants of burnt metal (could contain luminescent aircraft dials, with potential for radiological contamination).

If potentially contaminated material is encountered the Environmental Consultant shall be engaged to characterise the soils and assess potential risks to human health and controlled waters. If radiological contamination is suspected, the Radiological Adviser should be consulted.

If previously unidentified contamination (e.g. staining, odours) is encountered during demolition / redevelopment, it may require some form of remediation, which could comprise the following, to be advised by the Environmental Consultant:

- Remediation of hydrocarbon hotspots either by off-site disposal or on-site treatment, dependent on material volumes and options appraisal.
- Removal and placement of affected materials beneath either hardstanding or a clean soil cover system.
- Upgrading of proposed damp proof membranes / gas membranes to prevent vapour ingress in areas of localised volatile contamination (if not otherwise remediated / removed).
- Possible localised perched water remediation.
- Any additional contamination characterisation and / or remedial works undertaken in DP4 shall be documented in the validation report.

The re-deployment of excavated materials to other parts of the site should be recorded in the Materials Management Plan and Remediation Validation Report to demonstrate materials have been used in a way that will not cause unacceptable harm to human health or the environment.

4.6 TEMPORARY SOIL STORAGE / TREATMENT AREAS

If contaminated soils are encountered it may be necessary to remove the soils to a designated temporary contaminated soil storage areas that will be suitable for the temporary storage of grossly and / or mildly contaminated soils, as advised by the Environmental Consultant. The storage area for grossly contaminated soils shall be located on hardstanding and / or be lined and bunded, to prevent rainwater run-off. Areas for the possible on-site treatment of contaminated soils shall also be designated. Areas should be clearly marked on site and details of treatment undertaken shall be recorded and included in the final Validation Report.

4.7 REMEDIATION / VALIDATION CRITERIA

The Remediation / Validation Criteria adopted for DP4 North are provided in Appendix D. The criteria are applicable to areas requiring hot spot removal (if encountered) and soils imported to DP4 North, e.g. as part of an earthworks exercise. The criteria are based on current WSP human health generic assessment criteria for a residential (with home-grown vegetables) end use, assuming a 2.5% soil organic matter content (consistent with previous demolition phases).

4.8 LABORATORY ANALYSIS OF IMPORTED SOIL

Soils imported from outside the Woodford Aerodrome site to DP4 North shall be obtained from reputable external suppliers, be demonstrated to be suitable for its intended use and comply with the Remediation / Validation Criteria provided in Appendix B.

With regards to chemical suitability, imported soils shall be analysed in the laboratory as a minimum for:

- Asbestos fibres
- Metals suite (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc)
- PAH (US EPA suite of 16)
- TPH CWG

Laboratory analysis on imported products should be completed at a frequency of approximately 1 sample per 500m³. Testing results provided by the supplier would be acceptable if completed at a reputable laboratory using appropriate testing methodology. Additional testing suites may be required depending on the origin of the material, which would need to be confirmed by the supplier. The results shall be compared to the Remediation / Validation Criteria presented in Appendix B and confirmation as to the suitability sought from the Environmental Consultant.

Soils imported to DP4 from stockpiles generated by earlier development phases (DP1 to DP3) may require confirmatory laboratory analysis (at a frequency of 1 sample per 200m³), depending on their origin, to demonstrate suitability. Initially the analytical results shall be screened against the Remediation / Validation Criteria presented in Appendix B. The testing suite used to characterise the soils shall be consistent with the anticipated contaminants of concern in respect to the source of the material; analysis for all of the contaminants listed in Appendix B may not necessarily be required.

Records shall be maintained of soil imported to DP4 North (from within and outside of the wider Woodford Aerodrome site) or treated for re-use within DP4, including the origin of the material, analytical results and any justification required to confirm suitability. Records shall be included in the final Validation Report.

4.9 GROUND GAS PROTECTION MEASURES

Residential Area R3 – Classified as Amber 2 / CIRIA Characteristic Situation 3

The WSP Gas Report classified this area as Amber 2 / CIRIA Characteristic Situation 3, for which fairly significant gas protection measures are required. The R3 area was defined on the basis of ground gas monitoring results from one monitoring well (WS179) and extrapolation of the data to incorporate the entire area in which peat was encountered. Given the uncertainty associated with the extent of Area R3, it is recommended that supplementary ground gas monitoring and assessment is undertaken by Harrow Estates or the residential developer to provide robust recommendations for gas protection measures in properties in Area R3. The gas risk areas are summarised on Figure 3 in Appendix A.

Residential Area R2 – Classified as Green / CIRIA Characteristic Situation 1

Whilst properties in this area do not require gas protection measures, the southern part of the area is adjacent to Area A3, which is classified as Amber 1 / CIRIA Characteristic Situation 2, requiring basic gas protection measures to be installed. It is recommended that supplementary ground gas monitoring and assessment is undertaken by the residential developer along the southern boundary of Area R3 to provide robust recommendations for gas protection measures in properties in the southern part of Area R2.

Installation and Validation of Gas Protection Measures

Where gas protection measures are required for new buildings, they should be designed, installed and verified by suitably qualified professionals in accordance with the relevant guidance (BS8485: 2015 – Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings).

This Remediation Strategy will need to be updated with any further gas risk assessments to confirm gas protection measures required in the Residential Area.

Validation of any installed gas protection measures should be completed in accordance with relevant guidance and will be the responsibility of the residential developer.

4.10 POTABLE WATER SUPPLY PIPES

Based on the results obtained from the 2014 investigation for the majority of the Residential Area, it is considered unlikely that potable water supply pipes will need upgrading to more robust materials as a result of chemical contamination in soils.

When the proposed route of potable water supply pipes has been finalised, a United Utilities water supply pipeline risk assessment should be undertaken on the basis of information obtained in all phases of previous investigation and possible further shallow investigation in some areas. This will need to be submitted to United Utilities for their acceptance.

4.11 REMEDIATION VALIDATION DOCUMENTATION

All contamination-related remedial works undertaken prior to development (by Harrow Estates) and during construction (by the end-developer) shall be fully documented in completion / validation reports, which shall be forwarded to the Contaminated Land Officer at Stockport Council following completion of the works. The reports shall include the following:

Prior to construction:

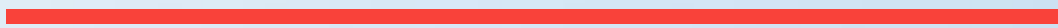
- Precautions taken to prevent exposure to asbestos fibres during the works.
- Information regarding unexpected contamination encountered and evidence of possible burning grounds / radiological contamination.
- The extent of areas subject to remedial works (if any).
- Volumes of soil exported from / imported to DP4 North.
- Soil / water sampling and laboratory analysis results.
- Risk assessments
- Waste classification assessments (for soils taken off site for disposal).
- Details of material re-use / treatment / off-site disposal.
- Details of where Remediation Criteria have been exceeded and robust justification / risk assessment to demonstrate soils are suitable for use

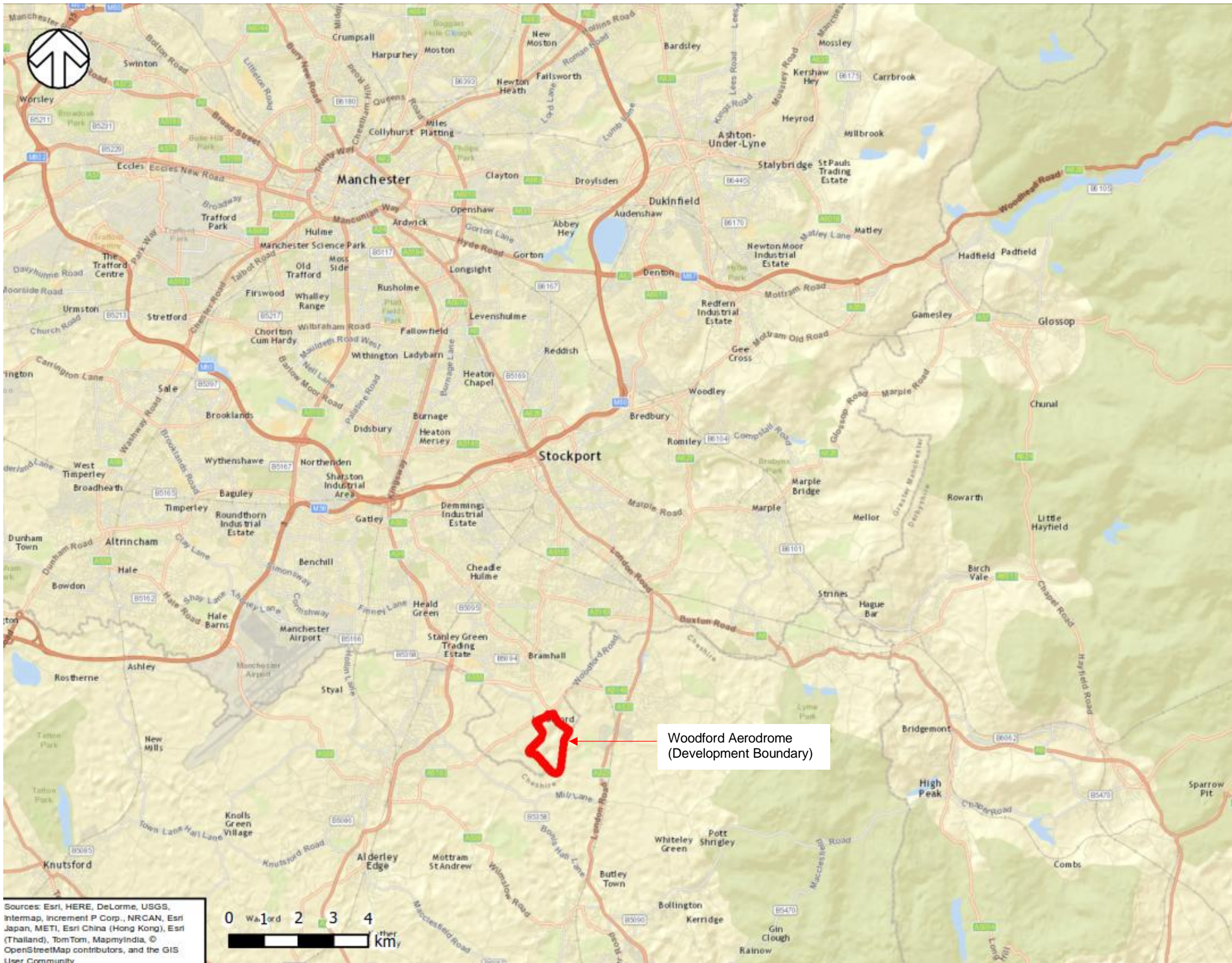
Following construction:

- Validation of garden and landscaped areas provided with clean soil cover systems if required (to include soil testing results and confirmation of depths).
- Validation of gas membrane installation.
- Validation of vapour membrane installation (if required) according to best practice.

Appendix A

FIGURES AND MASTERPLAN



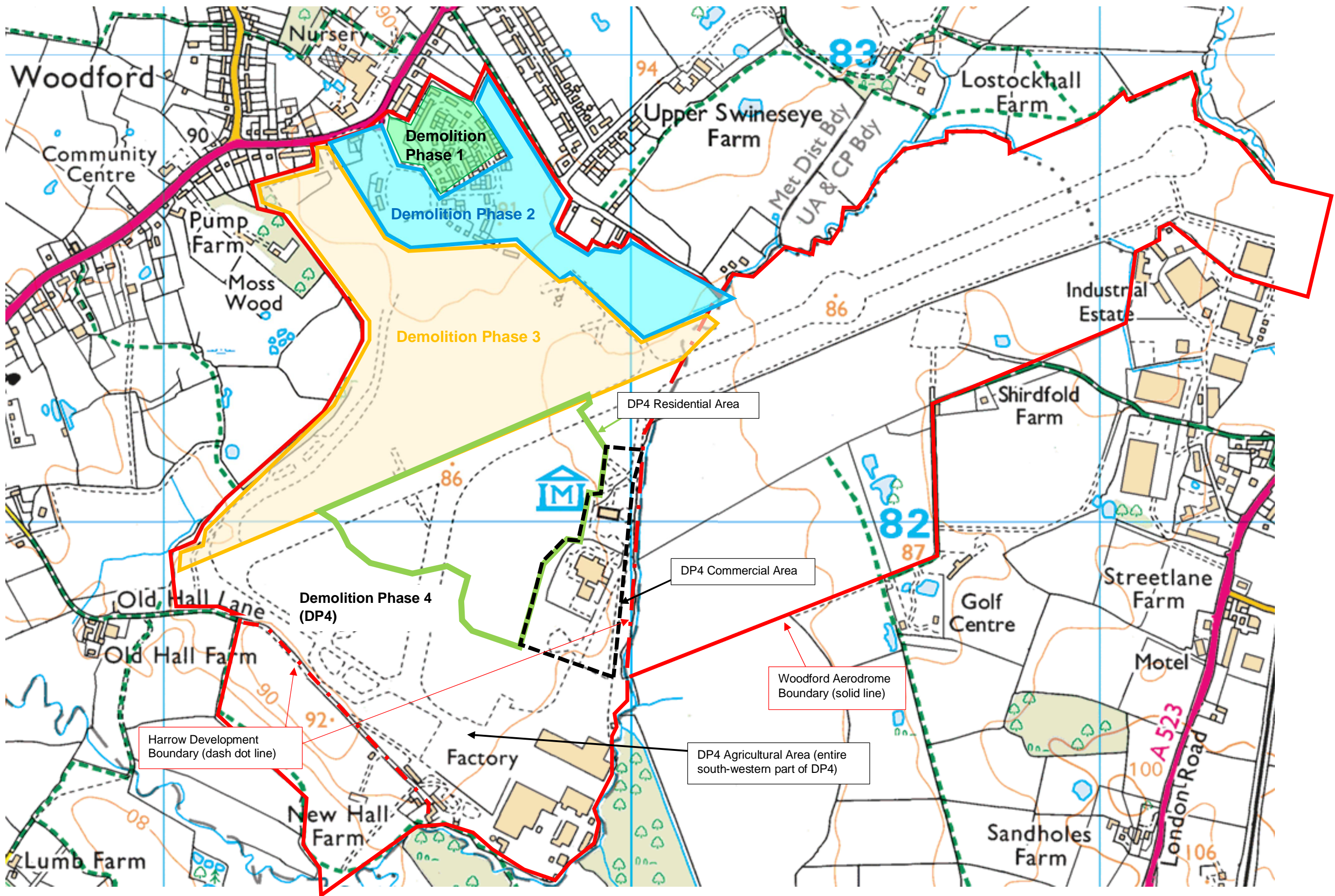


Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

TITLE:
70079453 Woodford Aerodrome DP4

FIGURE No.:
Figure 1: Site Location Plan





Basemap from Streetmap.co.uk 2021







TITLE:
70079453 Woodford Aerodrome DP4

FIGURE No.:
Figure 2: Indicative Boundaries Plan





KEY:

-  Demolition Phase 4 Boundary
-  Residential Area – Approximate boundary (part of DP4 North)
-  Commercial Area – Approximate boundary (part of DP4 North)
-  Boundary between DP4 North and DP4 South
-  Shird Fold Farm Brook and Red Brook – Approximate Route
-  Gas Risk Area – increased risk from ground gases – gas protection measures required for buildings

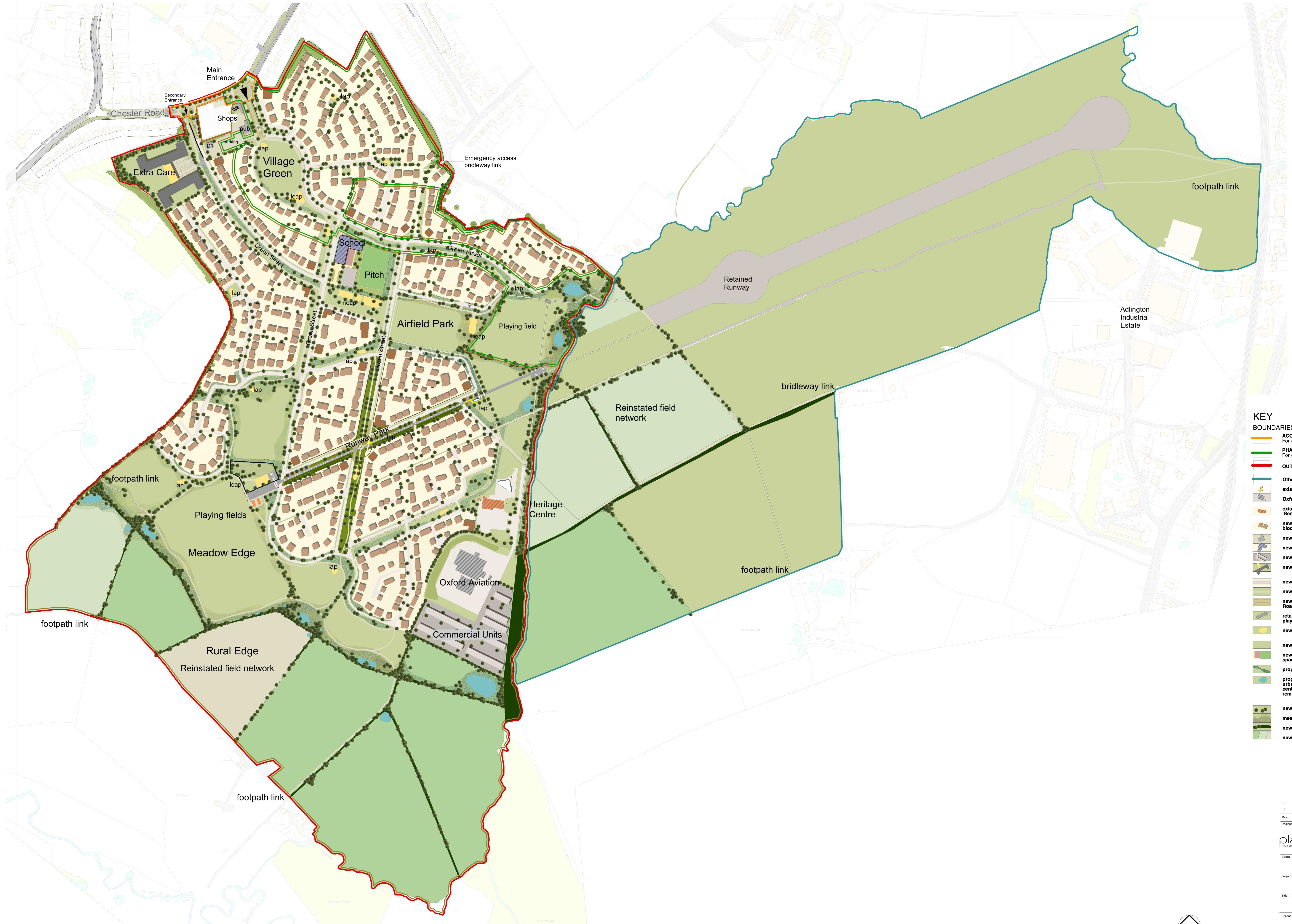
Note: Figure Not to Scale – Do not Scale

Image from Google Maps 2021

TITLE:
70079453 Woodford Aerodrome DP4

FIGURE No.:
Figure 3: DP4 North Remediation Summary Plan





- KEY**
- BOUNDARIES**
- **ACCESS BOUNDARY**
For determination
 - **PHASE 1 APPLICATION BOUNDARY**
For determination
 - **OUTLINE APPLICATION BOUNDARY**
 - **Other Land Ownership**
 - existing buildings around the site
 - Oxford Aviation building to be retained
 - existing fire station retained with relocated 'Sentinel' Vulcan bomber
 - new development plots & notional housing blocks
 - new shop and pub & d1 units
 - new school
 - new commercial units
 - new Extra Care blocks
 - new roads & driveways
 - new pedestrian/cycle routes
 - new high quality entrance treatment to Chester Road and Entrance area
 - retained runway remnant sections used as parks, play or parking areas
 - new play areas - LAP's, LEAP's & NEAP's
 - new public open space
 - new school grounds - pitch and playground spaces
 - proposed swale (sustainable urban drainage)
 - proposed attenuation field pond (sustainable urban drainage)
 - central watercourse - widened and culvert removed
 - new tree planting
 - meadow edge planting & wildflower
 - new hedgerows and field boundary tree planting
 - new fields managed for agricultural uses.

2	03.04.14	REVISED ISSUE	JT	JW
1	09.10.13	PLANNING ISSUE	GW	JW
Rev	Date	Description	Drawn	Checked
Originator:				

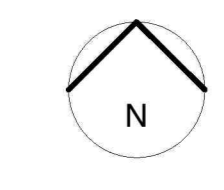
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 1 +44(0)1143 440111
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 1 +44(0)1143 440111
 1 +44(0)1143 440111

Client: **HARROW ESTATES**

Project: **WOODFORD**

Title: **ILLUSTRATIVE MASTERPLAN**

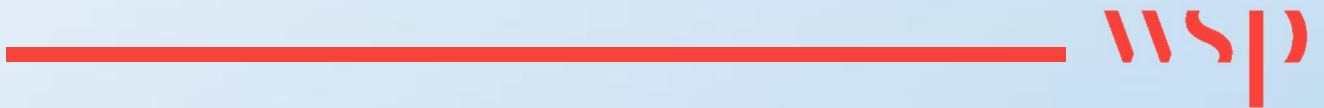
Status: PLANNING					
Designed	SF	Drawn	SF	Checked	JW
Scale	1:2500	Date	09.10.13	Approved	PS
Drawing No:	Revision:				



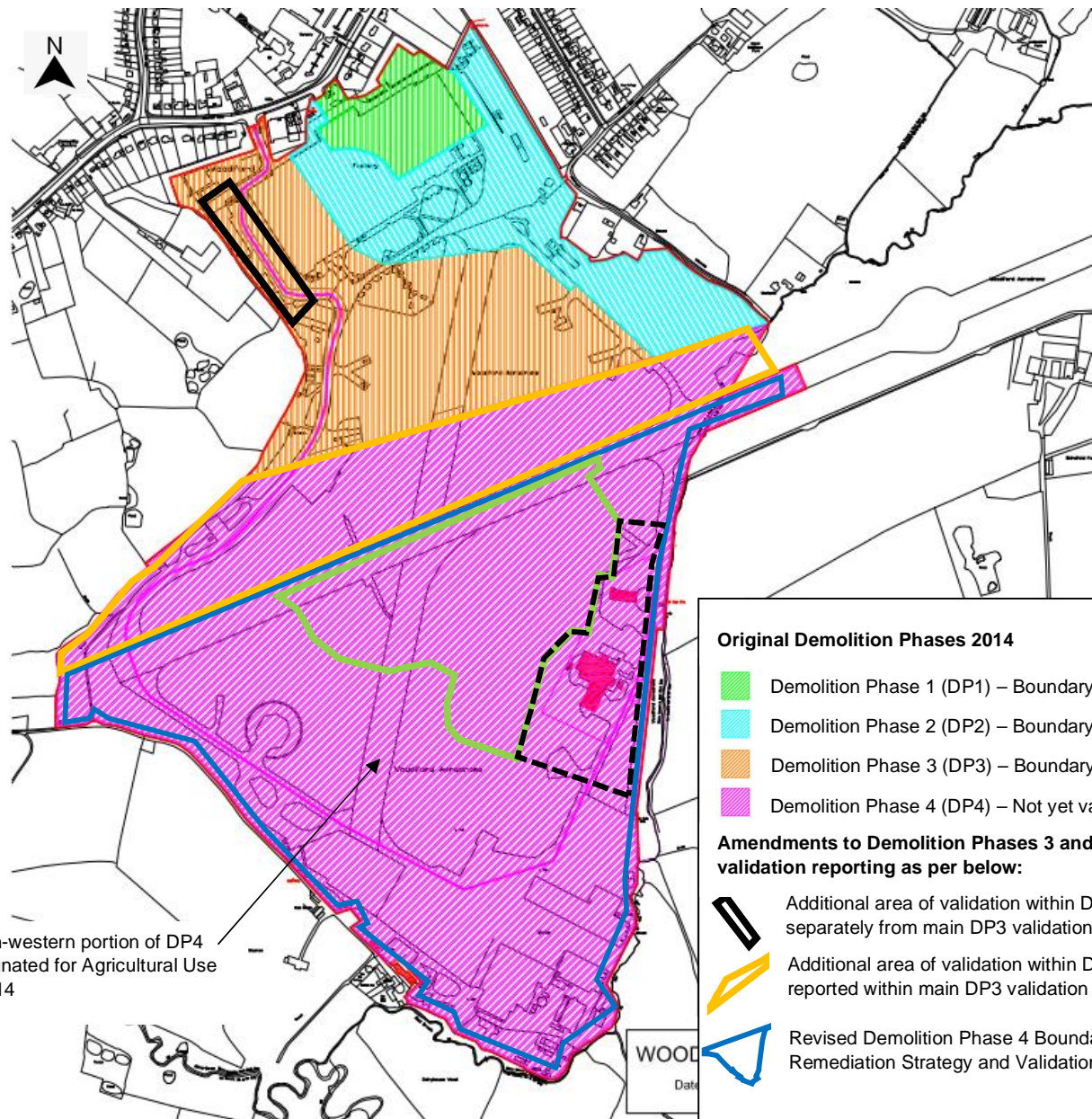
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Appendix B

DP3 / DP4 BOUNDARY CHANGE
INFORMATION



**Woodford Aerodrome – Demolition Phases investigated and validated by WSP
DP4 Remediation Strategy Appendix B**



South-western portion of DP4
Designated for Agricultural Use
in 2014

Original Demolition Phases 2014

- Demolition Phase 1 (DP1) – Boundary unchanged
- Demolition Phase 2 (DP2) – Boundary unchanged
- Demolition Phase 3 (DP3) – Boundary amended
- Demolition Phase 4 (DP4) – Not yet validated

Amendments to Demolition Phases 3 and 4 during validation reporting as per below:

- Additional area of validation within DP3 – reported separately from main DP3 validation report
- Additional area of validation within DP3 – reported within main DP3 validation report
- Revised Demolition Phase 4 Boundary for Remediation Strategy and Validation

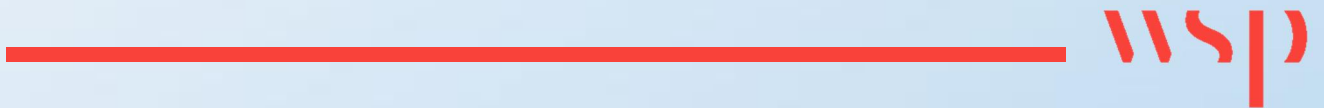
Demolition Phase 4 Proposed Land Uses in 2014

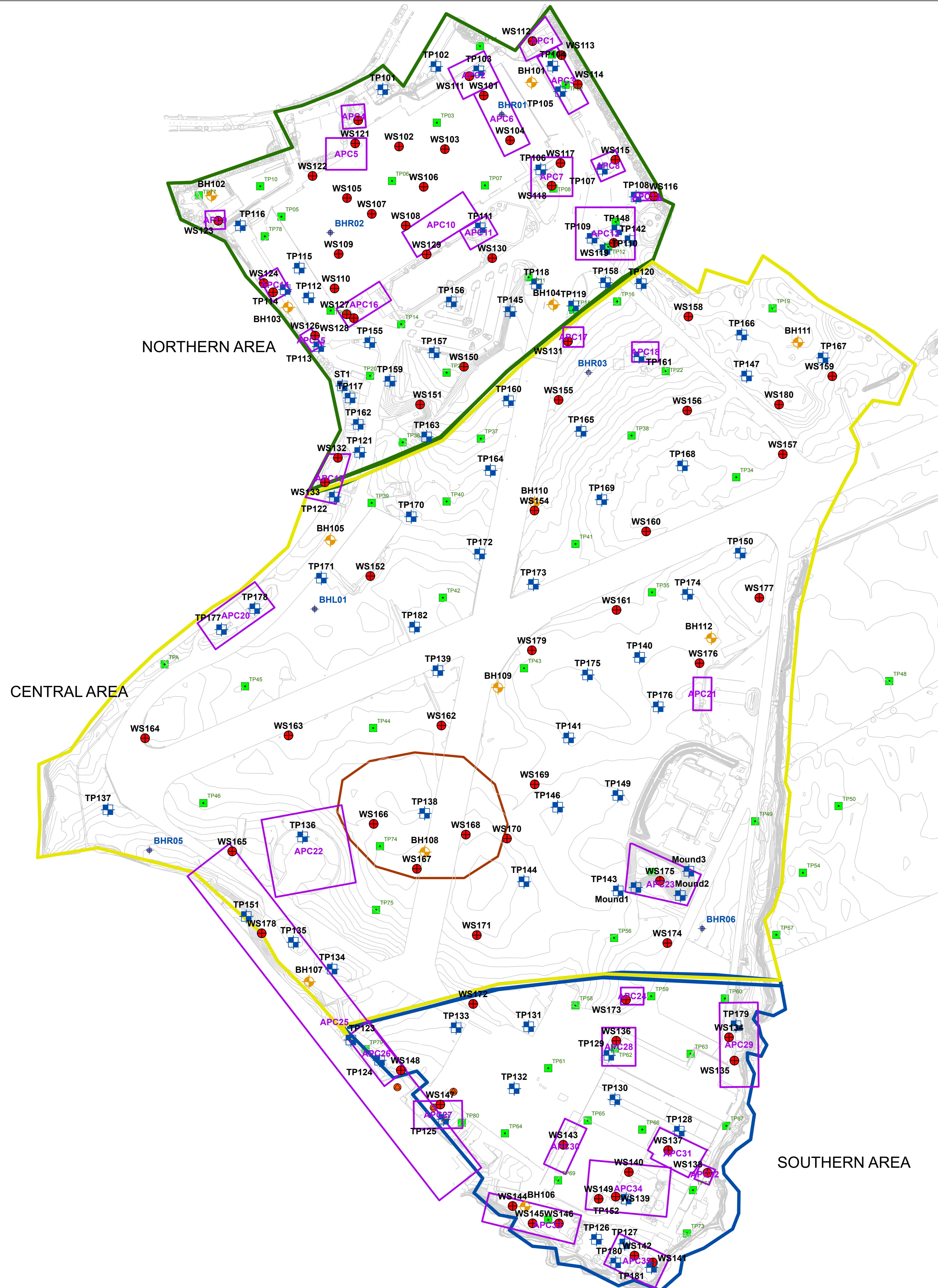
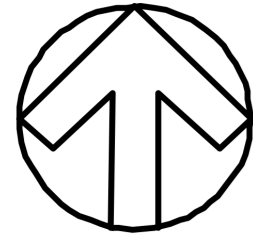
- Portion of Demolition Phase 4 that was proposed for Residential Use in 2014
- Portion of Demolition Phase 4 that was proposed for Commercial Use in 2014

South-western portion of DP4 Designated for Agricultural Use in 2014

Appendix C

PREVIOUS GROUND INVESTIGATION
INFORMATION

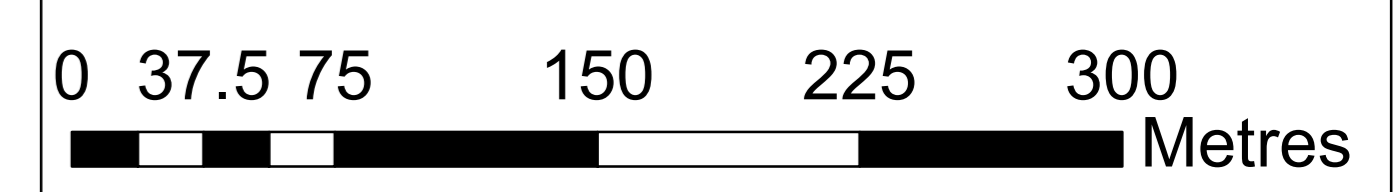




Legend

- Area of Potential Concern (APC)
 - Approximate Location of Peat Deposit
 - BAE Trial Pits
 - + BAE Monitoring Wells
- WSP Exploratory Hole Locations 2014**
- HoleTypeDescription**
- ⬮ Cable Percussion (shell and auger)
 - + Trial Pit/trench
 - Windowless sampler

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DRAWING STATUS: REV05, 10 DEC 2014		
<p>WSP, THE VICTORIA, THE QUAYS, MANCHESTER, M50 3SP</p>		
CLIENT: HARROW ESTATES PLC		
ARCHITECT:		
PROJECT: WOODFORD AERODROME		
TITLE: FIGURE 3: HISTORICAL AND WSP EXPLORATORY HOLE LOCATIONS 16 DEC 2014		
SCALE @ A1: WSP - A0 Landscape	CHECKED: PG	APPROVED:
CAD FILE:	DESIGN-DRAWN:	DATE:
PROJECT No: 70004430	DRAWING No:	REV: A
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