11.9. WWII-Era Photography

WWII-era aerial photography for the site area was obtained from the National Monuments Record Office (Historic England) and the Aerofilms Collection available from *Britain from Above*. This photography provides a record of the potential composition of the site during the war, as well as its condition immediately following the war (**Annex S**).

WWII-Era Photography	
Date	**Description**
27 August 1945	The site was occupied by a multi-storey structure and associated rear garden. Minor damage to the building was observable in the form of a slightly discoloured roof. Due to light being blocked by the surrounding structures, the ground covering of the garden was not observable in this photograph. The structures to the north possessed similarly discoloured roofing but appeared otherwise undamaged while no obvious impairment was observable across those to the east. No damage such as cratering was visible in the park to the south. The structure to the immediate west of the site additionally appeared undamaged with the exception of a slightly discoloured roof. A large area of cleared ground was however observable on the opposite side of this structures extending from Hyde Park Lane, as far north as the photograph covered.
1946	The face of the on-site building appeared relatively undamaged with no major examples of discolouring being observable. It would appear however that the windows on this side of the structure had all been blown out as had those belonging to the adjacent eastern and western structures – with the latter having possibly been bordered up. Otherwise both the site and the surrounding vicinity did not appear to have changed since the previous photograph.

11.10. Abandoned Bombs

A post air-raid survey of buildings, facilities, and installations would have included a search for evidence of bomb entry holes. If evidence of an entry hole was encountered, Bomb Disposal Officer Teams would normally have been requested to attempt to locate, render safe, and dispose of the bomb. Occasionally, evidence of UXBs was discovered but due to a relatively benign position, access problems, or a shortage of resources the UXB could not be exposed and rendered safe. Such an incident may have been recorded and noted as an 'abandoned bomb'.

Given the inaccuracy of WWII records, and the fact that these bombs were 'abandoned', their locations cannot be considered definitive or the lists exhaustive. The MoD states that 'action to make the devices safe would be taken only if it was thought they were unstable'. It should be noted that other than the 'officially' abandoned bombs, there will inevitably be UXBs that were never recorded.

1st Line Defence holds no records of officially registered abandoned bombs at or near the site of the proposed works.

11.11. Bomb Disposal Tasks

The information service from the Explosive Ordnance Disposal (EOD) Archive Information Office at 33 Engineer Regiment (EOD) (now 29 Regt) is currently facing considerable delay. It has therefore not been possible to include any updated official information regarding bomb disposal/clearance tasks with regards to this site. A database of known disposal/clearance tasks has been referred to which does not make reference to such instances occurring within the site of proposed works. If any relevant information is received at a later date GEA Ltd will be advised.

11.12. Evaluation of German Aerial Delivered UXO Records

Factors	Conclusion
Density of Bombing *It is important to consider the bombing density when assessing the possibility that UXBs remain in an area. High bombing density could allow for error in record keeping due to extreme damage caused to the area.*	During WWII the site was located within the Metropolitan Borough of Paddington, which sustained an overall very-high density of bombing with an average of 255.7 incidents recorded per 1,000 acres according to official Home Office bombing statistics; a figure attributable to the districts proximity to London city-centre, and the abundance of targets in the local vicinity - notably London Paddington Railway Station, located approximately 900m north-west of the site (**Annex L**). No HE bombs were recorded on-site according to London bomb census mapping. The same source however recorded three incidents just west of the site: one each in May 1941, March 1944, and June 1944. Paddington bomb census reports provided further information regarding the former with the strike having apparently been a 250kg HE that hit No. 4 Hyde Park Place on 10-11 May 1941. No further information was available regarding the latter two incidents. The way in which these were recorded on London bomb census mapping, it would appear that they overlapped somewhat with the western sector of the site. It should be noted, however, that this does not necessarily constitute an on-site incident. The mapping is not considered high quality and resultantly both incidents appeared to have covered an area of approximately 40m. The map is therefore not considered entirely accurate and based upon information presented in the sections below, it is considered likely that they landed in an area approximately 10m to the west of the site. A V-1 flying bomb strike was recorded over both the site and the surrounding area according to both London bomb census mapping and LCC bomb damage mapping. On this occasion London V-1 pilotless aircraft bomb census reports were available and clarified the incident as having struck the pavement outside No. 7 Hyde Park Place before penetrating the basements below.
Damage *If buildings or structures on a site sustained bomb or fire damage, any resulting rubble and debris could have obscured the entry holes of unexploded bombs dropped during the same or later raids. Similarly, a high explosive bomb strike in an area of open agricultural land will have caused soil disturbance, increasing the risk that a UXB entry hole would be overlooked.*	LCC bomb damage mapping indicates that the structure on site was 'damaged beyond repair' and structures situated adjacent to the north, east and west of the site were labelled as 'seriously damaged'. However, aerial imagery of the site, dated 1945 and oblique imagery dated 1946, indicate that the structure on site, and those adjacent to the site, appear to have survived the war externally intact, highlighting a discrepancy in the record sets. Aerial imagery indicates that the structure on site's roofing appears to have been repaired – white tiling is often indicative of repair works. However, no evidence of 'damage beyond repair' was evident in imagery, as the structure remained on site and did appear to have been repaired. Of the common damage indicators discussed above, an example of cleared ground was observable in the vicinity. Visible across multiple post-war images, Nos. 4, 5, 6, and 7 Hyde Park Place appeared to have been destroyed. The closest of these to the site was No.4 at an approximate distance of 8m. Under regular circumstances this would have left the site within range of the J-curve effect whereby a UXB can end its trajectory at a lateral offset from point of entry. However, on this occasion, such a risk can be negated by the apparent presence of basements underneath the Hyde Park Place terraces. Multiple sources made reference to this including London V-1 pilotless aircraft bomb census reports which recorded a V-weapon *penetrating into the cellar beneath* as well as Paddington Bomb Census Reports which referred to the terrace as having been *well built with a basement*. As a result, had a UXB penetrated the ground and began to J-curve towards the site, it

	is considered unlikely that it would have able to progress beyond the basements in the adjacent properties.
Ground Cover *The nature of the ground cover present during WWII would have a substantial influence on any visual indication that may indicate UXO being present.*	Throughout WWII the site was occupied by 2 Hyde Park Place – a Georgian-era multi-storey terraced property. As discussed above, the site was subjected to bomb damage although this appeared to have been limited to the discolouring of the roof and several blown-out windows. It does not appear that the structural integrity of the building was compromised at any point during the war, and as a result, the site retained its developed, pre-war composition throughout the bombing campaign. A non-compromised on-site structure typically increased the likelihood of UXB evidence (such as bomb entry holes) being noted and reported during periods of occupation at these locations, as entry holes and unaccounted damage would be easily visible.
Access Frequency *UXO in locations where access was irregular would have a greater chance of passing unnoticed than at those that were regularly occupied. The importance of a site to the war effort is also an important consideration as such sites are likely to have been both frequently visited and subject to post- raid checks for evidence of UXO.*	At the beginning of the war the site was occupied by 2 Hyde Park Place and it is considered likely that it was inhabited at this time. Until 1944, there is no strong reason to suggest as to why it would not have been accessed. While an incident was recorded approximately 10m to the west on 10-11 May 1941, the Paddington Bomb Census Reports specifically mentioned that only Nos. 4 and 5 were damaged and it is therefore viable that an evacuation of No. 2 would not have been considered necessary. Due to the lack of written records, it is not known to what extent the two bomb strikes of 1944 affected the site although it is considered likely that the damage observable on post-war imagery was instead as the result of the V-1 flying bomb strike of 18 June 1944. Had an evacuation been ordered, it likely came after this date and the structure would have only been uninhabited for the latter stages of the war (late 1944 and 1945) wherein the period of conventional bombing involving high explosive ordnance had largely ended. As a result, it is considered that the site was occupied during the period of most concern (1940, 1941, and early 1944). Inhabited properties such as these were typically associated with a frequent level of access by assigned ARP wardens, property owners, and local residents.
Bomb Failure Rate	There is no evidence to suggest that the bomb failure rate in the locality of the site would have been dissimilar to the 10% normally used.
Abandoned Bombs	1st Line Defence holds no records of abandoned bombs at or within the site vicinity.
Bombing Decoy sites	1st Line Defence could find no evidence of bombing decoy sites within the site vicinity.
Bomb Disposal Tasks	1st Line Defence could find no evidence of bomb disposal tasks within the site boundary and immediate area.

12. Introduction to Allied Explosive Ordnance

12.1. General

Many areas across the UK may be at risk from Allied UXO because of both wartime and peacetime military use. Typical military activities and uses that may have led to a legacy of military UXO at a site include former minefields, home guard positions, anti-aircraft emplacements, training and firing ranges, military camps, as well as weapons manufacture and storage areas.

Although land formerly used by the military was usually subject to clearance before returned to civilian use, items of UXO are sometimes discovered and can present a potential risk to construction projects.

It should be highlighted that there is no evidence that the site formerly had any military occupation or usage that could have led to contamination with such items of Allied ordnance. Despite this, urban areas, such as the location of the site, can be at risk from buried unexploded anti-aircraft projectiles fired during WWII – as addressed below.

12.2. Defending the UK From Aerial Attack

During WWII the War Office employed a number of defence tactics against the Luftwaffe from bombing major towns, cities, manufacturing areas, ports and airfields. These can be divided into passive and active defences (examples are provided in the table below).

Active Defences	Passive Defences
• Anti-aircraft gun emplacements to engage enemy aircraft. • Fighter aircraft to act as interceptors. • Rockets and missiles were used later during WWII.	• Blackouts and camouflaging to hinder the identification of Luftwaffe targets. • Decoy sites were located away from targets and used dummy buildings and lighting to replicate urban, military, or industrial areas. • Barrage balloons forced enemy aircraft to greater altitudes. • Searchlights were often used to track and divert adversary bomber crews during night raids.

Active defences such as anti-aircraft artillery present a greater risk of UXO contamination than passive defences. Unexploded ordnance resulting from dogfights and fighter interceptors is rarely encountered and difficult to accurately qualify.

12.2.1. Anti-Aircraft Artillery (AAA)

During WWII three main types of gun sites existed: heavy anti-aircraft (HAA), light anti-aircraft (LAA) and 'Z' batteries (ZAA). If the projectiles and rockets fired from these guns failed to explode or strike an aircraft they would descend back to land. The table below provides further information on the operation and ordnance associated with these type of weapons.

Anti-Aircraft Artillery				
Item	**Description**			
HAA	These large calibre guns such as the 3.7" QF (Quick Firing) were used to engage high flying enemy bombers. They often fired large HE projectiles, which were usually initiated by integral fuzes, triggered by impact, area, time delay or a combination of aforementioned mechanisms.			
LAA	These mobile guns were intended to engage fast, low flying aircraft. They were typically rotated between locations on the perimeters of towns and strategically important industrial works. As they could be moved to new positions with relative ease when required, records of their locations are limited. The most numerous of these were the 40mm Bofors gun which could fire up to 120 x 40mm HE projectiles per minute to over 1,800m.			
Variations in HAA and LSA Ammunition	**Gun type**	**Calibre**	**Shell Weight**	**Shell Dimensions**
	3.0 Inch	76mm	7.3kg	76mm x 356mm
	3.7 Inch	94mm	12.7kg	94mm x 438mm
	4.5 Inch	114mm	24.7kg	114mm x 578mm
	40mm	40mm	0.9kg	40mm x 311mm
Z-AA	The three inch unrotated rocket/projectile known as the UP-3 had initially been developed for the Royal Navy. The UP-3 was also used in ground-based single and 128-round launchers known as "Z" batteries. The rocket, containing a high explosive warhead was often propelled by cordite.			

The closest recorded HAA to the site was located approximately 450km south of the site, however the range of a projectile can be up to 15km. The site would also have been in range of mobile light anti-aircraft guns.

The conditions in which anti-aircraft projectiles may have fallen unnoticed within a site area are analogous to those regarding aerial delivered ordnance. Unexploded anti-aircraft projectiles could essentially have fallen indiscriminately anywhere within range of the guns. The chance of such items being observed, reported and removed during the war depends on factors such as land use, ground cover, damage and frequency of access – the same factors that govern whether evidence of a UXB is likely to have been noted. More information about these factors with regards to this particular site can be found in the German Aerial Delivered Ordnance section of this report.

Illustrations of Anti-Aircraft artillery, projectiles and rockets are presented at **Annex T**.

13. The Likelihood of Contamination from Allied Ordnance

There are several factors that may serve to either affirm, increase, or decrease the level of risk within a site with a history of military usage. Such factors are typically dependent upon the proximity of the proposed area of works to training activities, munition productions and storage, as well as its function across the years.

This section will examine the history of the proposed site and assess to what degree, if any, the site could have become contaminated as a result of the military use of the surrounding area.

13.1. Evaluation of Contamination Risk from Allied UXO

1st Line Defence has considered the following potential sources of Allied ordnance contamination:

Sources of Allied UXO Contamination	Conclusion
Military Camps *Military camps present an elevated risk from ordnance simply due to the large military presence and likelihood of associated live ordnance training.*	1st Line Defence could find no evidence of a military camp within the site.
Anti-Aircraft Defences *Anti-Aircraft defences were employed across the country. Proximity to anti-aircraft defences increases the chance of encountering AA projectiles.*	1st Line Defence could find no evidence of Anti-Aircraft defences such as a HAA or LAA gun emplacement occupying or bordering the site. The closest HAA was located approximately 450km south of the site, however the range of a projectile can be up to 15km. The conditions in which HAA or LAA projectiles may have fallen unnoticed within a site footprint are analogous to those regarding German aerial delivered ordnance.
Home Guard Activity *The Home Guard regularly undertook training and ordnance practice in open areas, as well as burying ordnance as part of anti-invasion defences.*	1st Line Defence has no evidence of any Home Guard activities on the site.
Defensive Positions *Defensive positions suggest the presence of military activity, which is often indicative of ordnance storage, usage or disposal.*	There is no evidence of any defensive features formerly located on or bordering the site footprint.
Training or firing ranges *Areas of ordnance training saw historical ordnance usage in large numbers, often with inadequate disposal of expended and live items. The presence of these ranges significantly impact on the risk of encountering items of ordnance in their vicinity.*	There is no evidence of such features affecting the site.
Defensive Minefields *Minefields were placed in strategic areas to defend the country in the event of a German invasion. Minefields were not always cleared with an appropriate level of vigilance.*	There is no evidence of defensive minefields affecting the site.

Ordnance Manufacture *Ordnance manufacture indicates an increased chance that items of ordnance were stored, or disposed of, within a location.*	No information of ordnance being stored, produced, or disposed of within the proposed site could be found.
Military Related Airfields *Military airfields present an elevated risk from ordnance simply due to the large military presence and likelihood of associated live ordnance training or bombing practice.*	The site was not situated within the perimeters or vicinity of a military airfield.

14. The Likelihood of UXO Contamination Summary

The following table assesses the likelihood that the site was contaminated by items of German aerial delivered and Allied ordnance. Factors such as the risk of UXO initiation, remaining, and encountering will be discussed later in the report.

UXO Contamination Summary	
Quality of the Historical Record	The research has evaluated pre- and post-WWII Ordnance Survey maps, Luftwaffe reconnaissance imagery, Home Office bombing statistics, consolidated and weekly London bomb census mapping, London V-1 flying bomb mapping, LCC bomb damage mapping, Paddington bomb census reports, London V-1 pilotless aircraft bomb census reports, multiple post-war images dated 1945 and 1946, and further anecdotal accounts. The record set is of generally mixed quality. A number of resources – both written and visual – were available during the production of this report to help ascertain wartime conditions both on the site and within the immediate vicinity. Nevertheless the written records were limited in regards to the period of the war being covered with no records having been available to account for bombing in the latter stages of the war i.e. 1944 a matter that limited the extent to which on-site conditions could be ascertained. In addition, a notable contradiction was observable between post-war imagery and LCC bomb damage mapping with the latter recording the on-site structure as having been far more severely damaged than was apparent in the former.
German Aerial Delivered Ordnance	• During WWII the site was located within the Metropolitan Borough of Paddington, which sustained an overall very-high density of bombing with an average of 255.7 incidents recorded per 1,000 acres according to official Home Office bombing statistics; a figure attributable to the districts close proximity to London city-centre and the abundance of targets in the local vicinity, notably London Paddington Railway Station, located approximately 900m north-west of the site. • The site was, as is, occupied by 2 Hyde Park Place – a Georgian-era multi-storey, terraced property and associated rear garden. • No HE bombs were recorded on-site according to London bomb census mapping. The same source however recorded three incidents just west of the site: one each in May 1941, March 1944, and June 1944. Paddington bomb census reports provided further information regarding the former with the strike having apparently been a 250kg HE that hit No. 4 Hyde Park Place on 10-11 May 1941. Regarding the incidents of March 1944 and June 1944, no further information was available. • A V-1 flying bomb strike was recorded over both the site and the surrounding area according to both London bomb census mapping and LCC bomb damage mapping. London V-1 pilotless aircraft bomb census reports further clarified that this incident struck the pavement outside No. 7 Hyde Park Place (approximately 40m to the west) before penetrating the basements below. There is typically a negligible risk from unexploded V-weapons since they were so large, distinctive, and noisy that the likelihood of them not being observed and removed is considered minimal. • 2 Hyde Park Place sustained blown-out windows and minor roofing damage according to post-war imagery dated 1945 and 1946. Otherwise, the building appeared to have avoided any serious impairment – an observation supported by Paddington Bomb Census Reports which specifically mentioned that only Nos. 4 and 5 had been affected by the incident of 10-11 May 1941. • A large area of cleared ground over the area previously occupied by Nos. 4, 5, 6, and 7 Hyde Park Place was observable across both post-war images. The closest of these to the site was No.4 at an approximate distance of 8m. Normally this would have left the site within range of the J-curve effect whereby a UXB can

	end its trajectory at a lateral offset from point of entry. However, on this occasion, such a risk is lessened by presence of basements underneath the Hyde Park Place terraces. As a result, had a UXB penetrated the ground and began to J-curve towards the site, it is considered unlikely that it would have able to progress beyond the basements in the adjacent properties. • At the start of WWII the site was occupied by a Georgian-era multi-storey terraced property and given the lack of severe damage observable on post-war imagery, the site appeared to have retained this developed composition throughout the bombing campaign. Non-compromised on-site structures typically increased the likelihood of UXB evidence (such as bomb entry holes) being noted and reported during periods of occupation at these locations, as entry holes and unaccounted damage would be easily visible. • It is considered viable that the site remained occupied and accessed until at least 1944. It is considered likely that the damage observable in post-war imagery was caused by the V-1 flying bomb strike of 18 June 1944 although had the site been evacuated after this incident the structure would have only been uninhabited for the latter stages of the war (late 1944 and 1945) by which point, the period of conventional bombing involving high explosive ordnance had largely ended. As a result, it is considered that the site was occupied during the period of most concern (1940, 1941, and early 1944) and inhabited properties were typically associated with a frequent level of access by assigned ARP wardens, property owners, and local residents. • In summary, the risk of UXO contamination at this site is not considered to be significant. It is not thought likely that a UXB would easily have fallen unnoticed and unrecorded within the site boundary as the buildings on and adjacent to the site appear to have survived the war largely undamaged. It is conceivable that an unexploded bomb could have fallen in the debris and rubble to the west of the site – but the likelihood of a UXB ending its trajectory underneath the site foundations is not considered high due to the presence of the adjacent surviving property and basements. Because of the close proximity to three bomb incidents and ruined buildings however, the risk is considered to be slightly elevated above background levels, but not high enough to warrant proactive on-site UXO Support.
Allied Ordnance	• There is no evidence that the site formerly had any military occupation or usage that could have led to contamination with items of Allied ordnance, such as LSA and SAA. The conditions in which HAA or LAA projectiles may have fallen unnoticed within the site boundary are however analogous to those regarding aerial delivered ordnance.

15. The Likelihood that UXO Remains

15.1. Introduction

It is important to consider the extent to which any explosive ordnance clearance (EOC) activities or extensive ground works have occurred on site. This may indicate previous ordnance contamination or reduce the risk that ordnance remains undiscovered.

15.2. UXO Clearance

1st Line Defence has found no evidence in the public domain or within internal records that any official ordnance clearance operations have taken place on site. Note however that we have not received confirmation of this fact from the 33 EOD Regiment Archive (now part of 29 Regt). It should also be noted that in addition to 29 Regt archival information, 1st Line Defence also do not currently have access to data that may be relevant including 5131(BD)SQN Archive, SD Training Technical Advisory Section (TAS) and MACA Records (bomb disposal callouts).

If such information is available at a later date, it is recommended that it be reviewed as it will assist with understanding both levels and types of contamination likely to be present, and may indicate risk reduction in certain areas.

15.3. Post-War Redevelopment

The site has undergone little redevelopment since WWII.

The risk of UXO remaining is considered to be mitigated at the location of and down to the depth of any post-war redevelopment on site.

Within the footprints of post-WWII redevelopments, the risk from shallow-buried UXO (especially 1kg German incendiaries and British AA projectiles) should have been encountered/removed during initial excavations. However, the risk from deep-buried German UXBs will only have been mitigated within the volumes of any post-war pile foundations or deep excavations for basement levels. The risk will remain within virgin geology below and amongst these post-war works, down to the maximum bomb penetration depth.

16. The Likelihood of UXO Encounter

16.1. Introduction

For UXO to pose a risk at a site, there should be a means by which any potential UXO might be encountered on that site.

The likelihood of encountering UXO on the site of proposed would depend on various factors, such as the type of UXO that might be present and the intrusive works planned on site. In most cases, UXO is more likely to be present below surface (buried) than on surface.

In general, the greater the extent and depth of intrusive works, the greater the risk of encountering. The most likely scenarios under which items of UXO could be encountered during construction works is during piling, drilling operations or bulk excavations for basement levels. The overall risk will depend on the extent of the works, such as the numbers of boreholes/piles (if required) and the volume of the excavations.

Generally speaking, the risk of encountering any type of UXO will be minimal for any works planned within the footprint and down to the depth of post-war foundations and excavations.

17. The Likelihood of UXO Initiation

17.1. Introduction

UXO does not spontaneously explode. Older UXO devices will require an external event/energy to create the conditions for detonation to occur. The likelihood that a device will function can depend on a number of factors including the type of weaponry, its age and the amount of energy it is struck with.

17.2. Initiating Aerial Delivered Ordnance

Unexploded bombs do not spontaneously explode. All high explosive filling requires significant energy to create the conditions for detonation to occur.

In recent decades, there have been a number of incidents in Europe where Allied UXBs have detonated, and incidents where fatalities have resulted.. There have been several hypotheses as to the reason why the issue is more prevalent in mainland Europe – reasons could include the significantly greater number of bombs dropped by the Allied forces on occupied Europe, the preferred use by the Allies of mechanical rather than electrical fuzes, and perhaps just good fortune. The risk from UXO in the UK is also being treated very seriously in many sectors of the construction industry, and proactive risk mitigation efforts will also have affected the lack of detonations in the UK.

There are certain construction activities which make initiation more likely, and several potential initiation mechanisms must be considered:

UXB Initiation	
Direct Impact	Unless the fuze or fuze pocket is struck, there needs to be a significant impact e.g. from piling or large and violent mechanical excavation, onto the main body of the weapon to initiate a buried iron bomb. Such violent action can cause the bomb to detonate.
Re- starting the Clock	A small proportion of German WWII bombs employed clockwork fuzes. It is probable that significant corrosion would have taken place within the fuze mechanism over the last 70+ years that would prevent clockwork mechanisms from functioning. Nevertheless, it was reported that the clockwork fuze in a UXB dealt with by 33 EOD Regiment in Surrey in 2002 did re-start.
Friction Impact	The most likely scenario resulting in the detonation of a UXB is friction impact initiating the shock-sensitive fuze explosive. The combined effects of seasonal changes in temperature and general degradation over time can cause explosive compounds to crystallise and extrude out from the main body of the bomb. It may only require a limited amount of energy to initiate the extruded explosive which could detonate the main charge.

18. Consequences of Initiation/Encounter

18.1. Introduction

The repercussions of the inadvertent detonation of UXO during intrusive ground works, or if an item or ordnance is interfered with or disturbed, are potentially profound, both in terms of human and financial cost. A serious risk to life and limb, damage to plant and total site shutdown during follow-up investigations are potential outcomes. However, if appropriate risk mitigation measures are put in place, the chances of initiating an item of UXO during ground works is comparatively low.

The consequences of encountering UXO can be particularly notable in the case of high-profile sites (such as airports and train stations) where it is necessary to evacuate the public from the surrounding area. A site may be closed for anything from a few hours to a week with potentially significant cost in lost time. It should be noted that even the discovery of suspected or possible item of UXO during intrusive works (if handled solely through the authorities), may also involve significant loss of production

18.2. Consequences of Detonation

When considering the potential consequences of a detonation, it is necessary to identify the significant receptors that may be affected. The receptors that may potentially be at risk from a UXO detonation on a construction site will vary depending on the site specific conditions but can be summarised as follows:

- People – site workers, local residents and general public.
- Plant and equipment – construction plant on site.
- Services – subsurface gas, electricity, telecommunications.
- Structures – not only visible damage to above ground buildings, but potentially damage to foundations and the weakening of support structures.
- Environment – introduction of potentially contaminating materials.

19. 1st Line Defence Risk Assessment

19.1. Risk Assessment Stages

Taking into account the quality of the historical evidence, the assessment of the overall risk from unexploded ordnance is based on the following five considerations:

1. That the site was contaminated with unexploded ordnance.
2. That unexploded ordnance remains on site.
3. That such items will be encountered during the proposed works.
4. That ordnance may be initiated by the works operations.
5. The consequences of encountering or initiating ordnance.

19.2. Assessed Risk Level

1st Line Defence has assessed that there is an overall **Low-Medium Risk** from German and anti-aircraft unexploded ordnance at the site of proposed works. There is also an assessed **Negligible Risk** from Allied ordnance.

Ordnance Type	Risk Level			
	Negligible	Low	Medium	High
German Unexploded HE Bombs		✓		
German 1kg Incendiary Bombs		✓		
Allied Anti-Aircraft Artillery Projectiles		✓		
Allied Land Service and Small Arms Ammunition	✓			

Please note – although the risk from unexploded ordnance on this site has been assessed as 'Low', this does not mean there is 'no' risk of encountering UXO. This report has been undertaken with due diligence, and all reasonable care has been taken to access and analyse relevant historical information. By necessity, when dealing historical evidence, and when making assessments of UXO risk, various assumptions have to be made which we have discussed and justified throughout this report. Our reports take a common-sense and practical approach to the assessment of risk, and we strive to be reasonable and pragmatic in our conclusions.

It should however be stressed that if any suspect items are encountered during the proposed works, 1st Line Defence should be contacted for advice/assistance, and to re-assess the risk where necessary. The mitigation measures outlined in the next section are recommended as a minimum precaution to alert ground personnel to the history of the site, what to look out for, and what measures to take in the event that a suspect item is encountered. It should also be noted that the conclusions of this report are based on the scope of works outlined in the 'Proposed Works' section of this report. Should the scope of works change or additional works be proposed, 1st Line Defence should be contacted to re-evaluate the risk.

20. Proposed Risk Mitigation Methodology

20.1. General

The following risk mitigation measures are recommended to support the proposed works at 2 Hyde Park Place, London:

Type of Work	Recommended Mitigation Measure
All Works	• **UXO Risk Management Plan** It is recommended that a site-specific plan for the management of UXO risk be written for this site. This plan should be kept on site and be referred to in the event that a suspect item of UXO is encountered at any stage of the project. It should detail the steps to be taken in the event of such a discovery, considering elements such as communication, raising the alarm, nominated responsible persons etc. Contact 1st Line Defence for help/more information. • **Site Specific UXO Awareness Briefings to all personnel conducting intrusive works.** As a minimum precaution, all personnel working on the site should be briefed on the basic identification of UXO and what to do in the event of encountering a suspect item. This should in the first instance be undertaken by a UXO Specialist. Posters and information on the risk of UXO can be held in the site office for reference.

In making this assessment and recommending these risk mitigation measures, if known, the works outlined in the 'Scope of the Proposed Works' section were considered. Should the planned works be modified or additional intrusive engineering works be considered, 1st Line Defence should be consulted to see if a re-assessment of the risk or mitigation recommendations is necessary.

1st Line Defence Limited **16th October 2020**

This Report has been produced in compliance with the Construction Industry Research and Information Association (CIRIA) C681 guidelines for the writing of Detailed UXO Risk Assessments.

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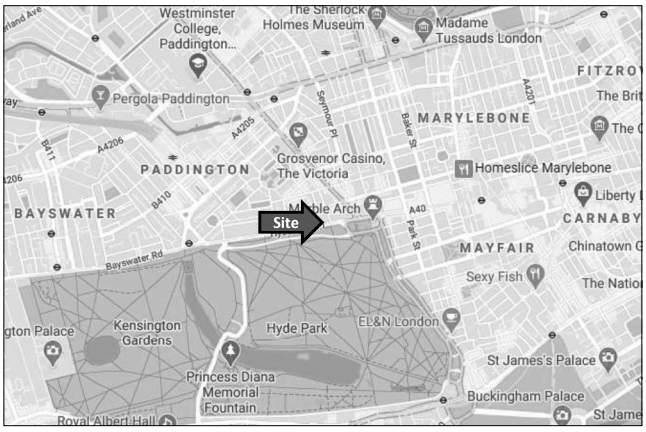
Site Location Mapping

Annex: A



1ST LINE DEFENCE Unit 3, Maple Park Essex Road, Hoddesdon, Hertfordshire. EN11 0EX **Email:** info@1stlinedefence.co.uk **Tel:** +44 (0)1992 245 020	Client: **GEA Ltd**	Approximate site boundary	N
	Project: **2 Hyde Park Place, London**		
	Ref: **DA11941-00**	Source: Google Maps	
	Produced by and Copyright to 1st Line Defence Limited. Registered in England and Wales with CRN: 7717863. VAT No: 128 8833 79		

Recent Aerial Photography

Annex: B

1ST LINE DEFENCE Unit 3, Maple Park Essex Road, Hoddesdon, Hertfordshire. EN11 0EX **Email:** info@1stlinedefence.co.uk **Tel:** +44 (0)1992 245 020	Client: **GEA Ltd**	Approximate site boundary	N
	Project: **2 Hyde Park Place, London**		
	Ref: **DA11941-00**	Source: Google Earth ™ Mapping Services	
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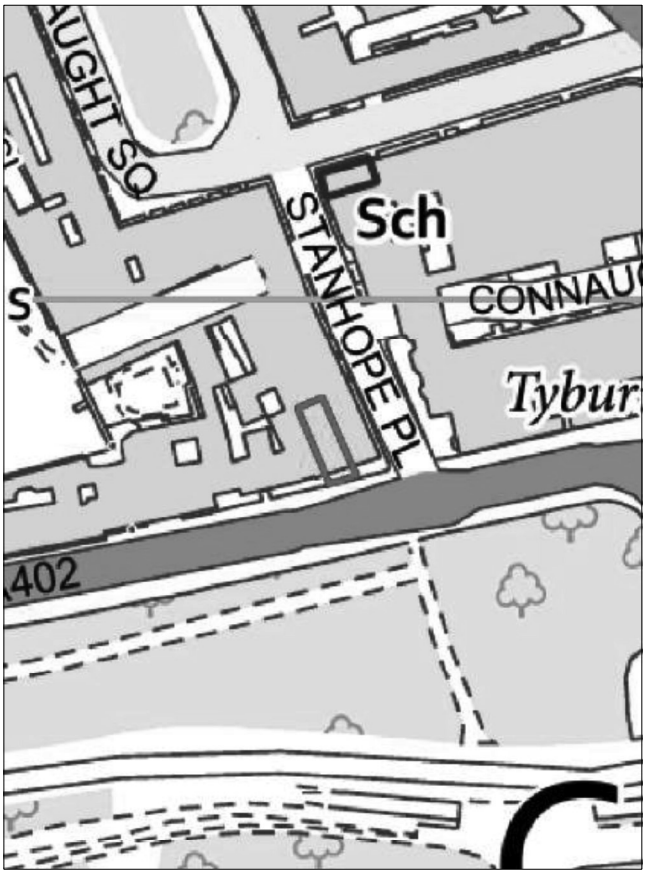
Client Provided Site Plan – Location

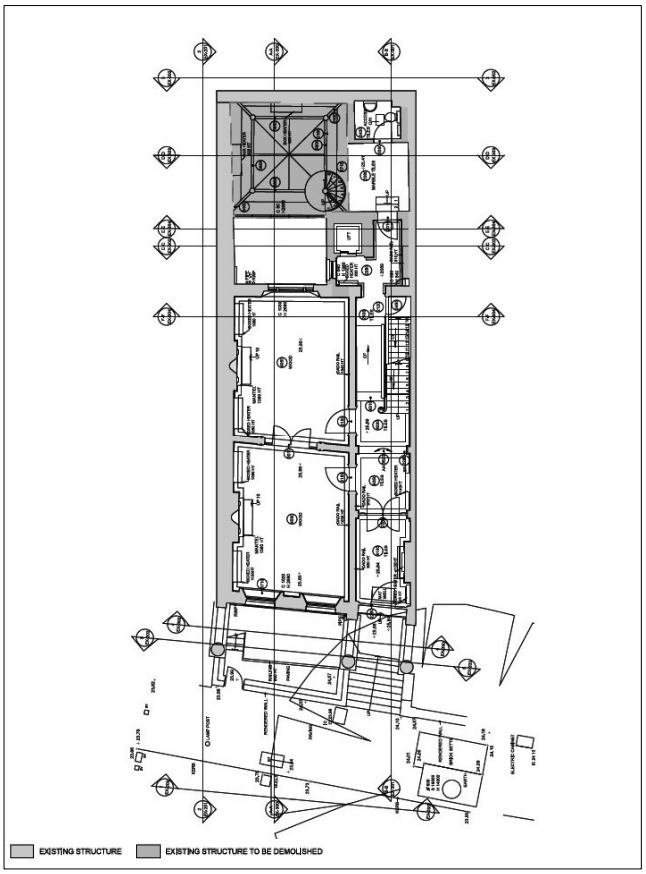
Annex: C1



1ST LINE DEFENCE	Client: GEA Ltd	Approximate site boundary	N
Unit 3, Maple Park Essex Road, Hoddesdon, Hertfordshire. EN11 0EX Email: info@1stlinedefence.co.uk Tel: +44 (0)1992 245 020	Project: 2 Hyde Park Place, London		
	Ref: DA11941-00	Source: GEA Ltd	

Client Provided Site Plan – Floor Plan

Annex: C2



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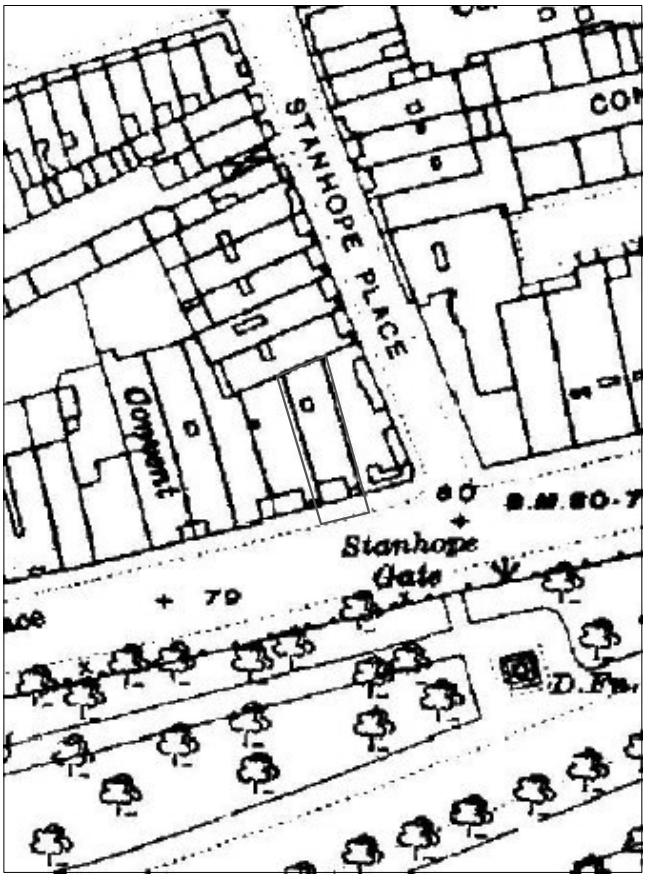
Unit 3, Maple Park Essex Road, Hoddesdon, Hertfordshire. EN11 0EX Email: info@1stlinedefence.co.uk Tel: +44 (0)1992 245 020	Project: 2 Hyde Park Place, London		
	Ref: DA11941-00	Source: GEA Ltd	

1916 Historical Mapping

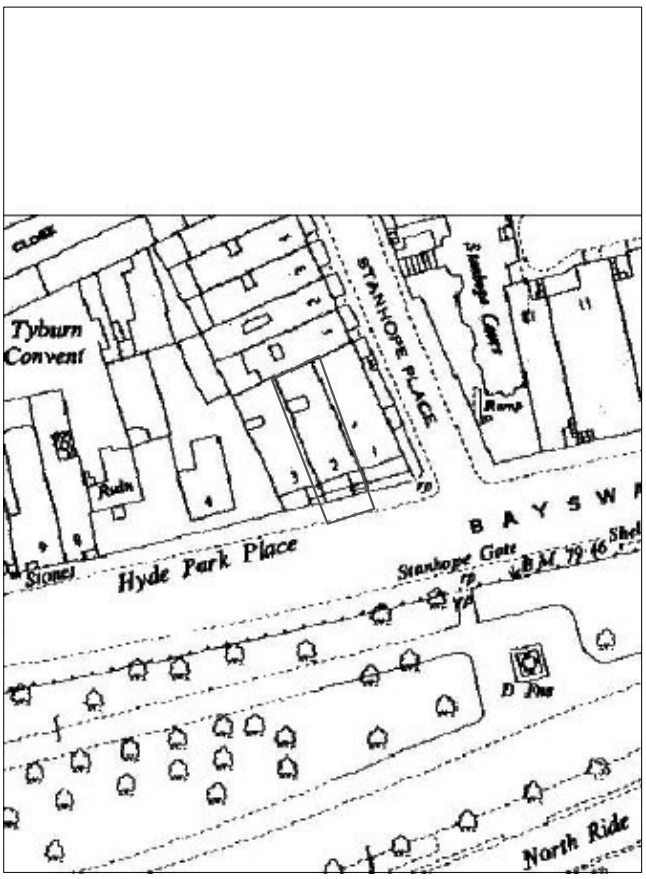
Annex: D1



1ST LINE DEFENCE	Client: GEA Ltd	Approximate site boundary	N
Unit 3, Maple Park Essex Road, Hoddesdon, Hertfordshire. EN11 0EX Email: info@1stlinedefence.co.uk Tel: +44 (0)1992 245 020	Project: 2 Hyde Park Place, London		
	Ref: DA11941-00	Source: Landmark Maps	

1953-1954 Historical Mapping

Annex: D2



1ST LINE DEFENCE	Client: GEA Ltd	Approximate site boundary	N
Unit 3, Maple Park Essex Road, Hoddesdon, Hertfordshire. EN11 0EX Email: info@1stlinedefence.co.uk Tel: +44 (0)1992 245 020	Project: 2 Hyde Park Place, London		
	Ref: DA11941-00	Source: Landmark Maps	