

An architectural rendering of a modern urban street scene. On the left, there are several multi-story buildings with a mix of blue, grey, and white facades and large glass windows. A wide, paved pedestrian walkway runs alongside the buildings, featuring young trees and black lampposts. A silver car is parked on the left side of the walkway. In the foreground, a white silhouette of a person is walking. On the right side of the walkway, there is a fruit and vegetable stand with various produce like oranges, tomatoes, and leafy greens. In the background, a red brick building with a clock tower is visible under a blue sky with light clouds. The overall scene is bright and sunny.

# West Southall Masterplan PADHI Report October 2008

On behalf of:  
National Grid Property Limited



Report Number: 7946

October 2008

## APPLICATION OF PADHI GUIDELINES TO THE PROPOSED WEST SOUTHALL REDEVELOPMENT OF THE FORMER SOUTHALL GAS WORKS

Advantica  
Restricted

Restricted to :National Grid Property &  
Advantica

**Prepared for:**



National Grid Property

Aviary Court,  
Wade Road,  
Basingstoke,  
RG24 8GZ

**Prepared by:**



Advantica  
Holywell Park  
Ashby Road  
Loughborough Leicestershire  
LE11 3GR  
United Kingdom



@advanticagroup.com

Website: [www.advanticagroup.com](http://www.advanticagroup.com)

**Customer Reference:**



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REGISTERED OFFICE: HOLYWELL PARK, NEW ASHBY ROAD, LOUGHBOROUGH, LEICESTERSHIRE, LE11 3GR, UK

## REPORT ISSUE / AMENDMENT RECORD

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<b>Report Number:</b> 7946	<b>Project Title:</b> West Southall Area Redevelopment <b>Project SAP Code:</b> 1/13017-CM01

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***Previous issues of this document shall be destroyed or marked SUPERSEDED***

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## DISTRIBUTION

Name	Company
[REDACTED]	National Grid Property  Aviary Court, Wade Road, Basingstoke, RG24 8GZ



## EXECUTIVE SUMMARY

Operational gas infrastructure retained on the site includes two existing high pressure gas pipelines and one proposed new high pressure pipeline. A single retained waterless gasholder and associated pressure reduction equipment is contained within National Grid Gas' land adjacent to the Application Site. These elements of gas infrastructure are recognised as potential hazardous installations under the Health and Safety Executive's guidelines discussed below. (It is recognised that the current advice to the planning authority from the HSE needs to be updated to acknowledge the decommissioned holders and future pipeline yet to be built.)

For developments near potentially hazardous installations there is a statutory requirement for the Local Planning Authority (LPA) to refer the planning application to the Health and Safety Executive (HSE). The HSE's response will be either that they 'Don't Advise Against' (DAA) granting planning permission for the development on safety grounds or that they 'Advise Against' (AA) the development on safety grounds. The HSE have developed the Planning Advice for Developments near Hazardous Installations (PADHI) methodology to facilitate the provision of planning advice.

The purpose of this report is to assess the proposed development submitted for planning against PADHI guidelines in respect of the remaining operational gasholder and the three high-pressure pipelines and to interpret what the HSE's view is likely to be.

## Conclusions

- a) It is considered that the HSE would give a Don't Advise Against (DAA) decision with respect to the operational gasholder, the Fulmer to Southall pipeline and the proposed Harefield to Southall pipeline
- b) It is considered that the HSE would give an Advise Against (AA) decision with respect to the Southall to Richmond pipeline if it remains on site in its current built form. However, if the Southall to Richmond pipeline is replaced, to standards equal or better than the Fulmer to Southall pipeline, it is considered that the HSE would give a Don't Advise Against (DAA) decision with respect to the Southall to Richmond pipeline.
- c) If the Southall to Richmond pipeline is replaced as indicated in Section 4.4, it is considered that the HSE advice would be Don't Advise Against (DAA) for the West Southall development as a whole, as detailed herein.

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# 1 INTRODUCTION

The West Southall redevelopment aims to regenerate the former Southall Gasworks site (the Application Site). This is an extensive plot of land previously used to manufacture and store gas. Four of the former gasholders are redundant and are now decommissioned. The Fulmer to Southall and Southall to Richmond high-pressure pipelines are routed along the southern boundary of the site adjacent to the railway. There is also a new high-pressure 48" pipeline planned, the Harefield to Southall pipeline, which will cross the centre of the park from the Minet Country Park across Yeading Brook and the canal into the National Grid Gas operational site. These high-pressure pipelines are not specific to the site and similarly pass through adjacent areas of Southall to form a local part of the national gas pipeline network.

An area of land retained by National Grid Gas (NGG) lies adjacent to the Application Site, which contains the single remaining operational "waterless" gasholder and various pressure reduction equipment.

The proposed redevelopment would include the construction of residential, retail and commercial uses, alongside community facilities and open space.

For developments near hazardous installations there is a statutory requirement for the local planning authority to refer the planning application to the Health and Safety Executive (HSE) for guidance. This guidance is given through a model available to the local planning authority. The HSE's response will be either that they 'Advise Against' (AA) granting planning permission for the development on safety grounds or that they 'Don't Advise Against' (DAA) the development. The HSE have developed the Planning Advice for Developments near Hazardous Installations (PADHI) methodology to facilitate the provision of planning advice (1).

The purpose of this report is to compare the proposed development with PADHI guidelines in respect of the installation of the waterless gasholder and the Fulmer to Southall, Southall to Richmond and Harefield to Southall pipelines, and to interpret what the HSE's view is likely to be.

# 2 DESCRIPTION OF SITE AND PROPOSED DEVELOPMENT

The Southall Gasworks Site (the Application Site) is immediately to the north of the main west coast railway line. The layout of part of the existing site is shown in Figure B-1, showing the redundant gasholders, the still-in-use waterless gasholder, and the two long-established high-pressure pipelines. The new Harefield to Southall pipeline route runs west-northwest from the waterless gasholder.

Figure B-1 also shows a number of medium-pressure pipelines in blue. The PADHI methodology applies only to potential major hazard pipelines, i.e. high pressure pipelines. For natural gas, a potential major hazard pipeline is defined as a pipeline operating with a pressure of 7 barg or greater (2). The medium pressure pipelines operate with a pressure of 2 barg or less, hence the PADHI guidelines do not apply to

them. The proposed development is understood to comply with all safety regulations and operating requirements relating to the medium-pressure gas pipelines.

The PADHI consultation zones for all 3 high-pressure pipelines, as they affect the proposed development area, are shown in Figure C-1. The building types that fall within the consultation distances for each of the high-pressure pipelines are detailed in Tables A-3, A-4 and A-5, and considered more fully in Section 4. The illustrative masterplan for the proposed development is shown in Figure C-2 and Figure C-3. The proposed development will consist of residential, retail and commercial uses and community facilities; and would result in a population being present in the vicinity of the operational gasholder and high-pressure pipelines.

## **3 PADHI METHODOLOGY**

### **3.1 PADHI Zones**

The basic approach of the PADHI methodology is to divide the consultation distance for a major hazard into 3 zones:

Zone 1 – Between the hazard and the Inner Zone Boundary

Zone 2 – Between the Inner Zone Boundary and the Middle Zone Boundary

Zone 3 – Between the Middle Zone Boundary and the edge of the Consultation Distance.

Please refer to Figure C1 for details of the Zone.

### **3.2 Development Types**

The PADHI methodology categorises developments into 4 major categories dependent on the sensitivity of the population expected to use the developments. Various types of development fit into each development type category. The 4 major development type categories are as follows:

- a) Sensitivity Level 1 - Work places and dedicated car parks
- b) Sensitivity Level 2 – Indoor and outdoor developments for use by the general public.
- c) Sensitivity Level 3 – Developments for use by vulnerable people, i.e. developments for children, elderly or unwell people.
- d) Sensitivity Level 4 – Large sensitive developments or very large developments for outdoor public use.

Generally, for large developments of a particular development type, the sensitivity level is increased by one level. The examples of this nature that are relevant to the West Southall Development site are discussed below.



### 3.2.1 High – sensitivity residential developments

A housing development which has more than 30 dwellings has an area density greater than 40 dwellings per hectare is considered to be a 'Sensitivity Level 3' development.

### 3.2.2 High - sensitivity indoor place for public use

Developments for use by the general public where the total floor space exceeds 5000m<sup>2</sup> are considered to be a 'Sensitivity Level 3' development.

### 3.2.3 High - sensitivity institutional and educational buildings

Institutional and educational accommodation includes schools and nurseries. While it includes hospitals, convalescent homes and old people's homes, it does not include walk-in health centres. These building types are normally 'Sensitivity Level 3' developments. They become 'Sensitivity Level 4' developments if either of the following criteria apply:

- The development is a day-care only centre with an area exceeding 1.4 hectares.
- The development offers 24-hour care and the site area exceeds 0.25 hectares

## 3.3 Decision Matrix

To determine whether or not to advise against a development proposal, the HSE will establish the sensitivity level of the development, and PADHI zone in which the development falls. The proposal is then compared with the decision matrix given in Table A-1 to either produce an HSE decision to 'Advise Against' (AA) the granting of planning permission or to produce a 'Don't Advise Against' (DAA) supporting decision.

## 3.4 Principal Rules

The PADHI guidelines contain 3 main rules relevant to the proposed Southall Gasworks development. A summary of the rules is quoted from the PADHI guidelines below:

**“RULE 1 – Straddling developments. 1a** Developments that 'straddle' zone boundaries will normally be considered as being in the innermost zone to the major hazard unless either of the two following conditions apply. The development is in the OUTERMOST of the zones if:

- Less than 10% of the site area is inside that boundary; OR
- It is only car parking, landscaping (including gardens of housing), parks and open spaces, golf greens and fairways or access roads etc associated with the development; that are in the inner of the zones.”

**“RULE 2 – Multiple major hazards.** For each major hazard, you need to determine which zone the development is in, after applying the straddling rule if necessary. The final advice is based on the most onerous of the zones that the development is in.”

**“RULE 3 – Multiple-use developments.** You need to use this rule when the planning consultation is for a multiple use development (e.g. a mix of housing, indoor use by the public and a workspace. You need to identify the separate parts of the proposal according to the HSE Development Types. You then need to group together all facilities of the same development type before proceeding (for example before going on to use the straddling rule).”

## **4 APPLICATION OF PADHI METHODOLOGY TO THE WEST SOUTHALL DEVELOPMENT SITE**

Under PADHI Rule 2, the waterless holder and the three high-pressure pipelines are considered as multiple potential major hazards. The PADHI methodology has therefore been applied separately to the proposed developments within the consultation distance of each potential major hazard.

There are no ‘Sensitivity Level 4’ developments proposed for the area within the Consultation Distance of any of the potential major hazards. The Zone 1 area for each of the hazards is of a comparable size to the easement area with no buildings falling within the Zone 1 area. Hence an identified situation of the HSE’s guidelines leading to an ‘Advise Against’ decision would only arise from the location of a Sensitivity Level 3 development falling within or straddling the Middle Zone Boundary.

### **4.1 Waterless MAN Gasholder**

The waterless gasholder is a wooden-roofed waterless gasholder of the MAN type<sup>1</sup>. The Consultation Distance (CD) for such a gasholder is 30m from the edge of the gasholder (3). As such, the area encompassed by the CD falls within the retained National Grid Gas operational site, not the Application Site and the already existent railway. None of the proposed development falls within the CD for the gasholder, hence it is expected that the HSE guidelines would give a DAA decision with respect to the risks arising from the gasholder.

### **4.2 Fulmer to Southall Pipeline**

The CD for this pipeline is 80m. The Middle Zone Boundary coincides with the Inner Zone boundary at a distance of 3m from the pipeline. As this falls within the easement distance for the pipeline, all the building developments within the CD fall within Zone 3.

The proposed building types within CD of the Fulmer to Southall pipeline are listed in Table A-3, together with their Sensitivity Levels. As there are no Sensitivity Level 4 developments within the CD of the pipeline, it is expected that the HSE guidelines would not Advise Against the development.

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<sup>1</sup> This is at variance to current PADHI guidance to the local authority and has been agreed as an accepted variation with the HSE. A water-sealed holder was originally assumed.

The pipeline also passes through an ornamental park and play area. This is classified as a Sensitivity Level 2 development, and as such should not be located within a Zone 1 area. However the zone boundaries for major hazard pipelines are determined by risk levels. As the Middle Zone Boundary of 3m coincides with the Inner Zone Boundary for this pipeline, the area within 3m of the pipeline should be regarded as a Zone 2 area. Furthermore, as the area within the Inner/Middle Zone Boundary is less than 10% of the total area of the park, the park would be regarded as a Zone 3 development under Principal Rule 1. It is therefore expected that the HSE would not Advise Against the development as a result of the proposed park and play area.

Overall, it is expected that the HSE would give a Don't Advise Against (DAA) decision with respect to the Fulmer to Southall pipeline.

### **4.3 Southall to Richmond Pipeline (Existing Construction)**

On the Southall to Richmond pipeline, the Middle Zone Boundary is at a distance of 75m from the pipeline and the CD is a distance of 135m from the pipeline. Hence a substantial portion of the CD is within Zone 2 and therefore should be of a Sensitivity Level 1 or 2.

The proposed building types within CD of the Southall to Richmond pipeline are listed in Table A-4, together with their sensitivity levels. Superficially, there are no Sensitivity Level 3 buildings within Zone 2. However consideration needs to be given to whether the sensitivity level of any development type would be increased due to the size of the development.

#### **4.3.1 DT2.4 developments within Consultation Distance**

Within the CD on the plans are a cinema, retail units and a supermarket. These are all classified as DT2.4 development types, i.e. buildings for indoor use by the general public. Under Principal Rule 3, these would be grouped together as a single development type.

The supermarket has a gross external area of 5,850m<sup>2</sup> (4). The cinema has a gross external area of 4,700m<sup>2</sup>. The non-food retail units have a gross external area of 14,200m<sup>2</sup>, of which approximately 50% is within the CD, and approximately 10% is within the Middle Zone boundary. Under Principal Rule 1, these would all be counted as lying within Zone 2. Therefore the total gross external area of the DT2.4 within the CD is approximately 17,500m<sup>2</sup>.

Typically, approximately 60% of the gross external area of a retail area is available for use by the general public (5). Therefore the minimum retail floor space that the HSE would consider to be within Zone 2 would be 10,500m<sup>2</sup>. However the HSE may regard the DT2.4 type floor space within Zone 2 to be the total floor space of the DT2.4 buildings.

If the total floor space on DT2.4 developments exceeds 5,000m<sup>2</sup>, the sensitivity level of the DT2.4 facilities would be raised to Sensitivity Level 3. It is probable that the HSE would Advise Against (AA) allowing planning permission for the development, as the DT2.4 total floor space of exceeds 5,000m<sup>2</sup>.

#### **4.3.2 DT2.1 developments within Consultation Distance**

The gross external area within the CD of the Southall to Richmond pipeline given over to apartments has been estimated as 7000m<sup>2</sup>. Taking the gross external area of an apartment to be 86.6m<sup>2</sup> (5), the total number of proposed residential dwellings within the CD of the pipeline is well in excess of the 30 dwellings allowed by the DT2.1 classification for housing developments. The sensitivity level of the proposed apartment blocks would therefore be raised to Sensitivity Level 3.

The gross external area of apartments within Zone 2 for the pipeline is estimated to be 1,500m<sup>2</sup>, i.e. approximately 20% of the housing development within the CD. Under Principal Rule 1, the HSE may decide that the housing development should be considered as being within Zone 2. If this were the case, the HSE would Advise Against (AA) the development.

The number of residential units currently proposed across the entire development site is in excess of 3000 units. Principal Rule 1 could be interpreted to mean that more than 300 units must be within the Middle Zone Boundary for the Southall to Richmond pipeline to produce an Advise Against decision.

#### **4.4 Southall to Richmond Pipeline (New Replacement Construction)**

Following the assessment in Section 4.3, it has been considered appropriate to reassess the development proposals against a reconstructed pipeline of improved materials from the pressure reduction station in the NGG compound through to the point where the pipeline leaves the development boundary at the eastern extremity of the site.

The proposed pipeline relay will be constructed from a pipe with a 11.91mm wall thickness, and a minimum steel grade of X52. The zone boundaries for this reconstructed pipeline would be as follows (6):

Inner Zone boundary	3m
Middle Zone boundary	4m
Consultation Distance	80m

The effect of this change to the pipe parameters would be to bring the Middle Zone boundary within the easement distance for the pipeline. Hence all the buildings within the development would fall within the Outer Zone of the CD.

As discussed in Section 4.3, the proposed buildings within the current CD for the Southall to Richmond pipeline are predominantly Sensitivity Level 3 developments. Where these are located within Zone 3 of the CD, it is expected that the HSE would give a Don't Advise Against (DAA) decision to the proposal. There are no Sensitivity Level 4 developments within the CD for this pipeline.

Given that the proposed pipeline replacement is carried out, it is expected that the HSE would give a Don't Advise Against (DAA) decision with respect to the Southall to Richmond pipeline.

## 4.5 Harefield to Southall Pipeline

The CD for this proposed pipeline has been assessed as 180m. The Inner and Middle Zone boundaries for the Harefield to Southall pipeline are set at 3m. There is therefore no proposed building development within Zone 1 and Zone 2 for this pipeline.

The building development types within the CD for this pipeline are listed in Table A-5. There are two Sensitivity Level 3 developments, the school/health centre and the nursery. These would be grouped together as a DT 3.1 development. The combined site area for these developments exceeds 0.25 hectares, but does not exceed 1.4 hectares. Assuming that these developments are day-care only establishments, the development would remain a Sensitivity Level 3 development, and would be considered acceptable as they lie within Zone 3.

The Harefield to Southall pipeline route passes through the same ornamental park and play area as the Fulmer to Southall pipeline. The considerations that apply to the Fulmer to Southall pipeline, discussed in Section 4.2, also apply to the Harefield to Southall pipeline. Therefore the proposal for the ornamental park and play area should not result in an Advise Against (AA) decision with respect to the Harefield to Southall pipeline.

It is therefore expected that the HSE would give a DAA response with respect to the Harefield to Southall pipeline.

## 5 RECOMMENDATIONS

1. It is considered that the HSE would give a Don't Advise Against (DAA) decision with respect to the operational gasholder, the Fulmer to Southall pipeline and the proposed Harefield to Southall pipeline
2. It is considered that the HSE would give an Advise Against (AA) decision with respect to the Southall to Richmond pipeline if it remains on site in its current built form. However if the Southall to Richmond pipeline is replaced to standards equal or better than the Fulmer to Southall pipeline, it is considered that the HSE would give a DAA decision with respect to the Southall to Richmond pipeline.
3. If the Southall to Richmond pipeline is replaced as indicated in Section 4.4, it is considered that the HSE advice would be Don't Advise Against (DAA) for the West Southall development as a whole, as detailed herein.



## **6 REFERENCES**

- 1) Health & Safety Executive, PAHDI – HSE’s Land Use Planning Methodology, March 2003
- 2) Health& Safety Executive, L82 A guide to the Pipelines Safety Regulations 1996”, 1996
- 3) Private communication with HSE. 1999.
- 4) Email from Carla Costelloe, RPG, to Phil Baldwin, Advantica, dated 31/01/2008
- 5) Email from Paul Scott, Make Ltd, to Carla Costelloe, RPG and Phil Lees, Advantica, dated 09/05/2008
- 6) Email from Doug Ford, White Young Green, to Phil Baldwin, Advantica, dated 05/06/2008

## APPENDIX A TABLES

Level of sensitivity	Development in Inner Zone	Development in Middle Zone	Development in Outer Zone
1	DAA	DAA	DAA
2	AA	DAA	DAA
3	AA	AA	DAA
4	AA	AA	AA

DAA = Don't Advise Against

AA = Advise Against

**Table A-1: PADHI decision matrix<sup>2</sup>**

Pipeline Name	Distance to PADHI Zone Boundaries (m) <sup>3</sup>		
	Inner	Middle	Outer (CD)
Fulmer to Southall	3	3	80
Southall to Richmond	8	75	135
Harefield to Southall	3	3	180

**Table A-2: PADHI zone boundaries for high-pressure pipelines within development area**

Development Description	PADHI Development Type
<b>ZONE 1 &amp; 2</b>	
Play space	DT 2.1
<b>ZONE 3</b>	
Townhouses & gardens	DT 2.1
Apartments	DT 2.1
Light Industry	DT 1.1
Energy Centre	DT 1.1
Play Area	DT 2.5

**Table A-3: Development Types for the Fulmer to Southall Pipeline**

<sup>3</sup> Zone distances provided by HSE to National Grid

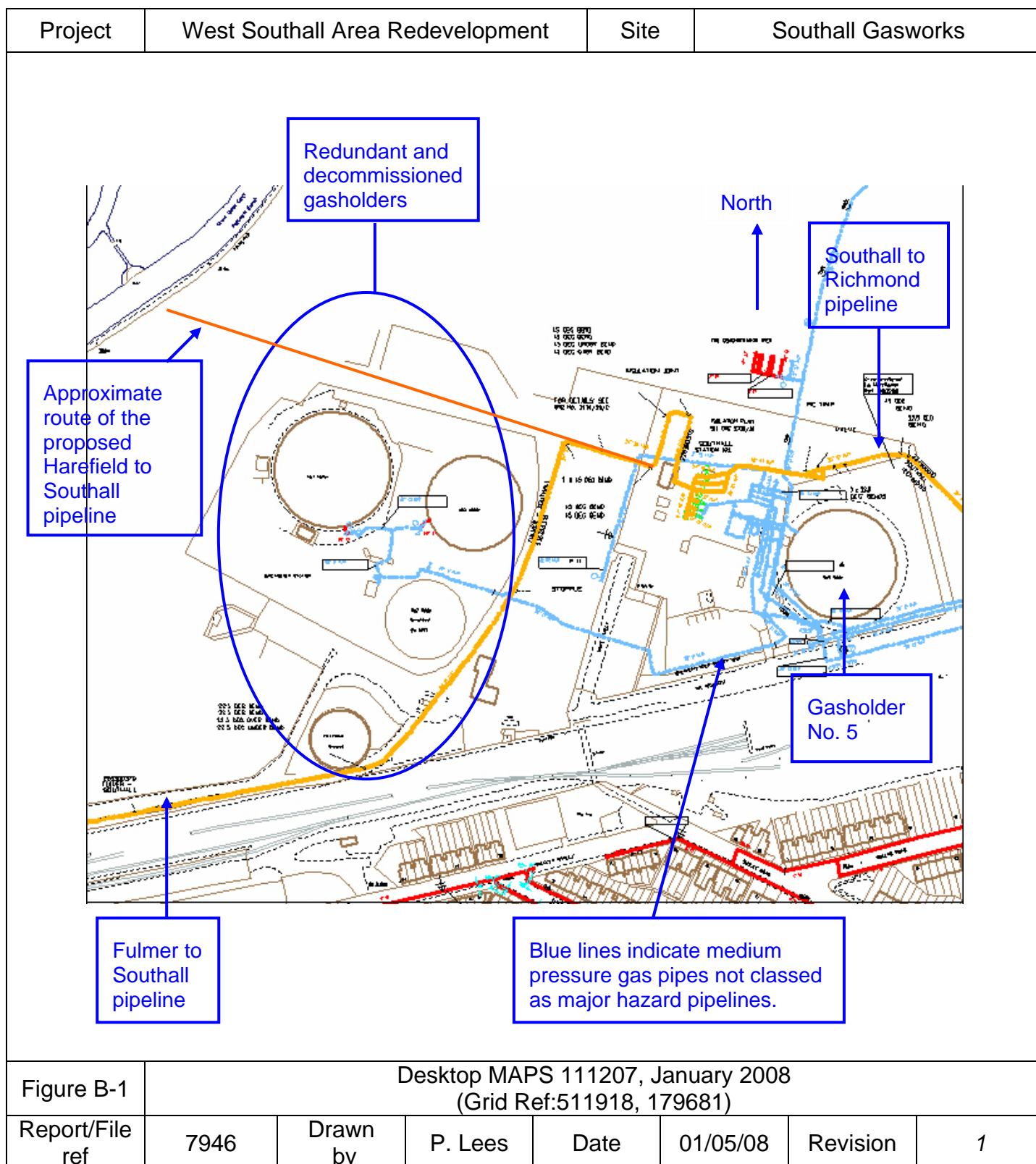
Development Description	PADHI Development Type
<b>ZONE 2</b>	
Studios	DT 1.1 (if used as work places)
Car Parking	DT 1.2 (unless associated with studios)
Cinema	DT 2.4
Food Store	DT 2.4
Other retail	DT 2.4
Apartments	DT 2.1
<b>ZONE 3</b>	
Apartments	DT 2.1
School / Health Centre	DT 3.1
Retail Units	DT 3.1

**Table A-4: Development Types for the Southall to Richmond Pipeline**

Development Description	PADHI Development Type
<b>ZONE 1 &amp; 2</b>	
Play space	DT 2.1
<b>ZONE 3</b>	
Apartments/Town houses	DT 2.1
School / Health Centre	DT 3.1
Retail Units	DT 2.4
Nursery	DT 3.1
Cafes/bars	DT 2.1
Food Store	DT 2.1
Play Area	DT 2.5

**Table A-5: Development Types for the Harefield to Southall Pipeline**

## APPENDIX B MAP OF EXISTING INFRASTRUCTURE



## APPENDIX C MAPS SUPPLIED BY DEVELOPER

[illegible]



Drawn by	White Young Green Environmental Ltd, Dwg No. 501 (Overlay317 Site Plan 070825)		
Project	West Southall Area Redevelopment	Site	Southall Gasworks

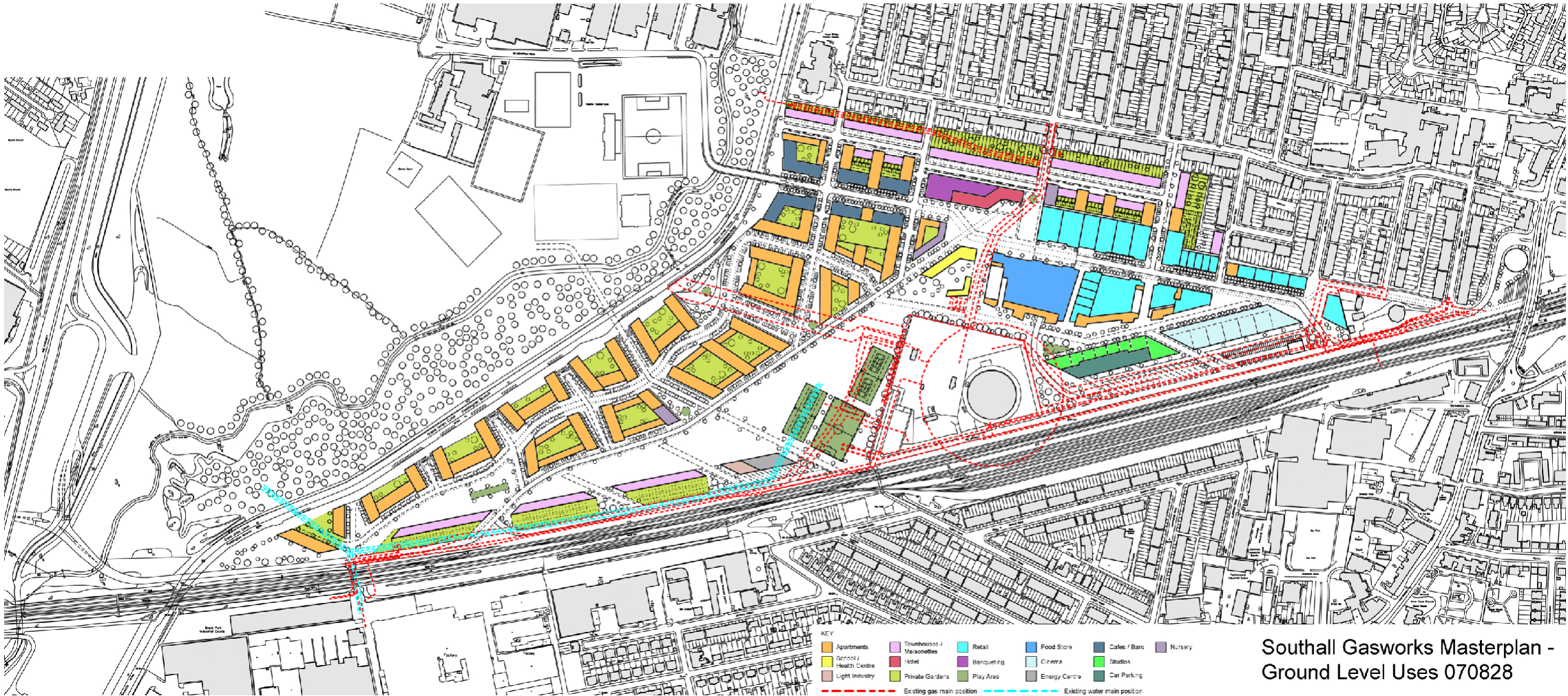


Figure C-2

Southall Gasworks Masterplan, Ground Level Uses 070828



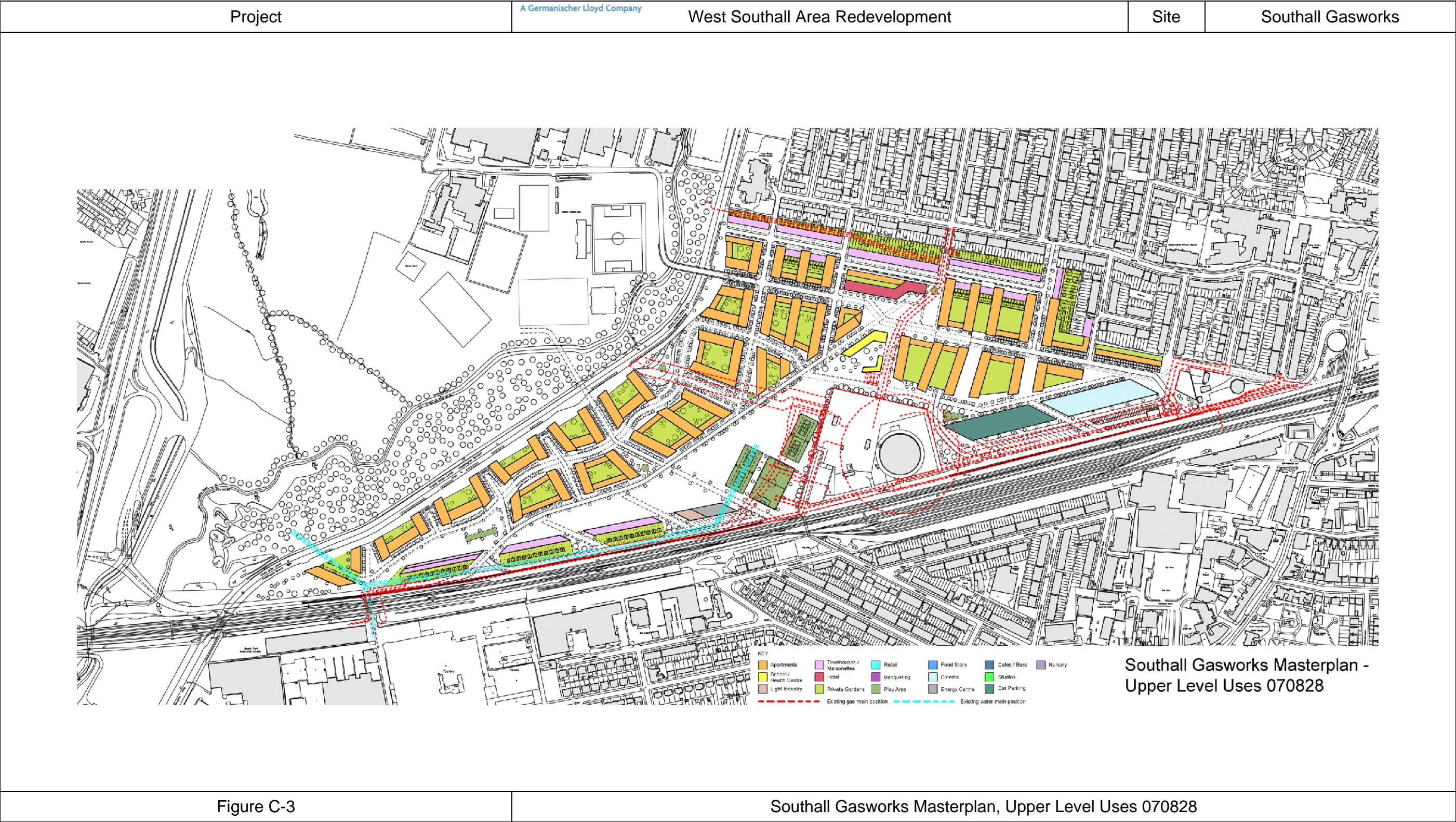


Figure C-3

Southall Gasworks Masterplan, Upper Level Uses 070828

National Grid Property Limited

Beyond Green

Capita Lovejoy

Cyril Sweett

Hakes Associates

Hunt Dobson Stringer

Make

Marks Barfield Architects

PPS Group

RPS

Savell Bird & Axon

Savills

White Young Green