



RiverOak Strategic Partners

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Volume 26: Utilities  
Infrastructure Report**

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Manston Airport Development Consent Order

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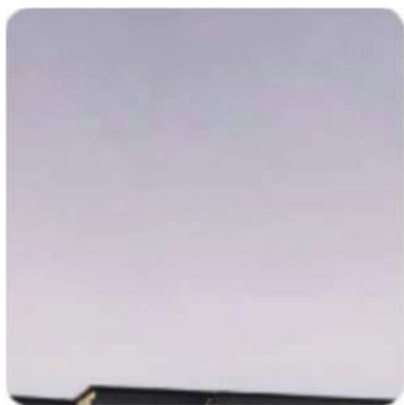


# Volume 26 Contents

## Utilities Infrastructure Report

# MANSTON AIRPORT MASTERPLAN

## Utilities Infrastructure Report



# **MANSTON AIRPORT MASTERPLAN**

## **UTILITIES INFRASTRUCTURE REPORT**

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Our Ref: LSM02874 - Revision 4

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# QUALITY MANAGEMENT

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REVISION	DATE	REMARKS
1	March 2017	Draft Issue.
2	July 2017	Report amended to incorporate Northern Business Park loads. New loads added for each stage of the phased development plan.
3	December 2017	Updated to suit revised masterplan, revised loads and discussions with the Utility Companies.
4	February 2018	Revised to suit new accommodation mix.

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# 1 INTRODUCTION

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- 1.1 This report is a narrative on the utility services availabilities and envisaged future requirements for the Manston Airport site proposals prepared for Riveroak Investment Corporation LLC.
- 1.2 A study has been undertaken to establish the probable utility services requirements of the proposed development over a fifteen year phased development plan, referencing historical services data for the existing infrastructure, previously submitted as part of a planning application for a mixed use redevelopment of the site by the site's present owners, Stone Hill Park Ltd.
- 1.3 Riveroak Strategic Partners LLC proposes to revive Manston Airport as an operational international air freight hub which will also offer passenger transport, executive travel and aircraft engineering services.

## 2 PROJECT PROPOSALS

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### 2.1 Existing Site Description

2.1.1 The existing site comprises a former single runway airfield – with associated hardstandings and buildings enclosed within a site bounded by the A299 (Hengist Way) to the South, B2050 (Manston Road) to the North, B2190 (Spitfire Way) to the West and arable farmland to the East.

2.1.2 The site ceased being utilised as a commercial aviation facility in 2014, becoming largely vacant with only small scale commercial operations associated with the aviation industry remaining.

2.1.3 Much of the existing infrastructure and services associated with its former use as an operational airfield remain insitu. The facilities which comprise of the runway, taxiways, aprons, the passenger terminal, car parking, control towers, hangars and airfield fire and rescue facilities are all retained.

### 2.2 Proposed Development

2.2.1 The proposed development comprises the re-establishment of Manston Airport into a fully operational commercial airfield with the addition of new facilities being introduced over a number of phases.

2.2.2 Initial phasing proposals are as follows:

Phase 1 – The re-commissioning of the existing runway, taxiways and passenger terminal together with the establishment of 8 No. new Code E aircraft stands, a 12,000 m<sup>2</sup> cargo handling facility.

Phase 2 – The establishment of a further 6 No. new Code E cargo aircraft stands, a second cargo handling facility of 16,500 m<sup>2</sup>, refurbishment and opening of 3 existing passenger aircraft stands and construction of a maintenance & recycling facility with a dedicated Code C aircraft stand.

Phase 3 – The establishment of a further 2 No. new aircraft stands, a 14,000 m<sup>2</sup> cargo handling facility, construction of a second maintenance and recycling facility with dedicated Code C aircraft stand and 25,500 m<sup>2</sup> of landside cargo storage.

Phase 4 – The establishment of a further 3 No. new Code E cargo aircraft stands, 23,000 m<sup>2</sup> of cargo handling facility, circa 35,000 m<sup>2</sup> of cargo storage, extension to the passenger terminal including a new Code C passenger stand and a third hanger/aircraft maintenance facility with dedicated Code C aircraft stand.

### 3 UTILITY INFRASTRUCTURE SERVICES

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#### 3.1 General

It has been established from record information that the statutory undertakers operating in the area of Manston Airport are as follows:

- Electricity - UK Power Networks
- Gas - Scotia Gas Networks
- Water - Southern Water
- Telecoms - Openreach BT

#### 3.2 Existing Electricity Network

At present Manston Airport is fed from a number of strategically situated 11,000/415 V substations connected to an 11kV ring running around the site, with the 11 kV supplies being derived from Manston primary substation which is located north of the site on Manston Court Road.

The primary substation is fed via underground 33 kV cables from Richborough Energy Park, a grid connection point, which in turn is connected to the electricity grid via 132 kV overhead lines.

It should be noted that electricity networks are dynamic by nature, and any available spare capacity will be allocated on a 'first come, first served' basis. It can therefore never be assumed that any reported spare capacity will still be available in the future if measures are not progressed to secure capacity. To secure capacity negotiations need to be started with the network operator to secure the required MVA capacity. Network operators usually request a payment based on a cost per MVA basis for reserving capacity.

#### 3.3 Estimated Future Electricity Supply Requirements

Future electrical capacities have been estimated for the phased development and are listed below.

##### 3.3.1 Phase 1

Existing passenger Terminal 2, 200 m <sup>2</sup>	=	190	kVA
Cargo Facility – 12,000 m <sup>2</sup> @ 0.086 kVA/m <sup>2</sup>	=	1,000	kVA
Access storage and parking – 14,000 m <sup>2</sup> @ 0.004 kVA/m <sup>2</sup>	=	56	kVA
8 No. Aircraft stands, allow 1 No. 90 kVA ground power unit per 2 stands	=	360	kVA
Taxiway & aprons 23,000 m <sup>2</sup> @ 0.004 kVA/m <sup>2</sup>	=	92	kVA
Radar and Navigational aids	=	200	kVA

Runway and Approach Lighting 144,000 m <sup>2</sup> @ 0.004 kVA/m <sup>2</sup>	=	576	kVA
Foul Pumping chamber and aerators	=	260	kVA
(assume 100 kW duty/standby pumps and 8 No 20kW horizontal aerators)			
<b>Total estimated additional electrical capacity for Phase 1</b>	<b>=</b>	<b>2,734</b>	<b>kVA</b>

#### Northern Business Park Development - Schedule of Loads

Unit Ref	m <sup>2</sup>	Use	Description	VA/m <sup>2</sup>	Elect kVA
1	11040	B2	Heavy Industrial	145	1,601
2	6048	B2	Heavy Industrial	145	877
3	6144	B2	Heavy Industrial	145	891
4	8320	B2	Heavy Industrial	145	1,206
5	5120	B1	Light Industrial	120	614
6	9384	B2	Heavy Industrial	145	1,361
7	4136	B1	Light Industrial	120	496
8	4816	B1	Light Industrial	120	578
9	4480	B1	Light Industrial	120	538
10	6400	B2	Heavy Industrial	145	928
11	10320	B2	Heavy Industrial	145	1,496
12	8320	B2	Heavy Industrial	145	1,206
13	2688	B1	Light Industrial	120	323
14	5512	B1	Light Industrial	120	661
15	7488	B2	Heavy Industrial	145	1,086
16	6688	B2	Heavy Industrial	145	970
17	6144	B2	Heavy Industrial	145	891
18	6048	B2	Heavy Industrial	145	877

**Additional Capacity required for Business Park Development = 16.6 MVA**

#### 3.3.2 Phase 2

Cargo Facility – 16,000 m <sup>2</sup> @ 0.086 kVA/m <sup>2</sup>	=	1,400	kVA
Access Storage & Parking – 24,371 m <sup>2</sup> @ 0.004 kVA/m <sup>2</sup>	=	100	kVA
6 No. Aircraft stands, allow 1 No. 90 kVA ground power unit per 2 stands	=	270	kVA
Taxiway and Aprons 64,240 m <sup>2</sup> @ 0.004 kVA/m <sup>2</sup>	=	250	kVA
Radar and Navigational aids	=	200	kVA
<b>Total estimated additional electrical capacity for Phase 2</b>	<b>=</b>	<b>2,220</b>	<b>kVA</b>
<b>Total cumulative load (Phases 1 &amp; 2) (excl. business park)</b>	<b>=</b>	<b>4,954</b>	<b>kVA</b>

### 3.3.3 Phase 3

Cargo facility – 14,000 m <sup>2</sup> @ 0.086 kVA/m <sup>2</sup>	=	1, 200	kVA
Access, storage and parking 27,000 m <sup>2</sup> @ 0.004 kVA/m <sup>2</sup>	=	110	kVA
2 No. Aircraft stands, allow 1 No. 90 kVA ground power unit per 2 stands	=	90	kVA
Taxiway & Aprons 90,000 m <sup>2</sup> @ 0.004 kVA/m <sup>2</sup>	=	360	kVA
Radar and Navigational aids	=	200	kVA
<b>Total estimated additional electrical capacity for Phase 3</b>	<b>=</b>	<b>1, 960</b>	<b>kVA</b>

**Total cumulative load (Phases 1, 2 & 3) (excl. business park) = 6, 914 kVA**

### 3.3.4 Phase 4

Terminal additional Area 2,200 m <sup>2</sup>	=	190	kVA
Cargo facility 23,000 m <sup>2</sup> @ 0.086 kVA/m <sup>2</sup>	=	2, 000	kVA
Access, storage and parking 35,000m <sup>2</sup> @ 0.004 kVA/m <sup>2</sup>	=	140	kVA
3 Aircraft Maintenance Hangars	=	3, 000	kVA
6 No. aircraft stands, allow 1 No. 90 kVA ground power unit per 2 stands	=	270	kVA
Taxiway and Aprons 78,350 m <sup>2</sup> @ 0.004 kVA/m <sup>2</sup>	=	320	kVA
Radar and Navigational aids	=	200	kVA
<b>Total estimated additional electricity capacity for Phase 4</b>	<b>=</b>	<b>6, 120</b>	<b>kVA</b>

**Total cumulative load (Phases 1, 2, 3 and 4) (excl. business park) = 13, 034 MVA**

### 3.3.5 Summary of Electrical Loads

The electrical loads demand will increase as the phases of the development come on line. The increase in loads and the associated timescale are shown below:

Electrical Maximum Demand (before overall site diversity)				
Phase	Completion year	Load kVA		
		Airport	Business Park	Cumulative Total
Phase 1	2021	2734	16,600	19,334
Phase 2	2023	4954	16,600	21,554
Phase 3	2030	6914	16,600	23,514
Phase 4	2036	13034	16,600	29,634

The loads indicated above are the maximum connected load, but does not include for site wide diversity. Utility companies calculate the network load requirements based on an after diversity maximum demand (ADMD) basis.

This figure assess that not each of the buildings will simultaneously operate at their estimated maximum demand, and therefore a correction factor is used to diversify the load to avoid oversizing the network. UKPN have advised that they use a figure of 0.66, and therefore for planning purposes the electrical loads for planning purposes are as the table below.

After Diversity Maximum Demand				
Phase	Completion year	Load kVA		
		Airport	Business Park	Cumulative Total
Phase 1	2021	1,804	10,956	12,760
Phase 2	2023	3,270	10,956	14,226
Phase 3	2030	4,563	10,956	15,519
Phase 4	2036	8,602	10,956	19,558

There is an existing 33KV / 11KV primary sub-station (00816 Manston) to the north east of the site that was located there with investment supported by the East Kent Spatial Development company, with the intention of providing power to planned developments in the vicinity.

The extent of the planned developments has to date been fairly low and therefore there is a significant amount of available power, which at the time of the meeting was approximately 20MVA. There is also an 11KV sub-station (343607 Manston Airport) along Spitfire Way to the north west edge of the site which has potentially up to 3MVA of spare capacity. With an element of diversity applied to the currently estimated loads, there is currently sufficient capacity to supply at least the first three phases of the development without any network reinforcement.

If network reinforcement was needed in the future, the Manston Primary sub-station could be expanded by adding additional switches. If the sub-station building was to be increased in size this would require an approximate 20m x 5m building extension. This should be able to be accommodated within their current demised area.

### 3.4 Existing Gas Network

Record information has identified that there are low pressure gas mains in Manston Court Road and Manston Road, East of Manston Court Road (B2050).

Medium pressure mains are located in Spitfire Way (B2190), crossing the site near the Western end of the runway to run along the South side of Hengist Way (A299).

Intermediate pressure mains run parallel to the medium pressure mains in Hengist Way (A299), turning North along Minster Road (B2190).

Scotia Gas Networks has confirmed that the maximum gas load which can be supported before possible network reinforcement is 1733kW (approx. 165m<sup>3</sup>/hr).

### 3.5 Estimated Future Gas Supply Requirements

#### Phase 1

Cargo Facility – 12,000 m <sup>2</sup> @ 80 W/m <sup>2</sup>	=	960 kW	(91.5
m <sup>3</sup> /hr) Northern Business Park Development	=	14,256 kW	(1,358
m <sup>3</sup> /hr) Terminal building – 2,200 m <sup>2</sup> @ 60 W/m <sup>2</sup>	=	132 kW	(1,386
m <sup>3</sup> /hr) <b>Total Phase 1</b>	=	<b>15, 348 kW</b>	<b>(2, 835.5</b>
<b>m<sup>3</sup>/hr)</b>			

#### Phase 2

Cargo Facility = 16,000 m <sup>2</sup> @ 80 W/m <sup>2</sup>	=	1, 280 kW	( 122 m <sup>3</sup> /hr )
<b>Total cumulative load (Phases 1 &amp; 2)</b>	=	<b>16, 628 kW</b>	<b>( 2, 957.5 m<sup>3</sup>/hr )</b>

#### Phase 3

Cargo Facility – 14, 000 m <sup>2</sup> @ 80 W/m <sup>2</sup>	=	1,120 kW	( 107 m <sup>3</sup> /hr )
<b>Total cumulative load (Phases 1, 2 &amp; 3)</b>	=	<b>17, 748 kW</b>	<b>( 3, 064.5 m<sup>3</sup>/hr )</b>

#### Phase 4

Cargo Facility – 23,000 m <sup>2</sup> @ 80 W/m <sup>2</sup>	=	1, 840 kW	( 175 m <sup>3</sup> /hr )
Hangars 19,100m <sup>2</sup> @ 80 W/m <sup>2</sup>	=	1, 528 kW	( 145 m <sup>3</sup> /hr )
Terminal building – 2,200 m <sup>2</sup> @ 60 W/m <sup>2</sup>	=	132 kW	( 1,386 m <sup>3</sup> /hr )
Total estimated gas load Phase 4	=	3, 500 kW	( 1,706 m <sup>3</sup> /hr )
<b>Total cumulative load (Phases 1, 2, 3 &amp; 4)</b>	=	<b>21, 248 kW</b>	<b>( 4, 770.5 m<sup>3</sup>/hr )</b>

### 3.4 Summary of Gas Supply loads

The gas loads demand will increase as the phases of the development come on line. The increase in loads and the associated timescale are shown below:

Phase	Completion year	Load kW			Flow m3 / hr		
		Airport	Business Park	Total	Airport	Business Park	Total
Phase 1	2021	1,092	14,256	15,348	1,478	1,358	2,836
Phase 2	2023	1,280		1,280	122		122
Phase 3	2030	1,120		1,120	107		107
Phase 4	2036	3,500		3,500	1,706		1,706
	<b>Total</b>	<b>6,992</b>	<b>14,256</b>	<b>21,248</b>	<b>3,413</b>	<b>1,358</b>	<b>4,771</b>

SGN Connections have advised through a budget quotation that the Airport can be provided with the additional load within the existing piped network system.

SGN Connections have advised through a budget quotation, that the Northern Business Park can be provided with the additional load and will require an upgrade to the gas pipework network.

3.5 Water

3.5.1 Existing Water Network

Southern Water record drawings have identified the existence of water mains in the vicinity of the site.

The record drawings identify a 7" cast iron main which runs from Hengist Way (A299) on the Southern side of the site, under the runway then turning East towards Manston Village.

It has been assumed that this main serves the existing airport accommodation (final services connection pipes are not recorded on the drawings).

In addition a 20" cast iron trunk main and a 125mm polyethylene service main are located in Spitfire Way (B2190), extending North East along Manston Road.

3.5.2 Estimated Future Water Supply Requirements

Although the scale of the proposed development is large, due to the nature of the proposals the anticipated water requirements are relatively modest.

It is anticipated that each of the Cargo facilities peak potable water demand would not exceed 1.0 litres/second per unit.

The new hanger facility is not expected to exceed 1.0 litres/second, on the assumption that no processes requiring high water usage would be undertaken.

Cold water storage would be utilised for the passenger terminal to maintain domestic water services for amenities and catering facilities.

The development site North of the airport has also been assessed for probable water requirements, with the cumulative load being circa 10 litres/second.

3.5.3 Additional Water Usage – Phase by Phase

Phase 1 Cargo Facility	=	1.0 l/s
Phase 2 Cargo Facility	=	1.0 l/s
<b>Cumulate Increase</b>	<b>=</b>	<b>2.0 l/s</b>
Phase 3 Cargo Facility	=	1.0 l/s
<b>Cumulative Increase</b>	<b>=</b>	<b>3.0 l/s</b>

Phase 4 Cargo Facility	=	1.0 l/s
Hangers	=	1.0 l/s
<b>Cumulative Increase</b>	<b>=</b>	<b>5.0 l/s</b>
Northern Business Development Site	=	10 l/s

### 3.5.4 Summary of water loads

The water loads demand will increase as the phases of the development come on line. The increase in loads and the associated timescale are shown below:

Phase	Completion year	Flow litres / second					
		Airport	Business Park	Total	Diversity	Diversified Load	Cumulative
Phase 1	2021	1	10	11	0.75	8.25	
Phase 2	2023	1		1	0.75	0.75	9.00
Phase 3	2030	1		1	0.75	0.75	9.75
Phase 4	2036	2		2	0.75	1.50	11.25
					<b>Total</b>	<b>11.25</b>	<b>l/s</b>

## 3.9 Telecoms

An existing telephone exchange is situated at the junction of Manston Road (A2050) and Manston Court Road, and from BT Openreach records appears to provide telecom services to the existing airport and surrounding areas.

This exchange is strategically placed to be able to provide telecom services to both the airport and the development site to the North subject to available capacity.

A speed check on available broadband speed in the area has been undertaken, which is reporting a maximum speed of 17mb per second is achievable. No fibre broadband currently exists in the area.

## 3.10 Utility Provision methodology

The proposed methodology for supplying the Business Park and the Airport developments is summarised in the table below, also refer to Appendix A for drawing showing typical arrangement:

Service	Business Park	Airport
Electricity	Electrical cables will emanate from the 33kV /11kV primary substation to the North East of the business park will run buried in ground and ducts run and parallel to roads to serve local sub-stations located on the business park	Electrical cables will emanate from the 33kV /11kV primary substation to the North East of the business park will run buried in ground and ducts run and parallel to roads to serve from the Airport site.
Gas	A new gas main, buried below the pavement will run approx. 1km before entering the site, where it will then run locally in new pipe trenches.	New gas main from existing gas governor runs approximately 15m buried in road from existing local gas infrastructure
Water	Existing water services that run beneath Manston Road will be extended via a new below ground pipe before entering the site, where it will then run locally in new pipe trenches.	Existing water services that run beneath Spitfire Road will be extended via a new below ground pipe before entering the site.
Telecom	Existing telecom ducts that run beneath Manston Road will be extended via new below ground ducts before entering the site, new below ground ducts will run locally.	Existing telecom ducts that run beneath Spitfire Road will be extended via new below ground ducts before entering the site.

## 4 SUMMARY

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The combined new development consisting of the redeveloped airport and the northern business park introduce additional utility loads on the local infrastructure.

For a development of this size there is limited requirement for enhancement to the existing utility infrastructure. The proposed sites benefit from the previous investment made in the local infrastructure by the East Kent Spatial Development company.

Supplies to the airport are immediately available without network enhancement and therefore are available within the planned development timescales.

Supplies to the Northern Business Park are all locally available with some minor medications required to the electrical sub-station to the north the site and gas pipe work infrastructure. The timescales for theses are such that the required supplies can be available to suit the development program for the Northern Business Park.

# APPENDIX A - New Utilities Servicing Provision



MANSTON AIRPORT DEVELOPMENT CONSENT ORDER  
UTILITIES STRATEGY  
REGULATION 5(2)(o)  
THANET DISTRICT COUNCIL



c. 2015 RPS Group

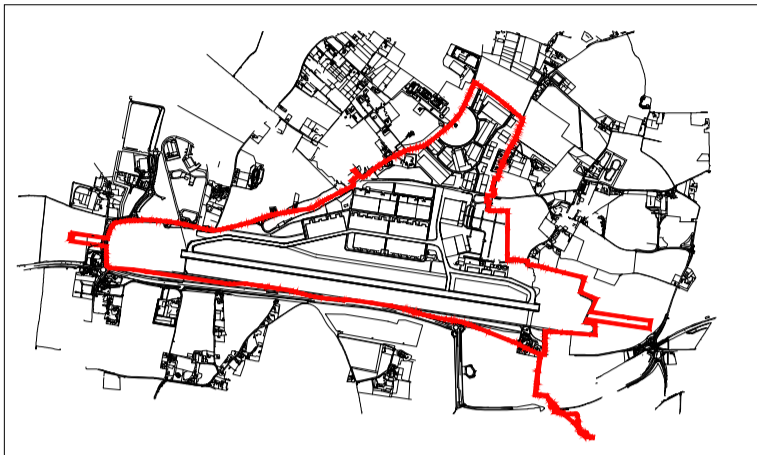
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Safety, Health & Environment Information

In addition to the hazards/risks normally associated with the types of work detailed on this drawing take note below. It is assumed that all works on this drawing will be carried out by a competent contractor, working, where appropriate, to an appropriate method statement.

Construction Risks	Maintenance/Cleaning Risks	Demolition/Adaption Risks



Key Plan  
Scale: NTS

Key

- DCO BOUNDARY
- ELECTRICAL SUPPLY CABLE IN CABLE TRENCH
- WATER/GAS SUPPLY CABLE IN TRENCH

Notes

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100m SCALE 1:7500

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Project MANSTON AIRPORT  
DEVELOPMENT CONSENT ORDER

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THANET DISTRICT COUNCIL

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