Statutory Consultation 2022

Preliminary Environmental Information Report

Volume 3: Appendix 20.4

Drainage Design Statement

Contents

1 INTRODUCTION

1.1 Report purpose

1.1.1 This document has been prepared to outline the proposed surface water and foul water drainage proposals for the application for development consent for the expansion of London Luton Airport (the Proposed Development) by Luton Rising (a trading name of London Luton Airport Limited).

1.1.2 The proposed drainage solution continues to be developed through engagement with key stakeholders and will be updated following the Statutory Consultation for inclusion as part of the application for development consent.

1.2 Proposed Development

1.2.1 The Proposed Development anticipates a significant increase in the number of passengers using the airport, from its current consented capacity of approximately 18 million passengers per year (mppa) to 32 mppa by around 2043.

1.2.2 The Proposed Development would comprise construction of an additional terminal (T2) to the north of the runway, located to the east of the existing terminal (T1). The two-terminal layout would require significant earthworks to create the necessary development platform, provisional details of which have been considered separately, refer to **Chapter 4** of the PEIR.

1.3 Stakeholder engagement

1.3.1 Engagement has been undertaken with the following stakeholders to date:

a. Luton Borough Council;

b. Thames Water (TW);

c. Affinity Water (AW);

d. Hertfordshire County Council;

e. Central Bedfordshire Council;

f. Environment Agency (EA); and

g. London Luton Airport Operations Limited (LLAOL).

In addition, it is considered likely that permits will be required from the following stakeholders:

a. Local authorities;

b. EA; and

c. Luton Borough Council as the Lead Local Flood Authority (LLFA).

1.4 Limitations

1.4.1 The current drainage strategy and future detailed design will be subject to the following:

a. ongoing stakeholder engagement meetings, in particular with AW, TW, the EA and the LLFA;
b. confirmation of the current TW Foul Water (FW) discharge consents for the airport site; and
c. continued coordination and design development, including to have regard to feedback received in response to the 2022 Statutory Consultation.

1.5 Passenger demand forecast

1.5.1 For information on passenger forecasts refer to the **Draft Need Case**.

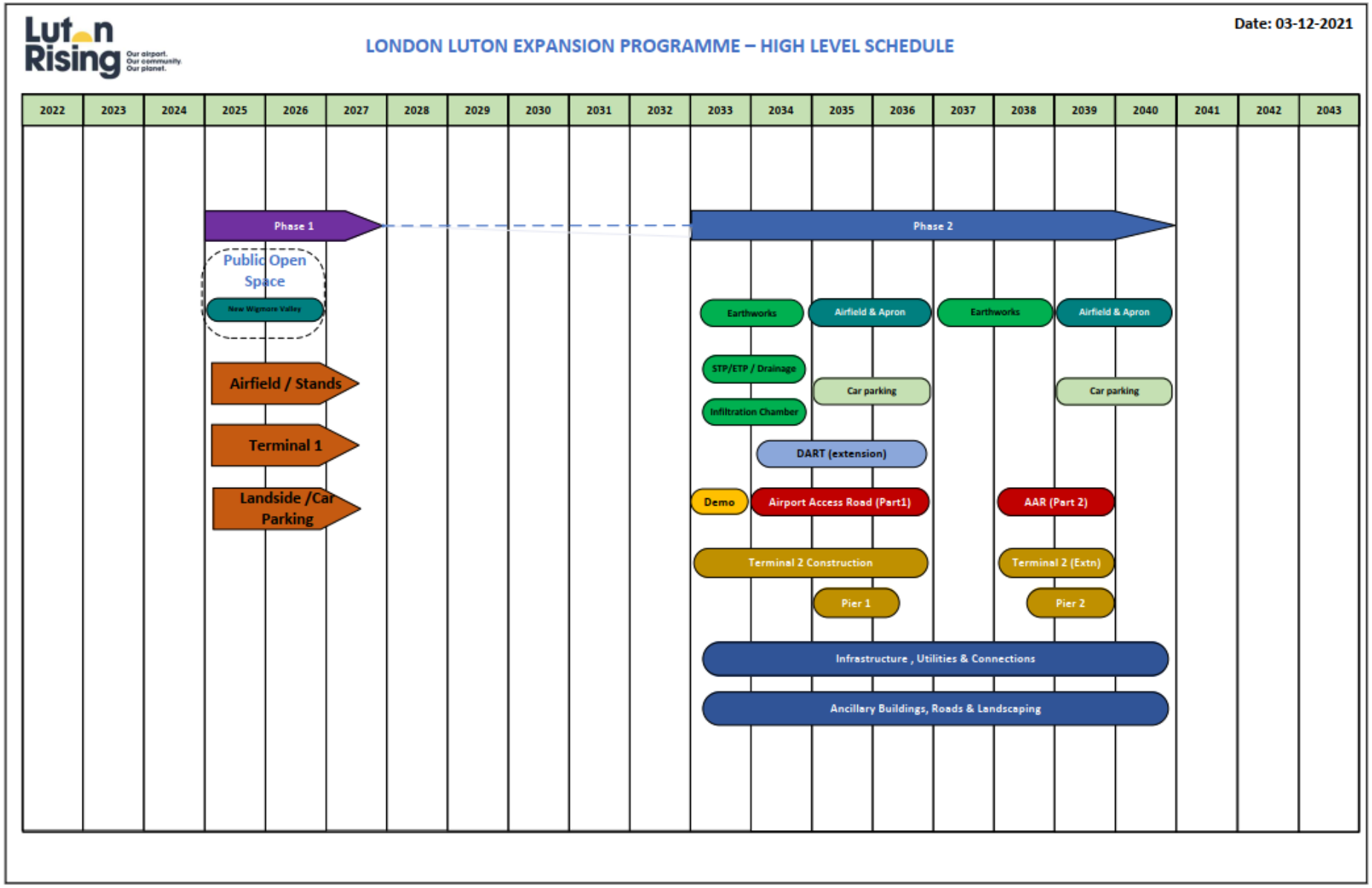
1.6 Phasing strategy

1.6.1 As outlined in **Chapter 5** of the PEIR, the Proposed Development will deliver additional capacity to meet the forecast growth in demand in two construction phases related to increasing capacity at the existing terminal (Phase 1), and the construction of the new terminal (Phase 2). The proposed delivery phases are indicatively shown in Inset 1-1.

1.6.2 However, given the length of time over which the Proposed Development will be constructed, and the step change in passenger numbers from the end of Phase 1 to final full capacity, an interim assessment phase has also been considered to understand environmental effects over the time the Proposed Development is constructed while the airport remains in operation. Therefore, for the purposes of assessment, three assessment phases are considered, as follows:

a. Phase 1: Expansion of existing Terminal 1 (T1) to increase capacity from 18 to 21.5 mppa. It is currently anticipated that Phase 1 works will commence in 2025 and be complete by mid 2027;
b. Phase 2a: Construction of new Terminal 2 (T2) and associated facilities to increase capacity from 21.5 mppa to 27 mppa upon opening. It is currently anticipated that Phase 2a works will commence in early 2033 ending 2036 and will enable a step up in capacity in Q1 2037; and
c. Phase 2b: Expansion of T2 and associated facilities. It is currently anticipated that Phase 2b works will commence in 2037 and will deliver incremental capacity increases from 27 mppa to 32 mppa. The works will be complete to enable a step up in capacity in 2041.

Inset 1-1: London Luton Airport Expansion Programme

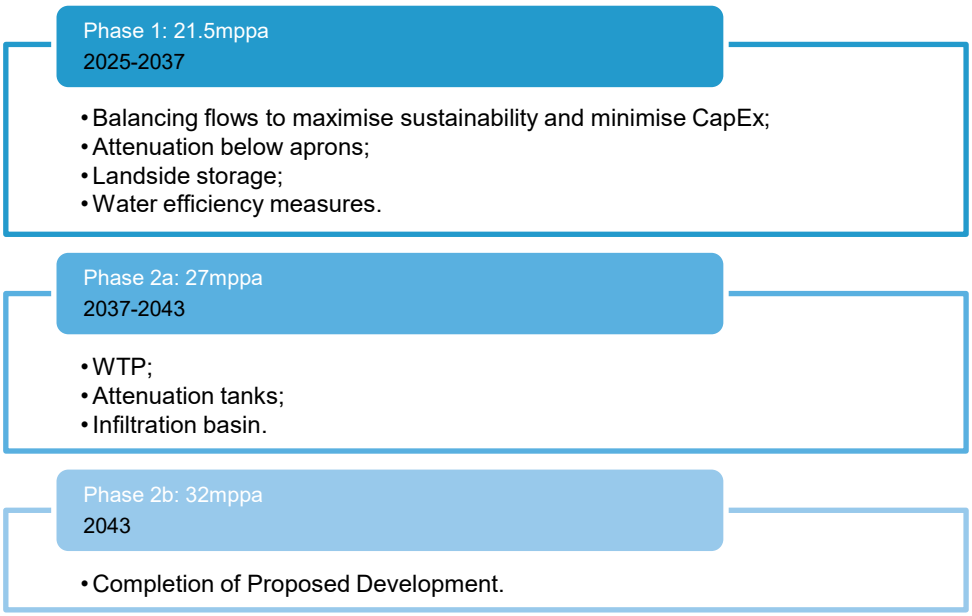


1.6.3 The drainage strategy has been formulated to align with the requirements of the Proposed Development. The strategy combines value driven and sustainable solutions to deliver the infrastructure required, having regard to stakeholder requirements.

1.6.4 The proposed Phase 1 (21.5 mppa) drainage strategy aims to utilise existing infrastructure through the introduction of a rainwater harvesting system along with a series of diversions to facilitate the expansion of the existing campus. The strategy also benefits from the installation of attenuation tanks below proposed aprons to control and monitor contaminants to reduce the risk to the existing soakaways. Furthermore, combined with the incorporation of landside storage, the strategy also aims to enhance the water efficiency measures to reduce the total water consumption to less than 6.98litres/passenger by end of 2023, representing a 10% reduction from the 2018 baseline (Ref 1.1).

1.6.5 The main drainage infrastructure will be installed at the start of Phase 2. This includes the installation of the Water Treatment Plant (WTP), attenuation tanks and infiltration basins, which for assessment purposes, would be delivered in Phase 2a. For assessment Phase 2b, the majority of the infrastructure is assumed to have been already installed, thereby facilitating the continued expansion of T2 facilities during this Phase.

Inset 1-2: Assumed delivery of drainage infrastructure for assessment purposes



2 SITE DETAILS

2.0 Location

2.0.0 The Application Site is located on the south eastern outskirts of Luton, about 3km east of the town centre. It is bound to the north by Eaton Green Road and Darley Road, and its remaining boundaries are not currently fixed. The topography is currently relatively undulating, falling up to 30m towards the south and east.

2.1 Geology

2.1.1 The prevailing underlying bedrock geology is understood to comprise chalk deposits and the bedrock aquifer is designated by the Environment Agency as a Principal Aquifer. Groundwater in the local area is understood to be abstracted from this aquifer for potable supply, with the nearest abstraction borehole located about 1.5km to the north east. The Application Site boundaries are within Zone 3 of a groundwater Source Protection Zone 0.

2.1.2 Superficial deposits comprising gravelly clay soil overlie the Chalk locally. It is also recognised that a former landfill known as Eaton Green Landfill lies on the eastern side of the site, extending to some 50ha and up to 20m deep.

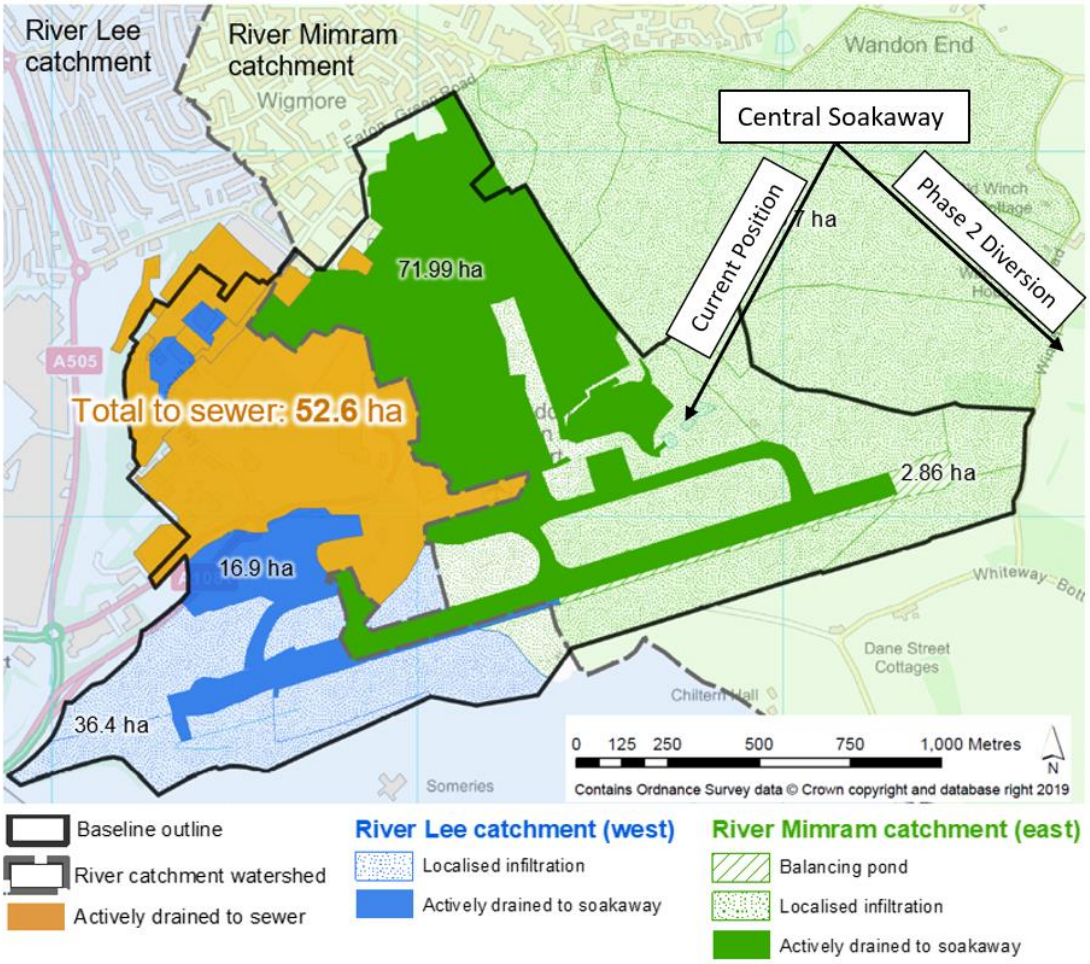
2.1.3 The Chalk aquifer underneath the airport forms part of the “Upper Lea Chalk” (Ref 1.2). Existing information indicates that the Chalk aquifer has suffered contamination in the past, including from airport operations, and is considered by the Environment Agency to be in a “Poor” condition and expected to meet “Good” status by 2027.

2.2 Hydrology

2.2.1 The River Lea is located about 600m west of the existing airport and is divided over two WFD waterbodies: Lea (from Luton to Luton Hoo Lakes, WFD ID GB106038033391) and Lea (from Luton Hoo Lakes to Hertford, WFD ID GB106038033392). These two waterbodies are considered to be in “Bad” and “Moderate” condition respectively. The Lea from Luton to Luton Hoo Lakes is expected to meet “Good” status by 2027. There is no objective for the Lea from Luton Hoo Lakes to Hertford.

2.2.2 Inset 2-1 illustrates the existing catchment areas and watershed line at the airport, dividing the airport into two distinct catchments. The first to the west discharges into the River Lea and the second to the east discharges into the Mimram valley. It is important to note that the proposed drainage infrastructure avoids diverting SW discharges across different catchment areas, thus flooding and/or drought patterns downstream remain unchanged.

Inset 2-1: London Luton Airport catchment areas



The changes in impermeable areas within the catchment zones that have been assumed for each assessment phase are summarised in Inset 2-2: Changes in impermeable areas within the catchment zones for each assessment phase.

Inset 2-2: Changes in impermeable areas within the catchment zones for each assessment phase

	Existing (18mppa)	Phase 1 (21.5mppa)	Phase 2a (27mppa)	Phase 2b (32mppa)
River Mimram Catchment	71.99ha	88.4ha	108.9ha	131.1ha
River Lee Catchment through Thames Water Surface Water Network	52.6ha	52.6ha	52.6ha	52.6ha
River Lee Catchment through Soakaway	16.9ha	16.9ha	16.9ha*	16.9ha*

3 DRAINAGE PROPOSALS

3.0 Existing drainage network and projections

3.0.0 The airport currently drains via a combination of discharges to SW and FW public sewers and a number of infiltration-based systems.

3.0.1 On 26 May 2021 during a meeting with VEOLIA, it was confirmed that at the airport site, and within the proposed development boundary, VEOLIA acts on behalf of LLAOL to look after:

a. the potable water network (**Appendix E**); and

b. the FW network (**Appendix G**).

3.0.2 The SW network (**Appendix F**) however is managed by LLAOL.

3.0.3 At that meeting, VEOLIA confirmed that 95% of the potable water supply was used as the basis to determine the FW discharge to TW. It is assumed in forecasts that 100% of the potable water supply will be discharged as FW.

3.0.4 The total potable water consumption for the entire airport during 2019/2020 (illustrated in **Appendix E**) was provided by VEOLIA. Potable water at the airport is supplied by AW where the total annual consumption was 236,756m^3. An average AW supply average was calculated accordingly at 7.5l/s.

3.0.5 Surveys are required to determine the full details of the current drainage arrangements. At this stage therefore, and based on the available record drawings, an assessment has been made of the existing airport catchment likely to require replacement drainage infrastructure as a function of the Proposed Development.

3.0.6 The extent of proposed hard surfacing requiring engineered drainage has been determined from reference designs, and allowance has been made for a degree of runoff from new areas of managed soft landscaping. Drawings in **Appendix A** illustrate the total catchment assumed for the different phases of the preliminary design.

3.0.7 It is noted that during the winter period (typically November to April), in line with Civil Aviation Authority (CAA) regulatory requirements, it is necessary to prevent the build-up of ice on aircraft and hard surfaces (anti-icing) or remove any ice already present (de-icing). The type of chemicals used for this are typically organic (e.g. glycol, formate or acetate based). These substances require removal from surface water runoff to prevent contamination of the aquifers.

3.0.8 Outside of the winter period SW runoff is not affected by de-icing chemicals and any sediments and hydrocarbons can be managed through well-established techniques such as silt traps and full retention separators. Some contingency measures for larger spills would be required, for example temporary bunds and vacuum pumps to cylinders tanks that are then exported from site and re-cycled.

3.0.9 Over the years the winter de-icing operations at the airport are increasing in effectiveness, and latest de-icing consumption figures show a sustained drop

from year to year. It is anticipated that the trend of reduced consumptions, increased re-cycling and decreased discharge will continue.

3.1 Phase 1

3.1.1 Key data such as current TW FW and SW consents are yet to be established. Searches are ongoing for this data, which will be subject to a full reconciliation with LLAOL and will form the benchmark from which the development will be measured for years to come. It is therefore essential that the benchmarks be precisely determined.

3.1.2 **Surface water proposals**

3.1.3 Phase 1 will involve several changes to the airport layout. This will include the following:

a. integration of the rainwater harvesting strategy for existing buildings;

b. the existing long stay car park (LSCP), Zone G on Inset 3-1, is to remain but area reduced by approximately 64,400m^2 reducing the amount discharged into the Central Soakaway;

c. new temporary car park proposed north east of existing LSCP, Zone F on Inset 3-1, comprising an area of 68,500m^2 to discharge into TW network north east of the airport; and

d. new apron south east of the airport, Zone C on Inset 3-1, encompassing an area of 44,250m^2 to discharge into the Central Soakaway.

3.1.4 As illustrated in section 1.6.3, the Phase 1 drainage strategy will involve a number of concepts which would effectively utilise the existing infrastructure. These consist of balancing flows using rainwater harvesting, potential attenuation below aprons, landside storage as well as water efficiency measures.

3.1.5 The balancing of flows will be critical to optimise the use of the existing infrastructure and consists of the points below, based on reasonable assumptions as relevant data is outstanding and will be required to confirm the design. This will continue to be developed with the stakeholders throughout the Development Consent Order process.

3.1.6 The rainwater harvesting strategy at Phase 1, will aim to collect water from the existing airport buildings illustrated in Inset 3-1. This includes T1 (Zone A) and other buildings (Zone B).

3.1.7 The evaluation of the proposed apron catchment area at Phase 1, south east of the airport, Zone C on Inset 3-1. Due to its proximity to the Central Soakaway, the drainage strategy considers the new apron's 44,250m^2 catchment area to discharge into the Central Soakaway. Live monitoring of contaminants is proposed to safeguard the Central Soakaway and divert contaminated flow.

3.1.8 During this Phase the SW will discharge to the existing Central Soakaway located east of the existing engine run-up bay. The discharge rate of the airfield surface water has been calculated to the green field run-off rate (GRR) and to

achieve this, an attenuation tank of approximately 4000m^3 is required under the apron to limit the discharge to the soakaway.

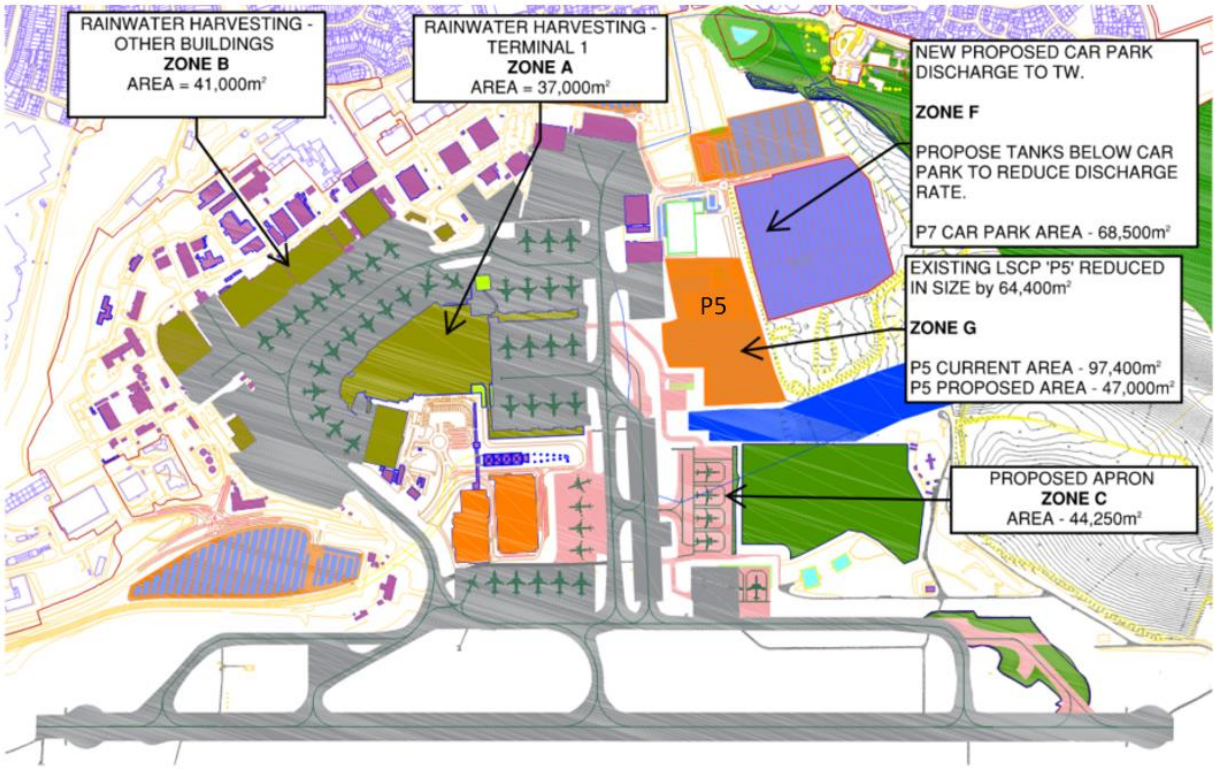
3.1.9 The existing Central Soakaway will be removed for Phase 2 as the proposed WTP will then be in place and operational as will the proposed drainage infrastructure for the airfield.

3.1.10 For Phase 2, the attenuation tanks required for Phase 1 will remain in place under the apron and will continue to restrict the discharge to the GRR. As such, there is a potential opportunity to further utilise this attenuation tank to control the discharge to the water treatment plant.

3.1.11 The new proposed car park north east of the airport at Phase 1, referred to as Zone F in Inset 3-1, will discharge to the TW network at President and Frank Lester Way to the north of the airport. It is noted from the SW network provided by VEOLIA, the TW network eventually discharges into the northern soakaway in this region. To help eliminate the increased discharge rate into the TW network, an attenuation tank is proposed, below the car park, to remove the risk of flooding and release water at a controlled rate.

3.1.12 The existing long stay car park east of T1, referred to as Zone G in Inset 3-1, will reduce in size by approximately 64,400m^2 to accommodate the new Phase 1 aprons to the south. A review of the VEOLIA SW network indicates that this car park is currently discharging into the Central Soakaway. Therefore, the reduction in impermeable catchment area will reduce the discharge into the Central Soakaway.

Inset 3-1: Balancing flows to maximise sustainability and minimise capex



EXISTING BUILDINGS – ZONE A&B
Total Roof Area (apprx. 78,000m²)

PROPOSED APRON – ZONE C
Total Area (apprx. 44,250m²)

New Proposed Car Park - Zone F
Total Area (apprx. 68,500m²)

P5 — Existing Modified Car Park - Zone G
Total Area (apprx. 64,400m²)

It is noted that a multi-storey car park has now been constructed (beneath proposed diversion P4). Review of updated SW network to confirm.

EXISTING SW NETWORK

Existing Buildings	80% to TW 20% to Central Soakaway
Existing Car Park	100% to Central Soakaway

PROPOSED SW NETWORK (Phase 1)

Existing Buildings	Diverted to Rainwater Harvesting Tanks with Overflow to Ground
Proposed Apron	Runoff to Central Soakaway (Quality Monitoring)
Existing Car Park	100% to Central Soakaway
New Proposed Car Park	100% to TW

3.1.13 The impact on the SW networks, including the Central Soakaway and TW are summarised below:

a. Central Soakaway:

There are two diversions away from the Central Soakaway:

i. Roof Rainwater Harvesting (Zone A & Zone B); and

ii. Reduction in Car Park Area Zone G – P5.

	Central Soakaway Catchment Area Discharge (m^2)
Roof Rainwater Harvesting - from **Zone A & B** (To storage tanks)	(7,000+7,600) = -14,600
Reduction in Existing Long Stay Car Park Area from **Zone G – P5**	-64,400
Total Area Diverted Away from Central Soakaway (m^2)	**- 79,000**
Total Area of Proposed Aprons Discharging to Central Soakaway (m^2)	**+ 44,250**
Net Discharge Area into Central Soakaway (m^2)	**- 34,750**

Therefore, the net discharge area is -34,750m^2, and the overall discharge into the Central Soakaway is reduced.

b. TW SW network:

The rainwater harvesting system will reduce discharge into TW through collecting and re-cycling roof rainwater from T1 (Zone A) and other buildings (Zone B).

	Thames Water Catchment Area (m^2)
Roof Rainwater Harvesting from **Zone A** and **Zone B** (To Storage Tanks)	(30,500+26,500) = -57,000
Additional Car Park Area – **Zone F – P7**	+68,500
Net Area Discharge into Thames Water Network (m^2)	**+11,500**

The total net increase in SW discharge area into TW network is 11,500m^2.

The total increase is to the North TW network that discharges to the northern soakaway. There may be solutions involving tanks to discharge at agreed rates with TW, however Zone F is above the deeper end of the landfill and any tanks will need to be coordinated with the landfill to avoid risks of contamination.

3.1.14 It appears that the balancing of flows could yield a net increase in discharge into the TW network while reducing the current levels of discharge into the Central Soakaway. This will continue to be developed with the stakeholders throughout the Development Consent Order process.

3.1.15 The potential installation of the airside attenuation tanks below aprons offers the opportunities below:

a. if the apron earthworks around the Central Soakaway impede on its capacity, the apron attenuation could assist discharge to Central Soakaway;

b. the reduction of the volume of the fill beneath the aprons;

c. the potential to defer the creation of the surface car park platform to the east by reducing the need to build attenuation in that location; and

d. the live monitoring of contaminants and the potential to divert contaminated flows to temporary storage to be tankered away at a later date.

3.1.16 Water efficiency measures for the existing terminal will be considered. This can be achieved through the following options:

a. Reduction in water consumption per passenger – reduced demand, and foul water discharge. This aligns with LLAOL's objectives to reduce total water consumption to less than 6.98 litres/pax by the end of 2023, representing a 10% reduction from the 2018 baseline (Ref 1.1).

b. Reduction in use of potable water in applications where non-potable water can be used.

c. Water efficient appliances and equipment to be used within the terminal.

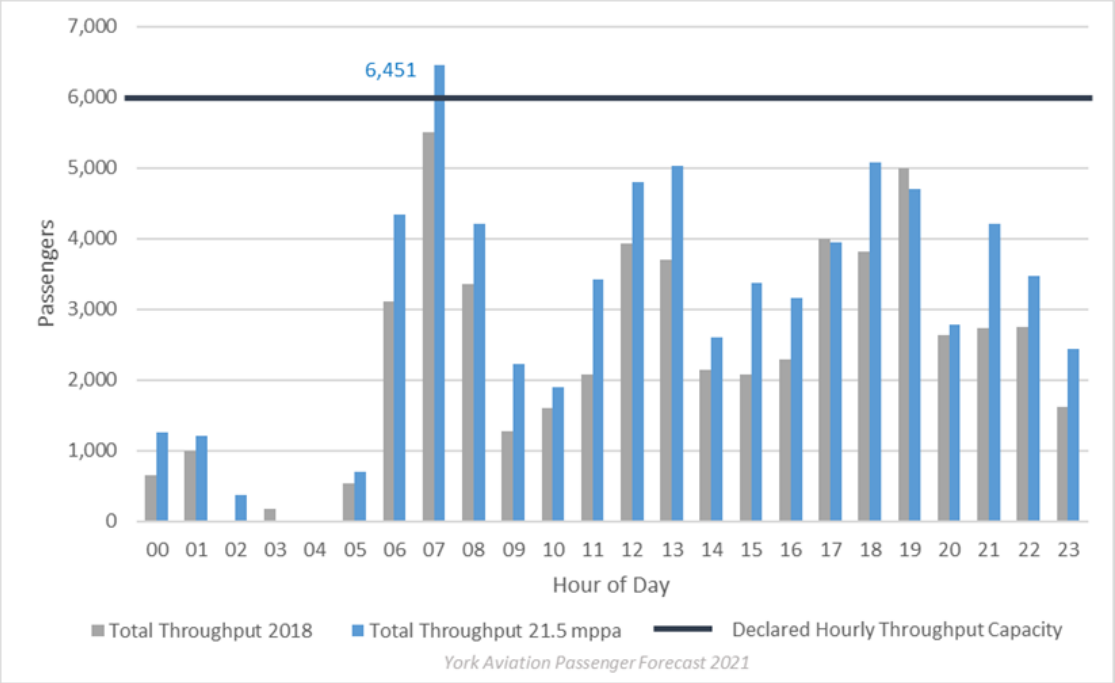
3.1.17 **Foul water proposals**

3.1.18 The LLAOL 19mmpa Drainage and Water Supply Infrastructure Appraisal (Ref 1.3) confirms in Inset 3.1 that the declared passenger capacity throughput per hour is 6000 passengers.

3.1.19 Moreover, as T1 expands to 21.5 mppa, this will increase the FW discharge through the existing TW network. The passenger forecast for Phase 1, shown in Inset 3-2, indicates a net peak increase in passenger throughput at 7am. This is an increase of 451 passengers above the declared airport capacity of 6,000 passengers per hour. Current proposals to accommodate the resulting increase in discharge is to attenuate this peak with added 5.9m^3 storage tanks and discharging it into the network at later hours of the day where the network is not at capacity. Discussions with TW are ongoing to address this projected peak in passenger throughput and eliminate the need for a new storage tank.

3.1.20 Surface runoff from new aircraft stands will be separated from the SW system and attenuated in storage tanks if contaminated by winter de-icing operations. These tanks will be emptied in a controlled manner to TW FW network in Phase 1. Alternatively, these can be emptied using tankers.

Inset 3-2: Passenger daily forecast



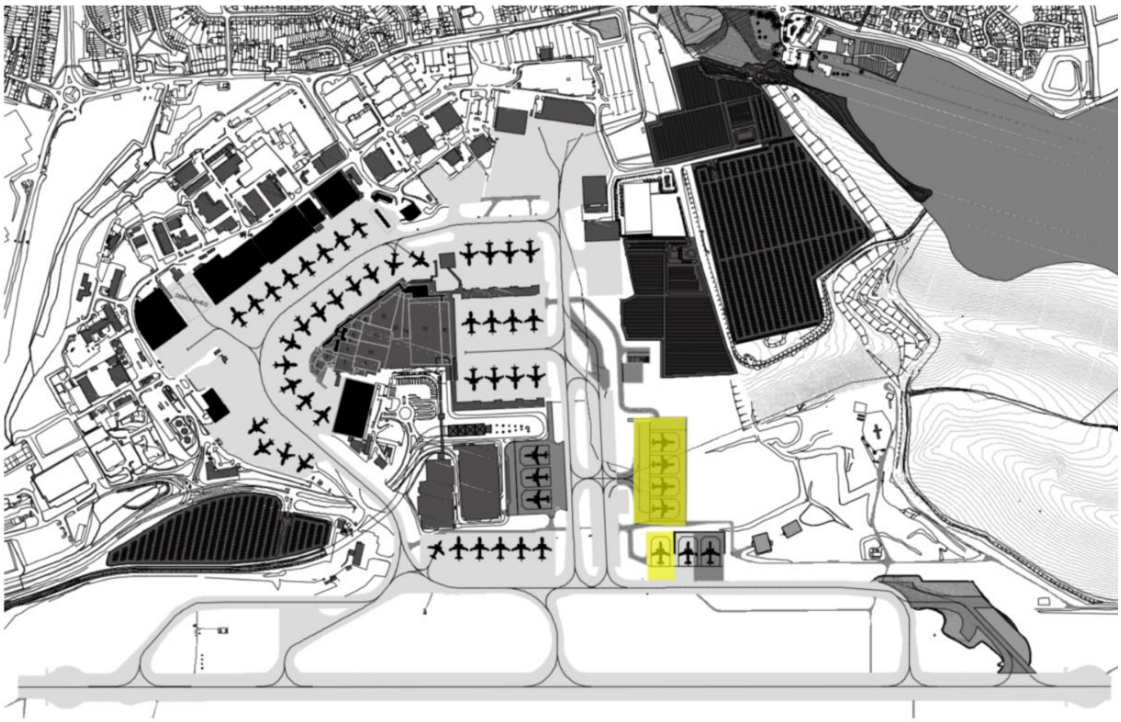
3.1.21 In addition to the airside SW attenuation tanks proposed for Phase 1, a polluted holding tank would be provided with a connection to TW's existing infrastructure when monitoring levels dictate.

3.1.22 For the south east stands shown on the 21 mppa proposals in **Appendix B**, a central polluted holding tank is proposed with an approximate capacity of 1,080m^3. The proposed upstream manholes will monitor the water quality and the proposed downstream manhole will offer flow control to the polluted water holding tank by means of an automated butterfly valve.

3.1.23 The polluted water from the tank will then be pumped by a rising main which will connect to the existing TW infrastructure to the north of the stands.

3.1.24 The proposed layout for the polluted tanks and their connections is shown on the drawing in **Appendix B**. The monitored airside area during Phase 1 will be limited to the stands where de-icing agents will be used. These are highlighted in Inset 3-3 below.

Inset 3-3: Phase 1 stands monitoring extents



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3.1.25 The calculation of the capacity of the polluted tank and pumping station is based on meteorological data provided by LLAOL.

3.1.26 This rainfall data has been provided in a form of intensity (i.e. medium or high) and not in a form of quantity in millimetres, therefore the relevant caveats have been included in these calculations and this will be revisited prior to the application for development consent. Furthermore, only two years of meteorological data has been provided and additional data would be required to inform the detailed design.

3.2 Phases 2a & 2b – 27 mppa & 32 mppa

3.2.1 The main drainage infrastructure will be incorporated during assessment Phase 2a. This includes the installation of new WTP, attenuation tanks and infiltration basins. Currently, the SW is discharged into soakaways without going through a WTP. The Proposed Development would divert the existing Central Soakaways into a new network that would control the pathway of the contaminated runoff and would terminate with end of pipe treatment.

3.2.2 There are two alternatives for treating the SW: discharging to the TW network that connects to the TW East Hyde Treatment Works (EHTW) or providing a WTP facility on site with an independent drainage network.

3.2.3 At the stakeholder meeting on 18 October 2018 at Luton Town Hall, TW indicated that the *"EHTW site is very constrained so room for expansion is very limited"* and that *"Additional treatment facilities would be required"*. This was re-iterated at the TW Statutory Consultation meeting on 10 September 2020. Accordingly, it is proposed to provide WTP facilities on site. This avoids

overloading the drainage network in volume as well as overloading the EHTW in chemical loads.

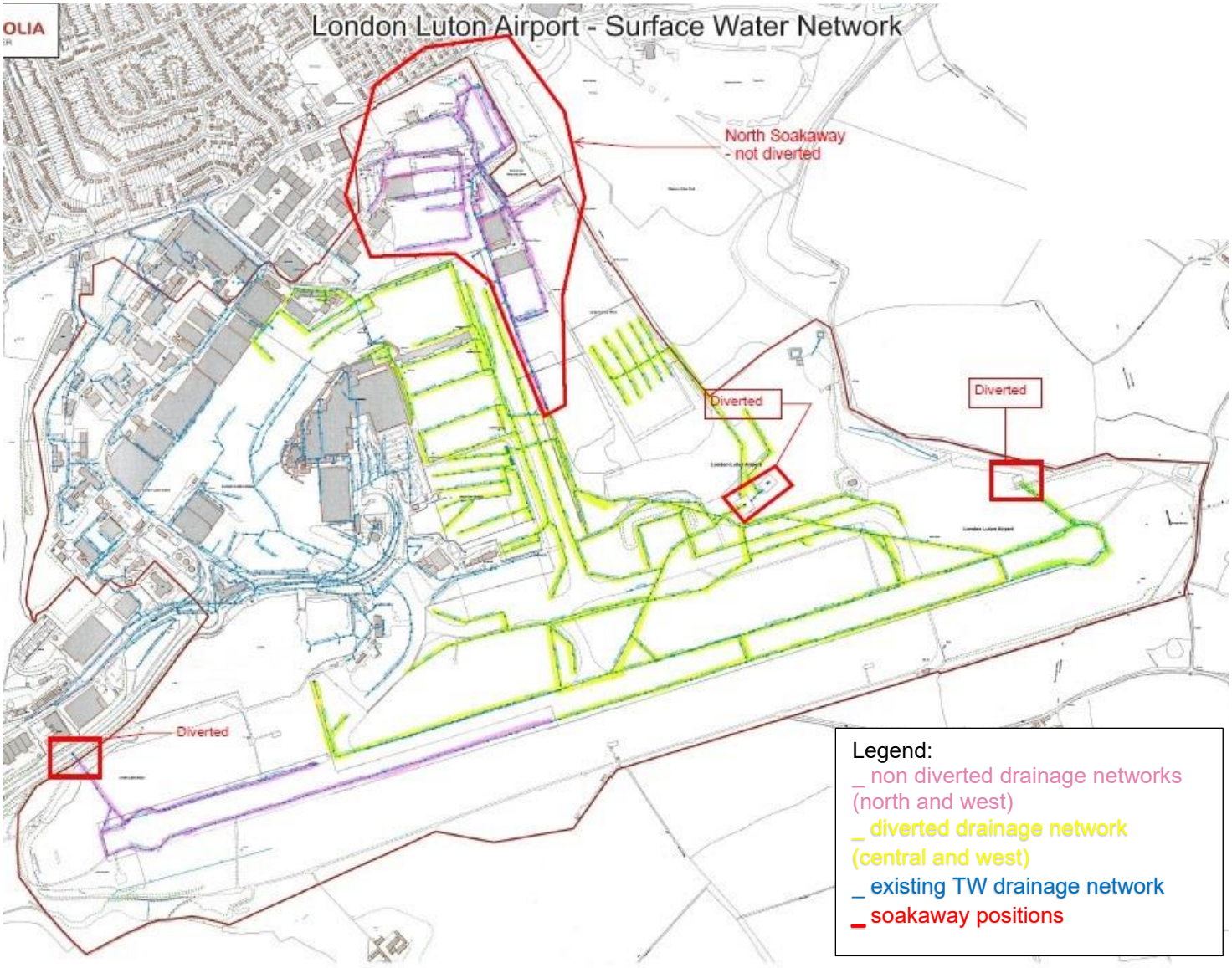
3.2.4 The key design considerations are intended to reflect a sustainable approach to water management, and include the following criteria:

a. The SW drainage will be designed, where possible, as a gravity system. The drainage system is to be designed in accordance with Sewers for Adoption, namely no surcharging during a critical storm event of 1 in 2 years return period and no exceedance flooding during a critical storm event of 1 in 30 years return period. All SW drainage is to be assessed for a 1 in 100 year return period with 40% added for climate change, so that any flooding is contained on site and does not impact surrounding buildings.
b. Suitable upstream management consisting of source control and continuous quality monitoring and end of pipe treatment would maximise the use of Sustainable Drainage Systems (SuDS). Oil separators are strategically positioned to capture and contain the spread of fuels and oils, which otherwise could become a hazard. Live monitoring of chemical loads and volumes allow contaminated water to be diverted into the storage tanks. Improved methodologies for applying the de-icing agents such as bunds and vacuum systems will limit the volume entering the drainage system and increase the re-cycled volume of de-icing agents.

3.2.5 The Chalk bedrock is relatively permeable and ground investigation has indicated a characteristic infiltration rate of about 0.085 m/hr. The strategy is therefore based on the use of suitably sized infiltration basins – ‘soakaways’ – as the preferred SuDS technique for the management of runoff. The actual infiltration rates will be confirmed at detailed design stage.

3.2.6 The existing drainage system discharges into a combination of soakaways and the TW sewage network. The new drainage system would divert the existing drainage runs away from the existing Central Soakaways to control the pathway of the contaminated runoff, continuously monitor the water quality and to ensure end of pipe treatment before final discharge into soakaways. The highlighted drainage runs in pink and yellow shown below on Inset 3-4 currently discharge into soakaways. The North Soakaway circled in red is not to be diverted in the Proposed Development. The existing connections to the TW network from the existing T1 and aprons would not be re-routed and would continue to discharge into the TW network and be treated at EHTW.

Inset 3-4: Location of the considered soakaway



3.2.7 A year-by-year forecast for the total airport water supply and discharge and the reliance on the local utilities has been collated in Tables 3-1 and 3-2. Two forecasts are shown as the extent of the rainwater harvesting will depend on the detailed design of the rainwater harvesting system and coordination with the existing airport infrastructure. Therefore, a forecast range is provided. The forecast also includes a pro-rata projection based on passenger numbers and 2019 consumption an assumed potable/non-potable water consumption split. Refer to notes in Tables 3-1 and 3-2 for further detail.

3.2.8 Tables 3-1 and 3-2 are coordinated with the passenger demand forecast (refer to **Draft Need Case**) shown in section 1.5.1.

3.2.9 The projections are based on the split of T1 and T2 traffic as shown in the passenger demand forecast (refer to **Draft Need Case**) once T2 is open around 2036 and the proposed drainage infrastructure (e.g. WTP) is installed and operational.

Table 3-1 : Drainage forecast – 0% Rain Water Harvesting (RWH) assumed

						Forecast								
A	B	C	D	E	F	G	H	I	M	N	O	P	Q	
year	Actual	mppa step up date	AW Supply Average (Pro rata to 2019 mppa levels)	AW Supply Average (With Water Efficiency) - 10% by 2023	AW supply ave (Without RWH) - Assume 0% AW demand reduction	Projected Construction Potable Water Req'ments	Final AW Supply Average	TW FW Discharge Average Flows	TW SW discharge change North Network	TW SW discharge change South-West Network	Fire Strategy Storage	Excess mppa from 2019 baseline	Recycling/ Discharge of FW to WTP	Notes
	mppa	mppa	l/s	l/s	l/s	l/s	l/s	l/s	l/s	l/s	m^3	mppa	l/s	All items in shaded in red inidcate water supply or discharge above the 2019 levels.
2019	18.2	18.2	7.5		No RWH - No further reduction in AW supply									*Water Supply to Airport 2019 - 7.5 l/s*
2020	5.5	5.5	2.3											
2021	9.6	9.6	4.0											
2022	16.0	16	6.6											
2023	18.8	18.8	7.8	6.9										*Refer to demand calculation for 6.9l/s in 2023*
2024	19.5	19.5	8.0	7.2		0.9	8.1	8.1						
2025	20.1	20.1	8.3	7.4		0.3	7.7	7.7						
2026	20.8	21.5	8.6	7.7		0.2	7.9	7.9	Phase 1 discharge from new car park limited to 5l/s.	Phase 1 SW discharge no change	+			
2027	21.5		8.9	7.9		0.1	8.0	8.0			+			
2028	21.5		8.9	7.9		0.0	7.9	7.9			+			
2029	21.5		8.9	7.9		0.0	7.9	7.9			+			
2030	21.5		8.9	7.9		0.0	7.9	7.9			+			
2031	21.5		8.9	7.9		0.1	8.0	8.0			+			
2032	21.5		8.9	7.9		1.7	9.7	9.7			+			
2033	21.5		8.9	7.9		2.0	9.9	9.9			+			*Construction activities for 27mppa start on site*
2034	21.5		8.9	7.9		2.5	10.5	10.5			+			*Revised WTP Plan - WTP in service in 2034*
2035	21.5		8.9	7.9		1.8	7.9	7.9	Phase 2 SW is reduced due to SW diverted WTP	Phase 2 SW discharge no change	+		1.8	*WTP only takes construction water and SW in 203*
2036	21.5	27	8.9	7.9		0.5	7.5	Phase 2 flows to TW limited to 7.5l/s as all excess discharge goes to WTP			+	3.3	5.7	*Terminal 2 and other buildings online in 2036*
2037	23.8		9.8	8.8		1.0	7.7				+	5.6	7.2	*Other Buildings FW Discharge 27mppa = 3.80l/s ,*
2038	25.1		10.4	9.3		1.2	7.8				+	6.9	7.9	*This flow will be reviewed circa 2035.*
2039	26.5		10.9	9.8		0.6	7.9				+	8.3	7.8	
2040	28.0		11.6	10.3			8.0				+	9.8	8.1	*Other Buildings FW Discharge 32mppa = 4.02l/s ,*
2041	29.4	32	12.1	10.9			8.1				+	11.2	8.6	
2042	31.0		12.8	11.4			8.2				+	12.8	9.3	*This flow will be reviewed circa 2038.*
2043	32.0		13.2	11.8			8.3				+	13.8	9.7	

References
Column E - Refer to LLAOL report "Our Responsible Business Strategy 2020 – 2025, December 2019"
Column D - water supply of 7.5 l/s in 2019 is based on Veolia water consumption and all forecast projections are pro rata from this baseline
WTP to be in service in 2034 in accordance with the London Luton Expansion Programme - High Level Schedule

Notes:
Reconciliation required from Affinity Water / Veolia / Luton Rising for water consumption.
Surface Water recycling has not been considered in the WTP calculation.
Column H from 2036 assumes T1 passengers will be limited to 20mppa and 30% of water supply is potable from AW and 70% non-potable water is from WTP.
Column O excluded from the forecast.
Columns I & Q assume that all construction water supply is discharged as FW, to TW until 2035 then to WTP afterwards.
Column Q ignores SW which could provide additional recycled water.

Note: For the purposes of assessing the scheme under assessment phases 1, 2a and 2b assumptions have been made as noted above.

Table 3-2: Drainage forecast – 7.5% RWH assumed

Forecast														
A	B	C	D	E	F	G	H	I	M	N	O	P	Q	
year	Actual	mppa step up date	AW Supply Average (Pro rata to 2019 mppa levels)	AW Supply Average (With Water Efficiency) - 10% by 2023	AW supply ave (Without RWH) - Assume 0% AW demand reduction	Projected Construction Potable Water Req'ments	Final AW Supply Average	TW FW Discharge Average Flows	TW SW discharge change North Network	TW SW discharge change South-West Network	Fire Strategy Storage	Excess mppa from 2019 baseline	Recycling/ Discharge of FW to WTP	Notes
	mppa	mppa	l/s	l/s	l/s	l/s	l/s	l/s	l/s	l/s	m^3	mppa	l/s	All items in shaded in red inidcate water supply or discharge above the 2019 levels.
2019	18.2	18.2	7.5											***Water Supply to Airport 2019 - 7.5 l/s***
2020	5.5	5.5	2.3											
2021	9.6	9.6	4.0											
2022	16.0	16	6.6											
2023	18.8	18.8	7.8	6.9	6.9									***Refer to demand calculation for 6.9l/s in 2023***
2024	19.5	19.5	8.0	7.2	7.2	0.9	8.1	8.1						
2025	20.1	20.1	8.3	7.4	7.4	0.3	7.7	7.7						
2026	20.8	21.5	8.6	7.7	7.1	0.2	7.3	7.9	Phase 1 discharge from new car park limited to 5l/s.	Phase 1 discharge reduced due to RWH	+			
2027	21.5		8.9	7.9	7.3	0.1	7.4	8.0			+			
2028	21.5		8.9	7.9	7.3	0.0	7.3	7.9			+			
2029	21.5		8.9	7.9	7.3	0.0	7.3	7.9			+			
2030	21.5		8.9	7.9	7.3	0.0	7.3	7.9			+			
2031	21.5		8.9	7.9	7.3	0.1	7.4	8.0			+			
2032	21.5		8.9	7.9	7.3	1.7	9.1	9.7			+			
2033	21.5		8.9	7.9	7.3	2.0	9.3	9.9			+			***Construction activities for 27mppa start on site***
2034	21.5		8.9	7.9	7.3	2.5	9.9	10.5			+			***Revised WTP Plan - WTP in service in 2034***
2035	21.5		8.9	7.9	7.3	1.8	7.3	7.9	Phase 2 SW is reduced due to SW diverted WTP	Phase 2 SW is reduced due to RWH	+		1.8	***WTP only takes construction water and SW in 203***
2036	21.5	27	8.9	7.9	7.3	0.5	6.9	Phase 2 flows to TW limited to 7.5l/s as all excess discharge goes to WTP			+	3.3	5.7	***Terminal 2 and other buildings online in 2036***
2037	23.8		9.8	8.8	8.1	1.0	7.0				+	5.6	7.2	***Other Buildings FW Discharge 27mppa = 3.80l/s ,***
2038	25.1		10.4	9.3	8.6	1.2	7.1				+	6.9	7.9	
2039	26.5		10.9	9.8	9.0	0.6	7.2				+	8.3	7.8	***This flow will be reviewed circa 2035.***
2040	28.0		11.6	10.3	9.6		7.2				+	9.8	8.1	***Other Buildings FW Discharge 32mppa = 4.02l/s ,***
2041	29.4	32	12.1	10.9	10.0		7.3				+	11.2	8.6	
2042	31.0		12.8	11.4	10.6		7.4				+	12.8	9.3	***This flow will be reviewed circa 2038.***
2043	32.0		13.2	11.8	10.9		7.4				+	13.8	9.7	

References
Column E - Refer to LLAOL report "Our Responsible Business Strategy 2020 – 2025, December 2019"
Column D - water supply of 7.5 l/s in 2019 is based on Veolia water consumption and all forecast projections are pro rata from this baseline

WTP to be in service in 2034 in accordance with the London Luton Expansion Programme - High Level Schedule 10/06/2021

Notes:
Reconciliation required from Affinity Water / Veolia / Luton Rising for water consumption.
Surface Water recycling has not been considered in the WTP calculation.
Column H from 2036 assumes T1 passengers will be limited to 20mppa and 30% of water supply is potable from AW and 70% non-potable water is from RWH and WTP.
Column O excluded from the forecast.
Column F assumes that no RWH will be adopted for both Terminals 1 & 2.
Columns I & Q assume that all construction water supply is discharged as FW, to TW until 2035 then to WTP afterwards.
Column Q ignores SW which could provide additional recycled water.

Note: For the purposes of assessing the scheme under assessment phases 1, 2a and 2b assumptions have been made as noted above

3.3 Preliminary design

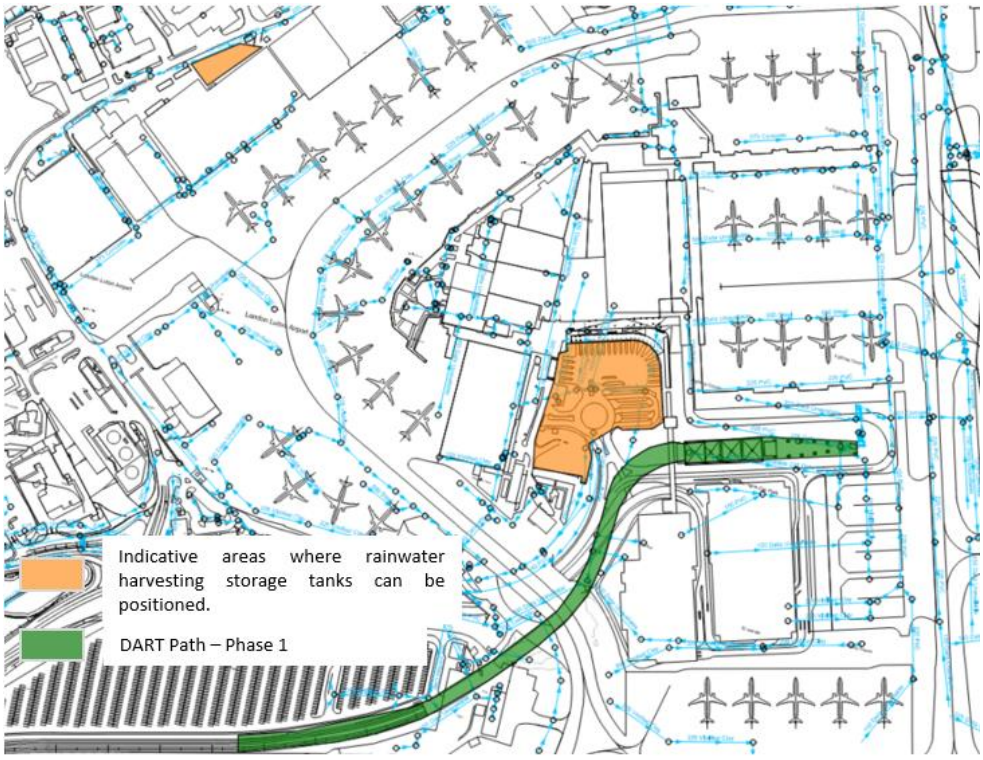
3.3.1 The main drainage infrastructure for Phase 1 includes:

a. rainwater harvesting for the existing buildings;
b. installation of the attenuation below the proposed car park; and
c. airside drainage infrastructure.

3.3.2 **The rainwater harvesting strategy** for the existing airport buildings, including T1 (37,000m^2 catchment area), Zone A and the adjacent buildings/hangers (41,000m^2 catchment area), Zone B as shown in Inset 3-1, to reduce the demand for potable water supplied by AW as well as minimising the increase in discharge into the TW network and Central Soakaway.

a. Based on rainfall data in the Luton area, a total volume for the storage tanks required is approximately 3000m^3 to maintain a constant monthly supply of approximately 3400m^3 to the airport throughout the year. It is important to note that surface area calculations assume that all rainwater from existing buildings highlighted in Inset 3-1 can be collected and stored. This will need to be confirmed at detailed design stage.
b. There is ongoing coordination with LLAOL to identify suitable locations for the proposed rainwater harvesting tanks. Congestion of utilities at the airport, combined with airport operations and coordination with the Luton Direct Air-Rail Transit (DART) present limitations to acceptable positions for the tanks. Some potential locations are highlighted in Inset 3-5.

Inset 3-5: Potential locations of rainwater harvesting tanks



c. Harvested rainwater will require treatment to ensure the quality is fit for the intended non-potable use. Preliminary treatment would include a series of filters and separators whereby the system shall be designed and located upstream of the storage tanks, noting that several systems may be needed to satisfy the number of tanks required. The treatment process will ensure that all coarse solids and organic matter is removed from the network such that the maximum particle size is equal or less than 1mm. The systems must also be accessible for maintenance and adhere to the requirements set by BS EN 16941-1:2018 (Ref 1.6).
d. In accordance with LLAOL's existing SW network (Ref 1.7, the approximate existing buildings' catchment areas for rainwater discharging into the Central Soakaway and TW network were evaluated at 20% (14,600m^2) and 80% (57,000m^2) respectively.

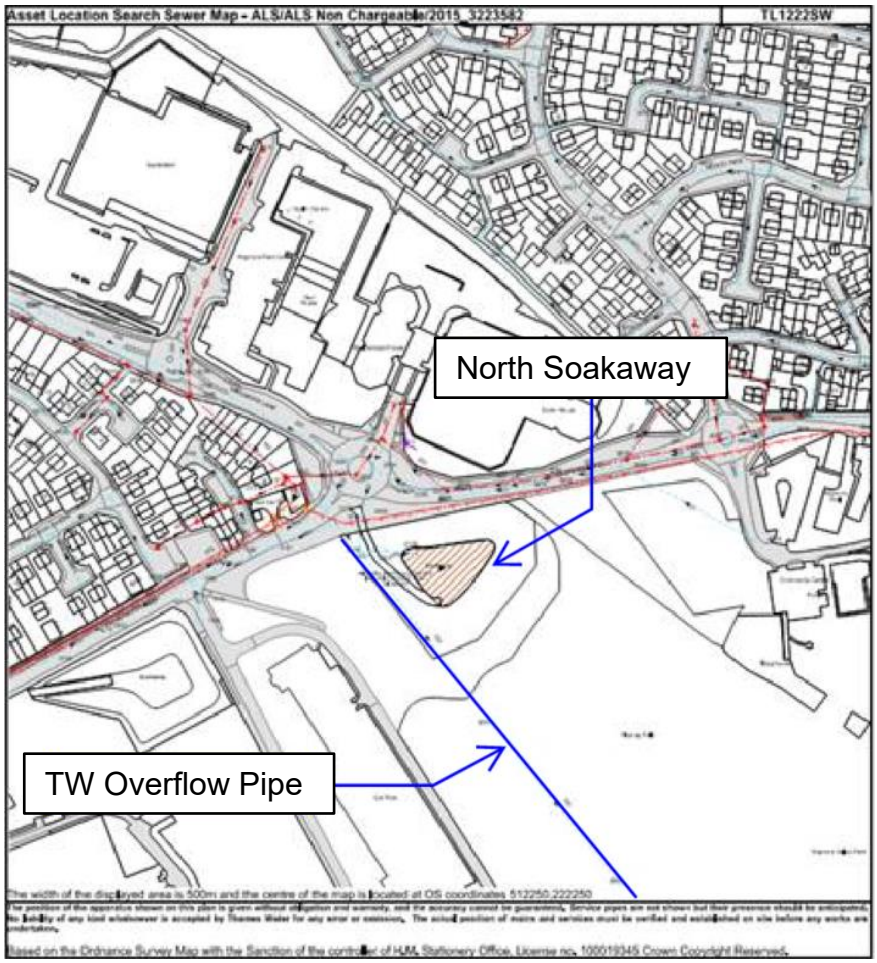
3.3.3 The proposed detail for the tank under the new proposed car park in Zone F, shown in Inset 3-1, to the north east of the airport incorporates gas membranes and waterproofing as coordinated with the geotechnical engineers in consideration of the landfill underneath the car parks. A typical section detail is shown in **Appendix B**.

3.3.4 In accordance with the phasing strategy for the Proposed Development, and due to the majority of the infrastructure, including the WTP, being installed during Phase 2, the drainage strategy for Phase 1 will involve both SW and FW connections to the TW network at two locations. These are shown indicatively in **Appendix C**. TW consents to the discharge of the trade effluent are shown in **Appendix D**, these are subject to further investigations. After the WTP is installed, the TW connections will be diverted to the WTP to reduce the discharge into the TW water networks. The proposed connections and projected discharge rates are subject to the design limitations listed in section 1.4.

3.3.5 The first SW connection will be at the north-east of the airport to discharge the new car park (Zone F). The car park is situated above the landfill and occupies an impermeable area of approximately 68,500m^2. This will be connecting to the Northern Soakaway as this is where all the TW SW sewers within the vicinity connect to at present. Please see **Appendix B** for the Phase 1 drainage strategy drawing.

3.3.6 A TW overflow pipe extending from the TW soak away to the north of the airport will need to be diverted. Inset 3-6 below illustrates extracts from the relevant TW asset search. Discussions are ongoing with TW.

Inset 3-6: TW overflow pipe within landfill

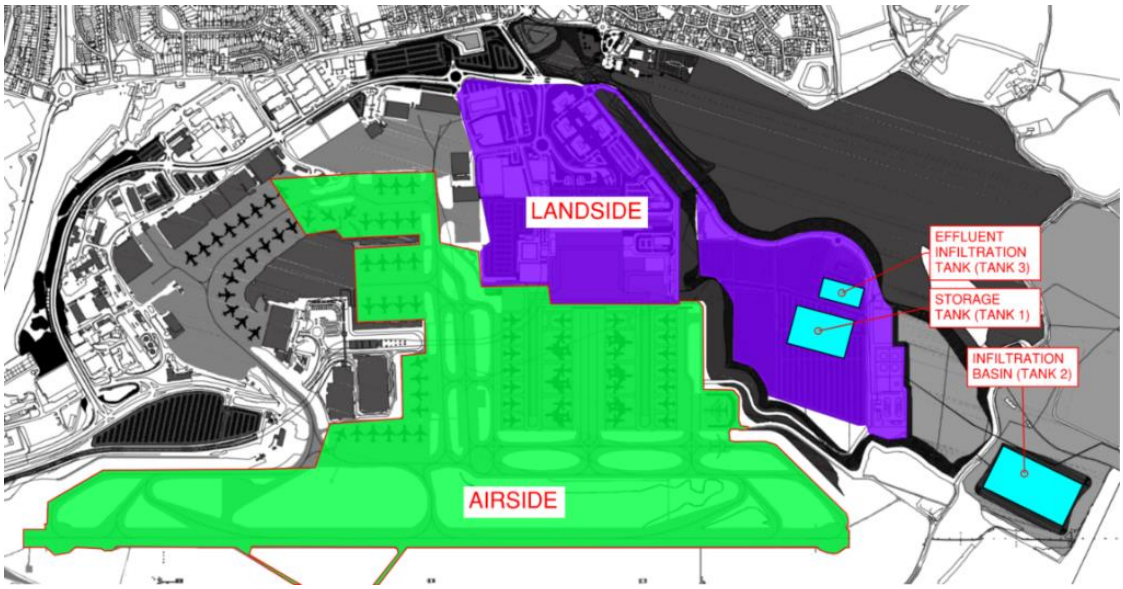


3.3.7 The preliminary drainage strategy assumed for assessment phases 2a and 2b is illustrated in **Appendix B**. Under this strategy the catchment has provisionally been split as follows:

a. Landside (shown in Inset 3-7) - SW runoff from the new terminal building, plus that from the new car parks to the north of the terminal, will be directed into the untreated infiltration basin (Tank 2) or permeable paving. This water will not be contaminated by the airside de-icing agents and oil separators will be provided locally as required. The infiltration basin will be underground to reduce the risk of bird strikes. The existing North Soakaway will not be diverted into this Proposed Development. The areas of the New Century Park which under Phase 1 discharge into the northern soakaway will be diverted and will discharge into the new infiltration tanks (Tank 2).
b. Airside (shown in Inset 3.7) - SW runoff will also be directed towards the infiltration basin (Tank 2), however, the water quality will be continuously monitored and diverted to a storage tank (Tank 1) for treatment when de-icing trigger levels are reached. Contaminated water will then be treated by the WTP and would be discharged to the treated effluent infiltration basin (Tank 3) north of the WTP. If low or no compounds are detected, the

inlet actuated valve to the storage tanks will be closed and the water will avoid the WTP and will discharge directly to the south infiltration basin (Tank 2). Monitoring of the Total Organic Compound (TOC) would be continuous, and the systems would be partially automated.

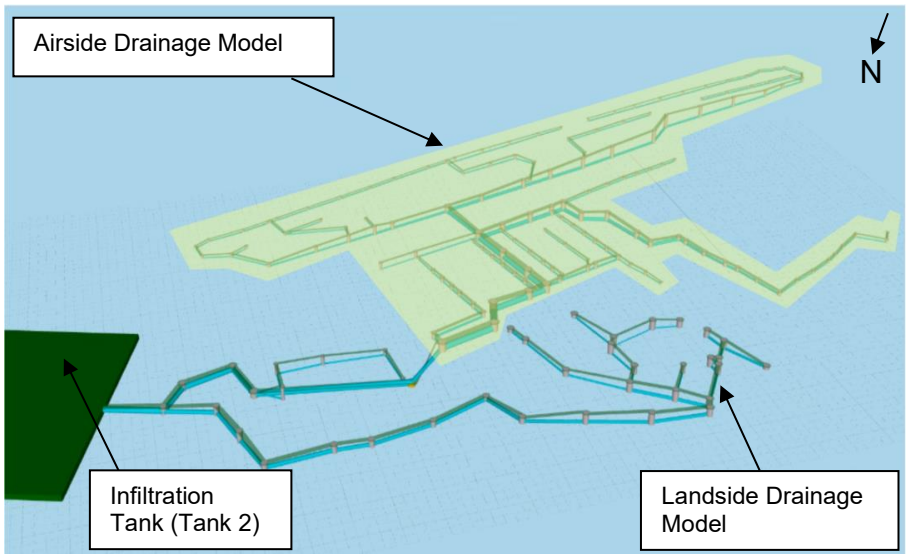
Inset 3-7: Airside and landside drainage catchments



3.3.8 Further checks have been carried out to determine the sizing of Tank 1, which is calculated based on several factors, including meteorological data to determine the number of de-icing events but most importantly on the allowable discharge rate to the WTP.

3.3.9 The data available at the time of the modelling suggests that a storage tank (Tank 1) may not be required to retain the polluted water from the airfield. However, this is based on the limited meteorological data available, and will be subject to the detailed design of the WTP and coordination between airside and landside drainage networks. As such a detailed assessment on the capacity of Tank 1 will be required at a detailed design to account for any changes to these parameters.

Inset 3-8: Causeway flow airside and landside 3D drainage network



3.3.10 Tank 1 will remain however part of the drainage strategy proposals seek to safeguard for any changes resulting from the detailed design and to provide a degree of redundancy in the system to cater for:

a. flooding at the infiltration tanks due to extreme events – the preliminary analysis suggests that for an extreme storm event of 1:100 return period + 40% climate change design, the tank will flood by approximately 14,000m^3;
b. WTP part-closure due to maintenance;
c. allowable discharge rate from the storage tank (Tank 1) into the WTP pending the detailed design of the WTP works;
d. the chemical composition of the contaminated airside influent and hazardous substances;
e. infiltration tanks (Tank 2 and Tank 3) part-closure due to maintenance;
f. seasonal variations in the re-cycled water demand (e.g. due to irrigation); and
g. variations in the actual infiltration rates at the infiltration tanks (Tank 2 and 3), pending local geotechnical investigations.

3.3.11 This rainfall data has been provided in a form of intensity (i.e. medium or high) and not in a form of quantity in millimetres, therefore the relevant caveats have been included in these calculations until this data is provided. Furthermore, only two years of meteorological data has been provided and additional data would be required to inform the detailed design.

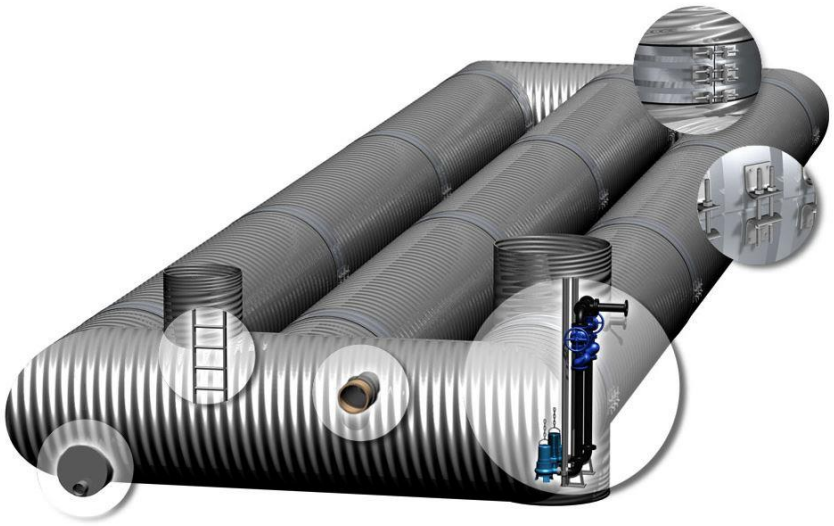
3.3.12 A small section of the western end of the existing runway will continue to discharge to a local soakaway at the west end of the airport. This section of runway will also be subject to monitoring, with flows being redirected to the storage and treatment facility should TOC levels trigger treatment requirements.

3.3.13 The indicative catchment areas for the SW volume calculations and discharge rates of each phase have been investigated and these are shown in **Appendix A**. It is proposed to build the storage and infiltration systems as sperate modules to facilitate maintenance and potential detail phasing of the work. The

modularity of the system will assist in the maintenance of the storage and infiltration systems as this will allow portions to be isolated without full decommissioning.

3.3.14 The infiltration basin is to be composed of perforated tanks or similar. The basins would be underground removing the requirement for any open water and thus reducing the risks of bird strikes, see Inset 3-9 below for the typical configuration of the underground tanks.

Inset 3-9: Axonometric of typical underground tanks



3.3.15 The storage tanks are to be composed of unperforated proprietary systems as shown in Inset 3-9 or similar.

3.3.16 Manholes deeper than 3m will be in accordance with the Highway Construction Details (HCD) F series (Ref 1.4).

3.3.17 The WTP civil works will be constructed in the first instance for the full and final capacity. The systems within the WTP however will be designed to accommodate the anticipated volumes and loads of each phase. Depending on the detail, there may be works carried out within the installations to adapt the processes to the specific requirements of each phase.

3.3.18 The water storage and the infiltration basin have been coordinated with the sequencing of the earth works and the phasing of construction.

3.3.19 The storage system could be used for holding SW runoff to be used during construction. This would assist in reducing the water supply requirements from AW and would reduce supply pressure on the local community.

3.3.20 The infiltration basin has been sized such that it should remain mostly dry in all but the most severe storms. Infiltration into the Chalk which is highly porous and therefore offers good drainage properties. Access will be required for periodic maintenance.

3.3.21 The basin offers a further 75,000m^3 water storage and would be positioned at the lower levels of the Application Site.

3.3.22 The maximum water table levels with a 1 in 100 rain fall event– however extreme and infrequent – would lift the maximum seasonal water table level by approximately 8m.

3.3.23 All underground water tanks (storage and infiltration) have been positioned with the bottom of the tanks at least 1m above the 1:100 maximum water table level, so approximately 9m above the maximum seasonal water table level.

Pollution prevention

3.3.24 Given the sensitivity of the Chalk aquifer, a series of treatment steps has been incorporated into the preliminary design. Within the pollution prevention philosophy source and pathway controls capture the pollution event and limit spread prior to end of pipe treatment. These include:

a. Full retention separators for all runoff from aprons, taxiways and the runway limit spread of fuel and oils. Bypass separators would only be used in areas for short term parking or roadways that receive light contamination. The pollution prevention philosophy entails reduced use of de-icing and re-cycling of the de-icing at source and pathway controls with continuous monitoring prior end of pipe treatment. Points of application will be managed with perimeter bunds and vacuum pumps with increased agent re-cycling.

b. A single combined WTP will consist of two processes: one process for the sewage load - the sewage treatment process (STP) - from the T2 building and a second process for the surface runoff - the effluent treatment process (ETP). As the de-icing agents will be seasonal (only in winter), the ETP portion of the WTP will be maintained out of season artificially by feeding it with the de-icing agents. The STP portion of the WTP will be active all year, thus ensuring that the systems both processes hold in common are maintained in working order.

3.3.25 The ETP portion of the WTP is for the de-icing agents. The plant is designed primarily to treat Glycol de-icers and very small amounts of aviation fuel, diesel, petrol and other hydrocarbon based compounds as well as salt, which may escape the upstream separators. Any additional inflow from Hydrocarbons (assumed to be petrol/diesel), standard road de-icers (sodium chloride) and/or potassium acetate (assumed to be a de-icer) need to be identified and the quantity of inflow determined to confirm the final design of the WTP.

3.3.26 There will be emergency isolation valves positioned strategically for use in the event of severe pollutant spillages. If high levels of TOC have entered the storage tanks (Tank 1), access points will be provided to enable the effluent to be tankered away if required, for treatment off site. The access points will also allow maintenance of the storage vessels.

3.3.27 The long-term car parks are located underneath the levels of the aprons, so to avoid the construction of a rising main, permeable paving is proposed to be used in these areas. The permeable paving will include a bio-membrane that will treat the fuel and oil leaks and include storage in the paving build up. The extent of the permeable paving will vary as the car parks extend and change

plan form. The corresponding surface runoff water is not included in the catchment area calculations for the infiltration tanks.

3.3.28 100% of the average daily treated FW from the WTP will be targeted for re-cycling and used in the T1 and T2 buildings. The re-cycled water will be pumped by rising main to a tank located underneath the T2 building. The re-cycled water will not be potable and will be used for toilet flushing, firefighting supply, and irrigation purposes. Current projections for irrigation are estimated at 6l/s.

3.3.29 All excess treated FW from the WTP will be channelled to a separate 15,600m^3 infiltration basin located north of the WTP, acting as an overflow. Potential re-use of some of the surplus re-cycled water from the proposed WTP will be considered with AW and other stakeholders. This will be examined in greater detail during ongoing stakeholder engagement meetings.

3.3.30 No further discharges are proposed to be connected to the TW network due to the constraints on the existing TW system. This is to maximise water re-cycling and maintain the SuDS hierarchy.

3.3.31 A former landfill site extends to the north of the airport. Leachate from the landfill will need to be controlled by capping the layer. The area occupied by the former landfill will therefore be impermeable with SW being channelled towards the TW network (Phase 1) or soakaways outside the landfill area (Phase 2).

3.3.32 Geotechnical site investigations indicate that the landfill will continue to settle with time. It will be required to include flexible jointing in the underground ducts to allow for differential settlement across the site. Settlement will need to be monitored and localised repairs may be required.

3.3.33 The site investigation work undertaken has indicated the historic landfill is still producing gas and therefore gas protection measures are required. All drainage systems (e.g. pipes and tanks) will need to be lined with a waterproof membrane. The extent of the landfill is shown on the drainage drawings in **Appendix B**.

3.3.34 The Fire Training Ground, shown in **Appendix B** (drawing 5507), will be self-contained. SW discharge will discharge to soakaway unless real time monitoring determines otherwise. During fire training operations, SW run-off will be diverted to a holding tank and not drain to ground under any circumstance. Effluent generated from fire training activities (containing foam and hydrocarbon breakdown constituents) may, subject to securing the necessary consents, be directed into existing public foul sewerage systems or be tankered away for treatment off-site.

3.3.35 It may be possible to treat the foam within the WTP and this will depend on the foam being used. Some foams are biodegradable and non-toxic to aquatic organisms (Angus Fire Niagara AR-FFFP 3-3 for example). The use of fluorine free foams is recommended.

3.3.36 All refuelling vehicles will carry spill kits to limit the amount from spills reaching the drainage system. There will be improved controls and spill reporting.

3.3.37 De-icing will be required during the winter months. The activity will take place at central points, taxiways, aprons, and at aircraft on stand. De-icing chemicals are applied to the ground and aircraft. The pollution prevention strategy will include:

a. improved controls and management of the application of ground de-icers (e.g. bunds, vacuum pumps to tankers and off-site re-cycling);
b. improved controls and management for dosing for application of de-icers to aircraft; and
c. no products used for de-icing will be classified as hazardous.

3.3.38 Central de-icing pad will be not be used at the airport as this restriction would create bottle necks on the runway and potentially obstruct airline traffic which could create a health and safety risk.

3.3.39 The fuel storage facility will be surrounded by a bund. SW will drain through oil separators with sensors to measure water quality. If contamination reaches high enough levels to trigger the actuated inlets valves, the water will be diverted away from the infiltration basin and towards the ETP. If the significant leak occurred from the fuel storage facility, the actuated inlet valves would close the drainage completely and the fuel spill would be tankered away for treatment off-site.

3.4 General on-site water treatment facilities

3.4.1 The WTP is currently projected to be constructed by 2034. The chemical composition of the influent and hazardous substances list will need to be finalised closer to this date and the treatment process potentially adjusted in accordance with design limitations listed in section 1.4.

3.4.2 All technical description of the WTP processes and monitoring systems are purely indicative and subject to input from the Mechanical and Electrical (M&E) team when appointed.

3.4.3 Once the hazardous substance list is confirmed, the treatment process will be finalised. Again, these will evolve in the next 15 years. For application a document will be submitted detailing the list of consents, permits and other agreements that may need to be sought in addition to development consent.

3.4.4 The proposed quality of the WTP discharge has been agreed in principle with AW and will be further consolidated in future discussions. The WTP is suggested to be as follows:

a. primary treatment using Rake Screens, grit cyclones and FOG tank. Screenings, grit and FOG shall be removed from site in skips for disposal off site;
b. biological treatment through use of Moving Biological Bed Reactors; (MBBRs);
c. secondary treatment through multi streamed Dissolved Air Floatation plant (DAF);
d. final treatment via Ultrafiltration (UF);

e. disinfection with UV or Chlorination;
f. sludge produced on site from MBBR's and DAF's would be thickened and stored for tankering off site; and
g. odour control plant will feed all parts of the building and consist of twin stage chemical scrubbers and GAC Polishing plant.

3.4.5 The influent characteristics from run-off have been assumed to be as shown in Table 3-3.

Table 3-3 Assumed runoff influent characteristics

Influent characteristics	
TSS	9 mg/l
BOD	116 mg/l
NH4-N	8 mg/l
NH3-N	0.13 mg/l
Total Organic Compound (TOC)	200 mg/l

3.4.6 Anticipated sewage inflow characteristics are shown in Table 3-4 below:

Table 3-4 Assumed sewage influent characteristics (Ref 1.5)

Influent characteristics	
TSS	400 mg/l
BOD	350 mg/l
NH4-N	45 mg/l

3.4.7 The combined peak inflow to the WTP will need to be updated in accordance with the revised forecast. Currently it has been determined to be;

Table 3-5 WTP maximum combine inflow

Inflow figures	
Max Sewage Inflow	41.07 l/s
Max Runoff inflow	205 l/s
Total Combined inflow	246.07 l/s

3.4.8 With the use of MBBR, DAF, UF and disinfection the final effluent quality from the combined WTP's is treated to a high quality. The final effluent considered consent levels are higher than many consented outfalls to estuarial sources from Utility providers.

3.4.9 There will be organics in the final effluent in the form of BOD, COD and Nitrogen compounds and likely Phosphorus. These however are considered low as indicated.

3.4.10 Additional higher levels of final effluent water quality could be provided with additional removal of organics polishing by further chlorination. This could be achieved through chlorine injection to high residual levels followed by de-chlorination via sulphur dioxide injection to reduce concentration levels to low levels prior to soakaway.

3.4.11 The final effluent discharge from the WTP is anticipated to be a combination of treated sewage and treated runway runoff.

Anticipated maximum figure 246l/s when the final effluent/RWH storage tanks are full are as follows:

a. BOD –1-5 mg/l;
b. COD – 5-50 mg/l; and
c. Ammoniacal Nitrogen NH4-N 0.01-0.5 mg/l.

3.4.12 A key aspect of the approach is the live monitoring of the water quality. Again, technology will evolve in the next 15 years, however the following points are based on currently available technology.

3.4.13 On 5 November 2020, there was a meeting with a control and monitoring specialist to develop further detail and costs for the water quality monitoring systems.

3.4.14 Table 5 highlights the suggested final effluent consent levels from the WTP.

3.4.15 Tests for chemicals highlighted in green in the table below would involve live instruments.

3.4.16 For detecting heavy metals shown green below, testing kiosks circa 2x2m per unit will be required. This would involve automated systems with submerged

pumping to extract test samples to local kiosks with automated testing along with regular visits from an operative.

3.4.17 Tests for chemicals highlighted in yellow in the table below would involve auto samplers across the Application Site, triggered by flow. The testing would be on-site lab tests with immediate results.

3.4.18 Test for chemical highlighted in orange in the table below would take several days before results can be checked, as the bacteria needs to be grown.

3.4.19 The list of chemicals in Table 3-6 are the assumed contaminants which are going to be monitored and the prescribed concentration will correspond to the trigger levels at which case the SW would be diverted to the WTP plant for storage, treatment and then discharge. The list of hazardous chemicals, monitoring systems, and treatment processes will need to be confirmed at detailed design, closer to the time of construction around 2034.

3.4.20 The following table considers reasonable assumptions for the suggested final effluent consent levels from the WTP:

Table 3-6: Suggested final effluent consent levels - from the WTP

Parameter	Units	Prescribed Concerntration or Value (PCV)	Sample Basis
TSS	mg/l	<20	composite daily sample - 95%ile
BOD	mg/l	<10	5 day sample - 95%ile
NH4-H ammonium	mg/l	<5	composite daily sample - 95%ile
COD	mg/l	<20	composite daily sample - 95%ile
pH	pH units	5-9.5	composite daily sample
TKN (Total Nitrogen)	mg/l	<20	composite daily sample - 95%ile
Turbidity	NTU	<10	composite daily sample
pH	pH units	5-9.5	spot
Residual Chlorine	mg/l	<2.0	spot
Residual Bromine	mg/l	<5.0	spot
Escherchia coli	number/100ml	250	spot
Instestinal enterocci	number/100ml	100	spot
legionella pneumophilia	number/100ml	N/A	spot
Total coliforms	number/100ml	1000	spot
Cadmium	µgCd/l	4	composite daily sample - 95%ile
Chromium	µgCr/l	20	composite daily sample - 95%ile
Copper	µgCu/l	50	composite daily sample - 95%ile
Mercury	nHg/l	200	composite daily sample - 95%ile
Gamma HCH (1,2,3,4,5,6 hexachlorocyclohexane)	nHCH/l	110	composite daily sample - 95%ile
Iron	mgFe/l	10	composite daily sample - 95%ile

Note: The above are achievable and the suggested levels for the discharge FE consent levels from the WwTW - they are subject to the confirmation of the influent parameters

3.5 Emergency water supply

3.5.1 The airport's Rescue and Firefighting Service operates through CAA Category 7 with Category 9 on request. These categories define the volume of firefighting media required at all times. The Proposed Development does not necessitate a change in the category; therefore, no additional water storage is required for firefighting purposes. Runway and taxiways do not have a hydrant system in place and rely on underground and static tanks.

3.5.2 The total water storage inside the static water supply is 353m^3 with a further 49m^3 on wheels. The total water available (static emergency and on wheels) is therefore 402,000 litres (or 402m^3). Engagement with LLAOL indicated that the current static Emergency Water Supply (EWS) has sufficient capacity. It is considered by LLAOL's Fire and Rescue Service that there are sufficient quantities of water available in the existing underground tanks to deal with an incident at the existing airport.

3.5.3 The EWS tanks are currently positioned as indicated on Inset 3-10 below in the blue boxes.

3.5.4 The EWS tanks are a potential use of the re-cycled non-potable water from the WTP to reduce the demand from AW. There is no legal obligation from AW to supply firefighting water. Therefore, the re-cycled non-potable water from the WTP could be used for that purpose.

3.5.5 The new apron design will include additional hydrants for firefighting purposes.

3.5.6 The Fire Training Ground will have a closed drainage system which is not part of the proposed drainage network at the airport. Contaminants from the ground will be captured in local tanks and tankered off-site to be re-cycled and reused.

Inset 3-10: Current location of the EWS tanks

4 REFERENCES

Ref 1.1 LLAOL report “Our Responsible Business Strategy 2020-2025, December 2019.

Ref 1.2 Water Framework Directive (WFD) waterbody (WFD ID GB40601G602900).

Ref 1.3 LLAOL 19mmpa Drainage and Water Supply Infrastructure Appraisal, August 2019.

Ref 1.4 Manual of Contract Documents for Highway Works (MCHW).

Ref 1.5 Assumed sewage influent characteristics based on Metcalf and Eddy (2013).

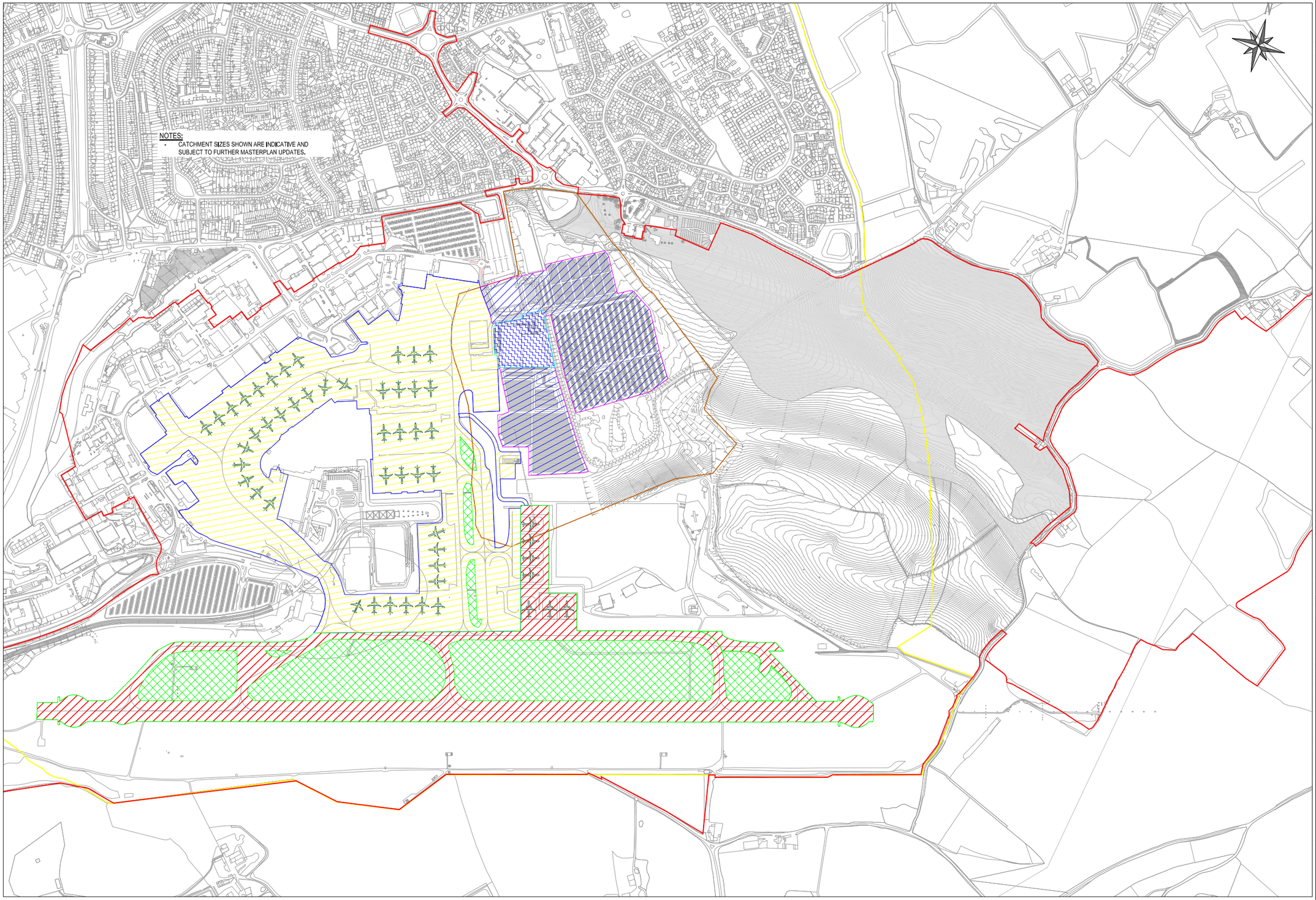
Ref 1.6 BS EN 16941-1:2018 is a European Standard of rainwater harvesting systems for the use of rainwater on-site as non-potable water.

Ref 1.7 LLAOL’s existing SW network (2018)

5 GLOSSARY AND ABBREVIATIONS

Acronym	Description
AW	Affinity Water
BOD	Biological Oxygen Demand
DAF	Dissolved Air Floatation
DART	Direct Air-Rail Transit
DCO	Development Consent Order
EA	Environmental Agency
ETP	Effluent Treatment Process
FW	Foul Water
LLAOL	London Luton Airport Operations Limited
LLFA	Lead Local Flood Authority
MBBR	Moving Biological Bed Reactors
M&E	Mechanical and Electrical
mppa	Million Passengers Per Annum
NH3-N	NH3 (ammonia) - N (nitrogen)
NH4-N	NH4 (ammonium) - N (nitrogen)
RWH	Rain Water Harvesting
STP	Sewage Treatment Process
SW	Surface Water
TOC	Total Organic Compound
TSS	Total Suspended Solids
TW	Thames Water
WFD	Water Framework Directive
WTP	Water Treatment Plant

Appendix A – Catchment drawings



NOTES:

- ALL CATCHMENT AREAS SHOWN ARE INDICATIVE AND SUBJECT TO ADJUSTMENTS.
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS SHOWN OTHERWISE.
- THIS DRAWING IS A DRAFT AND DOES NOT FORM AS PART OF THE LUTON AIRPORT DCO SUBMISSION.
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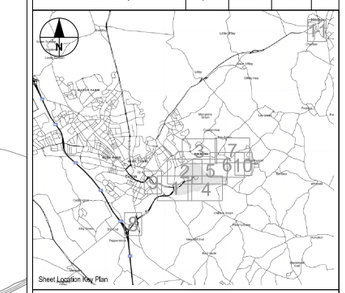
KEY:

- RED LINE BOUNDARY
- GREEN BELT
- RUNWAY / HARD STANDING NEW WORKS AIRSIDE (235200M², 23.52ha)
- HARD STANDING EXISTING AIRSIDE (454747M², 45.47ha)
- HARD STANDING LANDSIDE (157135M², 15.71ha)
- HARD STANDING LANDSIDE CENTURY PARK (19605M², 1.96ha)
- LANDSCAPING (237067M², 23.70ha)

TOTAL IMPERMEABLE AREA:
866687M²
86.66ha

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1



Sheet Location Key Plan

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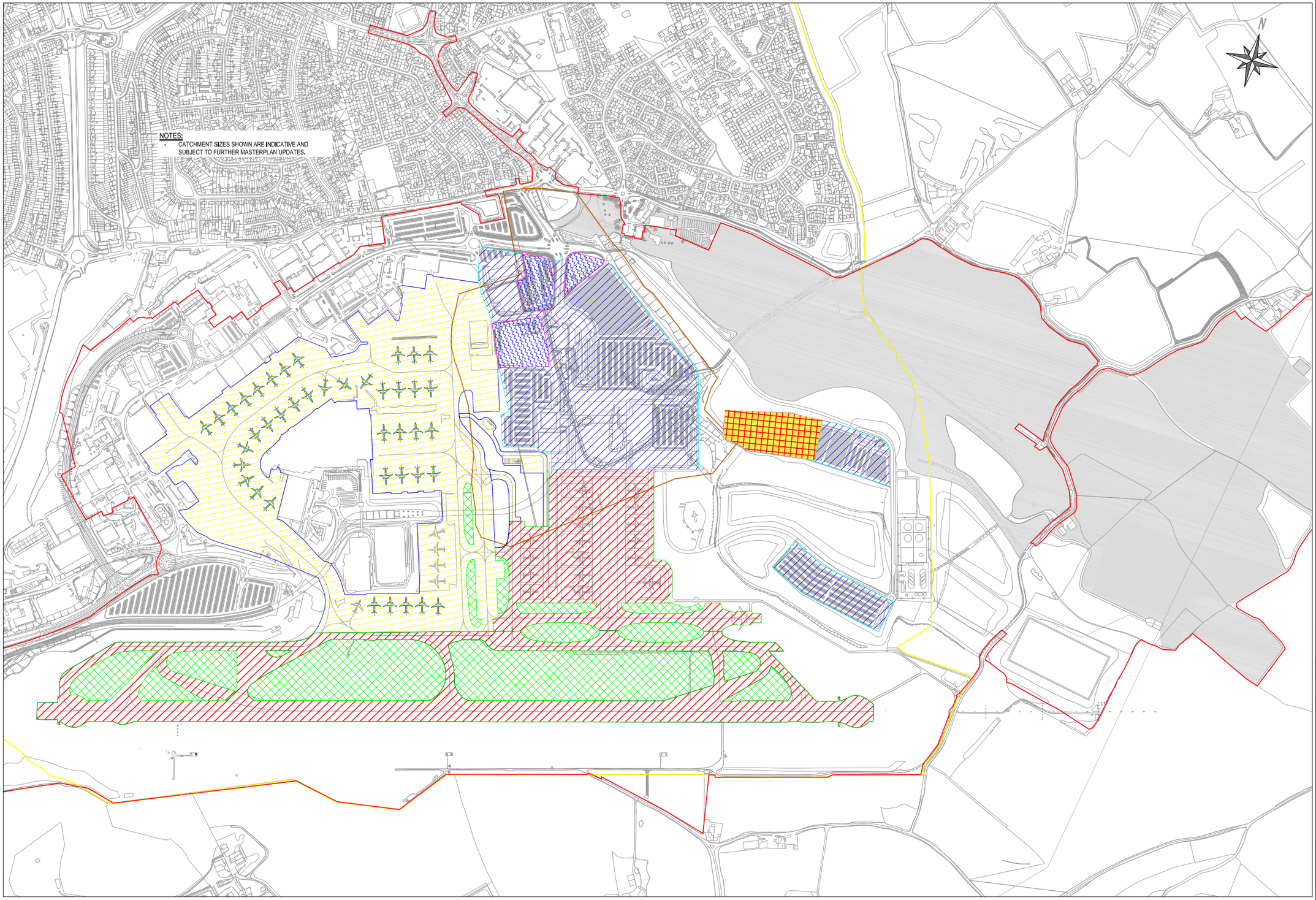
Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
SURFACE LAYOUT PLAN
21.5 MPPA

Purpose of Issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	07/02/2020	1:5000
DCO Application Reference	APFP Regulation		DCO Document Reference:	
TR020001	5(2)(j)		Volume X.XX	
Drawing Number				Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5514				P01.2
Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number				



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KEY:

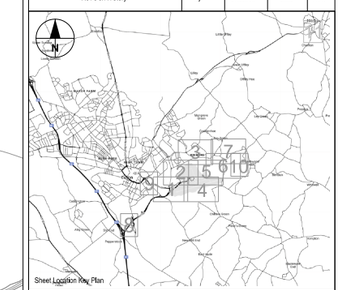
- RED LINE BOUNDARY
- GREEN BELT
- RUNWAY / HARD STANDING NEW WORKS AIRSIDE (385786M², 38.57ha)
- HARD STANDING EXISTING AIRSIDE (445755M², 44.57ha)
- HARD STANDING LANDSIDE (277430M², 27.74ha)
- HARD STANDING LANDSIDE CENTURY PARK (34981M², 3.49ha)
- LANDSCAPING (255964M², 25.59ha)
- PERMEABLE PAVING (27000M², 2.70ha)

TOTAL IMPERMEABLE AREA:
1143952M²
114.39ha

TOTAL PERMEABLE AREA:
27000M²
2.70ha

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1



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Drawing Title
OVERVIEW LAYOUT
SURFACE LAYOUT PLAN
27 MPPA

Purpose of Issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	07/02/2020	1:5000
DCO Application Reference	APFP Regulation		DCO Document Reference:	
TR020001	5(2)(j)		Volume X.XX	

Drawing Number
LLADCO-3C-CAP-INF-DRN-DR-CE-5515
Project – Phase – Originator – AssetZone – Sub Asset – Type – Discp. – Number

Revision
P01.3

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NOTES:
- CATCHMENT SIZES SHOWN ARE INDICATIVE AND SUBJECT TO FURTHER MASTERPLAN UPDATES.

KEY:

- RED LINE BOUNDARY
- GREEN BELT
- RUNWAY / HARD STANDING NEW WORKS AIRSIDE (488538M², 48.85ha)
- HARD STANDING EXISTING AIRSIDE (476288M², 47.63ha)
- HARD STANDING LANDSIDE (351065M², 35.10ha)
- HARD STANDING LANDSIDE CENTURY PARK (34981M², 3.50ha)
- LANDSCAPING (290719M², 29.1ha)
- PERMEABLE PAVING (27000M², 2.70ha)

TOTAL IMPERMEABLE AREA:
1641591M²
164.15ha

TOTAL PERMEABLE AREA:
27000M²
2.70ha

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	09/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1

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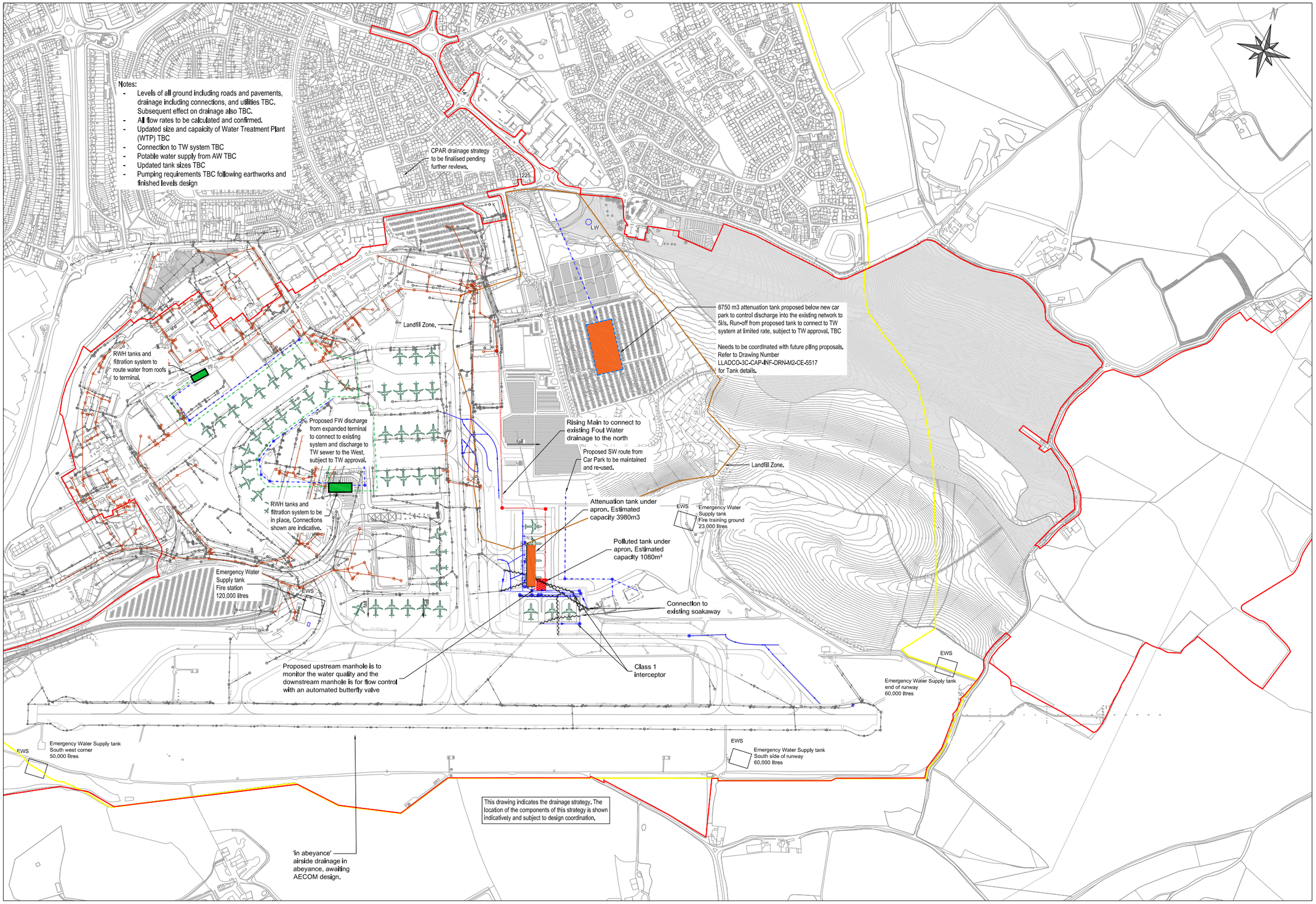
Drawing Title
OVERVIEW LAYOUT
SURFACE LAYOUT PLAN
32 MPPA

Purpose of Issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	07/02/2020	1:5000
DCO Application Reference	APFP Regulation		DCO Document References:	
TR020001	5(2)(j)		Volume X.XX	
Drawing Number				Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5516				P01.3
Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number				

Appendix B – Drainage strategy drawings



NOTES:

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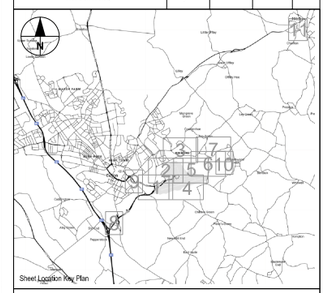
LEGEND

- existing surface water drain with manhole
- existing surface water drain with manhole
- new surface water drain with manhole
- large possible conduit new surface water carrier drain with manhole
- new foul water drain with manhole
- linear drainage channel
- 162.095 — spot level
- 162.095 — existing spot level
- EWS — Approx. position of existing Emergency Water Supply tanks
- PS — New pumping station
- New rising mains
- LW — Landfill sealed Leachate wells
- PI — petrol Interceptor
- DIV — Proposed surface water diversion location
- Landfill Zone

DRAFT

REVISED 21.5MPPA LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1
Revision History	By	Checked	Date	Rev.



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Project Title

London Luton Airport Development Consent Order

Drawing Title

OVERVIEW LAYOUT
FOUL/ SURFACE WATER DRAINAGE
21.5 MPPA

KEY PLAN

- Permeable Paving
- Undergrounnd Storage System
- Infiltration Basin
- Red Line Boundary
- Green Belt Boundaty
- Rain Water Harvesting Tank
- Attenuation Tank

Purpose of Issue: SUITABLE FOR INFORMATION				Suitability: S1
Drawn: SS	Checked: KK	Approved: JPC	Date: 31/03/20	Scale @ A1: 1:5000
DCO Application Reference: TR020001	APFP Regulation: 5(2)(j)		DCO Document Reference: Volume X.XX	

Drawing Number: LLADCO-3C-CAP-INF-DRN-DR-CE-5501
Project – Phase – Originator – AssetZone – Sub Asset – Type – Discp. – Number

Revision: P01.3

N

8750 m3 attenuation tank proposed below new car park to control discharge into the existing network to 5l/s. Run-off from proposed tank to connect to TW system at limited rate, subject to TW approval. TBC

Needs to be coordinated with future piling proposals.
Refer to Drawing Number LLADCO-3C-CAP-INF-DRN-M2-CE-5517 for Tank details.

Notes:
- Levels of all ground including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capaicity of Water Treatment Plant (WTP) TBC
- Connection to TW system TBC
- Potable water supply from AW TBC
- Updated tank sizes TBC
- Pumping requirements TBC following earthworks and finished levels design

Landfill Zone.

Landfill Zone.

Rising Main to connect to existing Foul Water drainage to the north

Proposed SW route from Car Park to be maintained and re-used.

Proposed FW discharge from expanded terminal to connect to existing system and discharge to TW sewer to the West, subject to TW approval.

Attenuation tank under apron. Estimated capacity 3980m3

Polluted tank under apron. Estimated capacity 1080m³

Connection to existing soakaway

Class 1 interceptor

Proposed upstream manhole is to monitor the water quality and the downstream manhole is for flow control with an automated butterfly valve

EWS
Emergency Water Supply tank Fire training ground 23,000 litres

Emergency Water Supply tank Fire station 120,000 litres

EWS
Emergency Water Supply tank end of runway 60,000 litres

EWS
Emergency Water Supply tank South side of runway 60,000 litres

NOTES:
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LEGEND

- existing surface water drain with manhole
- existing surface water drain with manhole
- new surface water drain with manhole
- large possible conduit new surface water carrier drain with manhole
- new foul water drain with manhole
- linear drainage channel
- 162.095 — spot level
- 162.095 — existing spot level
- EWS — Approx. position of existing Emergency Water Supply tanks
- PS — New pumping station
- New rising mains
- LW — Landfill sealed Leachate wells
- PI — petrol Interceptor
- DIV — Proposed surface water diversion location
- Landfill Zone

KEY PLAN

- Permeable Paving
- Undergrounnd Storage System
- Infiltration Basin
- Red Line Boundary
- Green Belt Boundaty
- Rain Water Harvesting Tank
- Attenuation Tank

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED 21.5MPPA LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1

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Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
FOUL/ SURFACE WATER DRAINAGE
SHEET 1 OF 2 TITLE POSITION 5
21.5 MPPA

Purpose of issue	Suitability
SUITABLE FOR INFORMATION	S1

Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/20	1:2500

DCO Application Reference	APFP Regulation	DCO Document Reference:
TR020001	5(2)(j)	Volume X.XX

Drawing Number
LLADCO-3C-CAP-INF-DRN-DR-CE-5502
Project – Phase – Originator – AssetZone – Sub Asset – Type – Discp. – Number

Revision P01.3

NOTES:

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- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1002 HAS BEEN USED PROVISIONALLY AS A BACKGROUND WHICH IS WORK IN PROGRESS. ANY UPDATES WILL NEED TO BE COORDINATED IN PREPARATION FOR THE DCO SUBMISSION.

Notes:

- Levels of all ground including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capacity of Water Treatment Plant (WTP) TBC
- Connection to TW system TBC
- Potable water supply from AW TBC
- Updated tank sizes TBC
- Pumping requirements TBC following earthworks and finished levels design

Landfill Zone.

Emergency Water Supply tank
end of runway
60,000 litres

EWS

LEGEND

- existing surface water drain with manhole
- existing surface water drain with manhole
- new surface water drain with manhole
- large possible conduit new surface water carrier drain with manhole
- new foul water drain with manhole
- linear drainage channel
- 162.095 — spot level
- 162.095 — existing spot level
- EWS — Approx. position of existing Emergency Water Supply tanks
- PS — New pumping station
- New rising mains
- LW — Landfill sealed Leachate wells
- PI — petrol Interceptor
- DIV — Proposed surface water diversion location
- Landfill Zone

KEY PLAN

- Permeable Paving
- Undergrounnd Storage System
- Infiltration Basin
- Red Line Boundary
- Green Belt Boundary
- Rain Water Harvesting Tank
- Attenuation Tank

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED 21.5MPPA LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1

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Project Title

London Luton Airport Development Consent Order

Drawing Title

OVERVIEW LAYOUT
FOUL/ SURFACE WATER DRAINAGE
SHEET 2 OF 2 TITLE POSITION 6
21.5 MPPA

Purpose of issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/20	1:2500
DCO Application Reference	APFP Regulation	DCO Document Reference:		
TR020001	5(2)(j)	Volume X.XX		

Drawing Number: LLADCO-3C-CAP-INF-DRN-DR-CE-5503 — Revision: P01.3

Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number

Notes:
- Levels of all ground including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capaicity of Water Treatment Plant (WTP) TBC
- Connection to TW system TBC
- Potable water supply from AW TBC
- Updated tank sizes TBC
- Pumping requirements TBC following earthworks and finished levels design
- Airfield drainage routes TBC

Interface with New Century Park SW drainage to be coordinated

Recycling Greywater from WTP to be pumped into a non portable tank. Approximately 100% of average daily flow from WTP.

Landfill Zone.

Foul disposal point for aircraft - connection to landside

Rain water harvesting tank to take runoff from terminal roof to be located below terminal building.

Note: Locations and sizes of greywater and treated effluent tanks TBC

Diverted existing drainage (approximately 26 ha)

fall

Full retention interceptor ref GC3oi, serves 2.890ha Spel model P550/1CSC or equal approved.

Permeable Paving Area = 27000m²

TREATED EFFLUENT INFILTRATION Tank (TANK 3):
2.5m diameter Twinstore perforated pipes with 41% surround void ratio by Tubosider Ltd. required storage volume approximately 15,590m³ based on a constant flow of approximately 250 l/s for 4 days from WTP with an infiltration rate of 0.085 m/hr to base only.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Water treatment plant (WTP)
Water treatment plant used for sewage treatment and during deicing months. Compound to accommodate parking spaces and vehicle manoeuvring for required maintenance.

Underground storage system (TANK 1)
3m diameter Helibore pipes by Tubosider Ltd. Estimated storage to capture airside first flush event and to provide a degree of redundancy in the system and flooding at the infiltration tanks.
Approx 70,900m³.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Full retention oil interceptor prior to discharge to the infiltration basin. (Spel model P100/1CSC or equal approved)

Penstock manhole to divert contaminated run-off to the Effluent Treatment Plant Potential requirement for package pumping station, depending on final levels within the treatment works.

Fuel Farm delivery area drained by conventional road gullies discharging to below ground retention tank. Adjacent roads drained via parallel swale and filter under-drain before discharge to the infiltration basin.

Connection point for airside drainage.

New monitoring chamber built over existing drain with telemetry link to valve chamber CD1C21. Existing drain diverted to monitoring chamber

Estimated catchment area to monitoring chamber is 3.25 ha.

Emergency Water Supply tank Fire Station 120,000 litres

EWS

Full retention interceptor ref GC15oi, serves 3.50ha Spel model P800/1CSC or equal approved.

Twin full retention interceptors ref GC4oi, serves 5.708ha Spel model P550/1CSC (x2) or equal approved.

Twin full retention interceptors ref GC1oi, serves 4.764ha Spel model P500/1CSC (x2) or equal approved.

Emergency Water Supply tank end of runway 60,000 litres

Valve chamber CD1C21 with automated penstock valves over outlets. Surface water run-off with registered pollutant levels to be channeled east to the effluent treatment plant. Otherwise flows directed to the existing soakaway.

Impermeable lined below ground storage crates to accept off-line flow in excess of downstream pipe capacity.

Carrier drain collects drainage from west stand area via full retention interceptor serving approximately 3.50ha, Spel model P800/CSC. Carrier drain also separately receives diversion of existing drainage from north west area of the site, comprising approx. 26ha. Upstream pollution control measures assumed to be in place TBC by survey.

Carrier drain collects drainage from south taxiways and runway. Comprising existing runway and taxiway drainage, new taxiways and allowance for soft areas. Drained area approximately 40.40ha. Pollution control measures tbc.

Edge slot or filter drain shown adjacent to runway that is unaffected by new taxi-way link construction is assumed to connect to the existing drainage system. Possible existing filter drain in these locations may be used if found to be appropriate - Typical. (Further information / survey of existing drainage is required).

Existing surface water sewer system to be connected to proposed surface water sewer system. Existing soakaway to become redundant.

Flow control valve set to divert surface water runoff into storage and treatment plant only during deicing months, during any accidental oil spillage and any emergency fire situation.

Infiltration Basin (TANK 2)
(Below ground infiltration tank:)
3.0m diameter perforated corrugated galvanised pipe by Tubosider Ltd. Required storage volume approximately 75,000m³ based on 0.085m/hr (2.37 x 10^{-5}m/sec) infiltration rate. Design based on 1:100 year return period +40%CC.
Location of soakaway to be confirmed with airport operations.
(Refer to drawing 5510)

KEY PLAN
- Permeable Paving
- Undergroundd Storage System
- Infiltration Basin
- Red Line Boundary
- Green Belt Boundaty
- Rain Water Harvesting Tank
- Attenuation Tank

NOTES:
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- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1003 HAS BEEN USED PROVISIONALLY AS A BACKGROUND WHICH IS WORK IN PROGRESS. ANY UPDATES WILL NEED TO BE COORDINATED IN PREPARATION FOR THE DCO SUBMISSION.

LEGEND
- existing surface water drain with manhole
- existing surface water drain with manhole
- new surface water drain with manhole
- large possible conduit new surface water carrier drain with manhole
- new foul water drain with manhole
- linear drainage channel
- 162.095 — spot level
- 162.095 — existing spot level
- EWS — Approx. position of existing Emergency Water Supply tanks
- PS — New pumping station
- New rising mains
- LW — Landfill sealed Leachate wells
- PI — petrol Interceptor
- DIV — Proposed surface water diversion location
- Landfill Zone

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.4
REVISED LAYOUT	SS	KHK	30/10/20	P01.3
REVISED LAYOUT	SS	KHK	09/10/2020	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1

Sheet Location Key Plan

London Luton Airport Ltd
A Luton Council company

London Luton Airport Ltd.
Hart House Business Centre
Kimpton Road, Luton, LU2 0LA
www.lla.org.uk

Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
FOUL/ SURFACE WATER DRAINAGE
27 MPPA

Purpose of issue	Suitability
SUITABLE FOR INFORMATION	S1

Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/2020	1:5000

DCO Application Reference	APFP Regulation	DCO Document Reference:
TR020001	5(2)(j)	Volume X.XX

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5504	P01.4

Project – Phase – Originator – AssetZone – Sub Asset – Type – Discp. – Number

N

Notes:
- Levels of all ground including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capaicity of Water Treatment Plant (WTP) TBC
- Connection to TW system TBC
- Potable water supply from AW TBC
- Updated tank sizes TBC
- Pumping requirements TBC following earthworks and finished levels design

Interface with New Century Park SW drainage to be coordinated

Landfill Zone.

Recycling Greywater from WTP to be pumped into a non portable tank. Approximately 100% of average daily flow from WTP.

Foul disposal point for aircraft - connection to landside

Rain water harvesting tank to take runoff from terminal roof to be located below terminal building.

Note: Locations and sizes of greywater and treated effluent tanks TBC

Diverted existing drainage (approximately 26 ha)

Twin full retention interceptors ref GC1oi, serves 4.764ha Spel model P500/1CSC (x2) or equal approved.

Full retention interceptor ref GC3oi, serves 2.890ha Spel model P550/1CSC or equal approved.

Twin full retention interceptors ref GC4oi, serves 5.708ha (x2) or equal approved.

Full retention interceptor ref GC15oi, serves 3.50ha Spel model P800/1CSC or equal approved.

Carrier drain collects drainage from south taxiways and runway. Comprising existing runway and taxiway drainage, new taxiways and allowance for soft areas. Drained area approximately 40.40ha. Pollution control measures tbc.

Carrier drain collects drainage from west stand area via full retention interceptor serving approximately 3.50ha, Spel model P800/CSC.
Carrier drain also separately receives diversion of existing drainage from north west area of the site, comprising approx. 26ha. Upstream pollution control measures assumed to be in place TBC by survey.

Permeable Paving
Area = 27000m²

TREATED EFFLUENT INFILTRATION
Tank (TANK 3):
2.5m diameter Twinstore perforated pipes with 41% surround void ratio by Tubosider Ltd. required storage volume approximately 15,590m³ based on a constant flow of approximately 250 l/s for 4 days from WTP with an infiltration rate of 0.085 m/hr to base only.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Water treatment plant (WTP)
Water treatment plant used for sewage treatment and during deicing months. Compound to accommodate parking spaces and vehicle manoeuvring for required maintenance.

Underground storage system
(TANK 1)
3m diameter Helibore pipes by Tubosider Ltd. Estimated stora
redundancy in the system and flooding at the infiltration tanks
Approx 70,900m³.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

IL out=120.750

PS

Full retention oil interceptor prior to discharge to the infiltration basin. (Spel model P100/1CSC or equal approved)

Penstock manhole to divert contaminated run-off to the Effluent Treatment Plant Potential requirement for package pumping station, depending on final levels within the treatment works.

Fuel Farm

Fuel Farm delivery area drained by conventional road gullies discharging to below ground retention tank. Adjacent roads drained via parallel swale and filter under-drain before discharge to the infiltration basin.

Flow control valve set to divert surface water runoff into storage and treatment plant only during deicing months, during any accidental oil spillage and any emergency fire situation.

Connection point for airside drainage.

Emergency Water Supply tank end of runway 60,000 litres

EWS

Existing surface water sewer system to be connected to proposed surface water sewer system. Existing soakaway to become redundant.

Edge slot or filter drain shown adjacent to runway that is unaffected by new taxi-way link construction is assumed to connect to the existing drainage system. Possible existing filter drain in these locations may be used if found to be appropriate - Typical. (Further information / survey of existing drainage is required).

Emergency Water Supply tank end of runway 60,000 litres

EWS

KEY PLAN
- Permeable Paving
- Undergrounnd Storage System
- Infiltration Basin
- Red Line Boundary
- Green Belt Boundaty
- Rain Water Harvesting Tank
- Attenuation Tank

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LEGEND
- existing surface water drain with manhole
- existing surface water drain with manhole
- new surface water drain with manhole
- large possible conduit new surface water carrier drain with manhole
- new foul water drain with manhole
- linear drainage channel
- 162.095 — spot level
- 162.095 — existing spot level
- EWS — Approx. position of existing Emergency Water Supply tanks
- PS — New pumping station
- New rising mains
- LW — Landfill sealed Leachate wells
- PI — petrol Interceptor
- DIV — Proposed surface water diversion location
- Landfill Zone

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1

Sheet Location Key Plan

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A Luton Council company
London Luton Airport Ltd.
Hart House Business Centre
Kimpton Road, Luton, LU2 0LA
www.llaal.org.uk

Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
FOUL/ SURFACE WATER DRAINAGE
SHEET 1 OF 2 TITLE POSITION 5
27 MPPA

Purpose of issue	Suitability
SUITABLE FOR INFORMATION	S1

Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/20	1:2500

DCO Application Reference	APFP Regulation	DCO Document Reference:
TR020001	5(2)(j)	Volume X.XX

Drawing Number: LLADCO-3C-CAP-INF-DRN-DR-CE-5505
Revision: P01.3
Project – Phase – Originator – AssetZone – Sub Asset – Type – Discp. – Number

NOTES:

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Notes:
- Levels of all ground including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capaicity of Water Treatment Plant (WTP) TBC
- Connection to TW system TBC
- Potable water supply from AW TBC
- Updated tank sizes TBC
- Pumping requirements TBC following earthworks and finished levels design

TREATED EFFLUENT INFILTRATION
Tank (TANK 3).
2.5m diameter Twinstore perforated pipes with 41% surround void ratio by Tubosider Ltd. required storage volume approximately 15,590m³ based on a constant flow of approximately 250 l/s for 4 days from WTP with an infiltration rate of 0.085 m/hr to base only.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Permeable Paving
Area = 27000m²

Landfill Zone.

IL out= 120.750

PS

LW

PI

Water treatment plant (WTP)
Water treatment plant used for sewage treatment and during deicing months. Compound to accommodate parking spaces and vehicle manoeuvring for required maintenance.

Underground storage system
(TANK 1)
3m diameter Helibore pipes by Tubosider Ltd. Estimated storage to capture airside first flush event and to provide a degree of redundancy in the system and flooding at the infiltration tanks.
Approx 70,900m³.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Full retention oil interceptor prior to discharge to the infiltration basin. (Spel model P100/1CSC or equal approved)

Penstock manhole to divert contaminated run-off to the Effluent Treatment Plant Potential requirement for package pumping station, depending on final levels within the treatment works.

Fuel Farm

Fuel Farm delivery area drained by conventional road gullies discharging to below ground retention tank. Adjacent roads drained via parallel swale and filter under-drain before discharge to the infiltration basin.

Flow control valve set to divert surface water runoff into storage and treatment plant only during deicing months, during any accidental oil spillage and any emergency fire situation.

Connection point for airside drainage.

Emergency Water Supply tank end of runway 60,000 litres

EWS

Infiltration Basin (TANK 2)
(Below ground infiltration tank.)
3.0m diameter perforated corrugated galvanised pipe by Tubosider Ltd. Required storage volume approximately 75,000m³ based on 0.085m/hr (2.37 x 10^{-5}m/sec) infiltration rate. Design based on 1:100 year return period +40%CC.
Location of soakaway to be confirmed with airport operations.
(Refer to drawing 5510)

tion interceptors
ves 5.708ha
550/1CSC (x2)
ved.

27000Ø
CD1C5
CD3C1
27000Ø
27000Ø
CD2C2
CD5C2
27000Ø
15000Ø
CD2C1
15000Ø

Existing surface water sewer system to be connected to proposed surface water sewer system. Existing soakaway to become redundant.

KEY PLAN
- Permeable Paving
- Undergrounnd Storage System
- Infiltration Basin
- Red Line Boundary
- Green Belt Boundaty
- Rain Water Harvesting Tank
- Attenuation Tank

LEGEND
- existing surface water drain with manhole
- existing surface water drain with manhole
- new surface water drain with manhole
- large possible conduit new surface water carrier drain with manhole
- new foul water drain with manhole
- linear drainage channel
- 162.095 — spot level
- 162.095 — existing spot level
- EWS — Approx. position of existing Emergency Water Supply tanks
- PS — New pumping station
- New rising mains
- LW — Landfill sealed Leachate wells
- PI — petrol Interceptor
- DIV — Proposed surface water diversion location
- Landfill Zone

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue,WIP	SS	KHK	31/03/20	P01.1

Sheet Location Key Plan

London Luton Airport Ltd
A Luton Council company

London Luton Airport Ltd.
Hart House Business Centre
Kimpton Road, Luton, LU2 0LA
www.lla.org.uk

Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
FOUL/ SURFACE WATER DRAINAGE
SHEET 2 OF 2 TITLE POSITION 6
27 MPPA

Purpose of issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/20	1:2500
DCO Application Reference	APFP Regulation	DCO Document Reference:		
TR020001	5(2)(j)	Volume X.XX		

Drawing Number
LLADCO-3C-CAP-INF-DRN-DR-CE-5506
Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number

Revision
P01.3

Notes:
- Levels of all ground including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capaicity of Water Treatment Plant (WTP) TBC
- Connection to TW system TBC
- Potable water supply from AW TBC
- Updated tank sizes TBC
- Pumping requirements TBC following earthworks and finished levels design
- Airfield drainage routes TBC

Interface with New Century Park SW drainage to be coordinated

Recycling Greywater from WTP to be pumped into a non portable tank. Approximately 100% of average daily flow from WTP.

Surface water (SW) network in these car parks is omitted for clarity. SW network will discharge to the infiltration basin.This water will remain uncontaminated with the airside de-icing agents and petrol interceptors will be provided locally as required.

Landfill Zone.

Foul disposal point for aircraft - connection to landside

Permeable Paving Area = 27000m²

Rain water harvesting tank to take runoff from terminal roof to be located below terminal building.

Note: Locations and sizes of greywater and treated effluent tanks TBC

Gatic Ultraslot channels and adjacent piped drainage - typical for apron drainage.

Diverted existing drainage (approximately 26 ha)

Full retention interceptor ref GC3oi, serves 2.890ha Spel model P550/1CSC or equal approved.

Emergency Water Supply tank Fire Station 120,000 litres

New monitoring chamber built over existing drain with telemetry link to valve chamber CD1C21. Existing drain diverted to monitoring chamber

Estimated catchment area to monitoring chamber is 3.25 ha.

Full retention interceptor ref GC15oi, serves 3.50ha Spel model P800/1CSC or equal approved.

Twin full retention interceptors ref GC4oi, serves 5.708ha Spel model P550/1CSC (x2) or equal approved.

Twin full retention interceptors ref GC1oi, serves 4.764ha Spel model P500/1CSC (x2) or equal approved.

Twin full retention interceptors ref GC5oi, serves 5.095ha Spel model P500/1CSC (x2) or equal approved.

Emergency Water Supply tank end of runway 60,000 litres

Valve chamber CD1C21 with automated penstock valves over outlets. Surface water run-off with registered pollutant levels to be channeled east to the effluent treatment plant. Otherwise flows directed to the existing soakaway.

Contaminated water collection and holding tank

Soakaway

Full retention oil interceptor

Impermeable lined below ground storage crates to accept off-line flow in excess of downstream pipe capacity.

'Clean' surface water run-off from the Fire Training Ground to discharge to local soakaway via a full retention oil interceptor (Spel model P150/1CSC or equal approved). Training ground run-off otherwise contaminated by fire fighting and training operations to be diverted to a local holding tank. Contaminated water to be tankered away for treatment and disposal or pumped directly from the collection tank to discharge to the on-site effluent treatement plant - details tbc.

Carrier drain collects drainage from west stand area via full retention interceptor serving approximately 3.50ha, Spel model P800/CSC. Carrier drain also separately receives diversion of existing drainage from north west area of the site, comprising approx. 26ha. Upstream pollution control measures assumed to be in place TBC by survey.

This drawing indicates the drainage strategy. The location of the components of this strategy is shown indicatively and subject to design coordination.

Carrier drain collects drainage from south taxiways and runway. Comprising existing runway and taxiway drainage, new taxiways and allowance for soft areas. Drained area approximately 40.40ha. Pollution control measures tbc.

Edge slot or filter drain shown adjacent to runway that is unaffected by new taxi-way link construction is assumed to connect to the existing drainage system. Possible existing filter drain in these locations may be used if found to be appropriate - Typical. (Further information / survey of existing drainage is required).

Existing surface water sewer system to be connected to proposed surface water sewer system. Existing soakaway to become redundant.

Flow control valve set to divert surface water runoff into storage and treatment plant only during deicing months, during any accidental oil spillage and any emergency fire situation.

TREATED EFFLUENT INFILTRATION Tank (TANK 3):
2.5m diameter Twinstore perforated pipes with 41% surround void ratio by Tubosider Ltd. required storage volume approximately 15,590m³ based on a constant flow of approximately 250 l/s for 4 days from WTP with an infiltration rate of 0.085 m/hr to base only.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Water treatment plant (WTP)
Water treatment plant used for sewage treatment and during deicing months. Compound to accommodate parking spaces and vehicle manoeuvring for required maintenance.

Underground storage system (TANK 1)
3m diameter Helibore pipes by Tubosider Ltd. Estimated storage to capture airside first flush event and to provide a degree of redundancy in the system and flooding at the infiltration tanks.
Approx 70,900m³.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Full retention oil interceptor prior to discharge to the infiltration basin. (Spel model P100/1CSC or equal approved)

Penstock manhole to divert contaminated run-off to the Effluent Treatment Plant Potential requirement for package pumping station, depending on final levels within the treatment works.

Fuel Farm delivery area drained by conventional road gullies discharging to below ground retention tank. Adjacent roads drained via parallel swale and filter under-drain before discharge to the infiltration basin.

Connection point for airside drainage.

Infiltration Basin (TANK 2)
(Below ground infiltration tank:)
3.0m diameter perforated corrugated galvanised pipe by Tubosider Ltd. Required storage volume approximately 75,000m³ based on 0.085m/hr (2.37 x 10^{-5}m/sec) infiltration rate. Design based on 1:100 year return period +40%CC.
Location of soakaway to be confirmed with airport operations.
(Refer to drawing 5510)

KEY PLAN

- Permeable Paving
- Undergrounnd Storage System
- Infiltration Basin
- Red Line Boundary
- Green Belt Boundaty
- Rain Water Harvesting Tank
- Attenuation Tank

NOTES:
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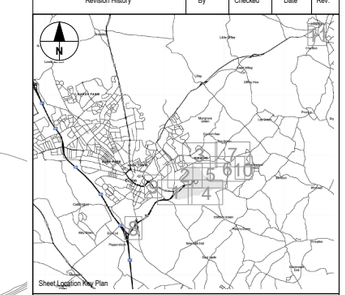
LEGEND

- existing surface water drain with manhole
- existing surface water drain with manhole
- new surface water drain with manhole
- large possible conduit new surface water carrier drain with manhole
- new foul water drain with manhole
- linear drainage channel
- 162.095 — spot level
- 162.095 — existing spot level
- EWS — Approx. position of existing Emergency Water Supply tanks
- PS — New pumping station
- New rising mains
- LW — Landfill sealed Leachate wells
- PI — petrol Interceptor
- DIV — Proposed surface water diversion location
- Landfill Zone
- As above - drainage for 32 MPPA expansion

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.4
REVISED LAYOUT	SS	KHK	30/10/20	P01.3
REVISED LAYOUT	SS	KHK	09/10/2020	P01.2
First Issue, WIP	SS	KHK	31/03/2020	P01.1



London Luton Airport Ltd
A Luton Council company

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Hart House Business Centre
Kimpton Road, Luton, LU2 0LA
www.lial.org.uk

Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
FOUL/ SURFACE WATER DRAINAGE
32 MPPA

Purpose of issue	Suitability
SUITABLE FOR INFORMATION	S1

Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/2020	1:5000

DCO Application Reference	APFP Regulation	DCO Document Reference:
TR020001	5(2)(j)	Volume X.XX

Drawing Number
LLADCO-3C-CAP-INF-DRN-DR-CE-5507
Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Disco. – Number

Revision
P01.4

Notes:
- Levels of all ground including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capaicity of Water Treatment Plant (WTP) TBC
- Connection to TW system TBC
- Potable water supply from AW TBC
- Updated tank sizes TBC
- Pumping requirements TBC following earthworks and finished levels design

Surface water (SW) network in these car parks is omitted for clarity. SW network will discharge to the infiltration basin.This water will remain uncontaminated with the airside de-icing agents and petrol interceptors will be provided locally as required.

TREATED EFFLUENT INFILTRATION
Tank (TANK 3):
2.5m diameter Twinstore perforated pipes with 41% surround void ratio by Tubosider Ltd. required storage volume approximately 15,590m³ based on a constant flow of approximately 250 l/s for 4 days from WTP with an infiltration rate of 0.085 m/hr to base only.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Water treatment plant (WTP)
Water treatment plant used for sewage treatment and during deicing months. Compound to accommodate parking spaces and vehicle manoeuvring for required maintenance.

Underground storage system
(TANK 1)
3m diameter Helibore pipes by Tubosider Ltd. Estimated storage redundancy in the system and flooding at the infiltration tanks. Approx 70,900m³.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Permeable Paving Area = 27000m²

IL out= 120.750

Interface with New Century Park SW drainage to be coordinated

Landfill Zone.

Recycling Greywater from WTP to be pumped into a non portable tank. Approximately 100% of average daily flow from WTP.

Foul disposal point for aircraft - connection to landside

Rain water harvesting tank to take runoff from terminal roof to be located below terminal building.

Gatic Ultraslot channels and adjacent piped drainage - typical for apron drainage.

Note: Locations and sizes of greywater and treated effluent tanks TBC

Diverted existing drainage (approximately 26 ha)

Full retention interceptor ref GC15oi, serves 3.50ha Spel model P800/1CSC or equal approved.

Twin full retention interceptors ref GC1oi, serves 4.764ha Spel model P500/1CSC (x2) or equal approved.

Full retention interceptor ref GC3oi, serves 2.890ha Spel model P550/1CSC or equal approved.

Twin full retention interceptors ref GC4oi, serves 5.708ha Spel model P550/1CSC (x2) or equal approved.

Twin full retention interceptors ref GC5oi, serves 5.095ha Spel model P500/1CSC (x2) or equal approved.

Flow control valve set to divert surface water runoff into storage and treatment plant only during deicing months, during any accidental oil spillage and any emergency fire situation.

Full retention oil interceptor prior to discharge to the infiltration basin. (Spel model P100/1CSC or equal approved)

Penstock manhole to divert contaminated run-off to the Effluent Treatment Plant Potential requirement for package pumping station, depending on final levels within the treatment works.

Fuel Farm

Fuel Farm delivery area drained by conventional road gullies discharging to below ground retention tank. Adjacent roads drained via parallel swale and filter under-drain before discharge to the infiltration basin.

Connection point for airside drainage.

Emergency Water Supply tank end of runway 60,000 litres

EWS

Existing surface water sewer system to be connected to proposed surface water sewer system. Existing soakaway to become redundant.

Edge slot or filter drain shown adjacent to runway that is unaffected by new taxi-way link construction is assumed to connect to the existing drainage system. Possible existing filter drain in these locations may be used if found to be appropriate - Typical. (Further information / survey of existing drainage is required).

Carrier drain collects drainage from south taxiways and runway. Comprising existing runway and taxiway drainage, new taxiways and allowance for soft areas. Drained area approximately 40.40ha. Pollution control measures tbc.

Carrier drain collects drainage from west stand area via full retention interceptor serving approximately 3.50ha, Spel model P800/CSC. Carrier drain also separately receives diversion of existing drainage from north west area of the site, comprising approx. 26ha. Upstream pollution control measures assumed to be in place TBC by survey.

Emergency Water Supply tank end of runway 60,000 litres

EWS

KEY PLAN
- Permeable Paving
- Undergrounnd Storage System
- Infiltration Basin
- Red Line Boundary
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- Rain Water Harvesting Tank
- Attenuation Tank

NOTES:
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LEGEND
- existing surface water drain with manhole
- existing surface water drain with manhole
- new surface water drain with manhole
- large possible conduit new surface water carrier drain with manhole
- new foul water drain with manhole
- linear drainage channel
- 162.095 — spot level
- 162.095 — existing spot level
- EWS — Approx. position of existing Emergency Water Supply tanks
- PS — New pumping station
- New rising mains
- LW — Landfill sealed Leachate wells
- PI — petrol Interceptor
- DIV — Proposed surface water diversion location
- Landfill Zone
- As above - drainage for 32 MPPA expansion

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/2020	P01.1

Sheet Location Key Plan

London Luton Airport Ltd
A Luton Council company

London Luton Airport Ltd.
Hart House Business Centre
Kimpton Road, Luton, LU2 0LA
www.llal.org.uk

Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
FOUL/ SURFACE WATER DRAINAGE
SHEET 1 OF 2 TITLE POSITION 5
32 MPPA

Purpose of issue	Suitability
SUITABLE FOR INFORMATION	S1

Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/2020	1:2500

DCO Application Reference	APFP Regulation	DCO Document Reference:
TR020001	5(2)(j)	Volume X.XX

Drawing Number: LLADCO-3C-CAP-INF-DRN-DR-CE-5508 — Revision: P01.3

Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number

NOTES:

- ALL DRAINAGE ELEMENTS SHOWN ARE INDICATIVE AND SUBJECT TO ADJUSTMENTS.
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS SHOWN OTHERWISE.
- THIS DRAWING IS A DRAFT AND DOES NOT FORM AS PART OF THE LUTON AIRPORT DCO SUBMISSION.
- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1004 HAS BEEN USED PROVISIONALLY AS A BACKGROUND WHICH IS WORK IN PROGRESS. ANY UPDATES WILL NEED TO BE COORDINATED IN PREPARATION FOR THE DCO SUBMISSION.

Notes:
- Levels of all ground including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capaicity of Water Treatment Plant (WTP) TBC
- Connection to TW system TBC
- Potable water supply from AW TBC
- Updated tank sizes TBC
- Pumping requirements TBC following earthworks and finished levels design

Surface water (SW) network in these car parks is omitted for clarity. SW network will discharge to the infiltration basin.This water will remain uncontaminated with the airside de-icing agents and petrol interceptors will be provided locally as required.

TREATED EFFLUENT INFILTRATION
Tank (TANK 3):
2.5m diameter Twinstore perforated pipes with 41% surround void ratio by Tubosider Ltd. required storage volume approximately 15,590m³ based on a constant flow of approximately 250 l/s for 4 days from WTP with an infiltration rate of 0.085 m/hr to base only.
(Refer to drawing
LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Permeable Paving
Area = 27000m²

Landfill Zone.

IL out= 120.750

PS

LW

PI

Water treatment plant (WTP)
Water treatment plant used for sewage treatment and during deicing months. Compound to accommodate parking spaces and vehicle manoeuvring for required maintenance.

Underground storage system
(TANK 1)
3m diameter Helibore pipes by Tubosider Ltd. Estimated storage to capture airside first flush event and to provide a degree of redundancy in the system and flooding at the infiltration tanks.
Approx 70,900m³.
(Refer to drawing
LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

Full retention oil interceptor prior to discharge to the infiltration basin. (Spel model P100/1CSC or equal approved)

Penstock manhole to divert contaminated run-off to the Effluent Treatment Plant Potential requirement for package pumping station, depending on final levels within the treatment works.

Fuel Farm

Fuel Farm delivery area drained by conventional road gullies discharging to below ground retention tank. Adjacent roads drained via parallel swale and filter under-drain before discharge to the infiltration basin.

Twin full retention interceptors ref GC5oi, serves 5.095ha
Spel model P500/1CSC (x2) or equal approved.

tion interceptors
ves 5.708ha
550/1CSC (x2)
ved.

Flow control valve set to divert surface water runoff into storage and treatment plant only during deicing months, during any accidental oil spillage and any emergency fire situation.

Connection point for airside drainage.

Emergency Water Supply tank
end of runway
60,000 litres

EWS

Existing surface water sewer system to be connected to proposed surface water sewer system. Existing soakaway to become redundant.

Infiltration Basin (TANK 2)
(Below ground infiltration tank:)
3.0m diameter perforated corrugated galvanised pipe by Tubosider Ltd. Required storage volume approximately 75,000m³ based on 0.085m/hr (2.37 x 10^{-5}m/sec) infiltration rate. Design based on 1:100 year return period +40%CC.
Location of soakaway to be confirmed with airport operations.
(Refer to drawing 5510)

LEGEND

- existing surface water drain with manhole
- existing surface water drain with manhole
- new surface water drain with manhole
- large possible conduit new surface water carrier drain with manhole
- new foul water drain with manhole
- linear drainage channel
- 162.095 — spot level
- 162.095 — existing spot level
- EWS — Approx. position of existing Emergency Water Supply tanks
- PS — New pumping station
- New rising mains
- LW — Landfill sealed Leachate wells
- PI — petrol Interceptor
- DIV — Proposed surface water diversion location
- Landfill Zone
- As above - drainage for 32 MPPA expansion

KEY PLAN

- Permeable Paving
- Undergrounnd Storage System
- Infiltration Basin
- Red Line Boundary
- Green Belt Boundaty
- Rain Water Harvesting Tank
- Attenuation Tank

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	01/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/2020	P01.1

Sheet Location Key Plan

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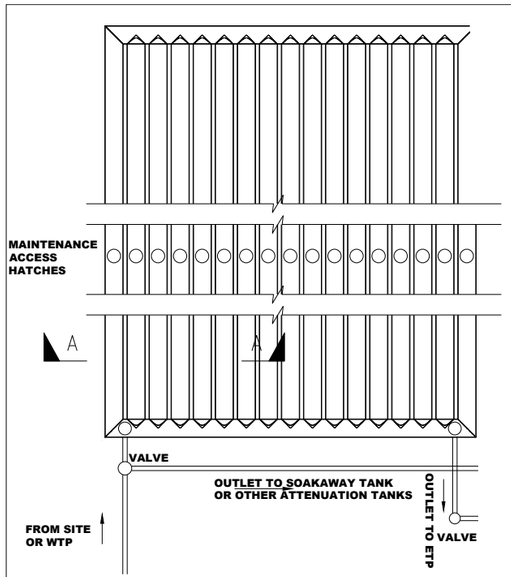
Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
FOUL/ SURFACE WATER DRAINAGE
SHEET 2 OF 2 TITLE POSITION 6
32 MPPA

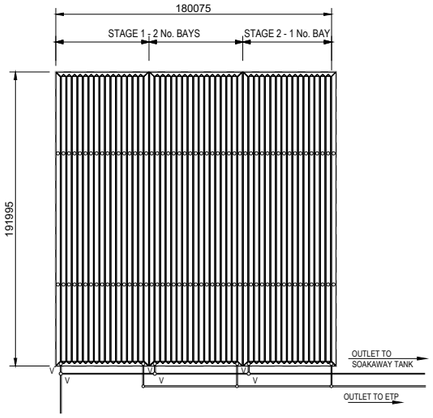
Purpose of issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/2020	1:2500
DCO Application Reference	APFP Regulation	DCO Document Reference:		
TR020001	5(2)(j)	Volume X.XX		

Drawing Number: LLADCO-3C-CAP-INF-DRN-DR-CE-5509
Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number
Revision: P01.3



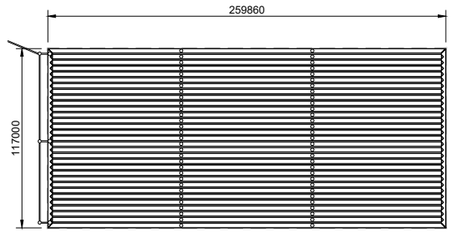
ATTENUATION STORAGE TANK (TANK 1) TYPICAL BAY

(1:500)



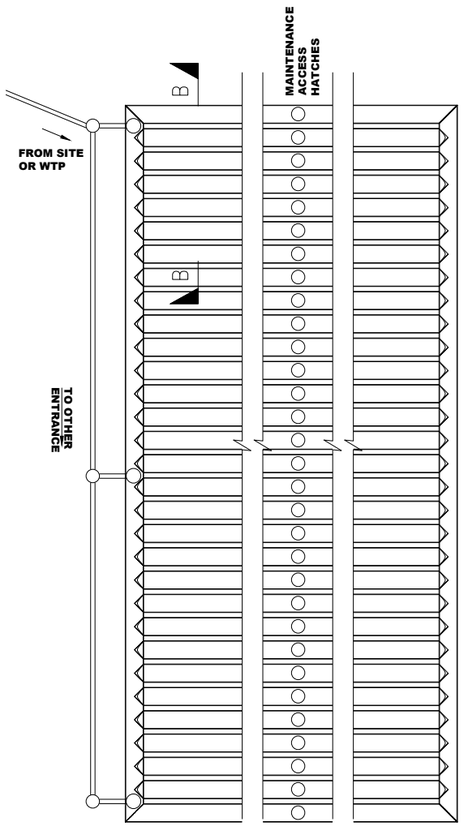
ATTENUATION STORAGE TANK (TANK 1)

(1:2000)



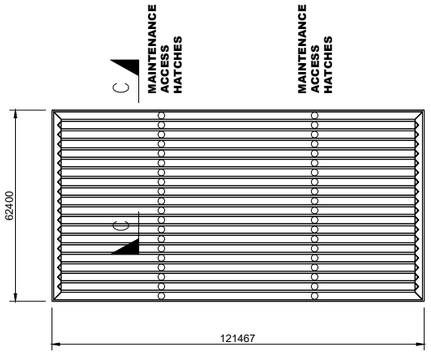
INFILTRATION BASIN (TANK 2) (SOAKAWAY TANK)

(1:2000)



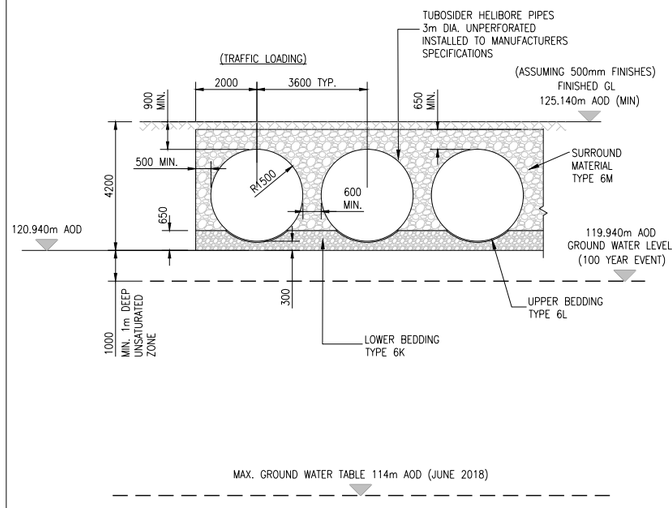
INFILTRATION BASIN (TANK 2) SOAKAWAY TANK TYPICAL BAY

(1:500)



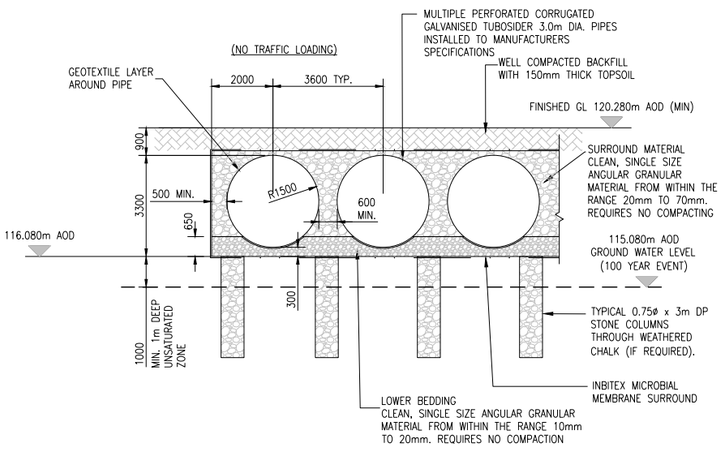
INFILTRATION BASIN (TANK 3) (SOAKAWAY TANK)

(1:2000)

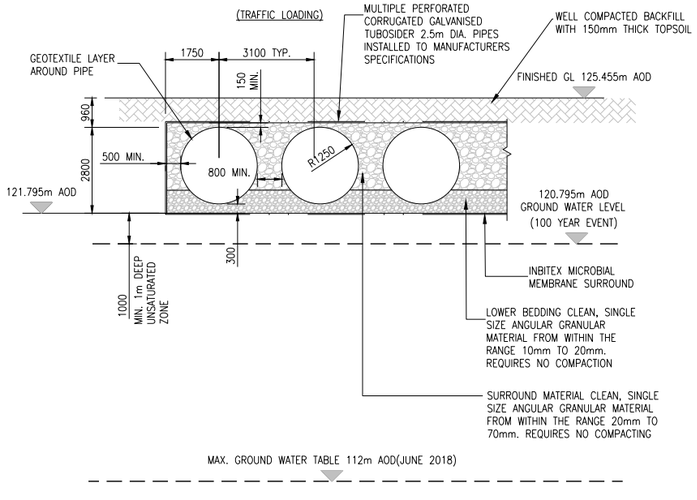


SECTION A-A ATTENUATION STORAGE TANKS (TANK 1)

(1:100)



SECTION B-B INFILTRATION BASIN (TANK 2) (SOAKAWAY TANKS)



SECTION C-C INFILTRATION BASIN (TANK 3) SOAKAWAY TANK

NOTES:

- ALL ACCESS MAINTENANCE HATCHES AND TANK ARRANGEMENTS ARE SHOWN AS INDICATIVE AND TO BE CONFIRMED BY TANK MANUFACTURER.
- ALL LEVELS ARE BASED ON FUTURE ESTIMATED 1:100 YEAR GROUND WATER LEVELS. THIS GIVES 1M CLEARANCE ABOVE THE GROUND WATER LEVEL IN LINE WITH THE SUDS MANUAL.
- ALL DIMENSIONS SHOWN IN MILLIMETERS UNLESS SHOWN OTHERWISE.
- THIS DRAWING IS A DRAFT AND DOES NOT FORM AS PART OF THE LUTON AIRPORT DCO SUBMISSION.

DRAFT

Revision History	By	Checked	Date	Rev.
ISSUED FOR INFORMATION	SS	AA	08/10/21	P01.3
ISSUED FOR INFORMATION	SS	KHK	30/10/20	P01.2
FIRST ISSUE	OGM	KHK	07/02/20	P01.1

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Hart House Business Centre
Kimpton Road, Luton, LU2 0LA
www.lla.org.uk

Project Title

London Luton Airport Development Consent Order

Drawing Title

TYPICAL SECTIONS INFILTRATION BASINS & ATTENUATION TANK

Purpose of issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
OGM	KHK	JPC	07/02/2020	AS SHOWN
DCO Application Reference	APFP Regulation		DCO Document Reference:	
TR020001	5(2)(J)		Volume X.XX	

Drawing Number

LLADCO-3C-CAP-INF-DRN-DR-CE-5510

Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number

Revision P01.3

Notes:
- Layout is to be confirmed following updated calculations and strategy.
- Requirements for tanks to be assessed following updated calculations.
- Coordination with airside to be confirmed.

Fire Water Requirement (excluding fuel farm, piers or works outside of capita remit): Worst case assumption is 4 simultaneous fires site wide based on assumed 4 different fire safety management organisations/owners covering various buildings. Total water required is 360,000L based on 90,000L for each fire scenario.

90,000L provides full fire fighting coverage for 60 minutes (equivalent to structural fire protection requirement for most buildings but subject to future fire strategy) at 1500L/min. Water stored at primary tank and always available. Fire water to be replenished within 36 hours after a fire event.

Subject to fire strategy development and agreement for the terminal and wider site buildings, and detailed design of fire mains and tanks to ensure flow and pressures can be achieved.

Notes:
- Levels of all ground Including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capacity of water Treatment Plant (WTP) TBC.
- Connection to TW system TBC.
- Potable water supply from AW TBC.
- Updated tank size TBC.
- Pumping requirements TBC following earthworks and finished levels design.

Storage Tank
Within Fuel Farm to be connected to Hydrant System
7.3 l/s Refill requirements

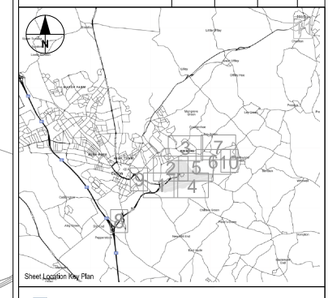
NOTES:
- NETWORK SHOWN IS INDICATIVE AND SUBJECT TO ADJUSTMENTS.
- PROPOSED POTABLE WATER IS ASSUMED TO CONNECT TO THE EXISTING NETWORK. POINT OF CONNECTION REQUIREMENT TO BE CONFIRMED PENDING EXISTING NETWORK FINDINGS.
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS SHOWN OTHERWISE.
- THIS DRAWING IS A DRAFT AND DOES NOT FORM AS PART OF THE LUTON AIRPORT DCO SUBMISSION.
- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1003 HAS BEEN USED PROVISIONALLY AS A BACKGROUND WHICH IS WORK IN PROGRESS. ANY UPDATES WILL NEED TO BE COORDINATED IN PREPARATION FOR THE DCO SUBMISSION.

LEGEND

- Proposed New Portable Water Mains (Indicative and subject to amendments)
- Proposed New Fire Main (Indicative and subject to amendments)
- INDICATIVE HYDRANT LOCATION (within 90m of building entrance or dry riser inlet (where provided)
- Central Supply Tank
- Fuel Farm Firefighting Main
- Red Line Boundary
- Green Belt
- Landfill Zone

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1



Sheet Location Key Plan

London Luton Airport Ltd
A Luton Council company

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Hart House Business Centre
Kimpton Road, Luton, LU2 0LA
www.llal.org.uk

Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
PROPOSED POTABLE/FIRE WATER
27 MPPA

Purpose of issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/20	1:5000
DCO Application Reference	APFP Regulation	DCO Document Reference:		
TR020001	5(2)(j)	Volume X.XX		
Drawing Number				Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5512				P01.3
Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number				

Notes:
- Layout is to be confirmed following updated calculations and strategy.
- Requirements for tanks to be assessed following updated calculations.
- Coordination with airside to be confirmed.

Fire Water Requirement (excluding fuel farm, piers or works outside of capita remit): Worst case assumption is 4 simultaneous fires site wide based on assumed 4 different fire safety management organisations/owners covering various buildings. Total water required is 360,000L based on 90,000L for each fire scenario.

90,000L provides full fire fighting coverage for 60 minutes (equivalent to structural fire protection requirement for most buildings but subject to future fire strategy) at 1500L/min. Water stored at primary tank and always available. Fire water to be replenished within 36 hours after a fire event.

Subject to fire strategy development and agreement for the terminal and wider site buildings, and detailed design of fire mains and tanks to ensure flow and pressures can be achieved.

Notes:
- Levels of all ground including roads and pavements, drainage including connections, and utilities TBC. Subsequent effect on drainage also TBC.
- All flow rates to be calculated and confirmed.
- Updated size and capacity of water Treatment Plant (WTP) TBC.
- Connection to TW system TBC.
- Potable water supply from AW TBC.
- Updated tank size TBC.
- Pumping requirements TBC following earthworks and finished levels design.

Storage Tank
Within Fuel Farm to be connected to Hydrant System 7.3 l/s Refill requirements

Airside Water Distribution to Emergency Water Supply Tanks to be confirmed.

NOTES:
- NETWORK SHOWN IS INDICATIVE AND SUBJECT TO ADJUSTMENTS.
- PROPOSED POTABLE WATER IS ASSUMED TO CONNECT TO THE EXISTING NETWORK. POINT OF CONNECTION REQUIREMENT TO BE CONFIRMED PENDING EXISTING NETWORK FINDINGS.
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- THIS DRAWING IS A DRAFT AND DOES NOT FORM AS PART OF THE LUTON AIRPORT DCO SUBMISSION.
- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1004 HAS BEEN USED PROVISIONALLY AS A BACKGROUND WHICH IS WORK IN PROGRESS. ANY UPDATES WILL NEED TO BE COORDINATED IN PREPARATION FOR THE DCO SUBMISSION.

LEGEND

- Proposed New Portable Water Mains (Indicative and subject to amendments)
- Proposed New Fire Main (Indicative and subject to amendments)
- INDICATIVE HYDRANT LOCATION (within 90m of building entrance or dry riser inlet (where provided)
- Central Supply Tank
- Fuel Farm Firefighting Main
- Red Line Boundary
- Green Belt
- Landfill Zone

DRAFT

Revision History	By	Checked	Date	Rev.
REVISED LAYOUT	SS	AA	08/10/21	P01.3
REVISED LAYOUT	SS	KHK	30/10/20	P01.2
First Issue, WIP	SS	KHK	31/03/20	P01.1

Sheet Location Key Plan

London Luton Airport Ltd
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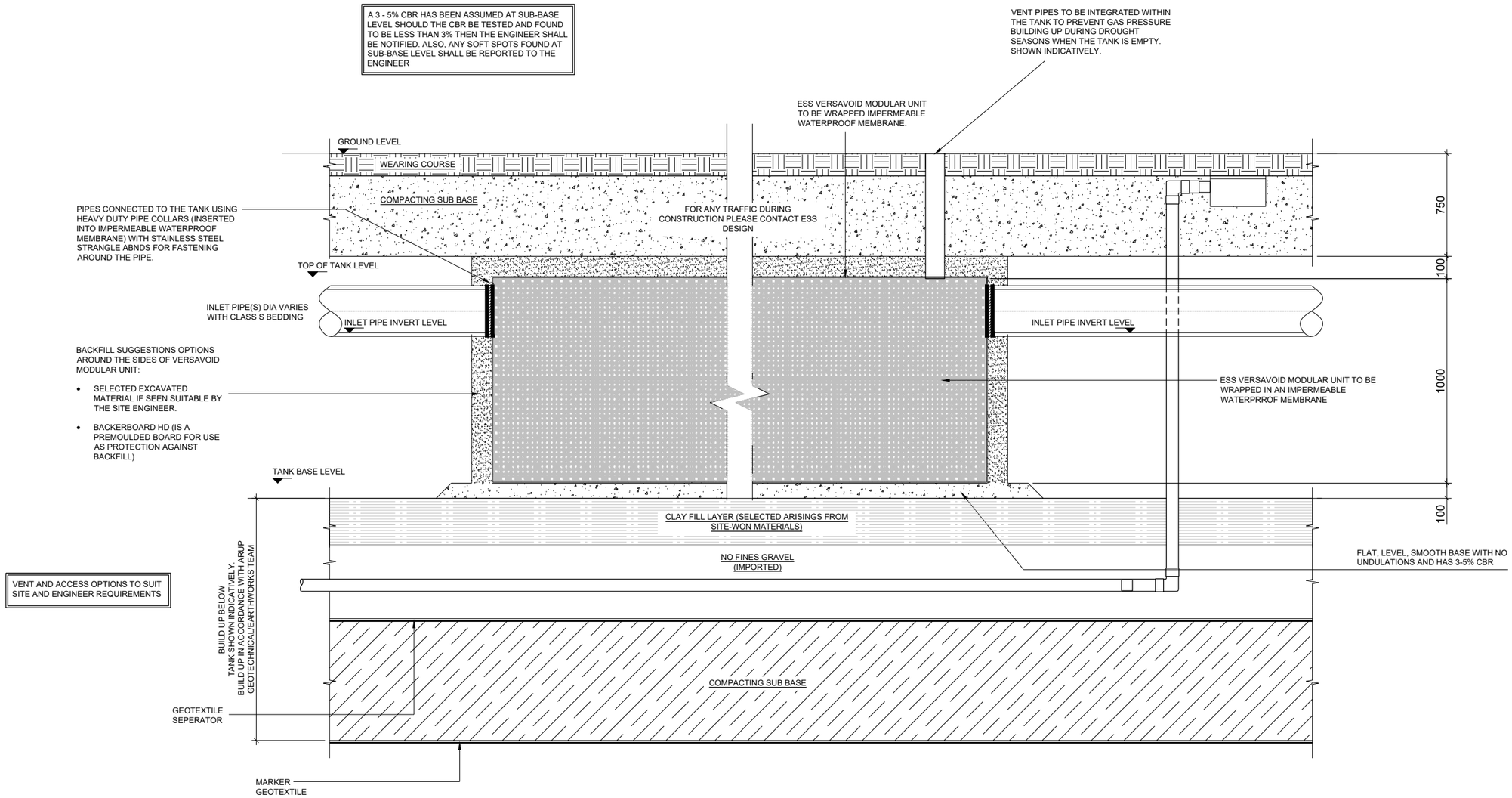
Hart House Business Centre
Kimpton Road, Luton, LU2 0LA
www.llal.org.uk

Project Title
London Luton Airport Development Consent Order

Drawing Title
OVERVIEW LAYOUT
PROPOSED POTABLE/FIRE WATER
32 MPPA

Purpose of Issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
SS	KHK	JPC	31/03/20	1:5000
DCO Application Reference	APFP Regulation	DCO Document References:		
TR020001	5(2)(j)	Volume X.XX		
Drawing Number				Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5513				P01.3
Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number				



TYPICAL DETAILS OF STORAGE TANK USING VERSAVOID MODULAR UNITS

NOTES:

- ALL DRAINAGE ELEMENTS SHOWN ARE INDICATIVE AND SUBJECT TO ADJUSTMENTS.
- ALL DIMENSIONS SHOWN ARE IN METERS UNLESS SHOWN OTHERWISE.
- THIS DRAWING IS A DRAFT AND DOES NOT FORM AS PART OF THE LUTON AIRPORT DCO SUBMISSION.
- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1002 HAS BEEN USED PROVISIONALLY AS A BACKGROUND WHICH IS WORK IN PROGRESS. ANY UPDATES WILL NEED TO BE COORDINATED IN PREPARATION FOR THE DCO SUBMISSION.

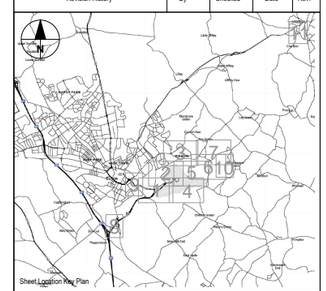
NOTES:

1. REFER TO 21.5MPPA PLAN ON DWG LLADCO-3C-CAP-INF-DRN-M2-CE-5501 FOR LOCATION OF TANK.
2. THIS DRAWING IS TO BE READ ALONGSIDE ALL ENGINEERS AND ARCHITECT DRAWINGS.
3. DURING DETAILED DESIGN, SETTLEMENT WILL NEED TO BE CONSIDERED IF SIGNIFICANT MAINTENANCE REGIME WILL NEED TO BE ESTABLISHED TO MONITOR SURFACE MOVEMENT AND UNDERTAKE UNDERGROUND REPAIRS TO MAINTAIN THE INTEGRITY OF THE WATERPROOFING AND GAS PROOFING SYSTEMS SHOWN BELOW.

TANK LOCATION TO BE COORDINATED WITH FUTURE PILE WORKS AND PROPOSED VENT BOX LOCATIONS. VENT BOX OMITTED FOR CLARITY.

DRAFT

First Issue, WIP	SS	AA	08/10/21	P01.1
Revision History	By	Checked	Date	Rev.



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Hart House Business Centre
Kimpton Road, Luton, LU2 0LA
www.lla.org.uk

Project Title
London Luton Airport Development Consent Order

Drawing Title
CAR PARK P7
TANK UNDER CAR PARK
TYPICAL DETAIL

Purpose of issue				Suitability
SUITABLE FOR INFORMATION				S1
Drawn	Checked	Approved	Date	Scale @ A1
SS	AA	JPC	08/10/21	N.T.S
DCO Application Reference	APFP Regulation		DCO Document Reference:	
TR020001	5(2)(j)		Volume X.XX	
Drawing Number				Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5517				P01.1

Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number

Appendix C – Thames Water Phase 1 connection points

Connection 1:
North East of the Airport
(ehy0105a - MH7802 along President Way)

Discharge rate 10l/s.

Connection 2:
South West of the airport (ehy00012 - Along Airport Way (A505) Pipe DN225)

Discharge rate 10l/s.

Note:

Connections indicated are preliminary and subject to confirmation upon receipt of update network drawings.

London Luton Airport - Surface Water Network

VEOLIA WATER

1:2,500

Legend

- SW Rising Pipe (Airport)
- SW Sewer Pipe (Private)
- SW Sewer Pipe (Airport)
- SW Rodding Eye (Airport)
- SW Petrol/Oil Interceptor (Airport)
- SW Petrol/Oil Interceptor (Private)
- SW Catchpit (Airport)
- SW Manhole (Airport)
- SW Manhole (Private)
- SW Soakaways (Airport)
- SW Undefined End (Airport)
- SW Outfall (Airport)
- SW Pumping Station
- Luton Airport Boundary
- Buildings

Connection 1:
North East of the Airport
Connection to Northern Soakaway

Note:

Connections indicated are preliminary and subject to confirmation upon receipt of update network drawings.

Appendix D – Thames Water FW consents

Thames Water Utilities

The Water Industry Act 1991

CONSENT

to discharge trade effluent into a public sewer

T.E. Case No: EHY00012

THAMES WATER UTILITIES LTD.

Water Industry Act 1991

CONSENT TO THE DISCHARGE OF TRADE EFFLUENT

WHEREAS

1. London Luton Airport Ltd
of Percival House, Percival Way, Luton, LU2 9LY is/are the occupier(s)/owner(s) of the trade premises known as London Luton Airport Ltd and situate at Percival House, Percival Way, Luton, LU2 9LY

(hereinafter called "the said premises") and by notice dated the ninth day of October One thousand nine hundred and ninety five has/have made application to Thames Water Utilities Ltd. (hereinafter called "the Company") to consent to the discharge of trade effluent by him/her/them from the said premises into the Company's public sewers.

2. NOW THEREFORE in exercise of the powers conferred upon it in that behalf as a sewerage undertaker by the Water Industry Act 1991, the Company

HEREBY CONSENT to the discharge of trade effluent from the said premises into the public sewers subject to the following conditions:

Nature and Composition

1. The nature and composition of the trade effluent (hereinafter called "the trade effluent") to be discharged under this Consent is: Waste liquids arising from aviation industry related processes and contaminated surface waters.

Sewer(s) affected

2. The sewer(s) into which the trade effluent may be discharged is/are the foul sewers situate in New Access Road and more particularly shown by a line(s) on the plan annexed hereto and thereon coloured RED. The point(s) at or through which the trade effluent is to be discharged is (are) shown on the said plan and thereon marked GREEN.

No change shall be made in such point(s) of discharge without prior consent in writing of the Company.

Maximum quantity to be discharged

3. The maximum quantity of the trade effluent which may be discharged on any one day of twenty-four hours determined from midnight to midnight shall not exceed $264m^3$.

Maximum rate of discharge

4. The maximum rate at which the trade effluent may be discharged shall not exceed $200m^3$ per hour.

Matter to be eliminated prior to discharge to the sewer(s) 5. (a) There shall be eliminated from the trade effluent before it is discharged into the sewer(s) any matter, which, either alone or in combination with any matter with which it is likely to come into contact while passing through any sewers, would injure or obstruct any such sewers or cause injury to and/or damage to the health of any person lawfully present in such sewers, pumping stations or sewage treatment works or would make specially difficult or expensive the treatment or disposal of their contents and in particular but without prejudice to the generality of the foregoing words the following matters :-

(i) Petroleum spirit
(ii) Calcium carbide
(iii) Thiourea and thiourea derivatives
(iv) Non biodegradable detergents

(b) The trade effluent shall not contain substances listed in Schedule 1 of the Trade Effluents (Prescribed Processes and Substances) Regulations 1989, as amended, at a concentration greater than background concentration as defined in such regulations.

(c) The trade effluent shall not contain any of the substances listed below at a concentration expressed in milligrams per litre greater than that stated:

(i)	Settleable Solids	1000
(ii)	COD	1000
(iii)	Unsaponifiable Oil and or Grease	50
(iv)	Ammoniacal Nitrogen (as N)	35
(v)	Available Chlorine (as Cl)	50

Temperature 6. No trade effluent shall be discharged which has a temperature higher than 43.3 degrees Celsius (110 degrees Fahrenheit).

Acidity or alkalinity 7. No trade effluent shall be discharged the pH value of which is less than 6.0 or greater than 11.0.

Condensing water 8. No condensing water shall be discharged.

Changes in occupier or process 9. The occupier(s) of the said premises shall forthwith give to the Company notice in writing of any changes or proposed changes in the company name, address, occupier, or processes of manufacture or the nature of the raw materials used or of any other circumstances which may alter the nature and composition of the trade effluent or may result in the permanent cessation of the discharge.

Payment

10. The occupier(s) of the said premises shall pay to the Company for the trade effluent discharged into the sewer (a) a sum calculated in accordance with the provisions contained in the Company's Charges Scheme together with (b) the amount of any additional expenses additional thereto which the Company may from time to time incur with the reception and disposal of the trade effluent. All sums payable to the Company under this condition shall become due and payable on demand.

Entry and samples

11. The owner(s) and occupier(s) of the said premises shall permit duly authorised representatives of the Company to inspect, examine and test at all reasonable times any works and apparatus installed in connection with the trade effluent and to take samples of the trade effluent.

Inspection

12. (i) An inspection chamber or manhole shall be provided and maintained by the owner(s) and occupier(s) of the said premises in a suitable position defined as point 'X' on the attached plan in connection with each pipe through which the trade effluent is being discharged and such inspection chamber or manhole shall be so constructed and maintained by the owner(s) or occupier(s) as to enable duly authorised representatives of the Company to take samples at any time of the matter passing into the sewer(s) from the said premises.

Measurement and determination of discharge

(ii) A notch gauge and continuous recorder or some other apparatus suitable and adequate for measuring and automatically recording the volume, nature, composition and rate of discharge of the trade effluent being discharged into the sewer(s) shall, if required by the Company be provided and maintained by the owner(s) or occupiers of the said premises to the satisfaction of the Company in connection with every pipe through which the trade effluent is being discharged.

Records

(iii) Records in such form as the Company may require shall be kept of the volume, rate of discharge, nature and composition of the trade effluent discharged into the sewer(s) and shall be available at all reasonable times for inspection by duly authorised representatives of the Company and copies of such records shall be sent to the Company on demand.

(iv) If the notch gauge and continuous recorder or other apparatus aforesaid ceases to register or measure correctly then, unless otherwise agreed, the quantity of the trade effluent discharged into the sewer(s) during the period from the date on which the records of the volume of trade effluent discharged into the sewer(s) were last accepted by the Company as being correct up to the date when the notch gauge and continuous recorder or other apparatus aforesaid again registers correctly shall, for the purpose of any payment to be made to the Company, be based on the average daily volume of the trade effluent discharged during the period of one month preceding the date on which the said records were last accepted as aforesaid or during the month immediately after the notch gauge and continuous recorder or other apparatus aforesaid has been corrected, whichever is the higher.

(v) The foregoing provisions of this condition shall be of no effect so long as there is available to the satisfaction of the Company some other method approved by the Company of sampling the trade effluent or of determining measuring and recording the volume and rate of discharge and the nature and composition of the trade effluent discharged.

Signed _____

Dr. M. McEvoy
Process Strategy Manager
Operations
Duly authorised to sign on behalf of the Company

DATED this 15th day of November 1995

(Address to which all communications should be sent)

Thames Water Utilities
Trade Effluent Control
Rye Meads STW
Stanstead Abbotts
Nr. Ware
Herts SG12 8JY

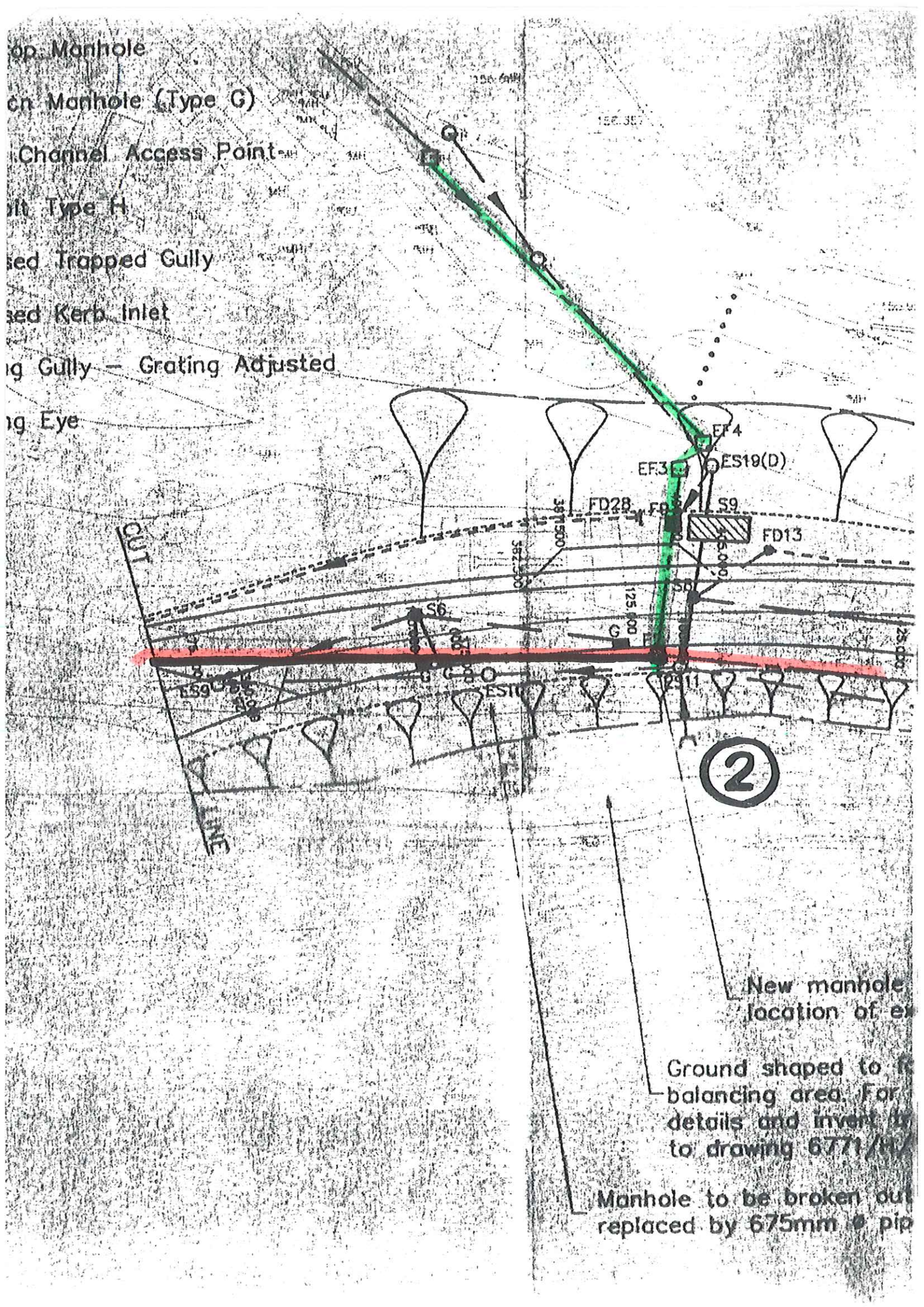
NOTE:

(a) Your attention is drawn to the right of appeal to the Director General of Water Services conferred by Section 122 of the Water Industry Act 1991 if you are aggrieved by any condition attached to this Consent.

(b) A standing charge for all sewerage services plus a domestic sewerage charge is payable in addition to charges for trade effluent flows.

(c) A copy of the Thames Water Utilities Ltd. Charges Scheme is obtainable from the Thames Water Customer Centre.

(d) If you discharge trade effluent in contravention of a condition of this Consent you will be guilty of a criminal offence and may be subject to prosecution.


op. Manhole
cn Manhole (Type G)
Channel Access Point
lt Type H
sed Trapped Gully
sed Kerb Inlet
g Gully – Grating Adjusted
g Eye
EF4
EF3
ES19(D)
FD28
S9
FD13
S8
S6
ES9
ES10
2911
CUT
2
New manhole
location of ex
Ground shaped to fi
balancing area. For
details and invert le
to drawing 6771/
Manhole to be broken out
replaced by 675mm ø pip

LTD Thames

Thames Water Utilities

Crossness Sewage Treatment Works
Abbey Wood London SE2 9AQ
Telephone 0181 507 4805
Telefax 0181 507 4880

Our Ref : WWS/CQC/TEHY.0105A

02/02/1998

Please Contact :
N. Shah 01993 771171

London Luton Airport Ltd
Percival House
Percival Way
Luton LU2 9LY

Dear Sir,

WATER INDUSTRY ACT 1991

NAME : London Luton Airport Ltd

PREMISES : Percival House
Percival Way
Luton LU2 9LY

I enclose a Consent dealing with the discharge of trade effluent from the above-mentioned premises.

Yours faithfully

Mrs D. MOSE
TRADE EFFLUENT CO-ORDINATOR

T.E. Case No: TEHY.0105A

THAMES WATER UTILITIES LTD.

Water Industry Act 1991

CONSENT TO THE DISCHARGE OF TRADE EFFLUENT

WHEREAS

1. London Luton Airport Ltd of
Percival House
Percival Way
Luton LU2 9LY
is/are the occupier(s)/owner(s) of the trade premises known as
London Luton Airport Ltd and situated at
Percival House
Percival Way
Luton LU2 9LY

(hereinafter called "the said premises") and by notice dated 12th December 1997 has/have made application to Thames Water Utilities Ltd. (hereinafter called "the Company") to consent to the discharge of trade effluent by him/her/them from the said premises into the Company's public sewers.

2. NOW THEREFORE in exercise of the powers conferred upon it in that behalf as a sewerage undertaker by the Water Industry Act 1991, the Company

HEREBY CONSENT to the discharge of trade effluent from the said premises into the public sewers subject to the following conditions:

Nature and Composition

1. The nature and composition of the trade effluent (hereinafter called "the trade effluent") to be discharged under this Consent is : Waste Liquids arising from pavement and aircraft de-icing processes

Sewer(s) affected

2. The sewer(s) into which the trade effluent may be discharged is/are the foul sewer(s) detailed below

within the Borough of Luton

No change shall be made in such point(s) of discharge without prior consent in writing of the Company.

Maximum quantity to be discharged

3. The maximum quantity of the trade effluent which may be discharged on any one day of twenty-four hours determined from midnight to midnight shall not exceed 40 m^3.

Maximum rate of discharge

4. The maximum rate at which the trade effluent may be discharged shall not exceed 72 m^3 per hour.

Matter to be eliminated prior to discharge to the sewer(s) 5. (a) There shall be eliminated from the trade effluent before it is discharged into the sewer(s) any matter, which, either alone or in combination with any matter with which it is likely to come into contact while passing through any sewers, would injure or obstruct any such sewers or cause injury to and/or damage to the health of any person lawfully present in such sewers, pumping stations or sewage treatment works or would make specially difficult or expensive the treatment or disposal of their contents and in particular but without prejudice to the generality of the the foregoing words the following matters :-

(i) Petroleum spirit
(ii) Calcium carbide
(iii) Thiourea and thiourea derivatives
(iv) Non biodegradable detergents

(b) The trade effluent shall not contain substances listed in Schedule 1 of the Trade Effluents (Prescribed Processes and Substances) Regulations 1989, as amended, at a concentration greater than background concentration as defined in such regulations.

(c) The trade effluent shall not contain any of the substances listed in APPENDIX 1 at a concentration expressed in milligrams per litre greater than that stated.

SEE APPENDIX 1

Temperature 6. No trade effluent shall be discharged which has a temperature higher than 43.3 degrees Celsius (110 degrees Fahrenheit).

Acidity or alkalinity 7. No trade effluent shall be discharged the pH value of which is less than 6.0 or greater than 11.0.

Condensing Water 8. No condensing water shall be discharged.

Changes in occupier or process 9. The occupier(s) of the said premises shall forthwith give to the Company notice in writing of any changes or proposed changes in the company name, address, occupier, or processes of manufacture or the nature of the raw materials used or any other circumstances which may alter the nature and composition of the trade effluent or may result in the the permanent cessation of the discharge.

Payment 10. The occupier(s) of the said premises shall pay to the Company for the trade effluent discharged into the sewer (a) a sum calculated in accordance with the provisions contained in the Company's Charges Scheme together with (b) the amount of any additional expenses which the Company may from time to time incur with respect to the monitoring, analysis, reception, treatment and disposal of the trade effluent. All sums payable to the Company under this condition shall become due and payable on demand.

Entry and Samples

11. The Owner(s) and occupier(s) of the said premises shall permit duly authorised representatives of the company to inspect, examine and test at all reasonable times any works and apparatus installed in connection with the trade and to take samples of the trade effluent.

Inspection

12. (i) An inspection chamber or manhole shall be provided and maintained by the owner(s) and occupier(s) of the said premises in a suitable position defined in connection with each pipe through which the trade effluent being discharged and such inspection chamber or manhole shall be so constructed and maintained by the owner(s) or occupier(s) as to enable duly authorised representatives of the Company to take samples at any time of the matter passing into the sewer(s) from the said premises.

Measurement and determination of discharge

(ii) A notch gauge and continuous recorder or some other apparatus suitable and adequate for measuring and automatically recording the volume, nature, composition and rate of discharge of the trade effluent being discharged into the sewer(s) shall, if required by the Company be provided and maintained by the owner(s) occupier(s) of the said premises to the satisfaction of the Company in connection with every pipe through which the trade effluent is being discharged.

Records

(iii) Records in such form as the Company may require shall be kept of the volume, rate of discharge, nature and composition of the trade effluent discharged into the sewer(s) and shall be available at all reasonable times for inspection by duly authorised representatives of the Company and copies of such records shall be sent to the Company on demand.

(iv) If the notch gauge and continuous recorder or other apparatus aforesaid ceases to register or measure correctly then, unless otherwise agreed, the quantity of the trade effluent discharged into the sewer(s) during the period from the date on which the records of the volume of the trade effluent discharged into the sewer(s) were last accepted by the Company as being correct up to the date when the notch gauge and continuous recorder or other apparatus aforesaid again registers correctly shall, for the purpose of any payment to be made to the Company, be based on the average daily volume of the trade effluent discharged during the period of one month preceding the date on which the said records were last accepted as aforesaid or during the month immediately after the notch gauge and continuous recorder or other apparatus aforesaid has been corrected, whichever is the higher.

(v) The foregoing provisions of this condition shall be of no effect so long as there is available to the satisfaction of the Company some other method approved by the Company of sampling the trade effluent or of determining, measuring and recording the volume and rate of discharge and the nature and composition of the trade effluent discharged.

Signed

J. W. Lawrence
General Manager, Waste Water Services
Duly authorised to sign on behalf of the Company

Dated this 28 day of January 1998

NOTES :

(a) All communications should be sent to the following address

Catchment Quality Control Manager
Thames Water Utilities Ltd.
Crossness Sewage Treatment Works
Belvedere Road
Abbey Wood
London
SE2 9AQ

(b) Your attention is drawn to the right of appeal to the Director General of Water Services conferred by Section 122 of the Water Industry Act 1991 if you are aggrieved by any condition attached to this Consent.

(c) A standing charge for all sewerage services plus a domestic sewerage charge is payable in addition to charges for trade effluent flows.

(d) A copy of the Thames Water Utilities Ltd. Charges Scheme is obtainable from the Thames Water Customer Centre.

(e) If you discharge trade effluent in contravention of a condition of this Consent you will be guilty of a criminal offence and may be subject to prosecution.

1000A

APPENDIX 1

The trade effluent shall not contain any of the substances listed below at a concentration expressed in milligrams per litre greater than that stated :

Settleable Solids	1000
Chemical Oxygen Demand	1000
Unsaponifiable Oil and or Grease	50
Sulphate (as SO4)	1800

THERE ARE NO FURTHER LIMITS IN THIS APPENDIX

Thames Water

URGENT TELEFAX MESSAGE

To: J. T. Appleby. **Date:** 18-02-98
Address:
London Luton Airport

Telephone: 01582 - 395313 **Fax:**

From: Nem Shah
Catchment Quality Control
Aylesbury STW Rabans Lane
Aylesbury Bucks. HP19 3RY

Telephone: 01296 435914 Int: 30125
Fax: 01296 431857 Int. 30130

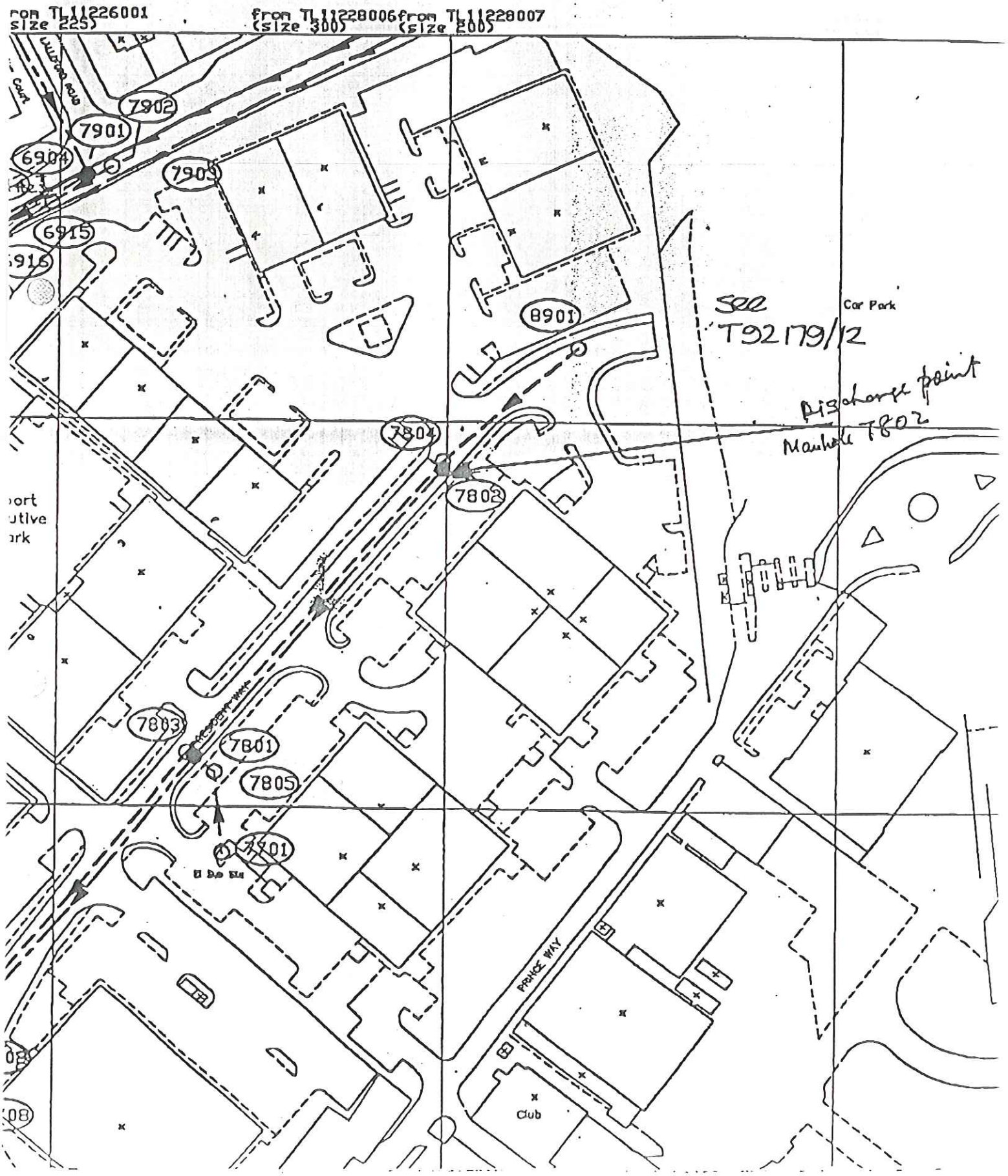
Message:

The accompanying plan shows the discharge point for consent CHY 0105A.

Nem

Total number of pages sent (including this page) 2

If you have not received any of the accompanying pages or find that any of them are illegible, please call the sender on the above telephone number.


from TL11226001
size 225)
from TL11228006
(size 300)
from TL11228007
(size 200)
7902
7901
6904
7903
6915
8901
See
T92179/2
Car Park
Fishermans point
Manhole 7802
7804
7802
7803
7801
7805
7901
PRINCE WAY
Club

Appendix E – Veolia potable water network

VEOLIA

POTABLE NETWORK

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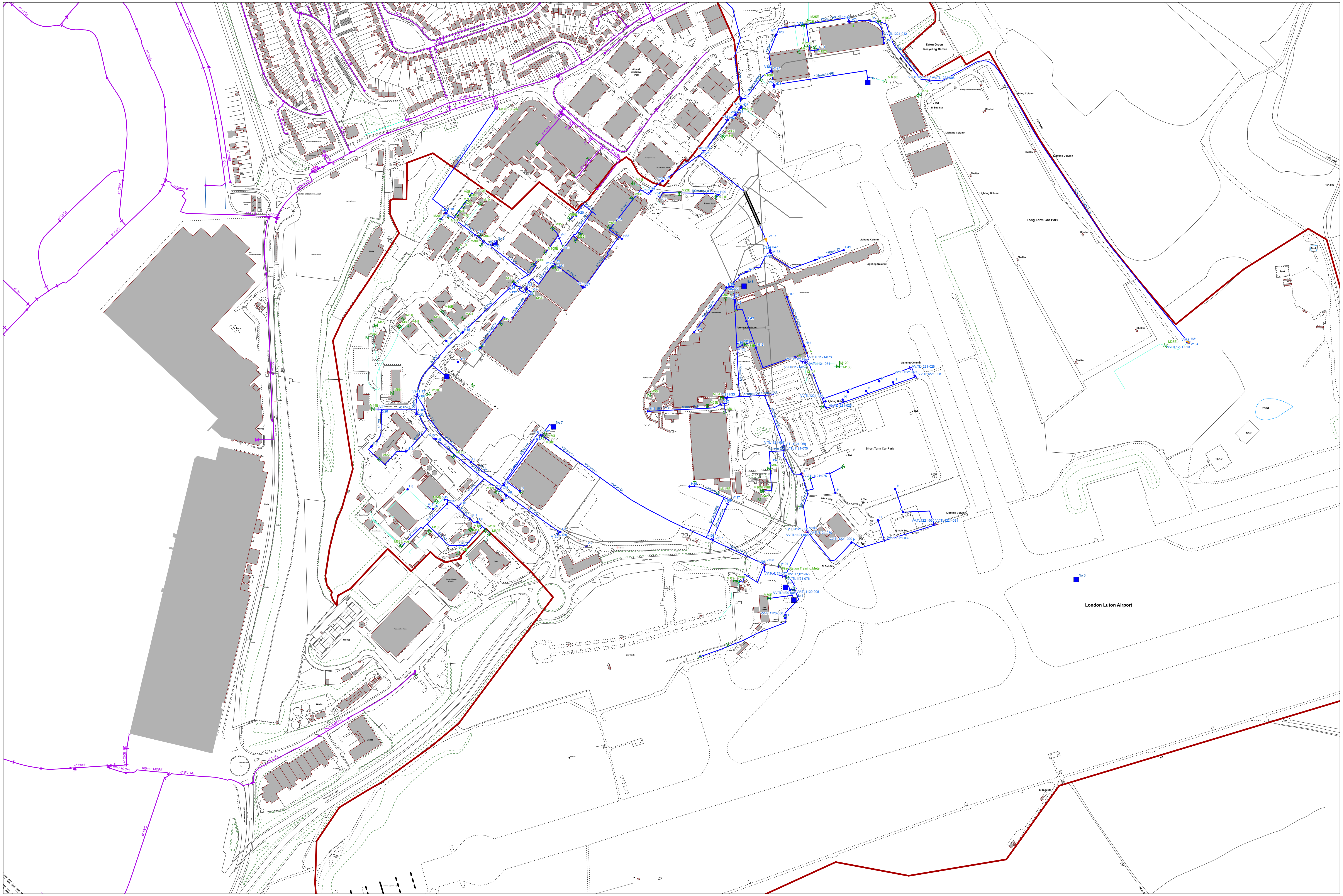
1:2,000

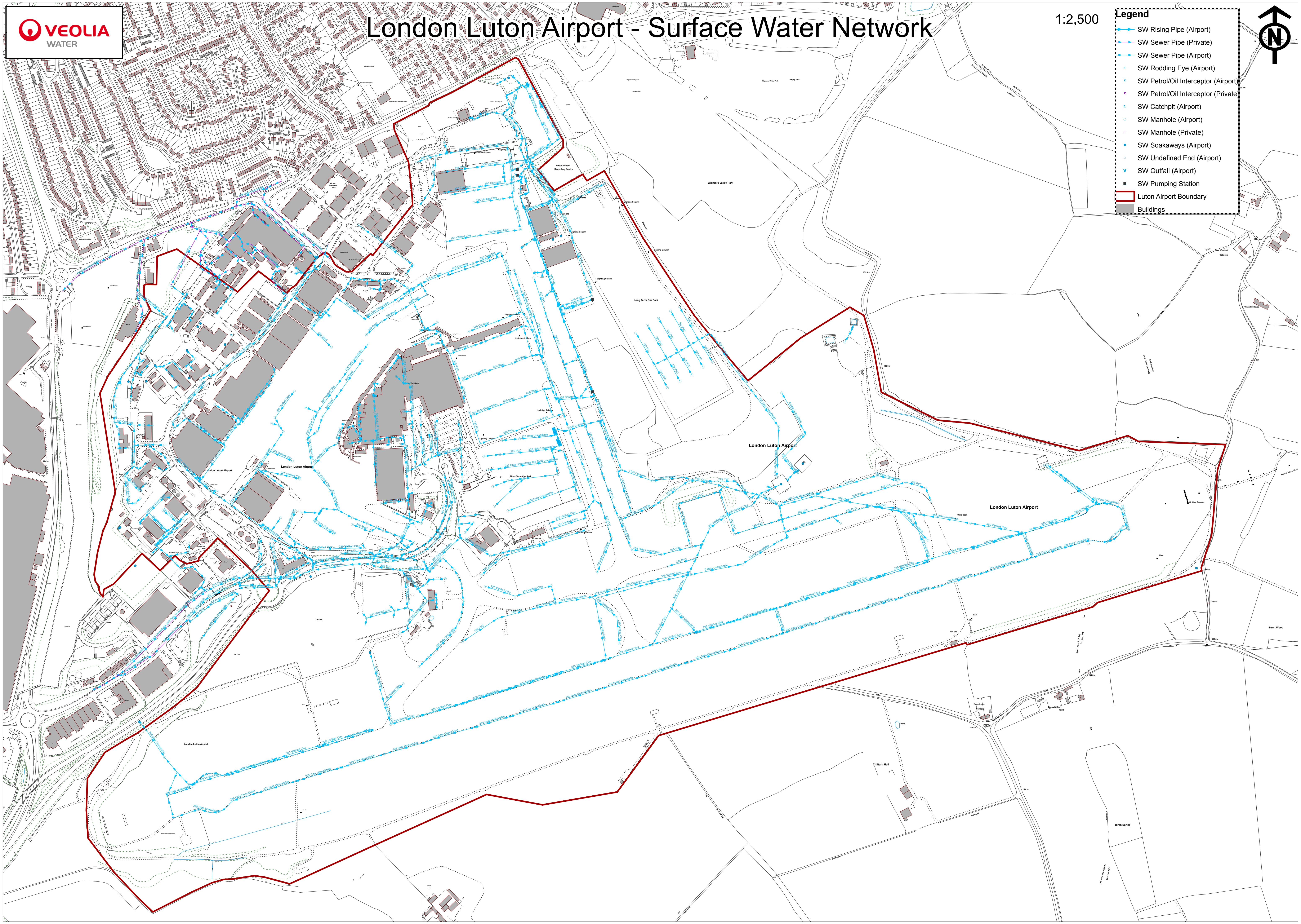


(16/07/2020)

Please see the supplement page for the map legend.

Appendix F – Veolia surface water network

London Luton Airport - Surface Water Network



Appendix G – Veolia foul water network

London Luton Airport - Foul Water Network

VEOLIA WATER

1:2,500

Legend

- FW Airport Sewer
- FW Airport Rising Main
- FW Private Sewer
- FW In Use Manhole
- FW Missing/Buried Manhole
- FW Private In Use Manhole
- FW Private Missing/Buried Manhole
- FW Pumping Station
- FW Pumping Apparatus
- FW Septic Tank
- FW Access Points
- Luton Airport Boundary
- Buildings

N

London Luton Airport

Wigmore Valley Park

Long Term Car Park

Short Term Car Park

Eaton Green Recycling Centre

Chiltern Hall

Burnt Wood

Birch Spring