Luton Rising
Our airport.
Our community.
Our planet.

November 2023

London Luton Airport Expansion

Planning Inspectorate Scheme Ref: TR020001

Volume 5 Environmental Statement and Related Documents

5.02 Appendix 20.4 Drainage Design Statement (Tracked Change Version)

Application Document Ref: TR020001/APP/5.02

APFP Regulation: 5(2)(a)

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

London Luton Airport Expansion Development Consent Order 202x

5.02 ENVIRONMENTAL STATEMENT APPENDIX 20.4 DRAINAGE DESIGN STATEMENT (TRACKED CHANGE VERSION)

Regulation number:	Regulation 5(2)(a)
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Author:	Luton Rising

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Issue 1	February 2023	Application issue
Revision 1	November 2023	Additional submission - Deadline 4
Revision 2	November 2023	Additional submission - Deadline 5 (Corrected)

Contents

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Insets

1 INTRODUCTION

1.1 Purpose of the Report

1.1.01.1.1 This Drainage Design Statement (DDS) forms part of the Development Consent Order (DCO) application for the proposed expansion of London Luton Airport (the airport) from 18 million passengers per annum (mppa) to 32 million passengers per annum (mppa), (hereafter referred to as 'the Proposed Development'). This application is made by London Luton Airport Limited (trading as Luton Rising and hereafter referred to as the Applicant), owners of London Luton Airport (the airport).

1.1.0 The airport is operated by London Luton Airport Operations Limited (LLAOL).

1.1.1 The DDS combines value driven and sustainable solutions to deliver the infrastructure required, having regard to stakeholder requirements.

The DDS informs 'design principles' included in the **Design Principles [TR020001/APP/7.09]** document [APP-225] Section xxx[APP225] that relate to the surface and foul water drainage infrastructure. These design principles that will be designed after the DCO is granted and such designs must reflect the principles set out in this document.

1.1.2 The design principles that will inform the detailed drainage design, capturing key requirements identified through design, assessment and stakeholder engagement at preliminary design stage and will inform the detailed drainage design. The detailed drainage design will be developed following grant of the Development Consent Order (DCO), pursuant to the relevant Requirement in Schedule 2 of the **draft DCO [TR020001/APP/2.01REP2-003]**.

1.1.3 This document has been updated in response to the acceptance of change notification [TR020001/APP/8.61]. This DDS has been updated for Deadline 4 of the DCO Examination to reflect a proposed change isas a result of ongoing discussions with statutory stakeholders. The change and relates to the previous iteration of the **Drainage Design Statement (DDS) [APP-137]**, particularly the preferred option for the treatment and discharge of foul water and contaminated surface water from the Proposed DevelopmemtDevelopment to discharge to the Thames Water (TW) network.

1.2 Report Structure

1.1.01.2.1 Following this section, the report is structured in eightseven sections. The content of these is summarised as follows.

1.2.11.2.2 Section 2 provides an overview of the existing site conditions and the existing drainage layout.

1.2.3 Section 03 provides an overview of the key considerations taken into account in developing the drainage statement strategy for the Proposed Development.

1.2.4 Section 4 provides an overview of the proposed catchment areas, rainwater harvesting and water balance for the assessment phases.

1.2.5 Sections 54 and 65 then describe the approach to drainage for the purposes of assessment first providing an overview of the preliminary surface water and foul water drainage designs assumed for the purposes of assessment Phase 1 and then for assessment Phases 2a and 2b.

1.2.6 Section 76 describes the concept design for the proposed Water Treatment Plant.

1.2.7 Section 87 describes the concept design of surface water drainage for the highways proposals, including the Airport Access Road and the Off-site Highway Interventions.

~~Section 8 then outlines the design principles that will inform the detailed drainage design, capturing key requirements identified through design, assessment and stakeholder engagement at preliminary design stage. The detailed drainage design will be developed following grant of the Development Consent Order (DCO), pursuant to the relevant Requirement in Schedule 2 of the draft DCO [TR020001/APP/2.01].~~

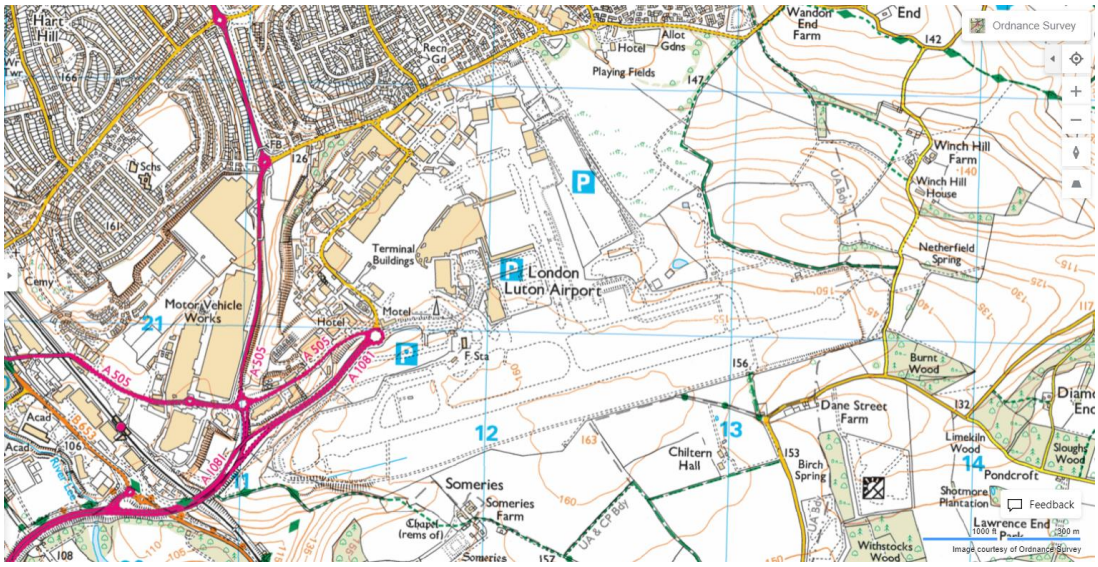
1.2.8 The design proposals incorporate ~~limitations/r~~equirements requirements that have been set out by relevant stakeholders, following extensive engagement including two statutory public consultations. The conceptual model includes design assumptions and data collected from the stakeholders. Detailed design will also include continued engagement with stakeholders, in particular with respect to permits and approvals.

2 EXISTING SITE DETAILS

2.1 Location

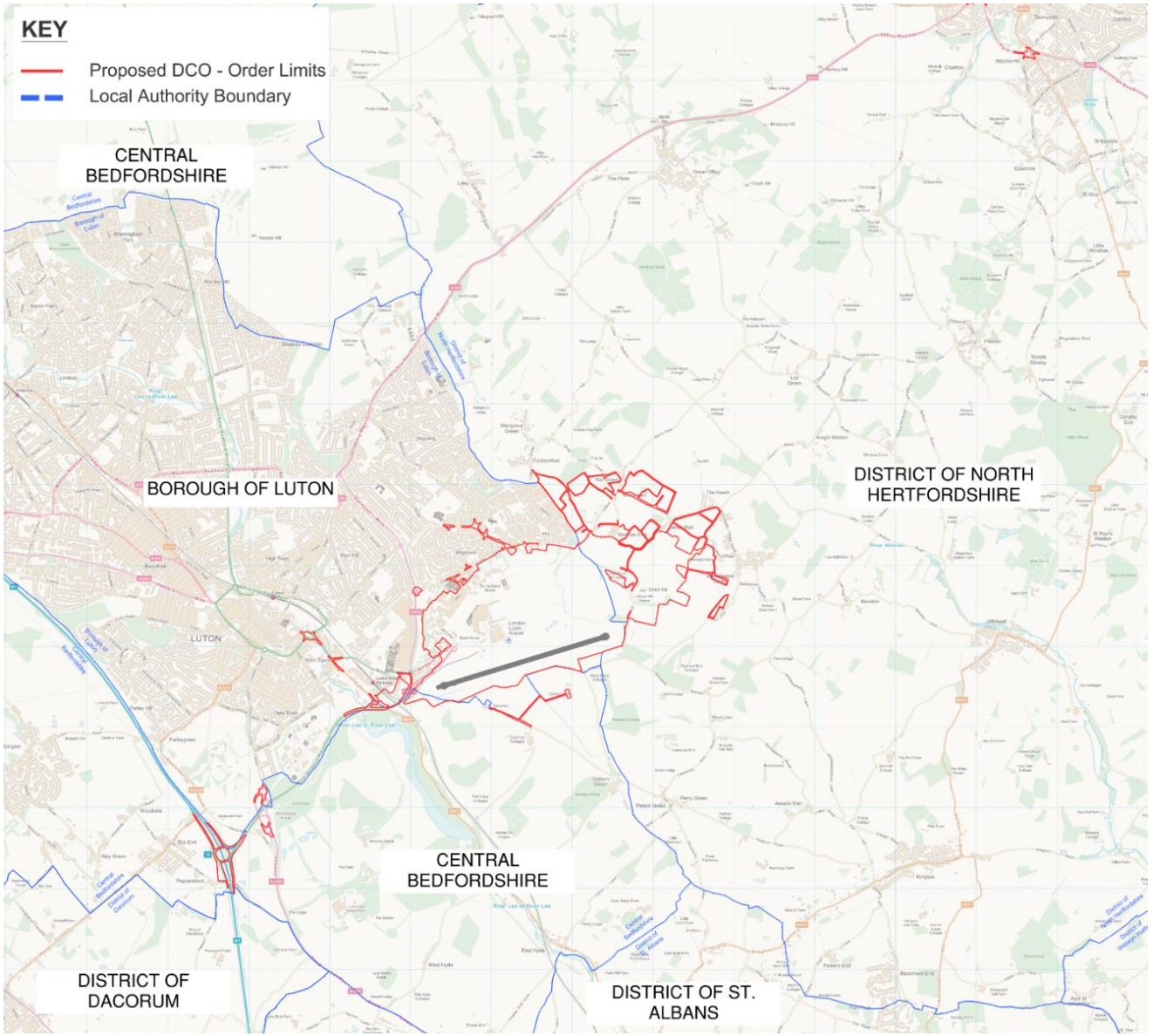
2.1.1 The Main Application Site is located on the south eastern outskirts of Luton, about 3km east of the town centre. It is bound to the north by Eaton Green Road and Darley Road with largely open land to the south and east. The topography is relatively undulating, with falls of 30m in elevation towards the east.

Inset 0.11: Ordnance Survey plan of the airport



2.1.2 The Application Site is located within the administrative areas of Luton Borough Council (LBC), North Hertfordshire District Council, Central Bedfordshire Council, Dacorum Borough Council and Hertfordshire County Council. The Lead Local Flood Authoritiesy (LLFAs) are LBC, Central Bedfordshire Council and Hertfordshire County Council. A map of the local authority boundaries and Order Limits proposed for the DCO can be found in **Inset 2.2**.

Inset 0.2: Local Authorities Boundaries and Order Limits



2.2 Site Geology

~~2.2.0~~2.2.1 The Main Application Site is generally underlain by superficial deposits of Clay-with-Flints (clay containing flint gravel) on the plateau areas, Head on the valley sides (clay), and Dry Valley Deposits (silty clay and gravel) at the base of the valley areas. These superficial deposits are in turn underlain by the solid geology which comprises the Lewes Nodular Chalk Formation.

2.2.2 The main water bearing strata in the region is Chalk, which is designated by the Environment Agency (EA) as a Principal aquifer. The majority of the Main Application Site is located within groundwater Source Protection Zone (SPZ) 3.

2.2.3 Superficial deposits comprising gravelly clay soil overlie the Chalk locally.

2.2.4 The former Eaton Green Landfill lies to the east of the existing airport. This feature fills part of the head of a dry valley extending across an area of approximately 40ha. The thickness of landfill waste varies from approximately 4m on the valley sides up to 20m at the centre and comprises mixed domestic, commercial and construction/demolition waste. Refer to **Chapter 17** of the **Environmental Statement (the ES) [TR020001/APP/5.01]** and **appendices [TR020001/APP/5.02].**

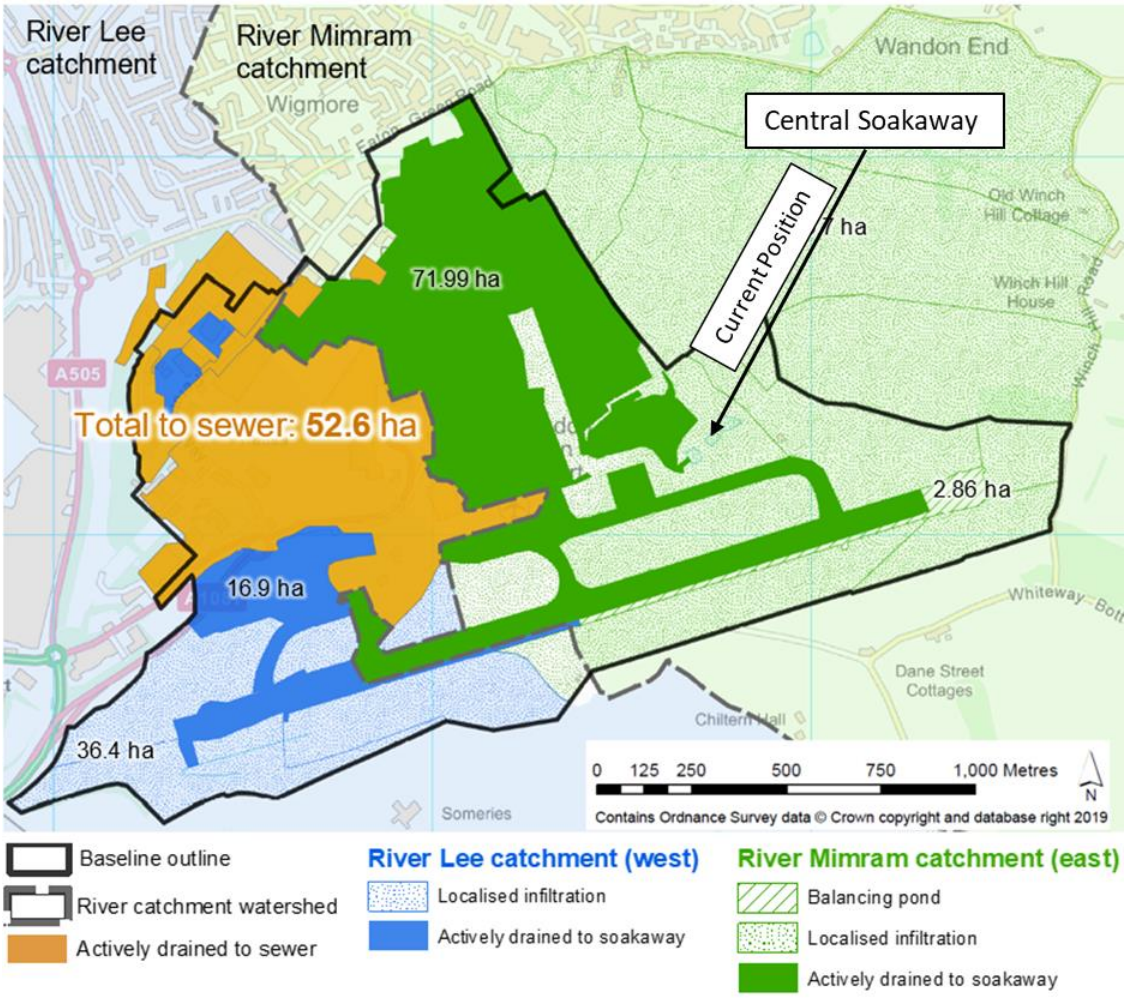
2.2.5 The Chalk aquifer is a designated Water Framework Directive (WFD) (Ref. 2.1) groundwater body: 'the Upper Lea Chalk'. For groundwater bodies there are two separate classifications (~~,~~ quantitative status~~,~~ and chemical status) that in combination provide an overall water body status. Both the quantitative and chemical status are classed as poor for the Upper Lea Chalk due to over-abstraction and contamination, respectively. The contamination is present across the wider catchment area with elevated levels of nitrate, pesticides, solvents due to industrial and agricultural land uses in the area.

2.3 Hydrology and Existing Catchments

~~2.2.0~~2.3.1 Two main water body catchments split the Main Application Site - the Lea catchment to the west, and the Mimram catchment to the east. The exact positioning of the groundwater divide at the site is uncertain. Groundwater flow direction in the Lea catchment is influenced by local abstractions west of the airport and flows in a westerly direction. The groundwater flow in the Mimram catchment is affected by the potable abstraction near Kings Walden, 1.5km north east of the Main Application Site boundary (2.8km north east of the landfill) and a second potable water abstraction (Nine Wells) at Whitwell, 5.3km east of the former landfill. Both may create a more easterly flow direction than the expected south easterly regional flow - refer to **Hydrogeological Characterisation Report [APP-~~previous reference REP1-004, since updated for Deadline 4~~TR02001/APP/5.02]** which has been updated for Deadline 4.

2.3.2 **Inset ~~Inset~~ 2.3** illustrates the existing river catchment areas and indicative watershed line at the airport, dividing the airport into two distinct catchments.

Inset 0.3: London Luton Airport River Catchment Areas



2.3.3 The river Lea (referred to as River Lee in **Inset 2.3**) is located about 600m west of the 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.

2.4 Stakeholders

~~2.2.1~~2.4.1 Statutory Undertakers with assets and direct interest in the drainage within the Main Application Site have been a part of stakeholder engagements to date. Listed below are the named stakeholders:

a. LBC;

b. ~~Thames Water (~~TW~~)~~;

c. Affinity Water (AW);

d. Hertfordshire County Council;

e. Central Bedfordshire Council;

f. ~~Environment Agency (~~EA~~)~~; and

g. LLAOL.

2.4.0 It is anticipated that permits will be required in respect of drainage from a number of stakeholders. These are described in the **Consents and Agreements Position Statement** [~~TR020001/APP/2.03~~AS-070] included with the application for development consent.

2.5 Existing Airport Drainage Assets

~~2.2.0~~2.5.1 Veolia manage the airport's potable and foul drainage systems on behalf of the operator, LLAOL (refer to section 3.4~~3.3~~).

2.5.0 AW supply the airport with potable water. Their existing network has been outlined in a survey undertaken by Veolia which can be found in Appendix E.

2.5.1 TW existing surface and foul assets located across the Main Application Site have been outlined in a Veolia Survey, and can be found in Appendix F and Appendix G respectively.

2.5.2 Within the TW network north of the Application Site, there is a balancing pond south of Eaton Green Road.

2.5.3 Two existing soakaway units~~,~~ (known as the central soakaway) ~~and,~~ managed by the airport, are located north-east of the eastern taxiway. The rectangular soakaways were constructed using brickwork and filled with free draining material, each with unconfirmed depths. The combined capacity of the soakaways has been estimated. This is based on an assumed porosity range due to sedimentation, with an upper bound of 25% and lower bound of 5%. The estimated volume is between a minimum of 351m^3 and maximum 1755m^3 respectively. It should be noted the assumptions made in these calculations including the assumed depth and porosity are based on sedimentation observed prior to planned maintenance and are therefore conservative assumptions.

Inset 0.4: London Luton Airport Existing Asset Locations

3 DESIGN CONSIDERATIONS

3.1 Luton Local Plan 2011 – 2031

3.1.0 The Luton Local Plan 2011 – 2031, published in November 2017 (Rref 3.1), along withat Policy LLP6 London Luton Strategic Allocation, states the following:

"The London Luton Airport Strategic Allocation (approximately 325 hectares) includes land within the airport boundary, Century Park and Wigmore Valley Park (as identified on the Policies Map). The allocation serves the strategic role of London Luton Airport and associated growth of business and industry, including aviation engineering, distribution and service sectors that are important for Luton, the sub-regional economy, and for regenerating the wider conurbation."

Part Fii further states:

"Development proposals for the London Luton Airport Strategic Allocation will ensure provision is made for sustainable drainage and the disposal of surface water in order to ensure protection of the underlying aquifer and prevent any harm occurring to neighbouring and lower land"

3.2 Airports National Policy Statement

3.2.1 The ANPS (Ref 3.2) sets out a number of principles for environmental impact assessment and compliance, and these will be an important and relevant consideration in the determination of the application for development consent. The relevant provisions of the ANPS include:

a. paragraphs 5.158-5.165 address the need for flood risk mitigation and management. They also provide advice on the use of sustainable drainage systems (SuDS) with the aim of ensuring that the volumes and peak flow rates of surface water leaving the site are no greater than the baseline rates, taking climate change into account;

b. paragraphs 5.172-5.177 outline assessment considerations for water quality and resources;

c. paragraphs 5.182-5.186 outlines requirements for the Proposed Development to consider interactions with Environment Agency requirements for water quality and resources.

~~The Airports National Policy Statement, published in June 2018, states the following:~~

~~2.3~~3.3 Potable Water Scarcity

~~2.3.0~~3.3.1 Potable water at the airport is supplied by AW. During early stakeholder engagement, AW identified the area suffers from groundwater scarcity.

3.3.1 LLAOL advised that the total potable water consumption for the entire airport during 2019 ~~/2020 (~~illustrated in Appendix E), was 236,756m3. An average AW supply was calculated accordingly at 7.5l/s (annual demand/time)~~.~~

3.3.2 An objective of this Drainage Design Statement is to reduce reliance on potable water from the network and to not increase demand from the 2019~~/20~~ baseline~~.~~.

~~2.4~~3.4 Existing Management of Potable Water and Drainage Networks

~~2.4.0~~3.4.1 Veolia are appointed by LLAOL to manage:

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

3.4.2 The surface water network (Appendix F) however is directly managed by LLAOL.

~~2.5~~3.5 Existing Sewerage Capacity/Limitations

~~2.5.0~~3.5.1 The East Hyde Treatment Works (EHTW) is located to the south of the airport as shown on **Inset 2.4** and is owned by TW. The EHTW treats the existing foul discharge from the airport.

3.5.2 TW has indicated (Appendix H) that:

a. they have a statutory duty to receive all domestic foul flows from T2 (subject to any potential upgrades to the sewer network)
b. ~~TW has~~they have a statutory duty to use p~~P~~ermitted d~~D~~evelopment r~~R~~ights for the necessary sewer network upgrades to accommodate increased foul water runoff, and
c. the EHTW site is ~~very~~ landlocked and expansion possibilities are correspondingly constrained. ~~and cannot be expanded through Permitted Development Rights. with no opportunity for expansion and that additional treatment facilities would be require~~However, within EHTW TW can used permitted development rights for expansion. ~~dHowever, a ny necessary upgrade to the TW foul networkthe its , to accommodate increased foul water runoff, will be delivered by TW under their Permitted Development Rights.~~

3.5.3 The EHTW treats only foul water, therefore surface water runoff discharging from the airport is not treated at EHTW.

3.5.4 Veolia confirmed that 95% of the potable water supply was used as the basis to determine the foul water discharge to the TW network. In this Statement, it is assumed in forecasts that 100% of the potable water supply will be discharged as foul water i.e. a worst case assumption. Therefore, the annual foul water load is assumed to be 236,756m^3.

~~2.6~~3.6 Water Flow Balance

~~2.6.0~~3.6.1 This ~~Drainage Design Statement~~DDS includes a number of concepts which would make best use of existing water resources by reducing rate of discharge to sewers and soakaways whilst also minimising potable water demand. These consist of balancing flows using rainwater harvesting, attenuation below aprons, landside storage as well as water efficiency measures.

3.6.2 The balancing of flows will be critical to optimise the use of the existing infrastructure. Further details are outlined in Sections 4 and 5.

~~2.7~~3.7 Rainfall Data

~~2.7.0~~3.7.1 The 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 the calculations and a conservative approach adopted. Detailed design will be based on updated data to include intensities in mm/hour~~ and a conservative approach adopted~~.

~~2.8~~3.8 Drainage Hierarchy

~~2.8.0~~3.8.1 The SuDS Manual (Ref. 3.3) identifies that surface water runoff from a development should be disposed of as high up the following hierarchy as reasonably practicable:

a. into the ground (infiltration);
b. to a surface water body;
c. to a surface water sewer, highway drain, or another drainage system; and then
d. to a combined sewer.

3.8.1 The aim of this approach is to manage surface water runoff close to where it falls and to mimic natural drainage pathways as closely as possible.

~~2.9~~3.9 Potential Infiltration

~~2.9.0~~3.9.1 The Chalk bedrock is relatively permeable and ground investigation indicated a characteristic infiltration rate of about 0.085m/hr as detailed in the **Hydrogeological Characterisation Report [TR020001/APP/5.02]**, which has been updated ~~APP previous reference **REP1-004,** since updated~~ for Deadline ~~4]~~. This ~~Statement~~ DDS is therefore based on the use of suitably sized infiltration basins – 'soakaway' – and attenuation tanks as the preferred SuDS technique for the management of runoff. The actual infiltration rates will be confirmed at detailed design stage as set out in the ~~design principle DDS.12 in the~~ **Design Principles [TR020001/APP/7.09].**~~-~~

3.10 Use of SuDS

3.10.1 The DDS solution is predicated on the fundamental core principles of Su~~U~~D~~s~~S, specifically large scale attenuation aligned with infiltration to manage water

quality and quantity at source and ~~-~~thus prevent downstream flooding and/or contamination.

a. To control the quantity of runoff to support the management of flood risk, and maintain and protect the natural water cycle.

b. Manage the quality of the runoff to prevent pollution.

3.10.2 These objectives align with two of the four pillars of SuDS~~s~~ design and the Proposed Development incorporates a number of components as described in the S~~U~~uDS~~s~~ manual (Ref 3.2) including pervious pavements, attenuation/retention, filter medium, treatment and infiltration. It is ~~We~~ noted that in Part C – Applying the Approach in the SuD~~s~~S manual the only references to solutions that are applicable to ~~A~~airports are in Chapter 20- Pervious Pavements and Chapter 21 – Attenuations storage tanks.

3.10.3 With respect to the other pillars of SuD~~s~~S:

a. The drainage design objectives for the Proposed Development do not include improvements to biodiversity for the reasons stated in Section 36.3.5 of the SuDS~~s~~ manual (Ref 3.2) which relates to aircraft safety risk management and states: "*The [Civil Aviation Authority] CAA has identified SuDS~~s~~ components, in particular ponds, wetlands and green roofs, as a ~~potential hazard~~potential hazard to aircraft. Although the ~~main concern~~main concern is wildfowl including flocks of ducks, geese and swans, there is also concern about other flocking species such as rooks, starlings and gulls.– Further advice ~~is provided~~is provided in Airport Operators Association (AOA) and General Aviation Awareness Council (GAAC) (2006).*"

3.10.4 Therefore the Proposed Development does not include SuDS~~s~~ that rely on vegetation features such as swales and reed beds as these are not compatible with the airfield location of the scheme, which ~~and~~ relies instead on engineered solutions. It is ~~We~~ noted that all changes to infrastructure on the airfield need to be approved by the CAA.

3.10.5 The proposed site of the drainage infrastructure is within the active airfield which is not a publicly accessible area due to reasons of safety and security. Therefore the strategy d~~i~~oes not consider the requirement for amenity value.

~~2.10~~3.11 Airside Pollution

~~3.11.1~~ Pollutants expected to be found on the airfield include, but are not limited to, those associated with aircraft and ground vehicle operations, de-icing agents both for aircraft and paved ~~surfaced~~surfaces, fuel spillages from aircraft and vehicles, and mechanical oil, and wear and corrosion particles ~~l~~from both aircraft and vehicles.

3.11.1

It is noted that th~~at LLAOL~~ e airport operator has~~ve~~ advised that technical aircraft washing is not undertaken in the operation of the airport.

~~3.11.2~~ 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., propylene glycol, formate or acetate based). These substances require removal from surface water runoff to prevent contamination of the aquifers which are discussed in section 7.3. For ~~the purpose of~~ this report, the term de-icing~~deicing~~ is used to cover both de-icing and anti-icing.

3.11.2

~~3.11.3~~ De-icing operations at the airport are increasing in effectiveness, and latest de-icing consumption figures show a sustained year ~~by~~ on year reduction in product use. It is anticipated that the trend of reduced consumption~~s~~, increased off-site re-cycling and decreased discharge, will continue.

3.11.3

3.11.4 Outside of the winter period, surface water runoff is not affected by de-icing chemicals.

3.11.5 Sediments and hydrocarbons spillages would be managed through good practice including silt traps and oil separators. Fuel spillage management includes booms to contain flow and rubber mats to cover gully gratings. In the event of larger fuel spills other mitigation would be deployed, for example temporary bunds and vacuum pumps to cylinders tanks that are then exported from site and re-cycled.

~~2.11~~3.12 Limit of Design

3.12.1 This ~~Drainage Design Statement~~DDS is based on an outline concept design. Detailed design will progress following approval of the DCO and will include continued engagement with stakeholders. The detailed surface and foul water design will reflect the design principles set out in the separate **Design Principles [TR020001/APP/7.09]** document ~~**[APP-225]**~~ referenced in Section 1.1~~Section 8 of this Statement,~~ in accordance with the relevant Requirement in Schedule 2 of the **draft DCO [~~TR020001/APP/2.01~~REP2-003]**.

~~3~~4 CATCHMENT AREAS AND WATER BALANCE

~~3.1~~4.1 Assessment Phase 1 Water Balance & Rainwater Harvesting

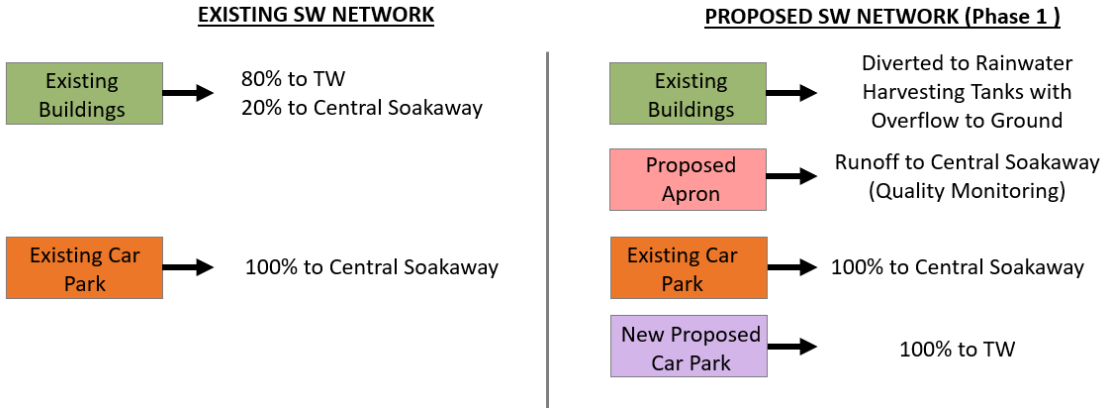
Rainwater Harvesting

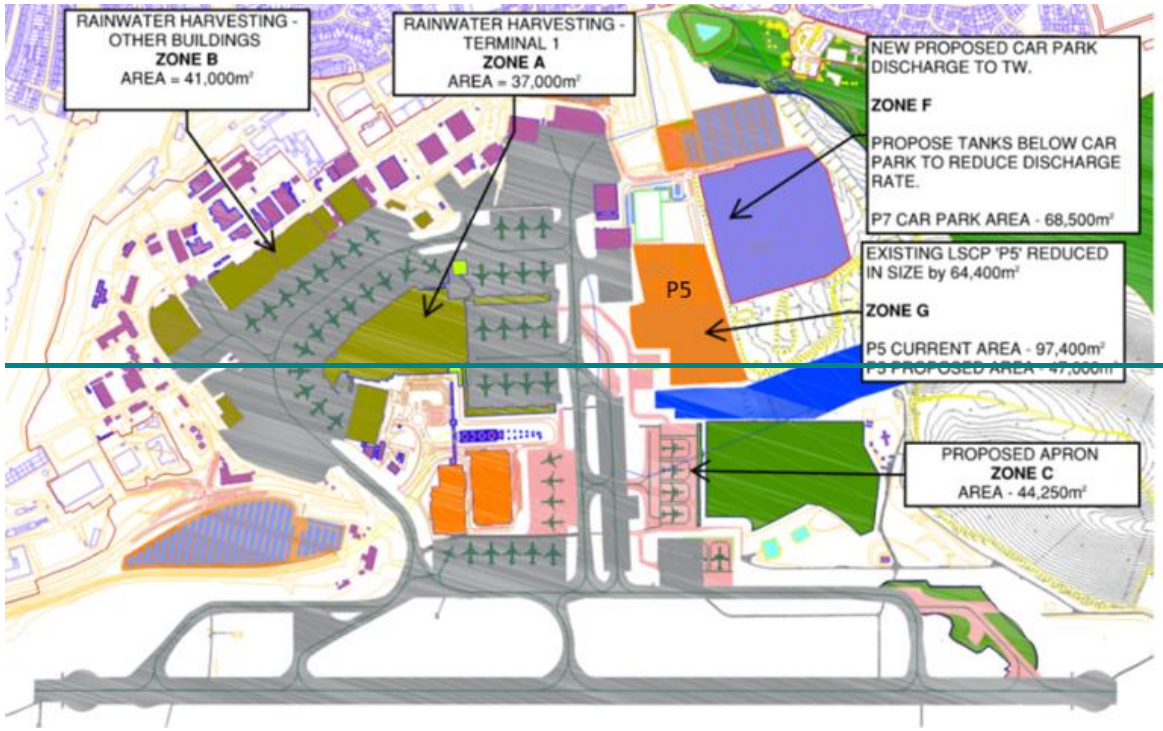
~~3.1.1~~4.1.1 The rainwater harvesting strategy is outlined to reduce the demand for potable water supplied by AW as well as minimising the increase in discharge into the TW network and Central Soakaway. Zone A including T1 (37,000m^2), and Zone B other existing airport buildings (41,000m^2), as shown in **Inset 4.1**.

~~The rainwater harvesting strategy is outlined 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. Zone A including T1 (37,000m^2), and Zone B other existing airport buildings (41,000m^2), as shown in **Inset 4.1**.~~

~~3.1.2~~4.1.2 Based on a conservative approach to obtain the rainfall data in the Luton area, a total volume required for the storage tanks is approximately 3,000m^3 to maintain a constant monthly supply of approximately 3,400m^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 4.1** can be collected and stored. This will need to be confirmed at detailed design stage.

Inset 0.41: Balancing flows to maximise sustainability (Assessment Phase 1)





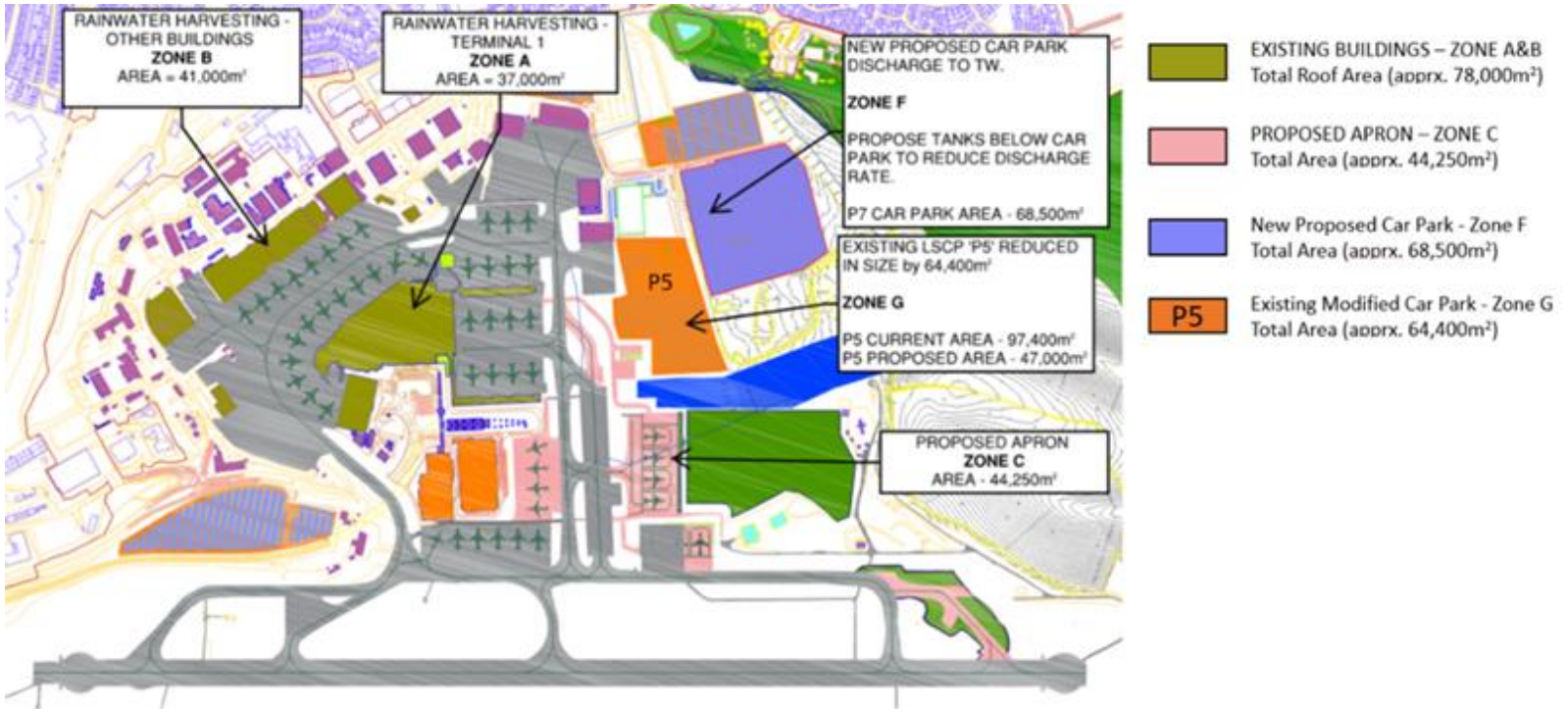
EXISTING BUILDINGS – ZONE A&B
Total Roof Area (apprx. 78,000m²)

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

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

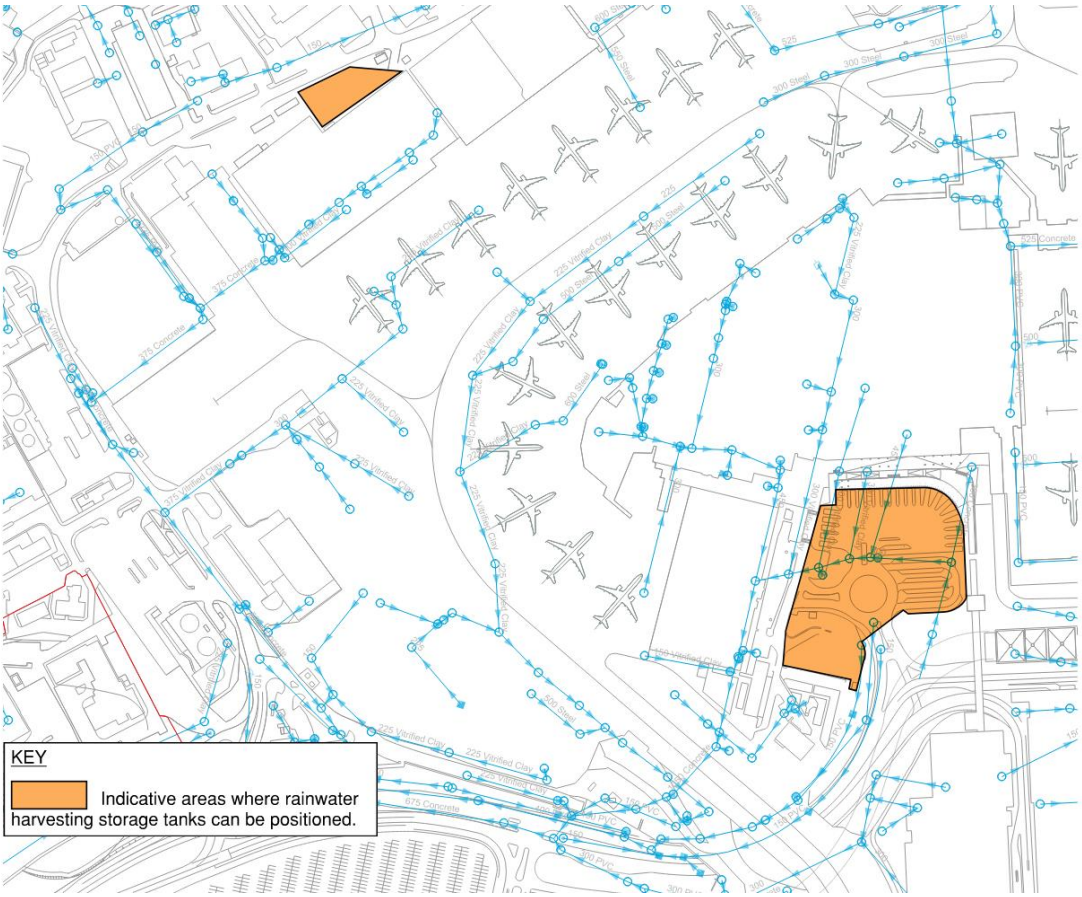
P5 Existing Modified Car Park - Zone G
Total Area (apprx. 64,400m²)

It is noted that a multi-storey car park has now been constructed (beneath proposed diversion P4).


RAINWATER HARVESTING - OTHER BUILDINGS
ZONE B
AREA = 41,000m²
RAINWATER HARVESTING - TERMINAL 1
ZONE A
AREA = 37,000m²
NEW PROPOSED CAR PARK DISCHARGE TO TW.
ZONE F
PROPOSE TANKS BELOW CAR PARK TO REDUCE DISCHARGE RATE.
P7 CAR PARK AREA - 68,500m²
EXISTING LSCP 'P5' REDUCED IN SIZE by 64,400m²
ZONE G
P5 CURRENT AREA - 97,400m²
P5 PROPOSED AREA - 47,000m²
P5
PROPOSED APRON
ZONE C
AREA - 44,250m²
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)

4.1.3 Potential locations of rainwater harvesting tanks are highlighted in **Inset 4.2**. Exact locations would be determined at detailed design stage.

Inset 0.5~~2~~: Potential locations of rainwater harvesting tanks



4.1.4 Harvested rainwater would require treatment so that 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 remove coarse solids and organic matter 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. 4.3) (or equivalent at time of implementation).

Water Balance

4.1.5 Consideration has been given to reducing the volume of potable water used in the Proposed Development.

4.1.6 The existing LSCP (P5) east of T1, referred to as Zone G in **Inset 4.1**, will reduce in size by approximately 64,400m^2 to accommodate the proposed aprons to the south.

4.1.7 A review of the surface water 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.

4.1.8 Capturing roof rainwater harvesting and the reduction in car park area will result in a reduction of surface water discharging to the Central Soakaway. The net decrease would be equivalent to a reduction in 34,750m^2 of paved area.

4.1.9 The reduction in the TW discharge from the airport due to rainwater harvesting and offset against the additional impermeable area from car park P7 (referred to as Zone F in **Inset 4.1**), provides a net contributing area increase to the TW network of 11,500m^2. 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).

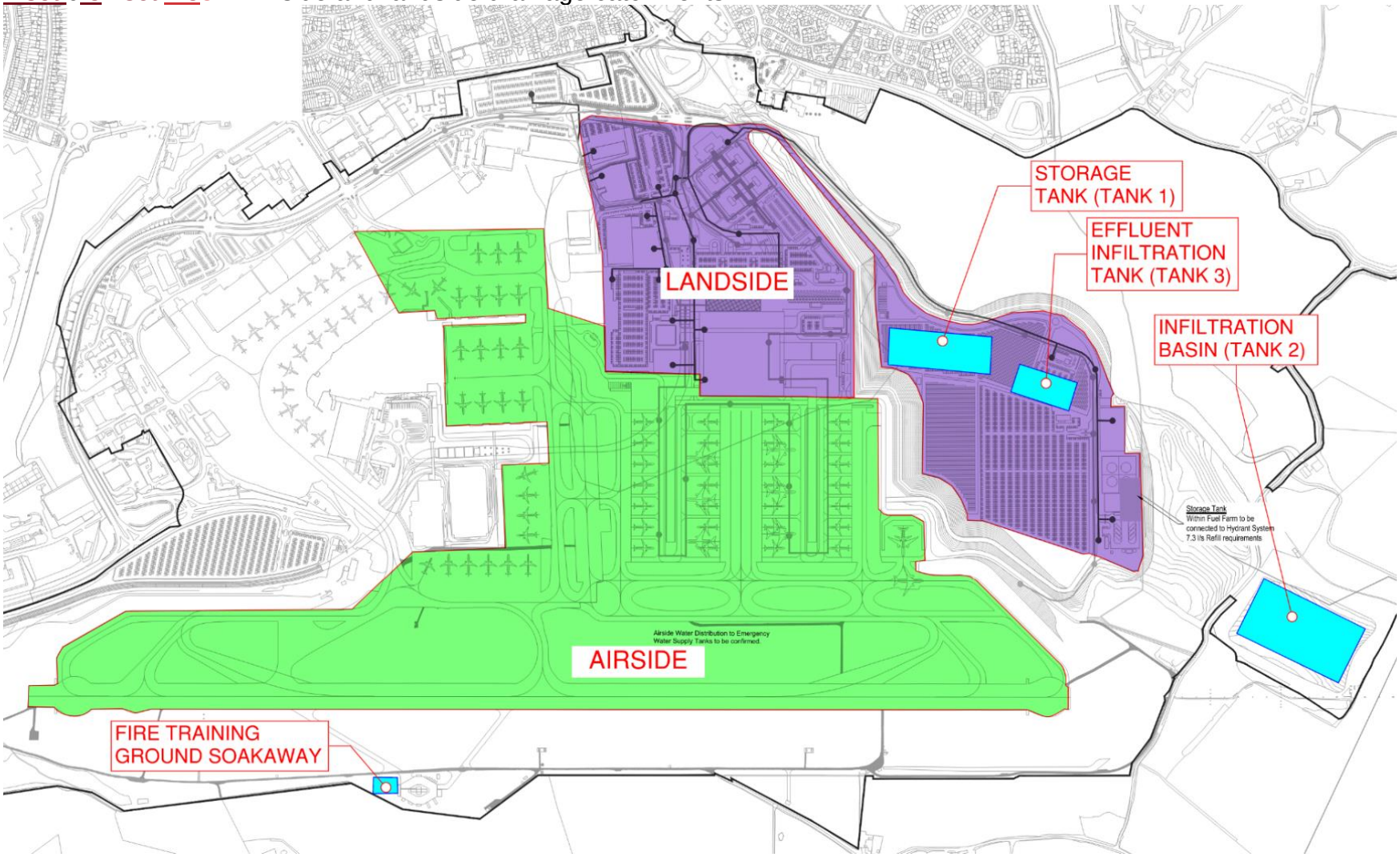
4.1.10 Therefore, the balancing of flows is expected to yield a net increase in discharge into the TW network while reducing the current levels of discharge into the Central Soakaway.

4.2 Assessment Phases 2a & 2b Water Balance & Rainwater Harvesting

Catchment Areas

4.2.1 The indicative catchment areas for the surface water volume calculations and discharge rates have been investigated and these are shown in Appendix A. The catchment has provisionally been split ~~as follows~~ between landside and airside as detailed~~ing~~ in ~~the~~ **Inse~~r~~t 4.3**:

Inset 0.3~~Inset 4.35.2~~: Airside and landside drainage catchments



Water Balance

~~3.1.0~~4.2.2 The existing surface car park (P5) west of T2, will further reduce in size to approximately 19,250m^2 to accommodate an energy centre and substation.

4.2.3 The proposed surface car parks constructed in assessment Phase 1 labelled as P6 and P7 will be demolished to construct Green Horizons Park (formerly New Century Park), access roads and two multi storey car parks (P12) and (P19) indicated in **Inset 4.5**.

4.2.4 The proposed surface car park constructed in assessment Phase 1 labelled as P9, will reduce in its current footprint and extend to the south east of the Northern Soakaway. Overall, this will provide a net reduction in the impermeable surface to 21,600m^2.

4.2.5 The proposed surface car parks for assessment Phases 2a and 2b are located west of the water treatment plant, labelled as P10 and P11 in **Inset 4.5**. Approximately 22,950m^2 of P11 above Tank 1 will be permeable paving.

4.2.6 Following the relocation of the Central Soakaway to the far east of the Main Application Site, car park P5 will be diverted to discharge into the proposed infiltration basin (Tank 2).

4.2.7 The impermeable surface area for assessment Phases 2a and 2b will discharge to the proposed infiltration tank has a net increase catchment area of 509,450m^2.

4.2.8 The reduction in the TW discharge from the airport due to rainwater harvesting and offset against the additional impermeable area from car park P10 and P11, provides a net contributing area decrease to the TW network due to diverted runs to the proposed infiltration tank. The rainwater harvesting system will reduce discharge into the TW network through collecting and re-cycling roof rainwater from T2 and other buildings.

4.2.9 Therefore, the balancing of flows is expected to yield a net decrease in discharge into the TW network whilst diverting the current levels of discharge away from the Central Soakaway.

Inset 4.4~~5.4~~: Summary of water balance for assessment Phases 1, 2a and 2b

PROPOSED SW NETWORK (Assessment Phase 1)		PROPOSED SW NETWORK (Assessment Phase 2a and 2b)	
Existing Buildings	Diverted to RWH tanks with overflow to ground	Existing Buildings	Diverted to RWH tanks with overflow to ground
Proposed Apron	Runoff to Central Soakaway	Proposed Apron	Runoff to Infiltration Basin (Tank 2). Diverted to Tank 1 if contamination triggered.
P5 Car Park	100% to Central Soakaway	P5 Car Park	100% to Infiltration Basin (Tank 2)
Proposed Car Parks	100% to TW after attenuation of 5l/s	Proposed Car Parks	100% to Infiltration Basin (Tank 2)

Rainwater Harvesting

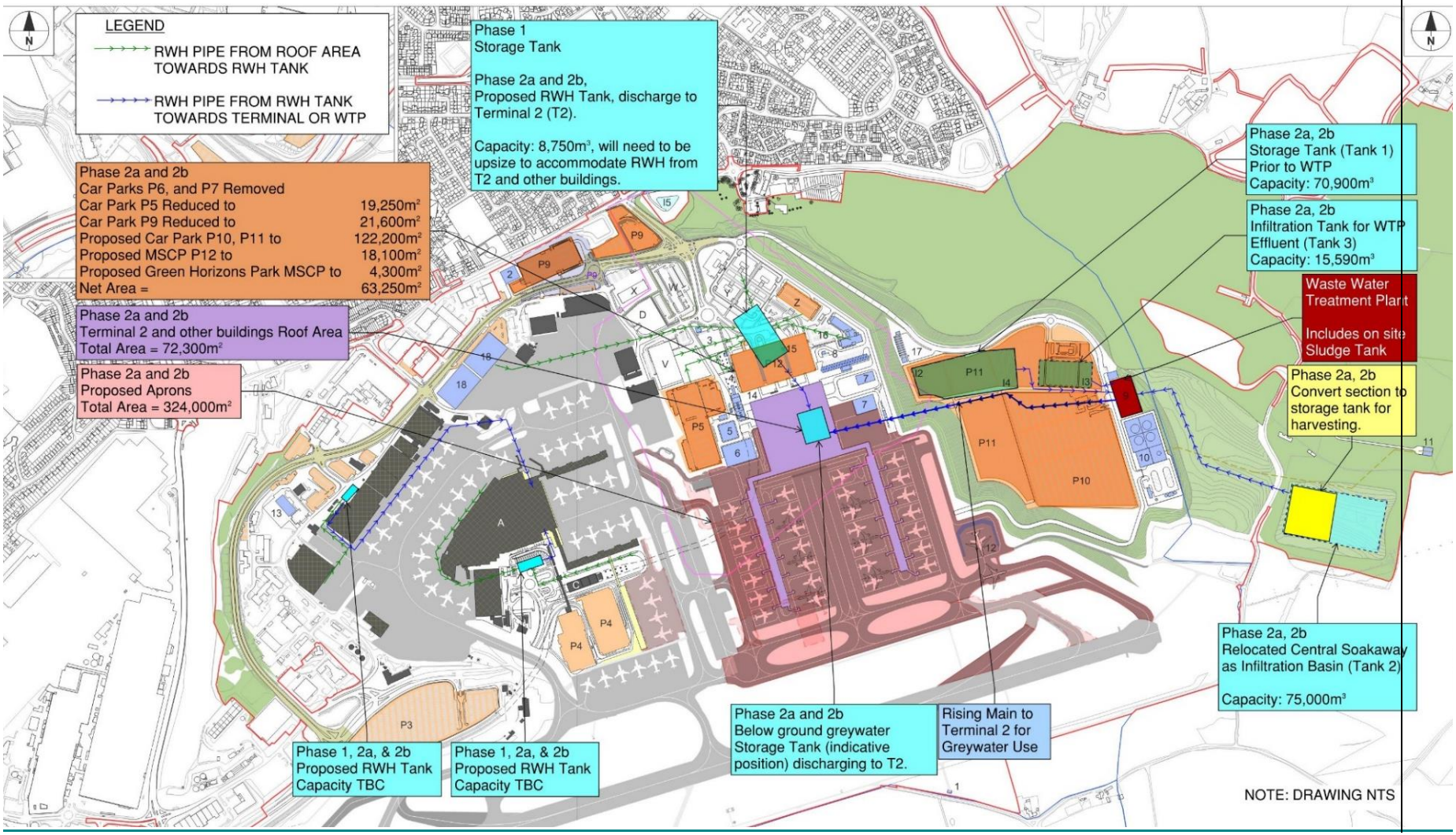
4.2.10 The rainwater harvesting strategy is outlined to reduce the demand for potable water supplied by AW, as well as minimising the increase in discharge via infiltration. **Inset 4.5** ~~5.3~~ highlights proposed infiltration basin/tanks with corresponding uses as well as roof catchment areas.

4.2.11 Based on rainfall data in the Luton area, a total volume required for the storage tank attenuating rainfall from the T2 buildings is approximately 3,100m^3, to maintain a constant monthly supply of approximately 3,100m^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 ~~5.3~~4.5** can be collected and stored. This will need to be confirmed at detailed design stage.

4.2.12 Potential locations of rainwater harvesting tanks for assessment Phases 2a and 2b are highlighted in **Inset ~~5.3~~4.5**. Exact locations would be determined at detailed design stage.

4.2.13 Harvested rainwater would require treatment so that 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 remove coarse solids and organic matter 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 (or equivalent at time of implementation).

Inset 4.5~~5.3~~: Rainwater harvesting for assessment Phases 2a and 2b



Water Efficiency Measures Across All Assessment Phases

4.2.14 The airport operator is committed to introducing water efficiency measures to reduce consumption, including:

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.

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.

45 ASSESSMENT PHASE 1 DRAINAGE DESIGN STRATEGY

4.15.1 Introduction

5.1.1 Assessment Phase 1 anticipates an increase in the number of passengers using the airport, from its current consented capacity of 198 mppa to 21.5 mppa.

5.1.2 Surveys will be required to determine the full details of the current drainage arrangements to support detailed design.

5.1.3 Assessment Phase 1 includes the following changes of relevance to drainage:

a. expansion of the existing Terminal 1 (T1);

b. introduction of the rainwater harvesting strategy for existing buildings;

c. the existing long stay car park (LSCP), Zone G on **Inset 4.1**, is to be reduced to approximately 64,400m^2, reducing the amount of discharge into the Central Soakaway;

d. new temporary car park proposed north east of existing LSCP, Zone F on **Inset 4.1**, comprising an area of 68,500m^2 to discharge into the TW network north east of the airport;

d.e. Landscape and ecological improvements, including the replacement of existing open space-; and

e.f. new apron south east of the airport, Zone C on **Inset 4.1**, encompassing an area of 44,250m^2 to be attenuated and discharged into the Central Soakaway.

5.1.4 The drainage consideration for the Airport Access Road and Off-site Highway Interventions are considered in Ssection 87 of this report, rather than as a part of this section. 0.

4.25.2 Existing Network

5.2.1 The airport currently drains via a combination of discharges to surface water and foul water public sewers and a number of infiltration-based systems.

5.2.2 An assessment has been made of the existing airport catchment likely to require replacement drainage infrastructure as a function of the Proposed Development.

5.2.3 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 preliminary design.

4.35.3 Drainage Strategy

5.3.1 The proposed drainage strategy aims to expand the existing T1 infrastructure through the introduction of a rainwater harvesting system along with a series of diversions. The strategy includes the installation of storage tanks below

proposed aprons to attenuate discharge rates and to monitor contaminants to safeguard the existing soakaways. Combined with the incorporation of landside storage, the strategy aims to enhance the water efficiency measures to reduce the total water consumption.

~~4.4~~5.4 Preliminary Surface Water Drainage Design

5.4.1 The runway and T1 paved areas are referenced as 'Airside Drainage'. T1, hangars and other buildings, and corresponding parking zones are referenced as 'Landside Drainage'.

Airside Drainage

5.4.2 The proposed apron catchment area of 44,250m^2, Zone C on **Inset 4.1**, would discharge into the existing Central Soakaway.

5.4.3 Class 1 Oil Interceptors will be included as part of the surface water drainage system to safeguard for any spillages or pollutants entering the system and subsequently the Central Soakaway.

5.4.4 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 4,000m^3 would be constructed below the apron to manage the discharge rate to the soakaway. Real-~~-~~time monitoring of surface water runoff would divert contaminated flow to a polluted water holding tank.

5.4.5 Whilst pollutants in runoff would typically be measured in terms of biological and chemical oxygen demand (BOD and~~&~~ COD), these present challenges to measurement on site including extended response~~s~~ times (typically 1 to 2 hours) and the requirement to be installed in an air-conditioned environment. They are thus typically measured in laboratories. Total organic carbon (TOC) is a substitute for these which can be measured in real time on site, and it is therefore used at a variety of sites to facilitate diversion of contaminated water. TOC monitors are known to be in use at a number of UK airports, including Manchester, Birmingham, Leeds Bradford and Wick, as well as internationally.

5.4.6 The proposed system would include ~~Total Organic Compound (~~TOC~~)~~ monitoring levels installed in an inspection chamber~~ downstream of the attenuation tank~~. A subsequent chamber, fitted with an automated ~~butterfly~~ valve would divert flows to the polluted water holding tank should pollutants be detected. The locations of the diversion valves and the TOC monitors would be selected in the detailed design stage based on the response time of any TOC monitor being used such that the travel time of contaminated runoff will be longer than the response time of the monitors.

~~5.4.4~~5.4.7 Detection levels will be confirmed at detailed design stage. Correlation between TOC, BOD and COD is site specific. Any future TOC detection level will be set based on baseline quality monitoring of existing surface water runoff and calibration of TOC levels against BOD and COD in laboratory tests. Similar monitoring and testing will be undertaken ~~on~~ at ~~a~~ regular intervals during the operation of the expanded airport to validate the calibration and adjust the threshold, if needed.

5.4.55.4.8 The proposed layout for the polluted water holding tanks and their connections at Phase 1 is shown on the drawing in **Appendix B**. The monitored airside area will be limited to the stands where de-icing agents will be used. These are highlighted in **Inset 5.24.4 below**. De-icing of aircraft would only be allowed on five of the proposed stands, as the other two stands are restricted to engine testing. Contaminated water stored under the apron will be discharged back into the TW foul water main at a discharge rate of 2l/s as agreed with TW, via a rising main.

5.4.65.4.9 Both the attenuation and polluted water holding tanks would be located below the apron. These would be designed to latest industry standards, including but not limited to the requirements of the Building Regulations 'Part H' (Ref. 4.1) and Sewerage Sector Guidance 'Design & Construction Guidance' 20212119 (Ref. 4.2), or equivalent at the time.

Landside Drainage

5.4.75.4.10 The proposed car park (P7) north-east of the airport, referred to as Zone F in **Inset 4.1**, will discharge to the TW network at President and Frank Lester Way to the north of the airport. To help eliminate the increased discharge rate into the TW network, an attenuation tank is proposed, below the car park, to reduce the risk of flooding and release water at a controlled rate. The estimated capacity of the tank is 8,750m^3. This tank would be constructed above the landfill and would need to be suitably designed to avoid risks of contamination. The sitewide strategy is to restrict the runoff from the car parks to GRR. A discharge rate of 5.0l/s/ha, from the attenuation tank, has been agreed with TW.

Class 1 Oil Interceptors will be included as part of the surface water drainage system to safeguard for any spillages or pollutants entering the system.

4.55.5 Preliminary Foul Water Strategy

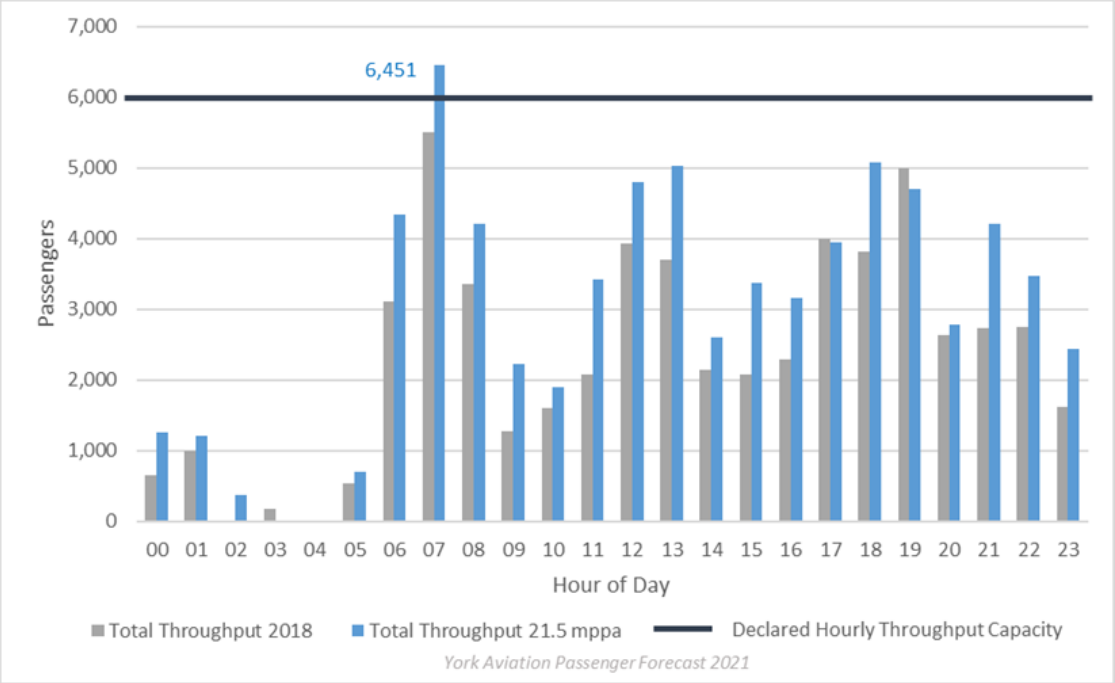
5.5.1 This strategy is based on the passenger forecasts set out in the **Need Case [TR020001/APP/7.04AS-125].**

Terminal 1 Foul Water Drainage

5.5.2 The LLAOL 19 mppa Drainage and Water Supply Infrastructure Appraisal (Ref. 4.4) indicates that the existing foul network can accommodate a maximum capacity throughput of 6000 passengers per hour.

5.5.3 The uplift in passenger throughput in T1 will increase the foul water discharge to the TW network. The passenger forecast shown in **Inset 5.14.3**, indicates a net peak increase in passenger throughput at 07:00, which results in an increase of 451 passengers above the declared airport throughput capacity of 6,000 passengers per hour. The foul water drainage strategy includes a 6m^3 storage tank to attenuate this peak, allowing discharge at later hours of the day when the network is not at capacity. The requirement for this attenuation would be confirmed at detailed design stage.

Inset 5.1: Passenger daily forecast

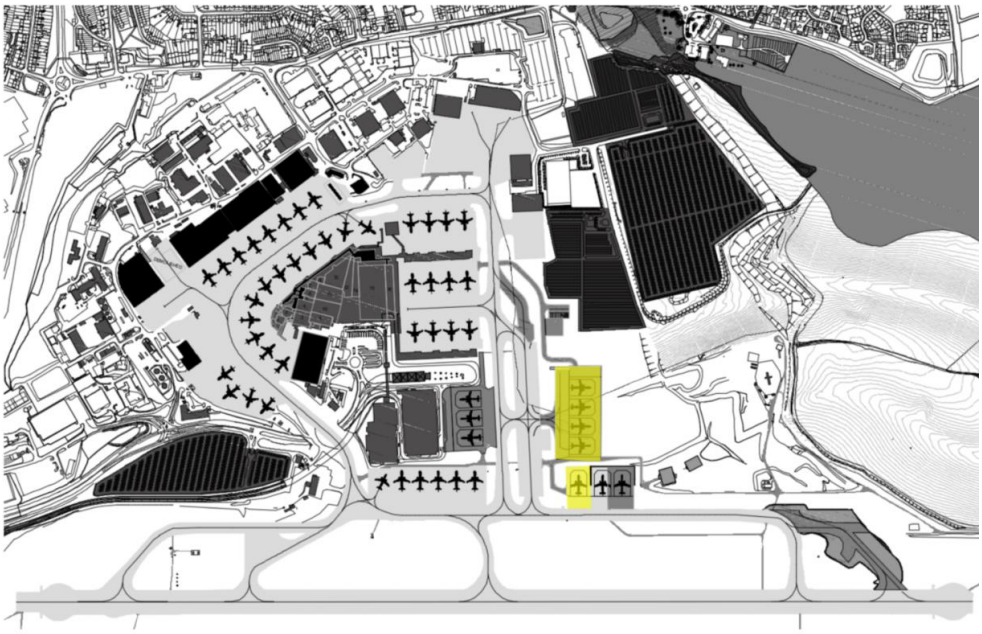


~~*Polluted*~~ *Contaminated* *Surface Water Runoff*

5.5.4 In the event of surface runoff from the new aircraft stands shown in **Inset 5.24~~.4~~**, being ~~polluted~~ contaminated (as indicated by the proposed monitoring system) (refer to section 5.4.4), it would be diverted from the surface water system and attenuated in a central polluted holding tank with an approximate capacity of 1,080m^3.

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

Inset 5.2: Aircraft de-icing stands (indicated in yellow)



~~5~~6 ASSESSMENT PHASES 2A AND 2B DRAINAGE DESIGN STRATEGY

~~5.1~~6.1 Introduction

6.1.1 For the purpose of this section, works for a~~A~~ssessment Phases 2a and 2b at the Terminal 2 (T2) campus are considered to include the following:

a. New passenger terminal building and boarding piers (T2);
b. Earthworks to create an extension to the current airfield platform; the vast majority of material for these earthworks would be generated on site;
c. Airside facilities including new taxiways and aprons, together with relocated engine run-up bay and fire training facility;
d. Landside facilities, including buildings which support the operational, energy and servicing needs of the airport;
e. Enhancement of the existing surface access network, including a new dual carriageway road accessed via a new junction on the existing New Airport Way (A1081) to the new passenger terminal along with the provision of forecourt and car parking facilities;
f. Extension of the Luton DART with a station serving the new passenger terminal;
g. Landscape and ecological improvements~~,~~; and
h. Further infrastructure enhancements and initiatives to support the target of achieving zero emission ground operations by 2040[1] with interventions to support carbon neutrality being delivered sooner including facilities for greater public transport usage, improved thermal efficiency, electric vehicle charging, on-site energy generation and storage, new aircraft fuel pipeline connection and storage facilities and sustainable surface and foul water management installations.

6.1.2 Assessment Phase~~s~~ 2a and 2b include~~s~~ the following changes of relevance to drainage:

a. construction of T2;
b. installation of a new infiltration basin (Tank 2) at the east of the site, diverting existing discharge from existing Central Soakaway to proposed infiltration basin (Tank 2) as highlighted in **Inset 4.3**;
c. apron and taxiway expansion, comprising approximately 324,000m^2 of additional surface area discharging to the proposed infiltration basin (Tank 2);
d. rainwater harvesting strategy for proposed T2 buildings, and surface water attenuation from Tank 2. Storage tank installed during assessment Phase 1 to be converted to rainwater harvesting attenuation tank;
e. the existing long stay car park (LSCP), P5 on **Inset 4.5**, is to be reduced to approximately 19,250m^2, diverting the discharge from the existing Central Soakaway;
f. the temporary car parks proposed in assessment Phase 1 labelled as P6 and P7 on **Inset 4.3** will be built over in assessment Phases 2a and 2b, in

[1] This is a Government target, for which the precise definition will be subject to further consultation following the Jet Zero Strategy, and which will require further mitigations beyond those secured under the DCO.

part with T2 and associated development and also elements of Green Horizons Park (formerly New Century Park)~~.~~;

g. proposed car parks and block parking labelled P10 and P11 respectively on **Inset 4.5**, which would contribute to approximately 122,200m^2 of area, of which a proportion is permeable paving; and
h. construction of a Water Treatment Plant (WTP)~~water treatment plant~~ to treat ~~foul drainage from T2 and~~ contaminated airside run-off to discharge to ground via infiltration tank 3 (refer to **Inset 4.4**), and tanker sludge off-site for treatment. The WTP will also treat harvested surface water run-off to greywater standards and discharge to T2.

6.1.3 Note that drainage considerations for the Airport Access Road and Off-site Highway Interventions are considered in Section 8 of this ~~report~~Statement~~DDS~~, rather than as a part of this Section ~~6~~8.~~.~~

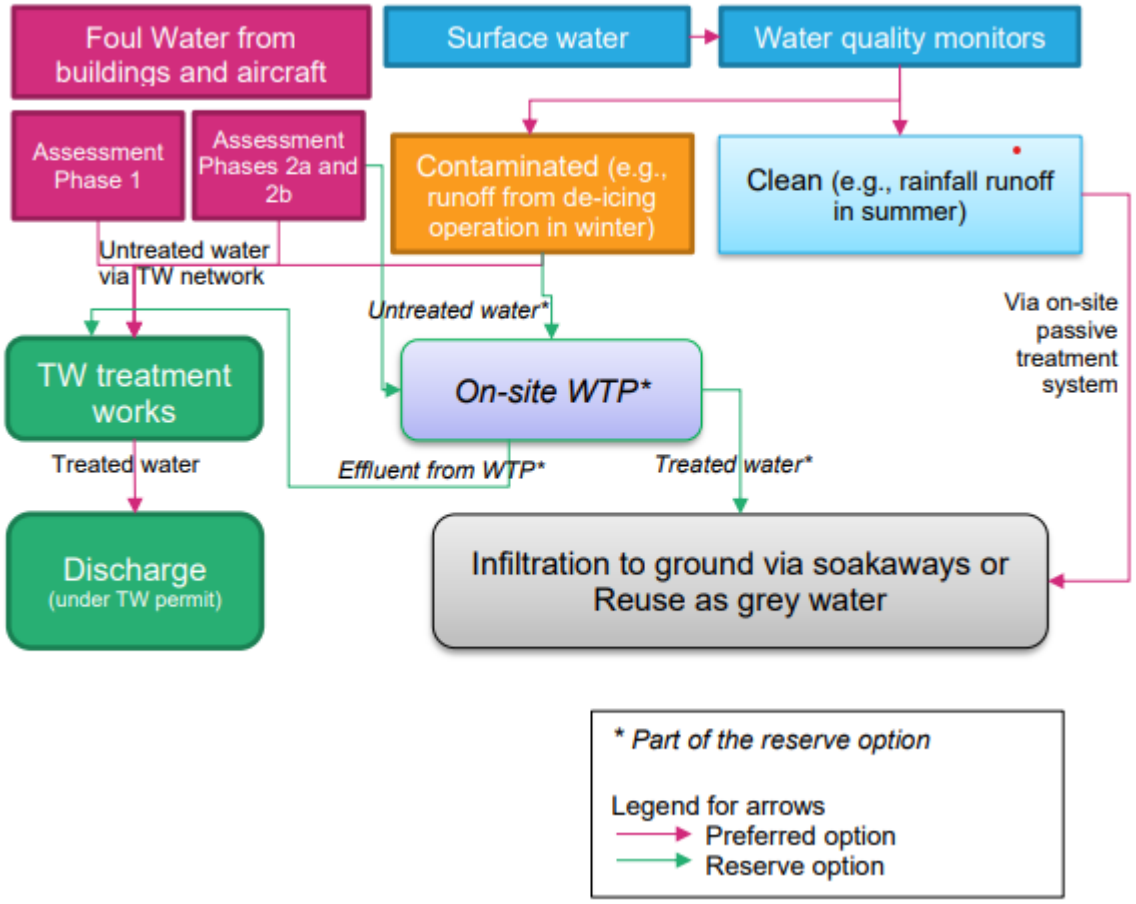
6.1.4 Given that TW's assessment of network and treatment capacity is ongoing, the DDS ~~will~~ considers a preferred and a reserve option.

6.1.5 The preferred option is to direct all contaminated discharges from assessment Phases 2a and 2b of the Proposed Development (including foul water from buildings, aircraft blue water ~~1~~ and contaminated surface water runoff) to the TW drainage, and TW treatment systems. As is the approach in the ~~current~~previous version of the **DDS [APP- 137]**, non-contaminated (clean) surface water runoff would continue to be directed to groundwater by infiltration or reused as grey water.

6.1.6 The reserve option retains the infiltration to ground for foul water~~FW~~ and contaminated surface water~~SW~~. This ensures a viable option exists for the treatment of contaminated discharges from assessment Phases 2a and 2b of the Proposed Development, should the preferred option prove not to be deliverable.

6.1.7 The preferred and reserve options are detailed on ~~the schematic below~~**Insert 6.1:**

Insert 6.1 – Preferred and Reserved treatment options



~~5.2~~6.2 Existing Network

6.2.1 The existing surface water network discharges into a combination of soakaways and the TW ~~sewage~~ network.

~~6.2.1~~6.2.2 The existing foul network discharges into the TW foul network.

6.3 Foul Water Strategy

~~*Terminal 2 Domestic~~ *T2 Campus Foul ~~Waste~~Water*

6.3.1 The proposals with respect to the treatment of the T2 campus ~~domestic waste~~foul water (e.g. from toilets, kitchen), and aircraft blue water[1] are conceptually detailed below.

6.3.2 Two options were considered for treating the foul water – discharging to the TW network that connects to the EHTW or providing a WTP on-site with an independent drainage network.

6.3.3 Following the **EA's Principal Areas of Disagreement Summary Statement (PADSS) [AS-056]** ~~PADSS raised by the EA~~, the Applicant has further

[1] The vacuum toilet used on aircraft sucks the waste into a holding tank where it is stored until the aircraft lands. Blue liquid disinfects the bowl and helps kill odours hence the name aircraft blue water.

consulted with TW ~~has been engaged~~ to undertake an assessment of the existing and future TW network required to accommodate the foul water discharge that was identified to go to the on-site WTP, prior to discharge to groundwater via infiltration, within the previous version of this ~~Statement~~DDS. ~~DDS~~.

6.3.4 A technical description of the WTP processes and monitoring systems is provided in the following section and will be further developed during the detailed design stage.

6.3.5 TW, via a letter dated 1~~st~~ September 2023 ~~with their reference K317-A-111~~ (Appendix H) have confirmed the following:

"TWUL accepts that it has a statutory duty to receive all domestic foul flows from the proposed buildings in the Terminal 2 development subject to any potential upgrades to the sewer network."

6.3.6 Completion of the TW study into the above is due for completion after ~~completion of~~ the DCO Examination. However, TW will be able to provide initial results during the eExamination ~~on 27 October 2023~~ and further refinement by January 2024.

Terminal 2 Blue Water

6.3.7 A new discharge point for Terminal 2 blue water operations will be provided adjacent to Terminal 2 and discharge to the TW network. Underground storage and flow monitoring will be provided to ensure discharge when foul flow from the remained of the T2 campus is low to ensure that the overall discharge rate for the T2 campus is not exceeded.

6.4 Surface Water Drainage Strategy

Introduction

6.4.1 The main drainage infrastructure would include the installation of the new WTP~~,~~ ~~(pollutedcontaminated surface water only and discussed further in section 6)~~, attenuation tanks and infiltration basins. The Proposed Development would replace the existing Central Soakaway with new infiltration tanks.

6.4.2 The proposed drainage system would divert the existing drainage runs away from the existing Central Soakaway to control the pathway of the contaminated runoff, continuously monitor the water quality and discharge via one of the following two methods:

a. Preferred Option - Discharge to the existing TW network at an agreed and controlled rate.
b. Reserve Option - If discharge to the existing TW network is not possible then on site treatment and discharge via infiltration will be applied~~-~~.

~~6.4.2~~6.4.3 The highlighted drainage runs in pink and yellow shown below on **Inset 6.2~~1~~** currently discharge into soakaways.

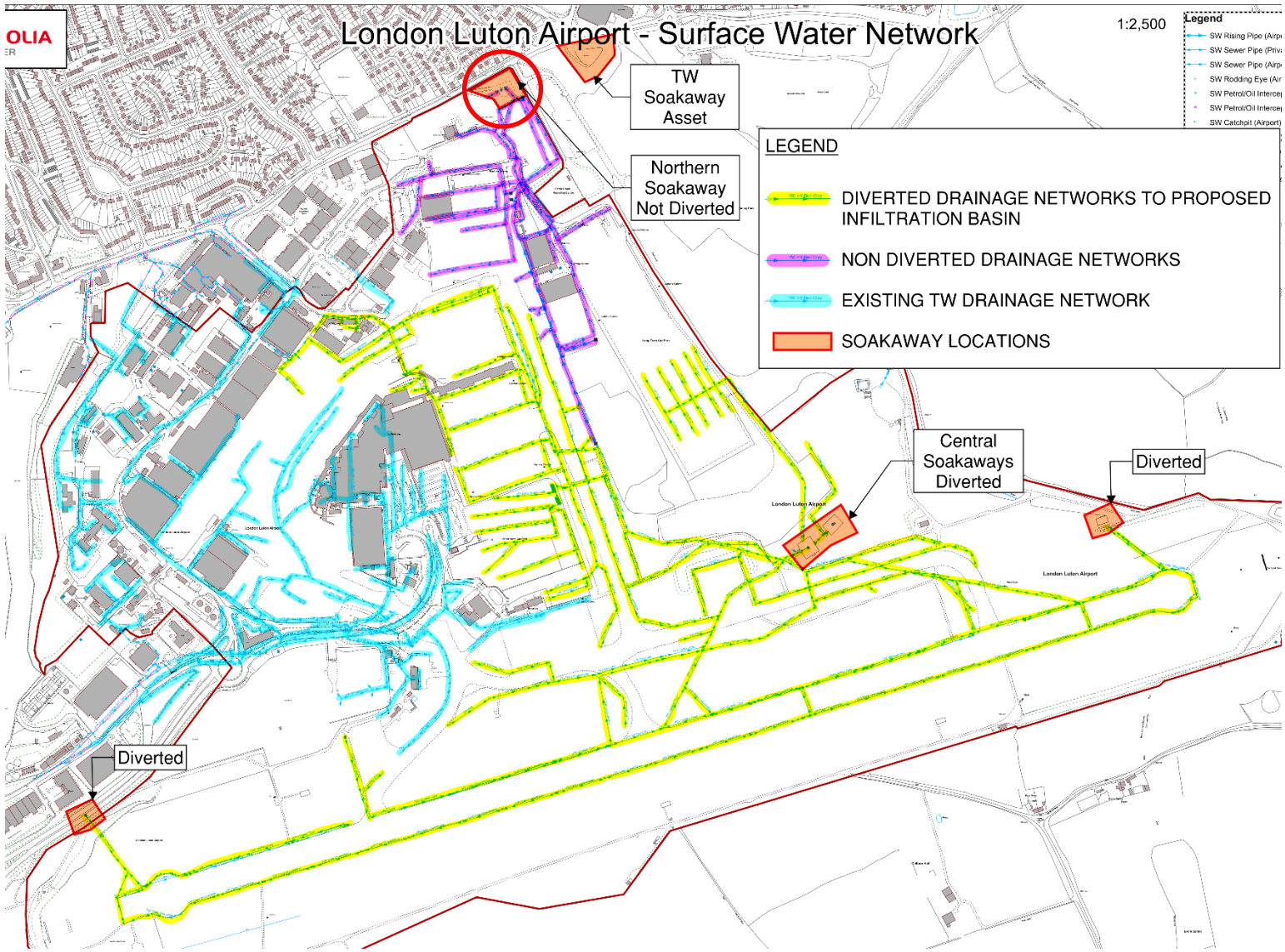
6.4.36.4.4 The extension of the apron for the T2 expansion will retain the attenuation tanks installed below the apron constructed in aAssessment Phase 1 and will continue to restrict the discharge to GRR. As such, there is an opportunity to further utilise this attenuation tank to control the discharge to the WTP.

6.4.5 The network discharging to the Northern Soakaway (circled in red on **Inset 6.21**) is not to be diverted in the Proposed Development. The existing connections to the TW network from the existing T1 and aprons would continue to discharge into the TW network.

EAffect on Existing River Catchments

6.4.6 As a result of the proposed airside drainage infrastructure, under the contaminated water discharge scenario, approximately 9ha of land that currently dischargesing intodischarges into the river Lea catchment will be diverted to the proposed drainage systems which would ultimately discharge into the river Mimram catchment.

Inset 6.~~21~~: Location of existing soakaways.



~~6.4.4~~ Pollution Control

~~6.4.5~~6.4.7 It is noted that operational preference is to pro-actively anti-ice to prevent the formation of ice as this is less disruptive to airport operations and requires less product than reactive de-icing which occurs after ice has formed.

6.4.8 The list and schematic below show the opportunities currently identified for ~~particulate~~ pollutants to be identified and removed prior to discharge:

a. Basic protection by ensuring that all London Luton Airport vehicles carry the appropriate spill kits to limit vehicle fuel spill runoff.

b. Gullies with silt traps and/or filter drains adjacent to runway and parallel taxiway – these act as a first separation ~~first filtration~~ stage for the main areas where heavy metals may be present (i.e. the touch down and take off zones).

c. Class 1 oil separators are provided to all areas where there is a possibility of a fuel spillage.

d. A pollution monitoring chamber will be provided that contains a TOC monitor (for ~~glycol~~~~deicer~~de-icer contaminated runoff detection) and a sensor to detect any floating pollutants (such as oil).

e. Dependant on whether pollutants are identified in the flow monitoring chamber, a flow control chamber is provided to direct and divert the flows as required. This is to be placed as far downstream of the pollution monitoring as possible to allow for adequate time for the mechanical flow control devices to operate.

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

6.4.9 Where there is a possibility of de-icing, the strategy below will be used:

a. De-icing will typically be required from November to April. The ~~activity takes~~activity takes place at runway, taxiways, aprons, and at aircraft on stand. De-icing chemicals are applied to the ground and aircraft. The pollution prevention strategy will include:

i. improved controls and management of the application of ground de-icers (e.g., bunds, vacuum pumps to tankers and off-site re-cycling); and

ii. improved controls and management for dosing for application of de-icers to aircraft.~~; and~~

~~no products used for de-icing will be classified as hazardous.~~

b. Any residual fluids resulting from the de-icing of aircraft and hard surfaces, would be collected by vacuum sweeper and/or collected by the drainage system, stored in the polluted storage tank, and discharged to the proposed water treatment plant. Monitoring inspection chambers

within the drainage system are activated by pollutants and subsequently the flow is diverted to the polluted storage tanks or water treatment plant.

c. The aforementioned TOC monitor will be integral in diverting any remaining glycol that has been dissolved in rainwater runoff away from the clean water system.

Fire Training Ground

6.4.10 The drainage associated with the proposed Fire Training Ground, shown in **Appendix B** (drawing 5507), will be self-contained. When the Fire Training Ground is not in use surface water run-off will discharge to an adjacent proposed soakaway, unless real time monitoring determines otherwise. During fire training operations, surface water run-off will be diverted to a holding tank and will 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 will otherwise be tankered away for treatment off-site.

~~6.4.6~~6.4.11 Work undertaken in future design stages will follow the principle of having no discharge from the Fire Training Ground via infiltration in order to protect the existing aquifer. This work will also set out the proposed detailed methodology for removing effluent from the site.

~~***Fuel Storage Facility***~~

~~6.4.8~~6.4.12 Outside of fire training operations, any surface water runoff will be screened by silt traps and oil interceptors prior to discharge.

~~6.4.9~~6.4.13 During fire training operation, the fire training ground will be isolated from the rest of the airside sections of the airport by way of valves incorporated into the drainage pipe network. Water generated by the fire training activities including wash down after the event has ceased will then be collected and transported off site for appropriate treatment and disposal.

~~6.4.10~~6.4.14 This water will not be treated within the on-site WTP and so will not be discharged to ground.

6.4.15 Environmental management procedures for the storage and use of bulk liquids will be developed in cognisance of the airport being located within a public water supply Source Protection Zone (SPZ).

~~6.4.11~~ Existing Landfill~~Fuel Storage Facility~~

~~6.4.12~~6.4.16 A former landfill site extends to the north of the airport and any potential surface water falling on the landfill area will need to be controlled by capping the landfill layer. The area occupied by the former landfill will therefore be impermeable with surface water being channelled towards infiltration basins/tanks outside the landfill area~~.~~.

6.4.136.4.17 Site investigations to -date indicate that the historic landfill is still producing gas and therefore gas protection measures are required. The extent of the landfill is shown on the drainage drawings in **Appendix B**.

6.4.146.4.18 All drainage systems (e.g., pipes and tanks) will need to be lined with a waterproof membrane.

6.4.156.4.19 In addition, the geotechnical site investigations indicate that the landfill will continue to settle with time and, therefore, any below ground installations will need to include flexible jointing to allow for differential settlement across the site. Settlement, along with any effects on the attenuation structure and pipework, will need to be monitored.

Emergency Water Supply

6.4.166.4.20 The airport's Rescue and Firefighting Service operates through CAA Category 7 with Category 9 on request (Ref. 5.1). 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. Whilst the new apron design will include additional hydrants for firefighting purposes, the runway and taxiways do not have a hydrant system in place and rely on underground static tanks.

6.4.176.4.21 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, the airport operator, indicatesoperator indicatesd that the current static emergency water supply has sufficient capacity to cater for the Proposed Development.

5.36.5 Clean Surface Water Drainage StrategyPreliminary Surface Water Drainage Design

6.5.1 The preliminary drainage strategy assumed to be in place for this assessment phase is illustrated in **Appendix B**.

6.5.2 For the purpose of this reportDDS, "clean" is airfield and landside runoff that has been screened by silt traps and oil interceptors but has no further contaminants.

5.3.0 *Key Design Considerations*

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

a. The surface water drainage will be designed, where possible, as a gravity system. The drainage system is to be designed in accordance with Design and Construction Guidance v2-1 (Ref. 5.1), (Ref. 4.24) 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 surface water 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 areas.

b. Suitable upstream management consisting of source control and continuous quality monitoring and end - of - pipe treatment to maximise the use of SuDS.

Proposed Design Details

6.5.4 If the water has been identified as clean, the following method is proposed as a baseline for dealing with the clean airfield surface water runoff:

a. Discharge to an infiltration basin (Tank 2) for discharge into the chalk layer.

6.5.5 This method would ensure that the aquifer continues to be recharged by surface water runoff from within the Main Application Site.

Tank 2

~~6.5.2~~6.5.6 The proposed infiltration basin (Tank 2) provides 75,000m^3 of water storage and will be positioned at the lower levels of the Main Application Site. It has been sized such that it should remain mostly dry in all but the most severe storms.

~~6.5.3~~6.5.7 Tank 2 drains into the chalk layer which is highly porous and therefore offers good infiltration properties.

~~6.5.4~~6.5.8 Access to Tank 2 will be required for periodic maintenance.

~~6.5.5~~6.5.9 Water stored in Tank 2 will be recycled for greywater use ~~. Water will gravitate to~~ via a re-lift pumping station located ~~at ground level within the water treatment plant~~along the pipe routing.

a. The re-lift pumping station will supply water to a grit removal plant which will include 75% duty/assist grit centrifugal separators. From the centrifugal separators the treated water will then gravitate to the final rainwater harvesting storage tank in the vicinity of the T2 building for use as grey water in the terminal.

b. The grit removed will be transferred to skip to be combined with the grit removed from the ~~WTP~~ water treatment plant for removal.

6.6 ~~Polluted~~Contaminated Surface Water Drainage Strategy

Key Design Considerations

6.6.1 The preliminary drainage strategy assumed to be in place for this assessment phase is illustrated in Appendix B.

6.6.2 The key design considerations are intended to reflect a sustainable approach to water management, and in addition to those already included under the "Clean Surface Water Drainage Strategy in Section 6.5 of this DDS" include the following criteria:

a. 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 volume of ~~re-cycled volume of~~ de-icing agents to be re-cycled off-site.~~.~~

6.6.3 It is noted that efforts are being made by ~~LLAOL~~ the airport operator to reduce the areas where ~~G~~glycol~~Glycol~~ is applied and recovery systems are being rolled out to collect ~~G~~glycol~~Glycol~~ from pavement surfaces to prevent the contaminant entering the ~~SW~~surface water network at source. ~~–~~The efficacy of these measures will ~~need to~~ be assessed at detailed design stage.

Proposed Design Details

6.6.4 If surface water has been identified as contaminated through water quality monitoring, the following method is proposed as a baseline for dealing with the contaminated airfield surface water runoff:

a. Preferred option – Storage of contaminated surface water and discharge to the TW network at a controlled and agreed rate. Depending on the outcome of the ~~consultation~~engagement with TW, there is a possibility that a WTP will be provided onsite (as referred to above and already included in the application) in order to pre-treat the effluent prior to discharge to the TW network.

b. Reserve option - Treatment to remove glycol and other identified contaminants followed by controlled discharge via infiltration to ground.

Tank 1

~~6.6.2~~6.6.5 Proposed Tank 1 shown in **Inset 4.3** is to be located below car park P11. 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 Water Treatment Plant~~water treatment plant~~.

~~6.6.3~~6.6.6 Tank 1 will provide a degree of redundancy in the system to cater for a range of factors that will be considered further at detailed design, including:

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 fill by approximately 14,000m^3;
b. WTP~~water treatment plant~~ part-closure due to maintenance;
c. allowable discharge rate from Tank 1 into the water treatment plant;
d. the chemical composition of the contaminated airside influent and hazardous substances;
e. infiltration basin/tank (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 basin/tank (Tank 2 and 3), pending local geotechnical investigations.

~~6.6.4~~6.6.7 Access to Tank 1 will be required for periodic maintenance.

Tank 3

~~6.6.5~~ ~~**Tank 3**~~

6.6.8 Proposed Tank 3 shown in **Inset 4.3** is to be located below car park P11. Further checks have been carried out to determine the sizing of Tank 3 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 water treatment plant.

6.6.9 The function of Tank 3 will vary depending on whether the preferred or reserve option is progressed:

a. Preferred option – Tank 3 will function as a storage tank (and may be combined with Tank 1) prior to discharge to the TW foul network.

b. Reserve option – Tank 3 will function as an infiltration tank to allow controlled discharge via infiltration to ground.

6.7 Discharge of Contaminated Surface Water to Thames Water Network

6.7.1 Further consultation is ongoing to identify if the adjacent TW~~hames Water~~ foul water network has sufficient capacity to accommodate the contaminated airfield surface water runoff ~~-~~at a reduced rate. This would require a new trade effluent consent to be agreed.

6.7.2 The proposal for onsite storage and pumped discharge to the TW~~hames Water~~ network is shown on the schematic in **Inset 6.1**: ~~I~~A~~A~~n assessment undertaken to identify the volume of polluted water storage which needs to be provided and the proposed outflow rate / quality to the existing TW network.

6.7.3 The methodology contained in the ~~report~~DDS is as follows:

a. A spreadsheet model of the pollution control system has been developed. Inputs include data from the Met Office Bedford Gauge for rainfall and daily weather data minimum temperature (1980 – 2023~~)~~), received May 2023, and Biological Oxygen Demand~~-~~ (BOD) load of de-icing fluids. Assumptions, based on historical data provided by LLAOL, have been made in relation to the numbers of aircraft de-iced and BOD loads intercepted before reaching storage.

b. It is likely, based on the existing t~~T~~rade e~~E~~ffluent c~~C~~onsents (R~~r~~ef~~-~~s EHY00012 & TEHY.0105A), that TW would impose limits on discharges to sewer both in terms of volume and BOD load. The calculations have been used iteratively, alongside liaison with TW to determine the

allowable discharge volume and rate and therefore the size of storage tank required as part of the development.

c. The BOD load limit from the current discharge consent (Appendix D) effectively caps the discharge to sewer to 0.46 l/s and 20 kg/day BOD. With these limits the contaminated water tanks would not fully drain down over the summer so the required volume would increase each year such that the storage tank is unable to empty over the summer prior to the start of the next winter de-icing period. Therefore, the conclusion of the modelling is that under these existing discharge limitations, the storage volume required significantly exceeds the volume of the tanks included in the DCO proposals.

d. If the BOD load limit is increased to ~~,~~ 1600kg/day and the allowable flow increased to 12~~/~~ l/s as proposed in the ongoing discussions with TW, then the volume of polluted water storage required is estimated to be approximately 85,000m^3 which is within the volume included in the Proposed Development.

e. Active monitoring and discharge control will be implemented to ensure no discharge during ~~existing~~ high flow conditions, i.e. when identified existing Combined Sewer Overflow~~'~~s (CSO) on the drainage route are in operation.

6.7.4 Engagement and completion of this element with TW is ongoing and will include further consultation with the EA, LBC and AW.

7 PROPOSED WATER TREATMENT PLANT

7.1 Conceptual Design – Layout

7.1.1 A WTP~~water treatment plant~~ will be designed to treat the flows as outlined below in the preferred and reserve options:

a. Preferred option – p~~P~~otential pre-treatment of contaminated surface water and treatment of surface water for re-use. (There maybe a requirement to pre-treat the contaminated surface water runoff being sent to TW if the ongoing study by TW highlights a capacity issue with regards to load capacity).

b. Reserve ~~option –~~option - treatment of T2 foul water, contaminated surface water and surface water for re-use.

~~A new water treatment plant will be designed and constructed to handle the outflow from the following catchments:~~

- ~~polluted contaminated airfield drainage (surface water);~~
- ~~proposed foul drainage from T2; and~~
- ~~proposed attenuated surface water from Tank 1.~~

7.1.2 Depending on the option t~~T~~he water treatment plant could~~would~~ be separated into three ~~interconnected~~ streams:

a. ~~–~~ tThe ~~– the~~ effluent treatment process~~lant~~ (ETP) treating the potentially contaminated surface water~~,~~.
b. tThe ~~), the~~ sewage treatment process~~lant~~ (STP) treating the foul water, if this cannot be d~~f~~ischarged to TW sewer.
c. ~~and t~~The~~the~~ surface water treatment ~~–~~process (SWTP) for treating clean surface water for re-use on site. ~~(SWT).~~

7.1.3 ~~).~~ There will be by-products produced from the various proposed processes which will include screenings, ~~fats, oils and grease (FOG),~~ grit, recovered fluids and surplus sludges that will require some on-site management in terms of treatment, consolidation, storage, and then subsequent ~~disposal~~ transport off-site for re-use, re-cycling or disposal.

7.1 Conceptual Design ~~–~~ Treatment

7.2.1 The detailed treatment arrangement will be determined at detailed design using the most appropriate technology at the time ~~following~~in accordance with the relevant t~~t~~**Ddesign P~~p~~rio~~e~~nciples [TR020001/APP/7.09~~APP-225~~]**. The following conceptual design of the water treatment plant is one potential option:~~s.~~ ~~as follows:~~

a. The ~~effluent treatment process (~~ETP~~)~~ will consist of screening, ultrafiltration followed by two-stage reverse osmosis for the recovery and separation of ~~deicing~~de-icing fluids. The recovered de-icing fluids will be ~~taken~~ recycled. ~~off-site for re-cycling.~~
b. The ~~sewage treatment process (~~STP~~)~~ will consist of screening, settlement followed by a membrane bio-reactor~~s~~ (MBR). The effluent will then be sent through reverse-osmosis and advanced oxidation and ultraviolet

disinfection. The sludge streams will be taken off-site for disposal. Tanks and processes may be covered and odour-controlled subject to a more detailed assessment.

c. The surface water treatment process (SWTP) will consist of grit removal, followed by media filtration and ultraviolet disinfection.

g. Primary treatment using rake screens, grit centrifugal separators and FOG tank. Screenings, grit, and FOG shall be removed from site in skips for disposal off site.

g. Biological treatment through use of Moving Biological Bed Reactors; (MBBRs).

g. Secondary treatment through multi streamed Dissolved Air Floatation (DAF) plant,

g. Final treatment via ultrafiltration (UF).

g. Disinfection with UV or chlorination.

g. Sludge produced on site from MBBRs and DAFs would be thickened and stored for 45inkering off site.

g. Odour control plant will feed all parts of the building and consist of twin stage chemical scrubbers and granular activated carbon (GAC) polishing plant. This would include localised areas requiring odour canopies as well as air quality control within the main building. All malodourous air would be treated through both a chemical treatment stage using Sodium Hypochlorite and Sodium Hydroxide followed by a final polishing stage through dual 60% GAC scrubbers prior to be being discharged to atmosphere through the exhaust stack.

7.97.2 Influent Characteristics

7.3.1 The primary / main influent characteristics from the potentially contaminated run-off are indicated in **Table 6.7.1**. Traces of additional substances listed in the Joint Agency Groundwater Directive Advisory Group (JAGDAG) (Ref 7.3) list such as metals, fuels and lubricants may also be present.

Table 0.1: Assumed potentially contaminated run-off influent characteristics

Influent characteristics	
Total Suspended Solids (TSS)	9 mg/l
Biological Oxygen Demand (BOD)	116 mg/l
Ammonium (NH4-N)	8 mg/l
Ammoniacal Nitrogen (NH3-N)	0.13 mg/l
Total Organic Compound (TOC)	200 mg/l

7.3.2 Anticipated foul sewage influent characteristics are shown in Table 76.2 below. These are the main influent strength parameters used for the design of the STP;

other substances typical of domestic and commercial sewage will also be present in varying concentrations.~~:~~

Table 0.2: Assumed sewage influent characteristics (Ref.~~:~~ 7~~6~~.1)

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

7.3.3 The clean surface water characteristics are not expected to have any significant organic, inorganic or solids loads.

~~7.3.3~~7.3.4 The combined peak inflow to the water treatment plant has been determined to be as follows.

Table 0.3: Water treatment plant maximum combined inflow

Inflow figures	
Max sewage Inflow	41.07 l/s
Max runoff inflow	205 l/s
Total combined inflow	246.07 l/s

~~7.10~~7.3 Water Quality Monitoring

7.4.1 A key aspect of the strategy is the live monitoring of the water quality by the airport operator based on the following:

a. Monitoring of TOC will be automated and ~~continuousand~~continuous and/or at regular intervals.

b. The monitoring is upstream of the water treatment plant~~,~~ and the inlet storage tanks, so that if levels of contaminants are below the trigger levels agreed with stakeholders, the influent will flow directly to the infiltration basin (Tank 2).

c. If, however, TOC is higher than the determined trigger level then the contaminated water will be automatically diverted to the inlet storage tank to be treated in the water treatment plant or discharged to the TW network.

7.4.2 It is anticipated that technology will evolve prior to construction of the Proposed Development and the following points are based on currently available technology.

~~7.4.2~~7.4.3 It is intended that trigger levels with respect to TOC will be refined during detailed design. The TOC trigger level will be site dependent, and it is anticipated that it would follow a period of site background testing as recommended within the Environmental Protection Agency guidance

documentation (Ref. 6.2), in the absence of UK equivalent guidance. This is to allow for seasonal variance in 'normal' background levels of contamination to be catered for. It is intended that samples would be taken frequently and in different environmental conditions to maintain a tight standard deviation.

7.4.37.4.4 Following this data gathering exercise, the warning and trigger percentiles will be developed and confirmed in discussion with relevant stakeholders. Commonly, the 90th percentile is used for warning and 95th percentile for action/trigger. In this case action/trigger would result in the actuated valve diverting water to the water treatment plant instead of Tank 2. An example of warning and action/trigger levels is detailed in **Table 76.4**, taken from the Environmental Protection Agency guidance document.

Table 0.4: Examples of Action/Warning Limits used at the Environmental Protection Agency sites

Parameter	Action (Upper) Limit (mg/l)	Warning (Lower) Limit (mg/l)
COD	80	50
TOC	40	30
SS	50	25
pH	6 to 9	6 to 8

7.4.47.4.5 The use of MBBR, DAF, UF and disinfection would provide a more stringent final effluent level than would be typically expected from a standard water treatment works. The calibration of equipment is a maintenance schedule activity with the instrumentation to be checked against lab results.

7.4.5 The final effluent would contain organics in the form of BOD, COD and nitrogen compounds.

7.4.6 The acceptability of discharge to ground from the proposed infiltration tanks in terms of the potential impact on groundwater quality is discussed in the **Chapter 17 of the ES [TR020001/APP/5.01] and its appended Hydrogeological Risk Assessment: Drainage [TR020001/APP/5.02].**

7.117.4 Final Effluent Quality

7.5.1 The below approach relatesd to all three potential effluent treatment streams and would be refined at detail design stage based on the drainage option adopted.

7.5.2 **Table 76.5** has been compiled using a number of typical final effluent discharge consents in England including watercourse and ground-water discharges. The characteristics have been further tightened based on experience and with the knowledge that there are public water supplies in the local area (site within SPZ3). Noting this is an outline design, the parameters stipulated below would be refined during detailed design with the development of the process solution.

7.5.1

Table 0.5: Proposed conceptual final effluent discharge consent levels

Parameter	Units	Prescribed Concentration or Value (PCV)	Sample Basis (assuming STP)
TSS	mg/l	<20	Composite daily sample – 95%ile
$CBOD_5$	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
Intestinal enterocci	number/100ml	100	Spot
Legionella pneumophilia	number/100ml	N/A	Spot
Total coliforms	number/100ml	1000	Spot
Cadmium	µgC~~a~~d/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
Iron	mgFe/l	10	Composite daily sample – 95%ile

~~7.5.2~~7.5.3 The list of chemicals in **Table ~~7~~6.5** are the assumed contaminants expected to be in the effluent from the water treatment plant, which will be monitored to maintain the prescribed concentration levels. Additional substances listed in the JAGDAG (Ref. 7.3) and drinking water standards may be present and these will need to be confirmed through additional sampling.

~~7.5.3~~7.5.4 The list of hazardous chemicals, monitoring systems, and treatment processes will need to be confirmed during detailed design. Within the wastewater treatment process, glycols~~,~~ and hydrocarbons ~~and Perfluoroalkoxy alkanes (PFAs)~~ are captured or broken down, therefore, they are not listed in Table ~~7~~6.5 but would be checked in sample monitoring. The monitoring regime for the final effluent is prescribed in **Table ~~7~~6.5** which includes organics, hydrocarbons, and BODs. **Table ~~7~~6.5** forms the basis of the water treatment plant design at this stage.

~~7.5.4~~7.5.5 Tests for chemicals highlighted in green in **Table ~~7~~6.5** are collected and monitored continuously to ensure prescribed levels at discharge are maintained, and are fully automated. Calibration would be checked against laboratory tests periodically.

~~7.5.5~~7.5.6 For detecting heavy metals in the water treatment plant effluent shown in Table ~~7~~6.5, to ensure prescribed levels at discharge are maintained, testing kiosks circa 2x2m per unit will be required. This would involve automated systems with submerged pumping to extract test samples to local kiosks. The samples will need to be onsite laboratory tested by an operative with immediate result.

~~7.5.6 Tests for residual bromine to ensure prescribed levels at discharge are maintained would involve auto samplers across the Main Application Site, triggered by flow. The testing would be on-site lab tests with immediate results.~~

7.5.7 Testing to ensure prescribed levels at discharge are maintained for chemicals highlighted in orange in **Table ~~7~~6.5** would take several days before results can be checked, as the bacteria needs to be grown.

7.5.8 Testing for CBOD5 levels at the water treatment plant effluent, to ensure levels at discharge correspond with prescribed concentration levels, would take at least five days before results can be checked as the bacteria needs to be grown.

7.5.9 The final effluent quality would ~~comply~~be in accordance with the design principle as set out in the **Design Principles [TR020001/APP/7.09~~APP-225~~]** document:~~,~~ "The drainage and water treatment systems will be designed so that all discharges to ground do not contain hazardous substances, as defined in WFD (Ref. 2.1), and are non-polluting, due to the underlying chalk being a Principal Aquifer and the infiltration tanks being proposed within a SPZ3."

~~7.12~~7.5 Protection of Chalk Aquifer

7.5.1 Given the sensitivity of the Chalk aquifer, a series of treatment steps has been incorporated into the concept 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. For the reserve option a~~A single combined~~ water treatment plant will include the following~~consist of two~~ processes: one process for the sewage load from the T2 campus~~building~~ - the ~~sewage treatment process (~~STP~~)~~ - and a second process for the surface run-off - the ~~effluent treatment process (~~ETP~~).~~ As the de-icing agents will be seasonal (typically November - April), the ETP stream of the water treatment plant will not be required to operate during the summer~~likely be maintained out of season artificially by feeding it with the de-icing agents to maintain a small level of 'glycol' digesting biomass whereas the STP stream of the water treatment plant will be active all ye~~ar~~. The STP will be designed to effectively treat the influent flows from T2 campus to the levels denoted in **Table ~~7~~6.5** and will ~~comply~~be in accordance with the relevant **Design Principles~~design principle as set out in~~ [TR020001/APP/7.09~~APP-225~~]**~~.~~

b. The ETP portion of the water treatment plant is for the de-icing agents. The plant is primarily to ~~treat~~ separate 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 or formates (assumed to be a de-icer) would need to be identified and the quantity of inflow determined during detailed design of the water treatment plant.

~~7.13~~7.6 Disposal of Final Effluent

7.7.1 All excess treated final effluent from the water treatment plant will be channelled to a separate 15,600m^3 infiltration tank (Tank 3) located north of the water treatment plant, acting as an overflow.

7.7.2 The treated final effluent from the water treatment plant will be recycled for irrigation with the remainder suitable for discharge to the ground. The re-cycled water will be pumped by rising main to a tank with location to be confirmed during detailed design. Current projections for irrigation are estimated at 6l/s.

7.7.3 It is proposed to re-use some of the attenuated surface water from Tank 2 which is pumped to the ~~surface water treatment process (~~SWTP~~)~~ for treatment~~water treatment plant for the removal of grit using centrifugal~~

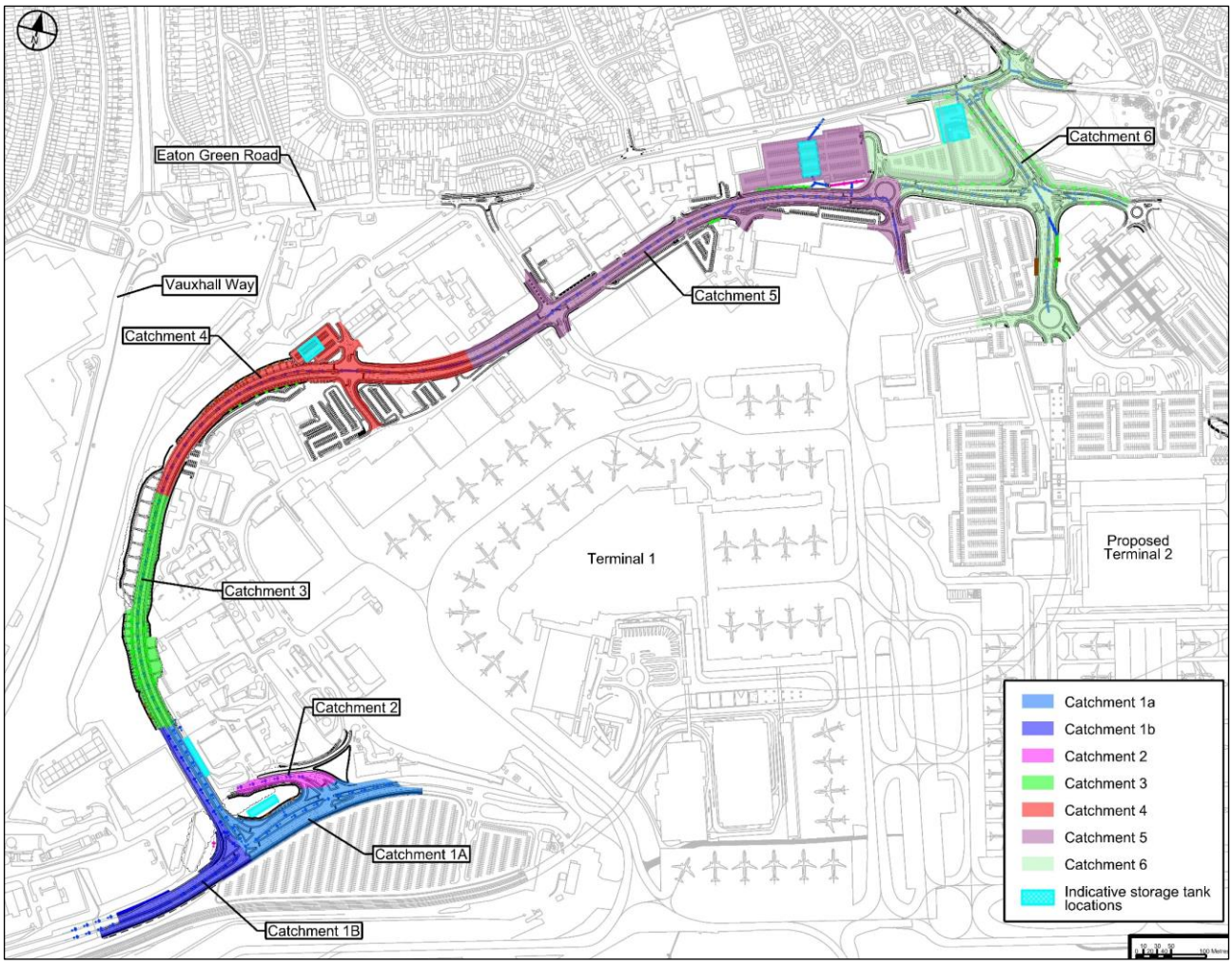
~~separators~~. After this process, the greywater will be returned to the terminals via a holding tank.

8 AIRPORT ACCESS ROAD AND OFF-SITE HIGHWAY MITIGATION

8.1 Airport Access Road Drainage

8.1.1 Six overall catchment areas are proposed to cater for drainage requirements associated with the Airport Access Road (AAR), as shown below in **Inset 87.1**.

Inset 0.1: AAR catchment areas



8.1.2 Table 0.6~~Table 8.1~~ is shown below, which summarises the impermeable and gross permeable areas of the proposed catchments with proposed outfalls. Proposed catchment 1 was split into two sub-catchments, to enable the proposed attenuation storages to be split and therefore provide additional flexibility in their placement and design.

Table 0.61: AAR Catchment Areas

Catchment Ref.	Catchments (ha)		Outfall to:
	Impermeable	Gross Permeable	
Catchment 1A	1.14	0.12	Highway drain – LBC
Catchment 1B	0.79	0.05	Highway drain - LBC
Catchment 2	0.20	0.04	Highway drain - LBC
Catchment 3	0.65	0.30	Highways drain - LBC
Catchment 4	1.56	0.34	Highway drain - Veolia
Catchment 5	3.20	0.30	Surface Water Sewer – TW
Catchment 6	3.76	0.67	Surface Water Sewer – TW

Proposed Attenuation Storage

8.1.3 Indicative storage proposals have been designed for 1 in 100-year storm event, plus climate change allowance.

8.1.4 The following climate change allowances were adopted based on Environment Agency Climate Change Allowance, 2022 (Ref. 87.1):

a. 35% for 1 in 30 storm events; and
b. 40% for 1 in 100 storm events.

8.1.5 A 10% additional storage has been added for urban creep (for expected changes over the lifetime of the Proposed Development). Surface water is to be managed within the site (no flooding beyond highway boundaries for 1 in 30 and 1 in 100-year rainfall events, plus climate change allowance). Micro Drainage – Source Control software, which is an industry standard modelling ~~methodology, was~~methodology, was used to model the storage requirements for each catchment.

8.1.6 **Table 0.7~~Table 8.2~~** summarises the proposed discharge rates and storage with levels, for each of the catchment areas.

Table 0.72: Proposed Discharge Rates and Storage

Catchment Ref.	Brownfield / Greenfield	Proposed Discharge Rates (l/s)	Indicative Proposed Storage
Catchment 1A	Brownfield	5.7	Proposed tank - 10m x 45m x 2m (900m^3 capacity) Cover Level – 148.0 mAOD Invert Level – 144.5mAOD
Catchment 1B	Brownfield	4.0	Proposed box culverts (x2) - 2m x 2m x 80m (640m^3 capacity) Cover Level – 139.6 mAOD Invert Level – 136.1 mAOD
Catchment 2	Brownfield	Existing	None
Catchment 3	Greenfield	2.0	Proposed tank - 5m x 60m x 2m (600m^3 capacity) Cover Level – 140.0 mAOD Invert Level – 136.5 mAOD
Catchment 4	Brownfield	7.8	Proposed tank - 20m x 30m x 2m (1200m^3 capacity) Cover Level – 154.5 mAOD Invert Level – 151.0 mAOD
Catchment 5	Brownfield	16.0	Proposed tank - 25m x 50m x 2m (2500m^3 capacity) Cover Level – 148.0 mAOD Invert Level – 144.5 mAOD
Catchment 6	Greenfield	7.5	Proposed tank - 38m x 50m x 2m (3800m^3 capacity) Cover Level – 142.4 mAOD Invert Level – 136.4 mAOD

Proposed Highway Drainage Criteria

8.1.7 Road drainage design will be carried out based on the Design Manual ~~for Roads~~for Roads and Bridges (DMRB) (Ref. 87.2) standards (CG 501) unless agreed otherwise with LBC.

8.1.8 DMRB CG 501 states: “For road runoff within drainage systems the following overall design criteria shall apply:

a. *1 in 1 year – no surcharge of the drainage system; and*
b. *1 in 5 years – no flooding from the drainage system”*

8.1.9 DMRB CG 501 states: *“All drainage systems shall be designed so that highway surface water flooding does not extend beyond the highway boundary up to the 1-in-100 year rainfall event, including an allowance for climate change.”*

8.1.10 Surface runoff collection systems and pipe networks are to be designed at later design stages. Open surface drainage systems, such as ditches, shall be adopted where practical for ease of maintenance at future design stage.

8.1.11 SuDS have been proposed for water quantity (proposed attenuation storages) and water quality (vegetated ditches, filter drains and swales) to a certain extent at this design stage. Further SuDS (e.g. bioremediation system etc.) shall be considered to improve water quality, amenity and biodiversity where possible by coordinating with the landscape and environment disciplines at the next design stage.

8.1.12 Ditches are proposed at the toe of proposed embankments where spaces permit. Filter drains are proposed where the road is in deep cuttings and at the toe of embankments where there is not enough space to accommodate ditches.

8.1.13 Notably, calculations indicate that there is an opportunity to propose a 50% betterment in discharge rates for brownfield sites. This is based on the LBC requirement for a reduction in brownfield redevelopment discharge rates by 50%, for events up to and including the 1 in 100-year return period event plus climate change (LBC – Surface Water Management Plan, 2012 – cl. 4.7.2 Policy 2), as opposed to a discharge of 5 l/s/ha which was the figure previously agreed by LBC in relation to the Green Horizons Park (formerly New Century Park) planning permission (17/02300/EIA). This will reduce the storage required for attenuation and may create enough space to accommodate an attenuation basin/swale to replace the current proposal of attenuation underground structures.

8.1.14 The outfall levels of existing highway drains/TW sewers for each catchment have been taken from the information available at this design stage (existing drainage model). Where the information was not available, the connection level has been assumed based on the existing surface with a 1.2m cover to soffit (using topographical survey information). This is a standard level used in highway construction and final outfall levels will be confirmed during detailed design.

8.1.15 The following section provides details on potential drainage designs for the individual catchment areas. These are outline designs and subject to detailed design in the future.

Proposed Drainage Layout – Catchment 1A

8.1.16 A bridge kerb drain is proposed to drain the length along the proposed southbound retaining wall.

8.1.17 The proposed attenuation tank is located in what appears to be an abandoned car park (car park decommissioned in recent years as shown in Google Earth history). The proposed tank has been located with a clearance of 5m from existing land slopes. Structural and geotechnical disciplines will be consulted at a later design stage to validate that the proposed attenuation tank will have no impact on the existing slope.

8.1.18 Proposed catchment 1A is to outfall to the catchment 1B.

Proposed Drainage Layout - Catchment 1B

8.1.19 A bridge kerb drain shall be proposed to drain the length along proposed northbound retaining wall. Box culverts are proposed within the central reserve and verge of A1081 New Airport Way. There is flexibility to vary the position of the box culverts within the Order limits for the Proposed Development~~.~~.

8.1.20 Box culverts will require interval chambers, as part of the design, with backdrops due to the steep surface gradients. A proposed swale is located near an existing land slope risking percolation. Further assessment is to be carried out during detailed design stage.

8.1.21 The Invert level (IL) of the proposed outfall to existing highway drain has been assumed based on a 1.2m cover to soffit and 300mm assumed pipe diameter, again based on standard levels used in highway construction.

Proposed Drainage Layout – Catchment 2

8.1.22 The proposed work involves only a re-alignment of existing carriageway which results in no increase in paved areas, therefore no attenuation is proposed.

Proposed Drainage Layout - Catchment 3

8.1.23 The proposed large earthwork along the northbound carriageway is to be drained naturally, as per the existing earthworks slope. A proposed attenuation tank is shown to the immediate east of the proposed AAR alignment, at the foot of the proposed AAR retaining wall.

8.1.24 The proposed attenuation tank is placed within an area of land which is subject to changes in level. Regrading of the land in this area would be required to accommodate the tank, in conjunction with potential amendments to the existing retaining structure, and a maintenance access will be proposed. The cover level of this area post-regrading has been assumed to be 140m AOD.

Proposed Drainage Layout - Catchment 4

8.1.25 Filter drains are proposed at certain locations along the toe of northbound embankment. This solution is proposed due to the narrow (1m) space being insufficient width to accommodate a ditch. The adjacent car park catchment has been included as impermeable to adopt a conservative approach. There is an opportunity to propose permeable pavement for the replacement areas of car parking located within this catchment.

Proposed Drainage Layout - Catchment 5

8.1.26 Filter drains are proposed at certain locations along the toe of northbound embankment. This proposal~~-~~, which provides an appropriate solution, is proposed due to the narrow (1m) space being insufficient width to accommodate a ditch. The highway drain is to discharge at a proposed swale prior to connection to the proposed attenuation tank beneath the western (decked) section of car park P9.

8.1.27 The car park P9 catchment has been included as impermeable to adopt a conservative approach. There is an opportunity to propose permeable pavement for the external (non-decked) sections of the car park.

Proposed Drainage Layout - Catchment 6

8.1.28 Filter drains are also proposed within the verge areas due to the road being partially constructed in a deep cutting. The adjacent car park P9 catchment has been included as impermeable to adopt a conservative approach. There is an opportunity to propose permeable pavement for car park. An attenuation tank is proposed to be located within an area of the former landfill, beneath the eastern section of the proposed Car Park P9.

8.2 Off-site Highway Interventions Drainage

8.2.1 As part of the Proposed Development, a series of highway improvements are proposed at various locations in line with the incremental approach to the airport expansion. These are referred to as 'Off-site Highway Interventions' within the application documentation and include:

a. Vauxhall Way / Eaton Green Road
b. Windmill Road / Manor Road
c. A1081 New Airport Way / B653 / Gipsy Lane
d. A1081 New Airport Way / Percival Way
e. Windmill Road / Kimpton Road
f. Vauxhall Way / Kimpton Road
g. A1081 New Airport Way / London Road (North)
h. A1081 New Airport Way / London Road (South)
i. M1 Junction 10
j. Eaton Green Road / Lalleford Road
k. Wigmore Lane / Crawley Green Road
l. Wigmore Lane / Eaton Green Road
m. A602 Park Way / Stevenage Road / Hitchin Hill
n. A505 Upper Tilehouse Street / A602 Park Way
o. A505 Upper Tilehouse Street
p. Crawley Green Road / Lalleford Road
q. Windmill Road / Saint Mary's Road / Crawley Green Road
r. Eaton Green Road / Frank Lester Way.

8.2.2 The Off-site Highway Interventions generally consist of widening and converting existing at-grade roundabouts to signalised junctions, together with minor scale works including realignment of kerblines and local widening. The following sections summarise the proposed works at each of the locations, where a high level drainage assessment of the proposed highway has been conducted.

8.2.3 Table 0.8~~Table 8.3~~ provides a summary of the drainage mitigation required at each of the off-site locations, together with a high-level commentary on the

scope of the works. The mitigation proposals noted in the table will need to be assessed against HEWRAT assessments at the detailed design stage, to ensure that no increases in pollutant loading occur.

Table 0.8~~3~~: Off-site Highway Interventions Drainage Strategy

Off-site Junction Location	Extent of Proposed Works	Drainage / Mitigation Proposals
Vauxhall Way / Eaton Green Road	Provision of signals on roundabout- no change in impermeable area.	No mitigation or attenuation required.
A1081 New Airport Way / B653 / Gipsy Lane	Kerb realignment and carriageway widening.	Oversized pipework is assumed capable of attenuating the increased impermeable areas, due to limited changes in overall impermeable area.
A1081 New Airport Way / Percival Way	Roundabout replaced with signalised junction, kerb realignment and carriageway widening.	
Windmill Road / Kimpton Road	Roundabout replaced with signalised junction, minor kerb realignment.	
Vauxhall Way / Kimpton Road	Minor widening to junction, kerb realignment.	
A1081 New Airport Way / London Road (North)	Signalisation of roundabout, kerb realignment and minor widening.	
A1081 New Airport Way / London Road (South)	Signalisation of roundabout, no change to impermeable area.	No mitigation or attenuation required.
M1 Junction 10	Signalisation of roundabout, kerb realignment and carriageway widening.	Oversized pipework is assumed capable of attenuating the increased impermeable areas, due to limited changes in overall impermeable area.
Eaton Green Road / Lalleford Road	Mini roundabout replaced with signalised junction, minor kerb realignment.	No mitigation or attenuation required.
Wigmore Lane / Crawley Green Road	Roundabout replaced with signalised junction, kerb realignment. Reduction in impermeable area.	Oversized pipework is assumed capable of attenuating the increased impermeable areas, due to limited changes in overall impermeable area.
Wigmore Lane / Eaton Green Road	Roundabout replaced with signalised junction, kerb realignment and carriageway widening.	
A602 Park Way / Stevenage Road / Hitchin Hill	Kerb realignment and widening to various arms of roundabout.	

Off-site Junction Location	Extent of Proposed Works	Drainage / Mitigation Proposals
A505 Upper Tilehouse Street / A602 Park Way	Kerb realignment and widening to various arms of roundabout.	
A505 Upper Tilehouse Street / Pirton Road	Kerb realignment and minor widening.	No mitigation or attenuation required.
Crawley Green Road / Lalleford Road	Mini roundabout replaced with signalised junction, minor kerb realignment.	
Windmill Road / Saint Mary's Road / Crawley Green Road	Signalisation of roundabout, kerb realignment and carriageway widening.	Oversized pipework is assumed capable of attenuating the increased impermeable areas, due to limited changes in overall impermeable area.
Eaton Green Road / Frank Lester Way	Roundabout replaced with signalised junction, minor kerb realignment.	No mitigation or attenuation required.

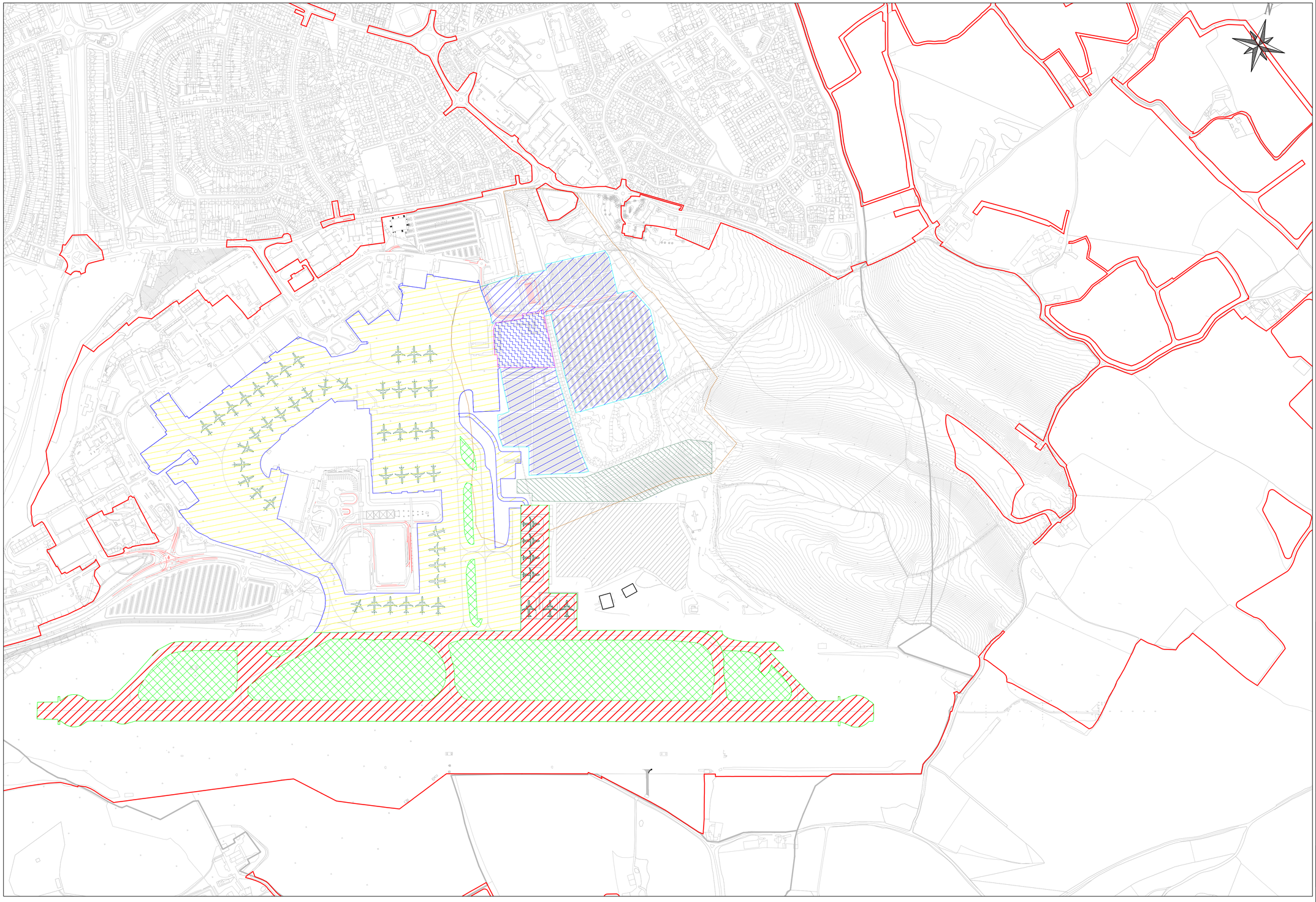
GLOSSARY AND ABBREVIATIONS

Acronym	Description
AW	Affinity Water
BOD	Biological Oxygen Demand
DAF	Dissolved Air Floatation
Luton DART	Luton Direct Air-Rail Transit
DCO	Development Consent Order
EA	Environmental Agency
ETP	Effluent tTreatment pProcess
EHTW	East Hyde Treatment Works
~~FW~~	~~Foul Water~~
GRR	Greenfield Runoff Rate
LLAOL	London Luton Airport Operations Limited
LLFA	Lead Local Flood Authority
LSCP	Long Stay Car Park
MBBR	Moving Biological Bed Reactors
M&E	Mechanical and Electrical
mppa	Million Ppassengers pPer aAnnum
NH3-N	NH3 (ammonia) - N (nitrogen)
NH4-N	NH4 (ammonium) - N (nitrogen)
~~RWH~~	~~Rain Water Harvesting~~
STP	Sewage tTreatment pProcess
~~SW~~	~~Surface Water~~
TOC	Total Organic Compound
TSS	Total Suspended Solids
TW	Thames Water
WFD	Water Framework Directive
WTP	Water Treatment Plant
UF	Ultrafiltration

REFERENCES

Ref. 2.1 The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (SI 2017/407).
Ref. 3.1 Luton Borough Council. The Luton Local Plan 2011 – 2031, published in November 2017
Ref 3.2 Department for Transport. Airports National Policy Statement, 2018.
Ref. 3.3 Construction Industry Research and Information Association. The SuDS Manual (C753). London. CIRIA. 2015.
Ref. 4.1 HM Government. The Building Regulations. Approved Document H. Drainage and waste disposal: NBS. 2010.
Ref. 4.2 Water UK. Design and Construction Guidance for foul and surface water sewers offered for adoption under the Code for adoption agreements for water and sewerage companies operating wholly or mainly in England ("the Code") 2021. Version 2.1. Water UK
Ref. 4.3 BS EN 16941-1:2018 On-site non-potable water systems. Systems for the use of rainwater
Ref. 4.4 London Luton Airport Operatons Ltd. 19mppa Application. Drainage and Water Supply Infrastructure Appraisal (41431JG22V2); Wood Group UK Ltd. 2021.
Ref. 5.1 Civil Aviation Authority. CAP 168: Licensing of Aerodromes. Edition 12. London. CAA. 2022.
Ref. 76.1 Metcalf and Eddy. Wastewater Engineering Treatment and Reuse. 4th Edition. New York: McGraw Hill, 2013.
Ref. 76.2 EPA Office of Environmental (2012). Guidance on the setting of trigger values for storm water discharges to off-site surface waters at epa ippc and waste licensed facilities. Issue No. 1. Ireland.
Ref. 7.3 Joint Agency Groundwater Directive Advisory Group (JAGDAG) List of hazardous substanaces, Jan 2017
Ref. 87.1 Environment Agency. Flood Risk Assessments: Climate Change Allowances, 2022.
Ref. 87.2 National Highways. Design Manual for Roads and Bridges. National Highways.
Ref. 8.1 Standards for Highways. Highway Construction Details.
Ref. 8.2 Department for Environment, Food and Rural Affairs. Sustainable Drainage Systems Non-statutory technical standards for sustainable drainage systems. March 2015.
Ref. 8.3 International Civil Aviation Organisation, International Standards and Recommended Practices, Annex 14 to the Convention on International Civil Aviation, Volume 1 Aerodrome Design and Operation, Ninth Edition, July 2022.

Appendix A – Catchment drawings



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SCALE 1 : 5000

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

NOTES:

- ALL CATCHMENT AREAS SHOWN ARE INDICATIVE AND SUBJECT TO DETAILED MASTERPLAN DESIGN.
- ALL DIMENSIONS SHOWN ARE IN METRES UNLESS SHOWN OTHERWISE.
- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1220 HAS BEEN USED AS A BACKGROUND.
- ALL PROPOSALS SHOWN ARE INDICATIVE FOR THE PURPOSES OF ASSESSMENT ONLY.
- THE PROPOSALS SHOWN RELATE TO THE MAIN APPLICATION SITE ONLY.

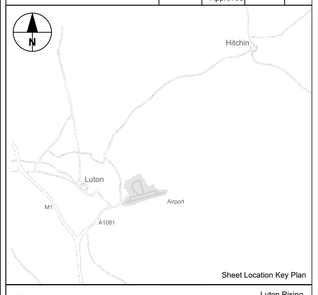
KEY:

- ORDER LIMITS
- RUNWAY / HARD STANDING PROPOSED WORKS AIRSIDE (235,199M^2, 23.52ha)
- HARD STANDING EXISTING AIRSIDE (454,748M^2, 45.47ha)
- HARD STANDING EXISTING AND PROPOSED LANDSIDE (157,135M^2, 15.71ha)
- HARD STANDING LANDSIDE PROPOSED GREEN HORIZONS PARK (19,606M^2, 1.96ha)
- PROPOSED AIRFIELD GRASSLAND (237,099M^2, 23.71ha)

TOTAL IMPERMEABLE AREA:
866,688M^2
86.67ha

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



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Drawing Title

OVERVIEW LAYOUT
HARDSTANDING LAYOUT PLAN
ASSESSMENT PHASE 1

Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:5000	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

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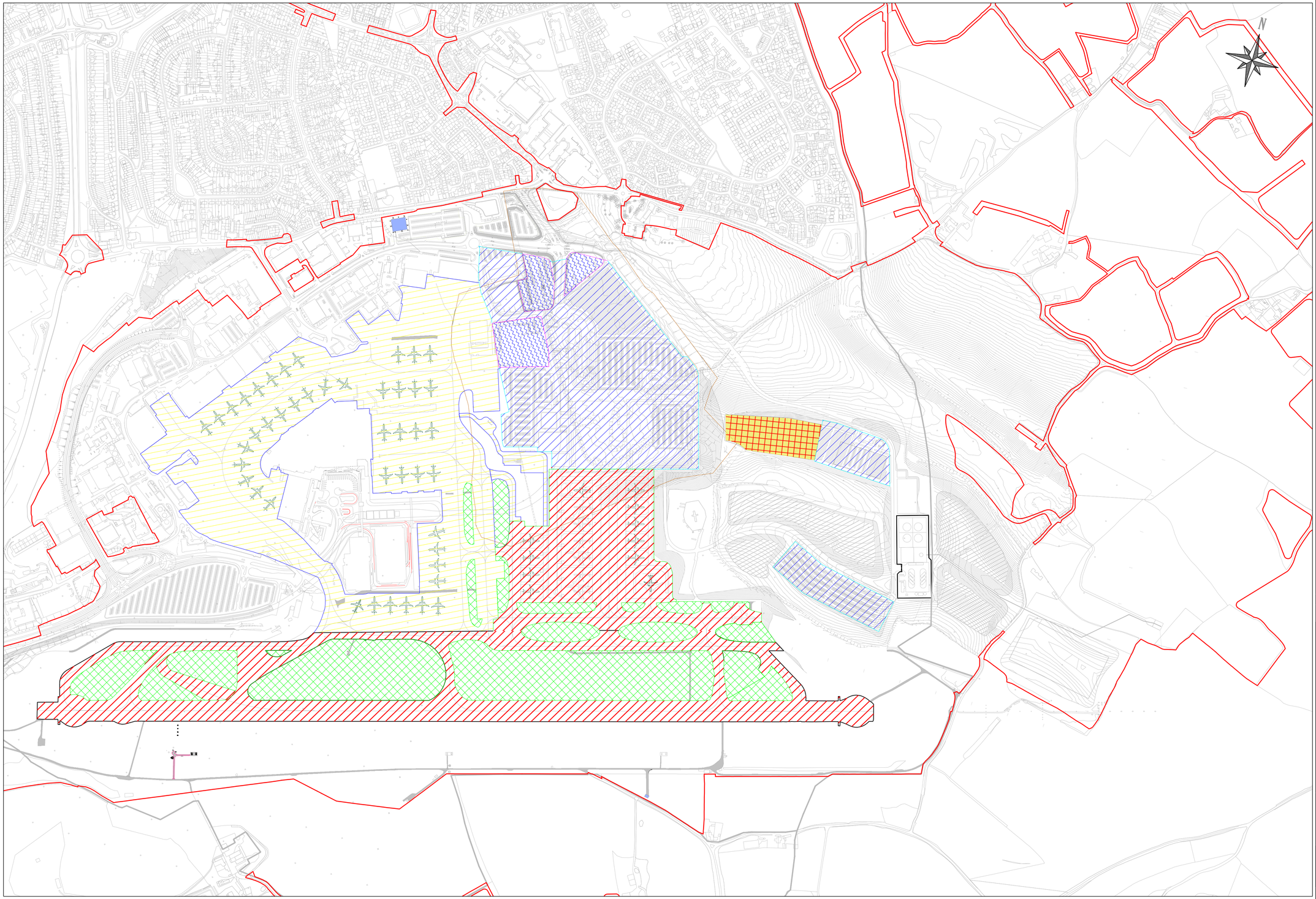
Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number



All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

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- THE PROPOSALS SHOWN RELATE TO THE MAIN APPLICATION SITE ONLY.

KEY:

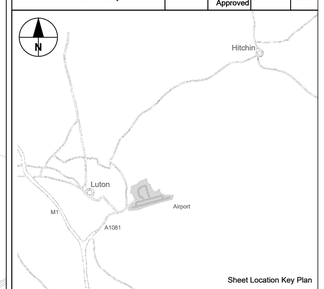
- ORDER LIMITS
- RUNWAY / HARD STANDING PROPOSED WORKS AIRSIDE (381,845M^2, 38.18ha)
- HARD STANDING EXISTING AIRSIDE (432,742M^2, 43.27ha)
- HARD STANDING EXISTING AND PROPOSED LANDSIDE (277430M^2, 27.74ha)
- HARD STANDING LANDSIDE PROPOSED GREEN HORIZONS PARK (34,982M^2, 3.50ha)
- PROPOSED AIRFIELD GRASSLAND (275,179M^2, 27.52ha)
- PROPOSED PERMEABLE PAVING (22,672M^2, 2.27ha)

TOTAL IMPERMEABLE AREA:
1,126,999M^2
112.70ha

TOTAL PERMEABLE AREA:
22,672M^2
2.27ha

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



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Drawing Title

OVERVIEW LAYOUT
HARDSTANDING LAYOUT PLAN
ASSESSMENT PHASE 2A

Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:5000	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5515	P01

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

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

NOTES:

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- ALL PROPOSALS SHOWN ARE INDICATIVE FOR THE PURPOSES OF ASSESSMENT ONLY.
- THE PROPOSALS SHOWN RELATE TO THE MAIN APPLICATION SITE ONLY.

KEY:

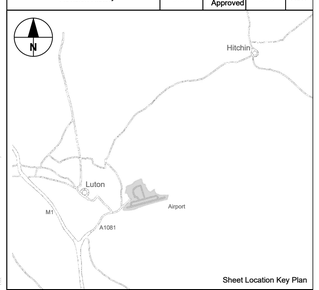
- ORDER LIMITS
- RUNWAY / HARD STANDING PROPOSED WORKS AIRSIDE (491,348M^2, 49.13ha)
- HARD STANDING EXISTING AIRSIDE (476,289M^2, 47.63ha)
- HARD STANDING EXISTING AND PROPOSED LANDSIDE (315,285M^2, 31.53ha)
- HARD STANDING LANDSIDE PROPOSED GREEN HORIZONS PARK (66,027M^2, 6.60ha)
- PROPOSED AIRFIELD GRASSLAND (293,571M^2, 29.36ha)
- PROPOSED PERMEABLE PAVING (22,672M^2, 2.27ha)

TOTAL IMPERMEABLE AREA:
1,348,949M^2
134.89ha

TOTAL PERMEABLE AREA:
22,672M^2
2.27ha

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



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Drawing Title

OVERVIEW LAYOUT
HARDSTANDING LAYOUT PLAN
ASSESSMENT PHASE 2B

Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:5000	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5516	P01

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

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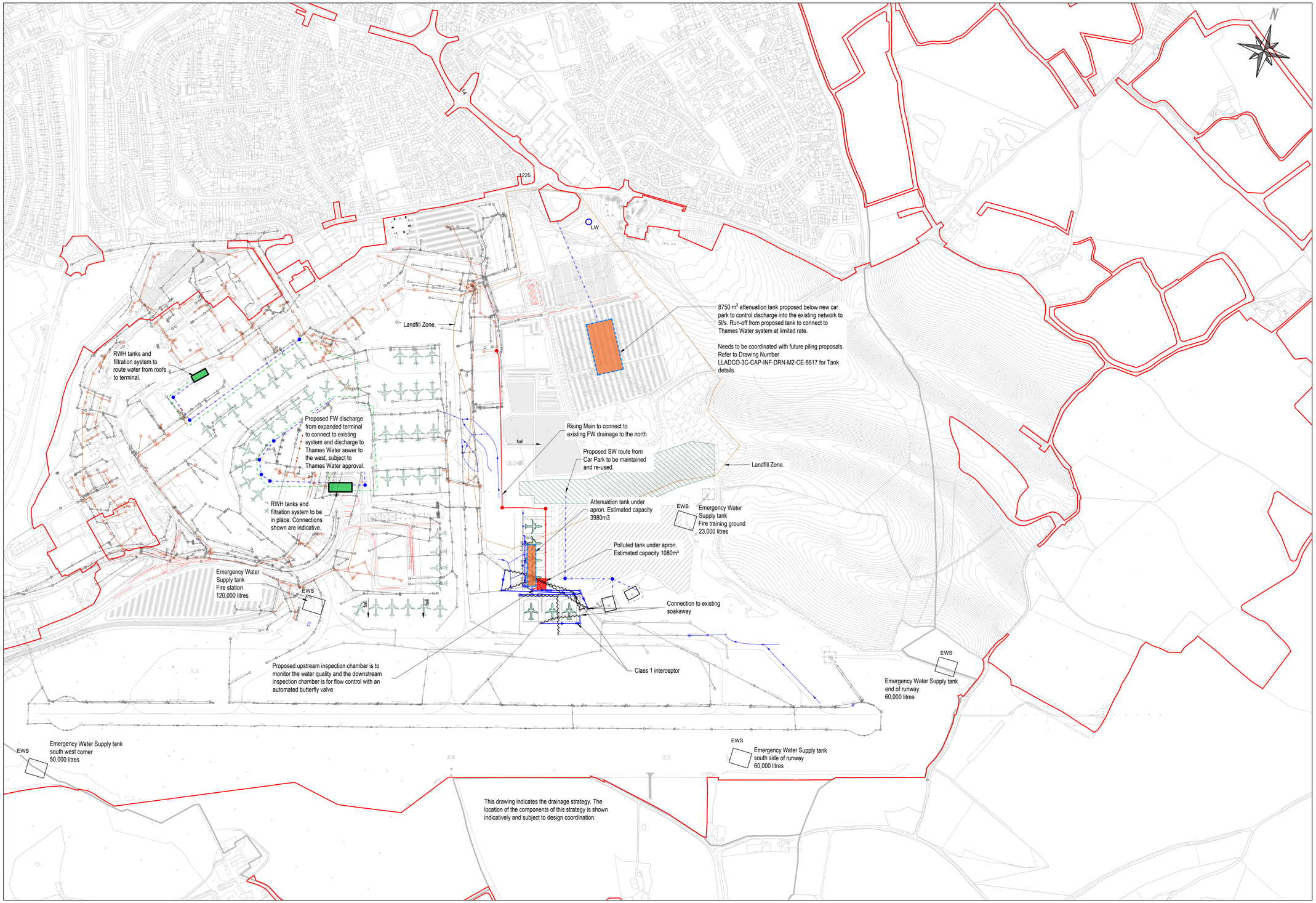
SCALE 1 : 5000

Appendix B – Drainage statement drawings



0 100 200 300 400 500 m

SCALE 1 : 5000

LEGEND

- Existing surface water drain with inspection chamber
- Existing foul water drain with inspection chamber
- Redundant pipe
- Proposed RWH surface water drain
- Proposed surface water drain with inspection chamber
- Large proposed surface water linear drainage conduit/ channel with inspection chamber
- Proposed foul water drain with inspection chamber
- Proposed airside drainage network
- 162.095 Proposed spot level
- 162.095 Existing spot level
- EWS Approx. position of existing Emergency Water Supply tanks
- PS Proposed pumping station
- Proposed rising mains
- LW Proposed landfill sealed Leachate wells
- PI Proposed petrol interceptor
- DIV Proposed surface water diversion location
- Order Limits
- Existing Landfill Zone
- Proposed Permeable Paving
- Proposed Underground Storage System
- Proposed Infiltration Basin
- Proposed Rain Water Harvesting Tank
- Proposed Attenuation Tank
- Proposed Polluted Tank

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

NOTES:

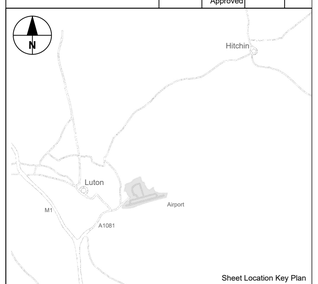
- ALL DRAINAGE ELEMENTS SHOWN ARE INDICATIVE AND SUBJECT TO DETAIL DESIGN.
- ALL DIMENSIONS SHOWN ARE IN METRES UNLESS SHOWN OTHERWISE.
- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1220 HAS BEEN USED AS A BACKGROUND.
- LEVELS OF ALL GROUND INCLUDING ROADS AND PAVEMENTS, DRAINAGE INCLUDING CONNECTIONS, AND UTILITIES SUBJECT TO DETAIL DESIGN. SUBSEQUENT EFFECT ON DRAINAGE ALSO SUBJECT TO DETAIL DESIGN.
- ALL FLOW RATES TO BE CALCULATED AND CONFIRMED.
- UPDATED SIZE AND CAPACITY OF WATER TREATMENT PLANT (WTP) SUBJECT TO DETAIL DESIGN.
- CONNECTION TO THAMES WATER SYSTEM OUTLINED IN DRAINAGE DESIGN STATEMENT.
- POTABLE WATER SUPPLY FROM AFFINITY WATER.
- UPDATED TANK SIZES SUBJECT TO DETAIL DESIGN.
- SIZE AND LOCATION OF PUMPS TO BE DETERMINED AT DETAILED DESIGN STAGE.

Abbreviations:

AW	-	Affinity Water
DIV	-	Diversion Location
EWS	-	Emergency Water Supply
FW	-	Foul Water
LW	-	Leachate Wells
PI	-	Petrol Interceptor
PS	-	Pumping Station
PVC	-	Polyvinyl Chloride
RWH	-	Rainwater Harvesting
SW	-	Surface Water
TW	-	Thames Water

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



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Drawing Title

OVERVIEW LAYOUT
FOUL/SURFACE WATER DRAINAGE ASSESSMENT PHASE 1

Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:5000	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5501	P01

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

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- LEVELS OF ALL GROUND INCLUDING ROADS AND PAVEMENTS, DRAINAGE INCLUDING CONNECTIONS, AND UTILITIES SUBJECT TO DETAIL DESIGN. SUBSEQUENT EFFECT ON DRAINAGE ALSO SUBJECT TO DETAIL DESIGN.
- ALL FLOW RATES TO BE CALCULATED AND CONFIRMED.
- UPDATED SIZE AND CAPACITY OF WATER TREATMENT PLANT (WTP) SUBJECT TO DETAIL DESIGN.
- CONNECTION TO THAMES WATER SYSTEM OUTLINED IN DRAINAGE DESIGN STATEMENT.
- POTABLE WATER SUPPLY FROM AFFINITY WATER.
- UPDATED TANK SIZES SUBJECT TO DETAIL DESIGN.
- SIZE AND LOCATION OF PUMPS TO BE DETERMINED AT DETAILED DESIGN STAGE.

Abbreviations:

AW	-	Affinity Water
DIV	-	Diversion Location
EWS	-	Emergency Water Supply
FW	-	Foul Water
LW	-	Leachate Wells
PI	-	Petrol Interceptor
PS	-	Pumping Station
PVC	-	Polyvinyl Chloride
RWH	-	Rainwater Harvesting
SW	-	Surface Water
TW	-	Thames Water

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 Thames Water system at limited rate.

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

Landfill Zone.

Landfill Zone.

Rising Main to connect to existing FW drainage to the north

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

EWS

Emergency Water Supply tank Fire training ground 23,000 litres

Attenuation tank under apron. Estimated capacity 3980m3

Polluted tank under apron. Estimated capacity 1080m³

Connection to existing soakaway

Class 1 interceptor

Emergency Water Supply tank end of runway 60,000 litres

EWS

Emergency Water Supply tank Fire station 120,000 litres

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

fall

terminal to
e to
ct to

0 50 100 150 200 250 m

SCALE 1 : 2500

LEGEND

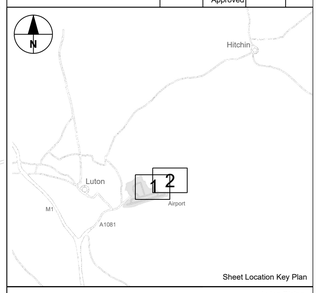
- Existing surface water drain with inspection chamber
- Existing foul water drain with inspection chamber
- Redundant pipe
- Proposed RWH surface water drain
- Proposed surface water drain with inspection chamber
- Large proposed surface water linear drainage conduit/ channel with inspection chamber
- Proposed foul water drain with inspection chamber
- Proposed airside drainage network

- 162.095 Proposed spot level
- 162.095 Existing spot level
- EWS Approx. position of existing Emergency Water Supply tanks
- PS Proposed pumping station
- Proposed rising mains
- LW Proposed landfill sealed Leachate wells
- PI Proposed petrol interceptor
- DIV Proposed surface water diversion location

- Order Limits
- Existing Landfill Zone
- Proposed Permeable Paving
- Proposed Underground Storage System
- Proposed Infiltration Basin
- Proposed Rain Water Harvesting Tank
- Proposed Attenuation Tank
- Proposed Polluted Tank

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	31/03/20	P01



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Drawing Title

OVERVIEW LAYOUT
FOUL/SURFACE WATER DRAINAGE
ASSESSMENT PHASE 1
SHEET 1 OF 2

Purpose of issue				Suitability	
DCO SUBMISSION				S6	
Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:2500	A1
DCO Application Ref.	APFP Regulation		DCO Document Ref.		
TR020001	5(2)(o)		TR020001/APP/5.02		
Drawing Number				Revision	
LLADCO-3C-CAP-INF-DRN-DR-CE-5502				P01	

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- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1220 HAS BEEN USED AS A BACKGROUND.
- LEVELS OF ALL GROUND INCLUDING ROADS AND PAVEMENTS, DRAINAGE INCLUDING CONNECTIONS, AND UTILITIES SUBJECT TO DETAIL DESIGN. SUBSEQUENT EFFECT ON DRAINAGE ALSO SUBJECT TO DETAIL DESIGN.
- ALL FLOW RATES TO BE CALCULATED AND CONFIRMED.
- UPDATED SIZE AND CAPACITY OF WATER TREATMENT PLANT (WTP) SUBJECT TO DETAIL DESIGN.
- CONNECTION TO THAMES WATER SYSTEM OUTLINED IN DRAINAGE DESIGN STATEMENT.
- POTABLE WATER SUPPLY FROM AFFINITY WATER.
- UPDATED TANK SIZES SUBJECT TO DETAIL DESIGN.
- SIZE AND LOCATION OF PUMPS TO BE DETERMINED AT DETAILED DESIGN STAGE.

Abbreviations:

AW	-	Affinity Water
DIV	-	Diversion Location
EWS	-	Emergency Water Supply
FW	-	Foul Water
LW	-	Leachate Wells
PI	-	Petrol Interceptor
PS	-	Pumping Station
PVC	-	Polyvinyl Chloride
RWH	-	Rainwater Harvesting
SW	-	Surface Water
TW	-	Thames Water

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01

scharge into the existing network to
m at limited rate.

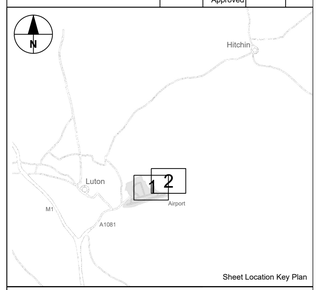
' for Tank details.

Landfill Zone.

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

ray

0 50 100 150 200 250 m
SCALE 1 : 2500



Sheet Location Key Plan

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

Luton Rising
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London Luton Airport Expansion Development Consent Order

Drawing Title

OVERVIEW LAYOUT
FOUL/SURFACE WATER DRAINAGE
ASSESSMENT PHASE 1
SHEET 2 OF 2

Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:2500	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number: LLADCO-3C-CAP-INF-DRN-DR-CE-5503
Project – Phase – Originator – Asset/Zone – Sub Asset – Type – Discp. – Number

Revision: P01

LEGEND

- Existing surface water drain with inspection chamber
- Existing foul water drain with inspection chamber
- Redundant pipe
- Proposed RWH surface water drain
- Proposed surface water drain with inspection chamber
- Large proposed surface water linear drainage conduit/ channel with inspection chamber
- Proposed foul water drain with inspection chamber
- Proposed airside drainage network

- 162.095 Proposed spot level
- 162.095 Existing spot level
- EWS Approx. position of existing Emergency Water Supply tanks
- PS Proposed pumping station
- Proposed rising mains
- LW Proposed landfill sealed Leachate wells
- PI Proposed petrol interceptor
- DIV Proposed surface water diversion location

- Order Limits
- Existing Landfill Zone
- Proposed Permeable Paving
- Proposed Underground Storage System
- Proposed Infiltration Basin
- Proposed Rain Water Harvesting Tank
- Proposed Attenuation Tank
- Proposed Polluted Tank

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

NOTES:

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- ALL FLOW RATES TO BE CALCULATED AND CONFIRMED.
- UPDATED SIZE AND CAPACITY OF WATER TREATMENT PLANT (WTP) SUBJECT TO DETAIL DESIGN.
- CONNECTION TO THAMES WATER SYSTEM OUTLINED IN DRAINAGE DESIGN STATEMENT.
- POTABLE WATER SUPPLY FROM AFFINITY WATER.
- UPDATED TANK SIZES SUBJECT TO DETAIL DESIGN.
- SIZE AND LOCATION OF PUMPS TO BE DETERMINED AT DETAILED DESIGN STAGE.
- AIRFIELD DRAINAGE ROUTES SUBJECT TO DETAIL DESIGN.
- DRAINAGE LAYOUT IN DARK GREY REFERS TO PREVIOUS ASSESSMENT PHASE INSTALLATION. REFER TO DRAWING LLADCO-3C-CAP-INF-DRN-DR-CE-5501.

Abbreviations:

AW	-	Affinity Water
DIV	-	Diversion Location
EWS	-	Emergency Water Supply
FW	-	Foul Water
LW	-	Leachate Wells
PI	-	Petrol Interceptor
PS	-	Pumping Station
PVC	-	Polyvinyl Chloride
RWH	-	Rainwater Harvesting
SW	-	Surface Water
TW	-	Thames Water

Interface with Green Horizons Park SW drainage to be coordinated

Rain water harvesting tank (formerly attenuation tank installed in assessment Phase 1) to take runoff from terminal 2 roof and other buildings

Greywater Storage Tank below Terminal 2. Capacity TBC.

Landfill Zone.

RWH tanks installed in assessment Phase 1. Refer to drawing LLADCO-3C-CAP-INF-DRN-DR-CE-5501.

Foul disposal point for aircraft - connection to landside

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

fall

Diverted existing drainage (approximately 26 ha)

Emergency Water Supply tank Fire Station 120,000 litres

EWS

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.

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

Emergency Water Supply tank end of runway 60,000 litres

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

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)

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.

Permeable Paving Area = 23000m²

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.

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

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

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

Fuel Storage Facility 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. Partly attenuated to harvest surface water for treatement into WTP and used in T2. Design based on 1:100 year return period +40%CC.
(Refer to drawing 5510).

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

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.

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. (Further information / survey of existing drainage is required).

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

0 100 200 300 400 500 m

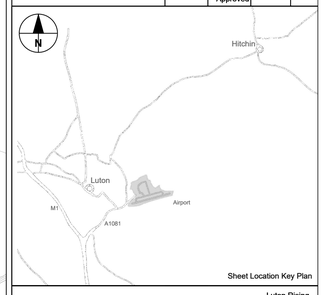
SCALE 1 : 5000

LEGEND

- Existing surface water drain with inspection chamber
- Existing foul water drain with inspection chamber
- Redundant pipe
- Proposed RWH surface water drain
- Proposed surface water drain with inspection chamber
- Large proposed surface water linear drainage conduit/ channel with inspection chamber
- Proposed foul water drain with inspection chamber
- Proposed airside drainage network
- 162.095 Proposed spot level
- 162.095 Existing spot level
- EWS Approx. position of existing Emergency Water Supply tanks
- PS Proposed pumping station
- Proposed rising mains
- LW Proposed landfill sealed Leachate wells
- PI Proposed petrol interceptor
- DIV Proposed surface water diversion location
- Order Limits
- Existing Landfill Zone
- Proposed Permeable Paving
- Proposed Underground Storage System
- Proposed Infiltration Basin
- Proposed Rain Water Harvesting Tank
- Proposed Attenuation Tank
- Proposed Polluted Tank

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked Approved	Date	Rev.
DCO SUBMISSION	SK	ZC MS	27/02/23	P01



Sheet Location Key Plan

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London Luton Airport Expansion Development Consent Order

Drawing Title

OVERVIEW LAYOUT
FOUL/SURFACE WATER DRAINAGE ASSESSMENT PHASE 2A

Purpose of issue				Suitability	
DCO SUBMISSION				S6	
Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:5000	A1
DCO Application Ref.	APFP Regulation		DCO Document Ref.		
TR020001	5(2)(o)		TR020001/APP/5.02		

Drawing Number: LLADCO-3C-CAP-INF-DRN-DR-CE-5504 — Revision: P01

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

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

N

NOTES:

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- CONNECTION TO THAMES WATER SYSTEM OUTLINED IN DRAINAGE DESIGN STATEMENT.
- POTABLE WATER SUPPLY FROM AFFINITY WATER.
- UPDATED TANK SIZES SUBJECT TO DETAIL DESIGN.
- SIZE AND LOCATION OF PUMPS TO BE DETERMINED AT DETAILED DESIGN STAGE.
- AIRFIELD DRAINAGE ROUTES SUBJECT TO DETAIL DESIGN.
- DRAINAGE LAYOUT IN DARK GREY REFERS TO PREVIOUS ASSESSMENT PHASE INSTALLATION. REFER TO DRAWING LLADCO-3C-CAP-INF-DRN-DR-CE-5501.

Abbreviations:

AW	-	Affinity Water
DIV	-	Diversion Location
EWS	-	Emergency Water Supply
FW	-	Foul Water
LW	-	Leachate Wells
PI	-	Petrol Interceptor
PS	-	Pumping Station
PVC	-	Polyvinyl Chloride
RWH	-	Rainwater Harvesting
SW	-	Surface Water
TW	-	Thames Water

Interface with Green Horizons Park SW drainage to be coordinated

Foul disposal point for aircraft - connection to landside

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

Diverted existing drainage (approximately 26 ha)

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.

Permeable Paving Area = 23000m²

Landfill Zone.

IL out=120.750

Treated effluent infiltration tank (TANK 3):
2.5m diameter Twinstore perforated pipes with 41% surround void ratio by Tubosider Ltd. require 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.

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

Penstock inspection chamber to div package pumping station, dependin

Fuel Storage Facility

Fuel Storage Facility delivery area retention tank. Adjacent roads drained via parallel

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.

Connection point for airside drainage.

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.

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

Emergency Water Supply tank end of runway 60,000 litres

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.

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

Emergency Water Supply tank end of runway

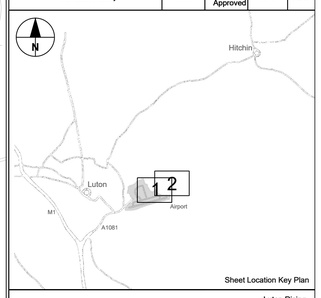
0 50 100 150 200 250 m
SCALE 1 : 2500

LEGEND

- Existing surface water drain with inspection chamber
- Existing foul water drain with inspection chamber
- Redundant pipe
- Proposed RWH surface water drain
- Proposed surface water drain with inspection chamber
- Large proposed surface water linear drainage conduit/ channel with inspection chamber
- Proposed foul water drain with inspection chamber
- Proposed airside drainage network
- 162.095 Proposed spot level
- 162.095 Existing spot level
- EWS Approx. position of existing Emergency Water Supply tanks
- PS Proposed pumping station
- Proposed rising mains
- LW Proposed landfill sealed Leachate wells
- PI Proposed petrol interceptor
- DIV Proposed surface water diversion location
- Order Limits
- Existing Landfill Zone
- Proposed Permeable Paving
- Proposed Underground Storage System
- Proposed Infiltration Basin
- Proposed Rain Water Harvesting Tank
- Proposed Attenuation Tank
- Proposed Polluted Tank

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked Approved	Date	Rev.
DCO SUBMISSION	SK	ZC MS	27/02/23	P01



Sheet Location Key Plan

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

London Luton Airport Expansion Development Consent Order

Drawing Title

OVERVIEW LAYOUT
FOUL/SURFACE WATER DRAINAGE ASSESSMENT PHASE 2A
SHEET 1 OF 2

Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:2500	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number: LLADCO-3C-CAP-INF-DRN-DR-CE-5505 — Revision: P01

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

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

NOTES:

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- CONNECTION TO THAMES WATER SYSTEM OUTLINED IN DRAINAGE DESIGN STATEMENT.
- POTABLE WATER SUPPLY FROM AFFINITY WATER.
- UPDATED TANK SIZES SUBJECT TO DETAIL DESIGN.
- SIZE AND LOCATION OF PUMPS TO BE DETERMINED AT DETAILED DESIGN STAGE.
- AIRFIELD DRAINAGE ROUTES SUBJECT TO DETAIL DESIGN.
- DRAINAGE LAYOUT IN DARK GREY REFERS TO PREVIOUS ASSESSMENT PHASE INSTALLATION. REFER TO DRAWING LLADCO-3C-CAP-INF-DRN-DR-CE-5501.

Abbreviations:

AW	-	Affinity Water
DIV	-	Diversion Location
EWS	-	Emergency Water Supply
FW	-	Foul Water
LW	-	Leachate Wells
PI	-	Petrol Interceptor
PS	-	Pumping Station
PVC	-	Polyvinyl Chloride
RWH	-	Rainwater Harvesting
SW	-	Surface Water
TW	-	Thames Water

Underground storage system (TANK 1)
3m diameter Hellbore 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)

2. Capacity TBC.

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 = 23000m²

Landfill Zone.

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.

IL out=120.750

PS

LW

PI

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

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

Fuel Storage Facility

Fuel Storage Facility delivery area drained by conventiona… …h drains to below ground retention tank.
Adjacent roads drained via parallel swale and filter under… …on basin.

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.

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.
Partly attenuated to harvest surface water for treatement into WTP and used in T2.
Design based on 1:100 year return period +40%CC.
(Refer to drawing 5510).

EWS

Emergency Water Supply tank end of runway 60,000 litres

CD5C2

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

CD1C5 2700Ø
CD3C1 2700Ø
CD2C2 2700Ø
CD2C1 1500Ø
1500Ø
2700Ø
2700Ø
225 PVC
225 PVC

0 50 100 150 200 250 m
SCALE 1 : 2500

LEGEND

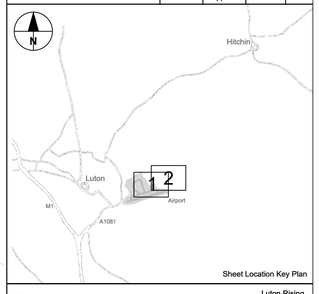
- Existing surface water drain with inspection chamber
- Existing foul water drain with inspection chamber
- Redundant pipe
- Proposed RWH surface water drain
- Proposed surface water drain with inspection chamber
- Large proposed surface water linear drainage conduit/ channel with inspection chamber
- Proposed foul water drain with inspection chamber
- Proposed airside drainage network

- 162.095 Proposed spot level
- 162.095 Existing spot level
- EWS Approx. position of existing Emergency Water Supply tanks
- PS Proposed pumping station
- Proposed rising mains
- LW Proposed landfill sealed Leachate wells
- PI Proposed petrol interceptor
- DIV Proposed surface water diversion location

- Order Limits
- Existing Landfill Zone
- Proposed Permeable Paving
- Proposed Underground Storage System
- Proposed Infiltration Basin
- Proposed Rain Water Harvesting Tank
- Proposed Attenuation Tank
- Proposed Polluted Tank

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



Sheet Location Key Plan

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Drawing Title

OVERVIEW LAYOUT FOUL/SURFACE WATER DRAINAGE ASSESSMENT PHASE 2A SHEET 2 OF 2

Purpose of issue				Suitability
DCO SUBMISSION				S6
Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:2500	A1
DCO Application Ref.	APFP Regulation	DCO Document Ref.			
TR020001	5(2)(o)	TR020001/APP/5.02			

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5506	P01

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

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

NOTES:

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- DRAINAGE LAYOUT IN DARK GREY REFERS TO PREVIOUS ASSESSMENT PHASE INSTALLATION. REFER TO DRAWING LLADCO-3C-CAP-INF-DRN-DR-CE-5504.

Abbreviations:

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DIV	-	Diversion Location
EWS	-	Emergency Water Supply
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ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01

Sheet Location Key Plan

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

London Luton Airport Expansion Development Consent Order

Drawing Title

OVERVIEW LAYOUT
FOUL/SURFACE WATER DRAINAGE
ASSESSMENT PHASE 2B

Purpose of issue				Suitability	
DCO SUBMISSION				S6	
Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:5000	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5507	P01

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

0 100 200 300 400 500 m
SCALE 1 : 5000

LEGEND

- Existing surface water drain with inspection chamber
- Existing foul water drain with inspection chamber
- Redundant pipe
- Proposed RWH surface water drain
- Proposed surface water drain with inspection chamber
- Large proposed surface water linear drainage conduit/ channel with inspection chamber
- Proposed foul water drain with inspection chamber
- Proposed airside drainage network
- 162.095 Proposed spot level
- 162.095 Existing spot level
- EWS Approx. position of existing Emergency Water Supply tanks
- PS Proposed pumping station
- Proposed rising mains
- LW Proposed landfill sealed Leachate wells
- PI Proposed petrol Interceptor
- DIV Proposed surface water diversion location
- Order Limits
- Existing Landfill Zone
- Proposed Permeable Paving
- Proposed Underground Storage System
- Proposed Infiltration Basin
- Proposed Rain Water Harvesting Tank
- Proposed Attenuation Tank
- Proposed Polluted Tank

Interface with Green Horizons Park SW drainage to be coordinated

Rain water harvesting tank (formerly attenuation tank installed in assessment Phase 1) to take runoff from terminal 2 roof and other buildings

Greywater Storage Tank below Terminal 2. Capacity TBC.

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)

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.

Landfill Zone.

Permeable Paving Area = 23000m²

RWH tanks installed in assessment Phase 1. Refer to drawing LLADCO-3C-CAP-INF-DRN-DR-CE-5501.

Foul disposal point for aircraft - connection to landside

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

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

Diverted existing drainage (approximately 26 ha)

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

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

Fuel Storage Facility 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. Partly attenuated to harvest surface water for treatement into WTP and used in T2. Design based on 1:100 year return period +40%CC.
(Refer to drawing 5510).

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.

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.

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 water treatment plant. Otherwise flows directed to the existing soakaway.

Contaminated water collection and holding tank

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

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

Soakaway

Full retention oil interceptor

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.

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

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. (Further information / survey of existing drainage is required).

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 water treatement plant - details tbc.

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

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

N

NOTES:

- ALL DRAINAGE ELEMENTS SHOWN ARE INDICATIVE AND SUBJECT TO DETAIL DESIGN.
- ALL DIMENSIONS SHOWN ARE IN METRES UNLESS SHOWN OTHERWISE.
- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1260 HAS BEEN USED AS A BACKGROUND.
- LEVELS OF ALL GROUND INCLUDING ROADS AND PAVEMENTS, DRAINAGE INCLUDING CONNECTIONS, AND UTILITIES SUBJECT TO DETAIL DESIGN. SUBSEQUENT EFFECT ON DRAINAGE ALSO SUBJECT TO DETAIL DESIGN.
- ALL FLOW RATES TO BE CALCULATED AND CONFIRMED.
- UPDATED SIZE AND CAPACITY OF WATER TREATMENT PLANT (WTP) SUBJECT TO DETAIL DESIGN.
- CONNECTION TO THAMES WATER SYSTEM OUTLINED IN DRAINAGE DESIGN STATEMENT.
- POTABLE WATER SUPPLY FROM AFFINITY WATER.
- UPDATED TANK SIZES SUBJECT TO DETAIL DESIGN.
- SIZE AND LOCATION OF PUMPS TO BE DETERMINED AT DETAILED DESIGN STAGE.
- AIRFIELD DRAINAGE ROUTES SUBJECT TO DETAIL DESIGN.
- DRAINAGE LAYOUT IN DARK GREY REFERS TO PREVIOUS ASSESSMENT PHASE INSTALLATION. REFER TO DRAWING LLADCO-3C-CAP-INF-DRN-DR-CE-5504.

Abbreviations:

AW	-	Affinity Water
DIV	-	Diversion Location
EWS	-	Emergency Water Supply
FW	-	Foul Water
LW	-	Leachate Wells
PI	-	Petrol Interceptor
PS	-	Pumping Station
PVC	-	Polyvinyl Chloride
RWH	-	Rainwater Harvesting
SW	-	Surface Water
TW	-	Thames Water

Interface with Green Horizons Park SW drainage to be coordinated

Rain water harvesting tank installed in assessment Phase 1) to be terminal 2 roof and other buildings .

Greywater Storage Tank below Terminal 2. Capacity TBC.

(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

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. require 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 = 23000m²

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.

IL out=120.750

PS

Landfill Zone.

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

Penstock inspection chamber to div package pumping station, dependin

Fuel Storage Facility

Fuel Storage Facility delivery area retention tank.
Adjacent roads drained via parallel

Connection point for airside drainage.

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.

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

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

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

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

Emergency Water Supply tank end of runway 60,000 litres

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

Emergency Water Supply tank end of runway

EWS

0 50 100 150 200 250 m
SCALE 1 : 2500

LEGEND

- Existing surface water drain with inspection chamber
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- Redundant pipe
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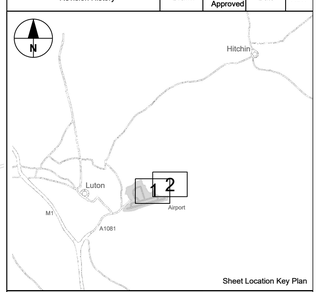
ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



Sheet Location Key Plan

Luton Rising
Our airport. Our community. Our planet.

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Kimpton Road, Luton, LU2 0LA
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London Luton Airport Expansion Development Consent Order

Drawing Title

OVERVIEW LAYOUT
FOUL/SURFACE WATER DRAINAGE
ASSESSMENT PHASE 2B
SHEET 1 OF 2

Purpose of issue				Suitability	
DCO SUBMISSION				S6	
Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:2500	A1
DCO Application Ref.	APFP Regulation		DCO Document Ref.		
TR020001	5(2)(o)		TR020001/APP/5.02		
Drawing Number				Revision	
LLADCO-3C-CAP-INF-DRN-DR-CE-5508				P01	

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

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Approx 70,900m³.
(Refer to drawing LLADCO-3C-CAP-INF-DRN-M2-CE-5510)

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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.

Permeable Paving
Area = 23000m²

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.

Landfill Zone.

IL out= 120.750

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

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

Fuel Storage Facility

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Adjacent roads drained via parallel swale and filter under... on basin.

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Connection point for airside drainage.

Infiltration Basin (TANK 2)
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(Refer to drawing 5510).

EWS

Emergency Water Supply tank end of runway 60,000 litres

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

CD1C5 2700Ø
CD3C1 2700Ø
CD2C2 1500Ø
CD2C1 1500Ø
CD5C2 2700Ø
2700Ø
2700Ø
2700Ø
2700Ø
150 PVC
225 PVC

tion interceptors
ves 5.708ha
350/1CSC (x2)
wed.

0 50 100 150 200 250 m
SCALE 1 : 2500

LEGEND

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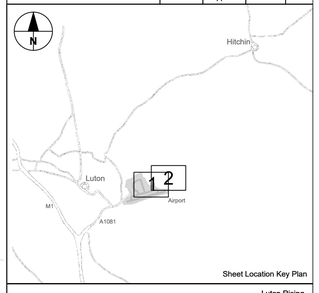
ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



Sheet Location Key Plan

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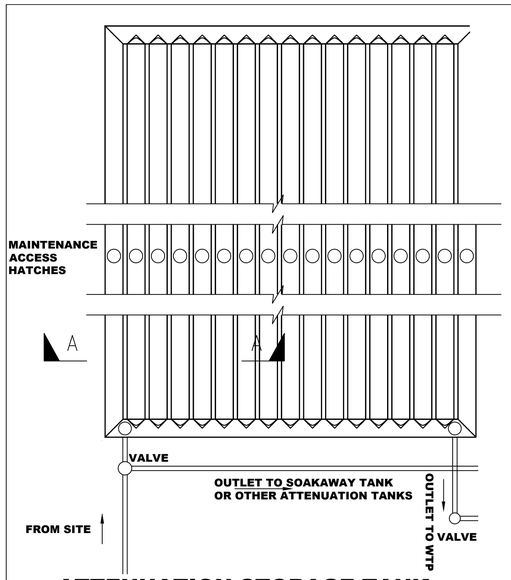
London Luton Airport Expansion Development Consent Order

Drawing Title

OVERVIEW LAYOUT
FOUL/SURFACE WATER DRAINAGE
ASSESSMENT PHASE 2B
SHEET 2 OF 2

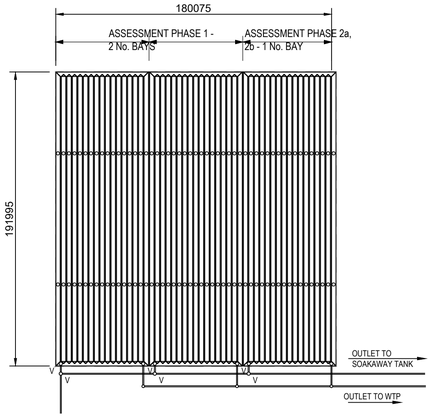
Purpose of issue				Suitability
DCO SUBMISSION				S6
Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:2500	A1
DCO Application Ref.	APFP Regulation	DCO Document Ref.		
TR020001	5(2)(o)	TR020001/APP/5.02		
Drawing Number				Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5509				P01

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



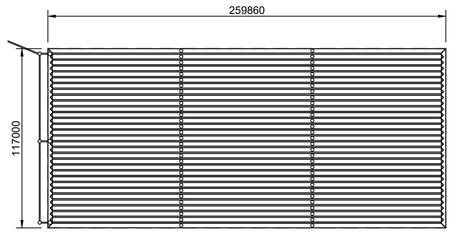
ATTENUATION STORAGE TANK (TANK 1) TYPICAL BAY

(1:500)



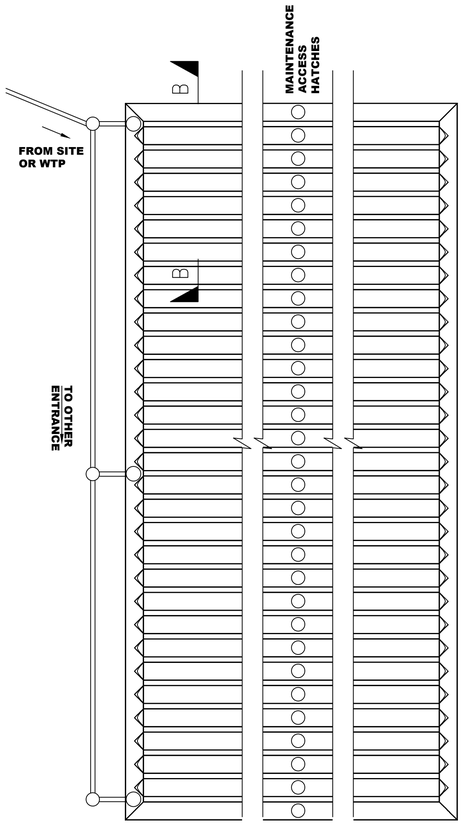
ATTENUATION STORAGE TANK (TANK 1)

(1:2000)



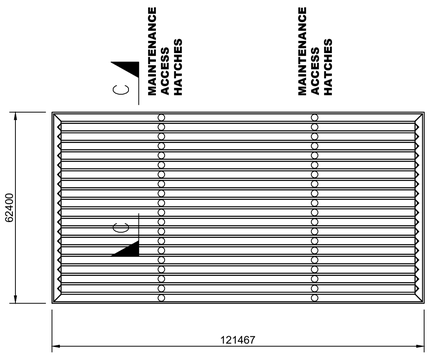
INFILTRATION BASIN (TANK 2) (SOAKAWAY TANK)

(1:2000)



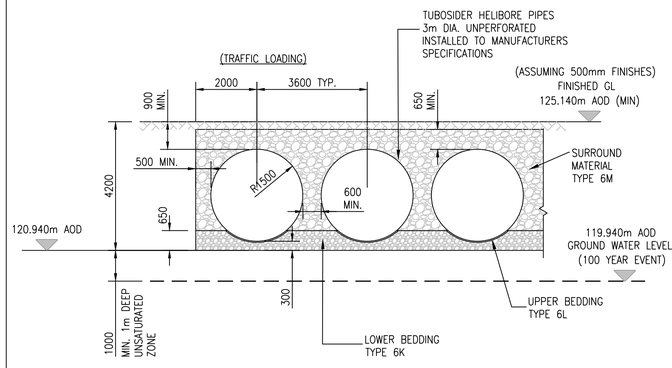
INFILTRATION BASIN (TANK 2) (SOAKAWAY TANK TYPICAL BAY)

(1:500)



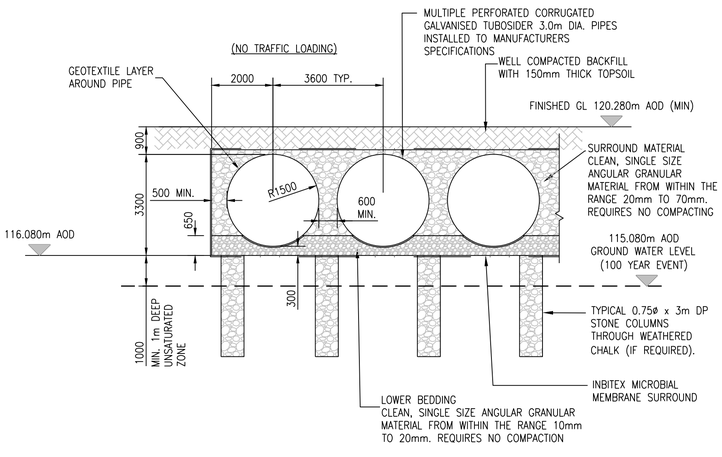
INFILTRATION BASIN (TANK 3) (SOAKAWAY TANK)

(1:2000)



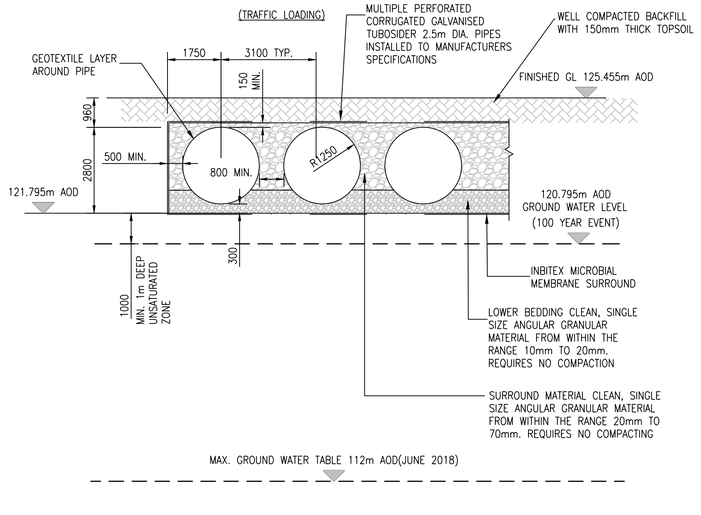
SECTION A-A ATTENUATION STORAGE TANKS (TANK 1)

(1:100)



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

(1:100)



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

(1:100)

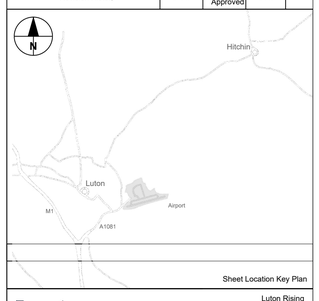
All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

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 MILLIMETRES UNLESS SHOWN OTHERWISE.

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



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London Luton Airport Expansion Development Consent Order

Drawing Title

TYPICAL SECTIONS INFILTRATION BASINS & ATTENUATION TANK

Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	AS SHOWN	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5510	P01

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

Notes:
- Layout is to be confirmed following updated calculations and strategy at detailed design stage.

Fire Water Requirement 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 1,500L/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 Thames Water (TW) system TBC.
- Potable water supply from Affinity Water (AW) TBC.
- Updated tank size.
- Pumping requirements to be outlined at detailed design stage following earthworks and finished levels design.

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

0 100 200 300 400 500 m
SCALE 1 : 5000

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

NOTES:

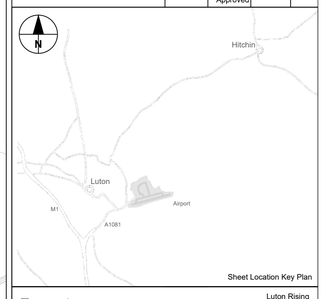
- NETWORK SHOWN IS INDICATIVE AND SUBJECT TO ADJUSTMENTS.
- PROPOSED POTABLE WATER NETWORK DOES NOT CONNECT TO THE EXISTING NETWORK AT THIS MOMENT. POINT OF CONNECTION REQUIREMENT TO BE CONFIRMED PENDING EXISTING NETWORK FINDINGS.
- ALL DIMENSIONS SHOWN ARE IN METRES UNLESS SHOWN OTHERWISE.
- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1240 HAS BEEN USED AS A BACKGROUND.
- ALL PROPOSALS SHOWN ARE INDICATIVE FOR THE PURPOSES OF ASSESSMENT ONLY.
- THE PROPOSALS SHOWN RELATE TO THE MAIN APPLICATION SITE ONLY.

LEGEND

- Proposed Potable Water Mains (Indicative and subject to detailed design)
- Proposed New Fire Main (Indicative and subject to detailed design)
- Proposed indicative access points along the proposed potable water main.
- Indicative hydrant location (within 90m of building entrance or dry riser inlet (where provided)).
- Proposed Central Supply Tank
- Proposed Fuel Storage Facility Firefighting Main
- Order Limits
- Existing Landfill Zone

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



Sheet Location Key Plan

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

Luton Rising — Our airport. Our community. Our planet.

London Luton Airport Expansion Development Consent Order

Drawing Title

OVERVIEW LAYOUT
PROPOSED POTABLE AND FIRE WATER
ASSESSMENT PHASE 2A

Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:5000	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5512	P01

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

Notes:

- Layout is to be confirmed following updated calculations and strategy at detailed design stage.

Fire Water Requirement 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 1,500L/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 Thames Water (TW) system TBC.
- Potable water supply from Affinity Water (AW) TBC.
- Updated tank size TBC.
- Pumping requirements to be outlined at detailed design stage following earthworks and finished levels design.

N

0 100 200 300 400 500 m

SCALE 1 : 5000

All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

NOTES:

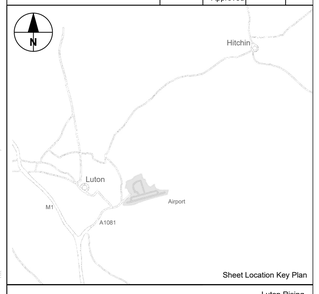
- NETWORK SHOWN IS INDICATIVE AND SUBJECT TO ADJUSTMENTS.
- PROPOSED POTABLE WATER NETWORK DOES NOT CONNECT TO THE EXISTING NETWORK AT THIS MOMENT. POINT OF CONNECTION REQUIREMENT TO BE CONFIRMED PENDING EXISTING NETWORK FINDINGS.
- ALL DIMENSIONS SHOWN ARE IN METRES UNLESS SHOWN OTHERWISE.
- DRAWING LLADCO-3C-CAP-WHS-GEN-DR-AR-1260 HAS BEEN USED AS A BACKGROUND.
- ALL PROPOSALS SHOWN ARE INDICATIVE FOR THE PURPOSES OF ASSESSMENT ONLY.
- THE PROPOSALS SHOWN RELATE TO THE MAIN APPLICATION SITE ONLY.

LEGEND

- Proposed Potable Water Mains Extension (Indicative and subject to detailed design)
- Previously installed network, refer to latest drawing number LLADCO-3C-CAP-INF-DRN-DR-CE-5512
- Proposed indicative access points along the proposed potable water main.
- Previously installed network, refer to latest drawing number LLADCO-3C-CAP-INF-DRN-DR-CE-5512
- Previously Installed Central Supply Tank
- Previously Installed Fuel Storage Facility Firefighting Main
- Order Limits
- Existing Landfill Zone
- Proposed New Fire Main (Indicative and subject to detailed design)

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



Sheet Location Key Plan

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

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London Luton Airport Expansion Development Consent Order

Drawing Title

OVERVIEW LAYOUT
PROPOSED POTABLE AND FIRE WATER
ASSESSMENT PHASE 2B

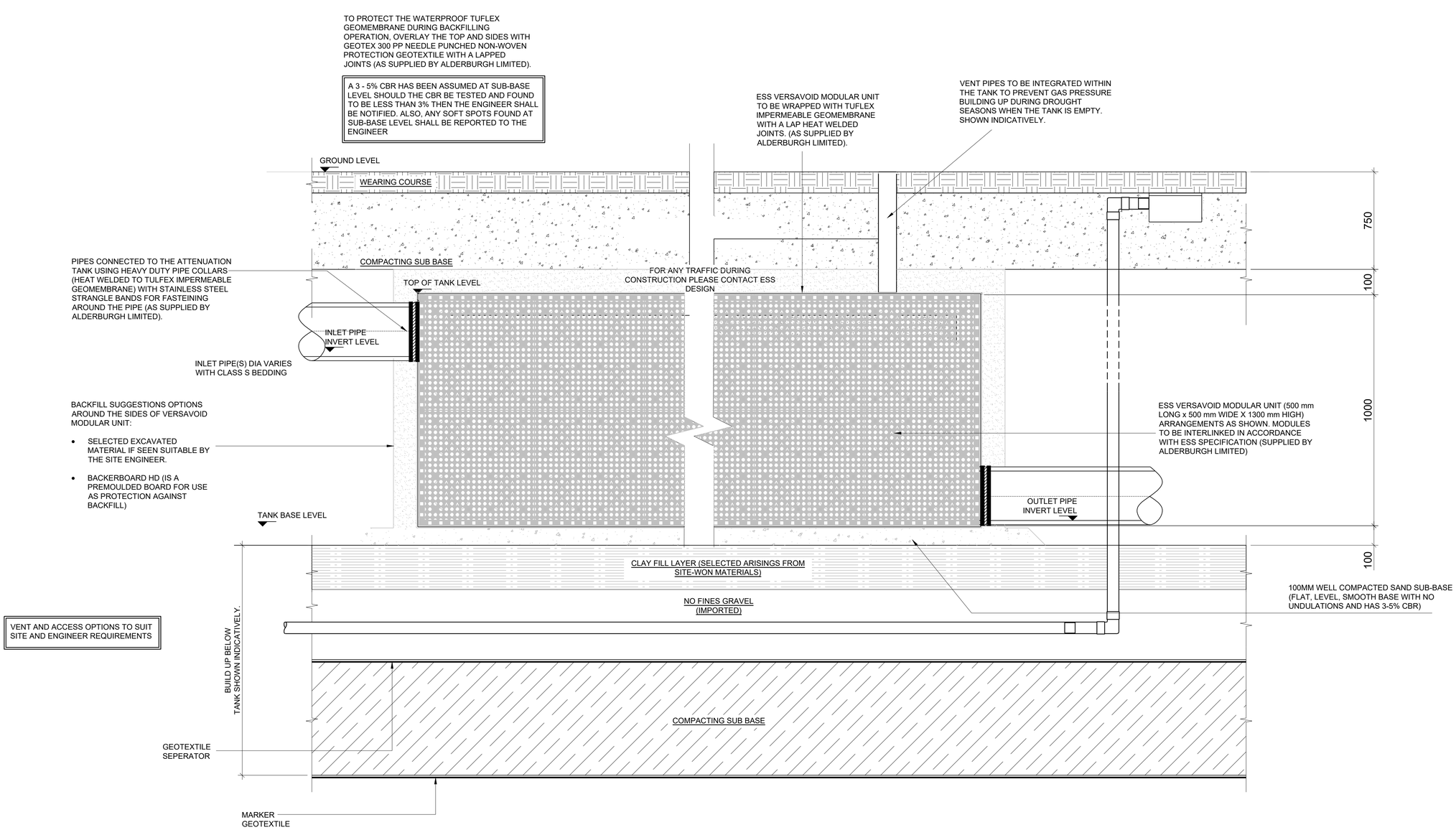
Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	1:5000	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5513	P01

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



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

TYPICAL DETAILS OF STORAGE TANK USING VERSAVOID MODULAR UNITS

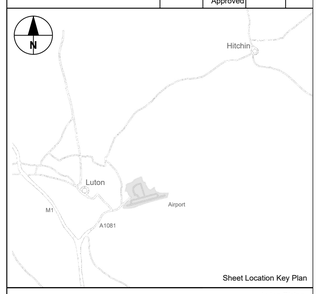
All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

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. ALL DRAINAGE ELEMENTS SHOWN ARE INDICATIVE AND SUBJECT TO ADJUSTMENTS.
4. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS SHOWN OTHERWISE.
5. 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.

ILLUSTRATIVE ONLY

Revision History	Drawn	Checked / Approved	Date	Rev.
DCO SUBMISSION	SK	ZC / MS	27/02/23	P01



Sheet Location Key Plan

Luton Rising
Our airport. Our community. Our planet.

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

London Luton Airport Expansion Development Consent Order

Drawing Title

CAR PARK P7
TANK UNDER CAR PARK
TYPICAL DETAIL

Purpose of issue	Suitability
DCO SUBMISSION	S6

Drawn	Checked	Approved	Date	Scale	Size
SK	ZC	MS	27/02/23	N.T.S	A1

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	5(2)(o)	TR020001/APP/5.02

Drawing Number	Revision
LLADCO-3C-CAP-INF-DRN-DR-CE-5517	P01

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

Appendix C – Thames Water Connection Points

LONDON LUTON AIRPORT - FOUL WATER NETWORK

1:2,500

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 by Veolia, upon receipt of updated network drawings at detailed design stage.

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 by Veolia, upon receipt of updated network drawings at detailed design stage.

Appendix D – Thames Water foul water 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 [redacted]

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

DATED this 15th day of November 1995

1000A

(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

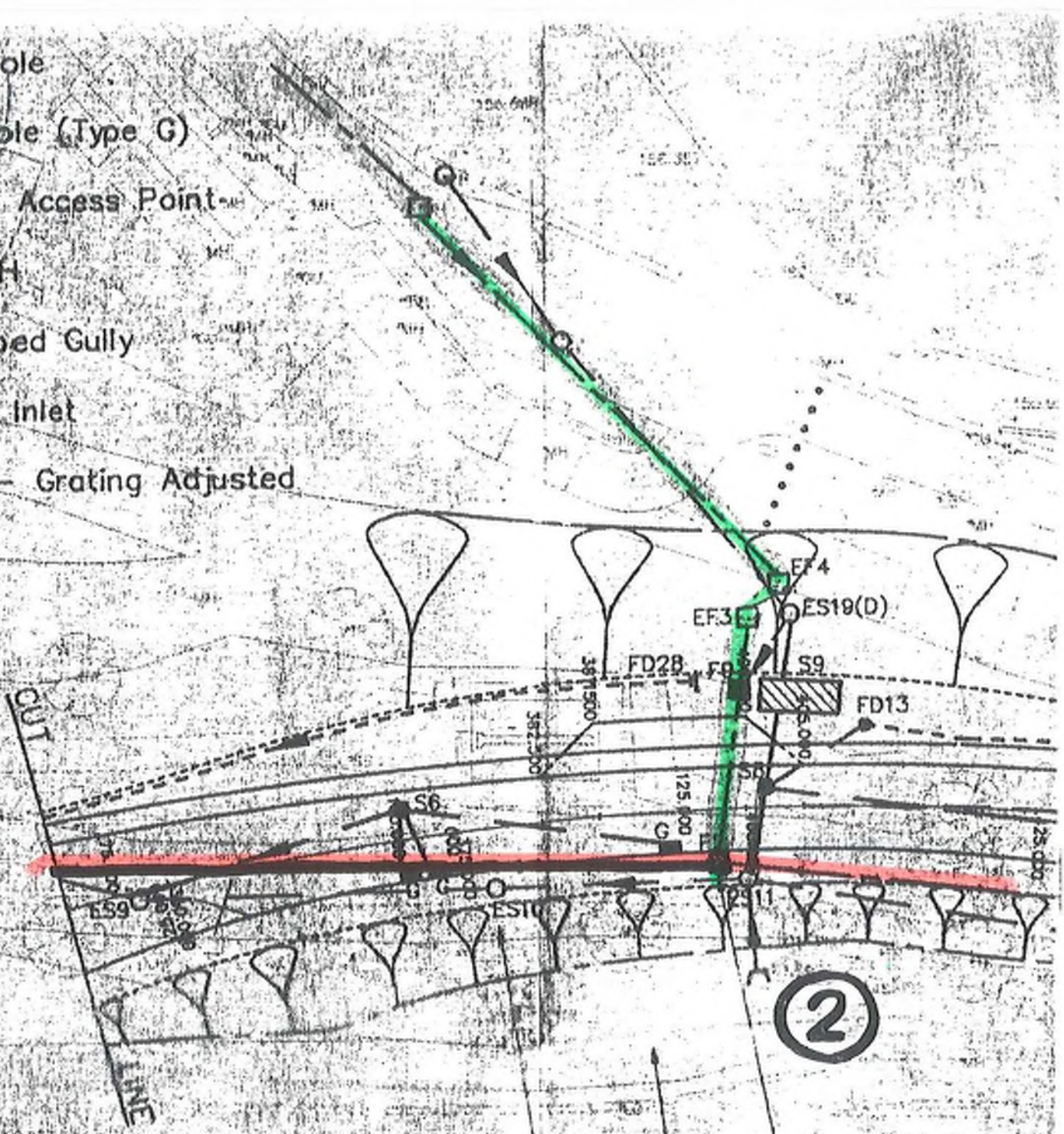
lt Type H

sed Trapped Gully

sed Kerb Inlet

g Gully – Grating Adjusted

g Eye



LTU 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

[redacted]

[redacted]
Mrs D. MOSE
TRADE EFFLUENT CO-ORDINATOR

Thames Water Utilities Limited
Registered in England and Wales No. 2366661
Registered office Nugent House Vastern Road Reading RG1 8DB

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 [redacted]

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.

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:**

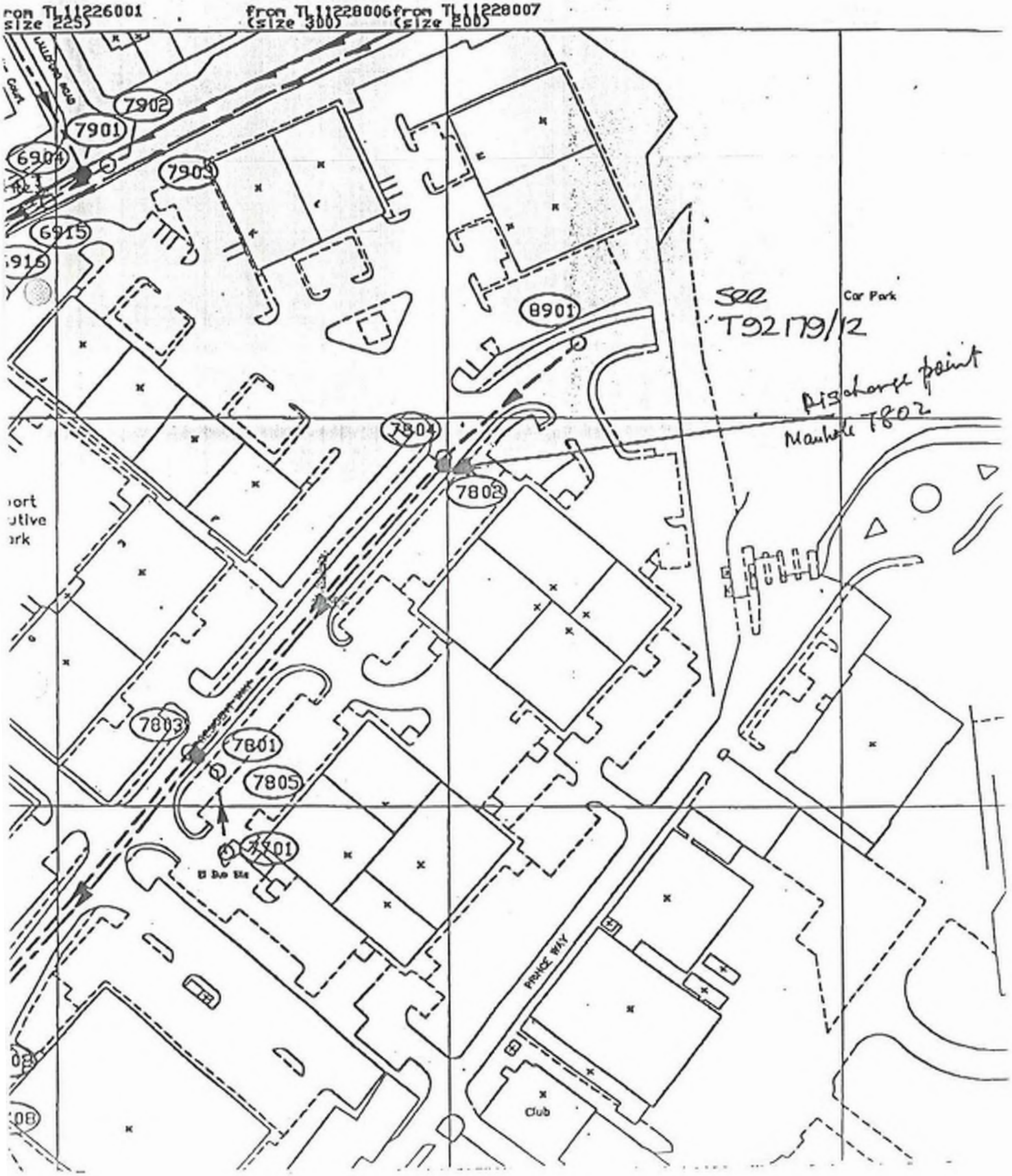
From:	Nem Shah Catchment Quality Control Aylesbury STW Rabans Lane Aylesbury Bucks. HP19 3RY	
Telephone:	01296 435914	Int: 30125
Fax:	01296 431857	Int. 30130

Message:

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

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
7905
6915
8901
See T92179/2
Car Park
Discharge point Manhole T802
7804
7802
7803
7801
7805
7701
PRINCE WAY
Club

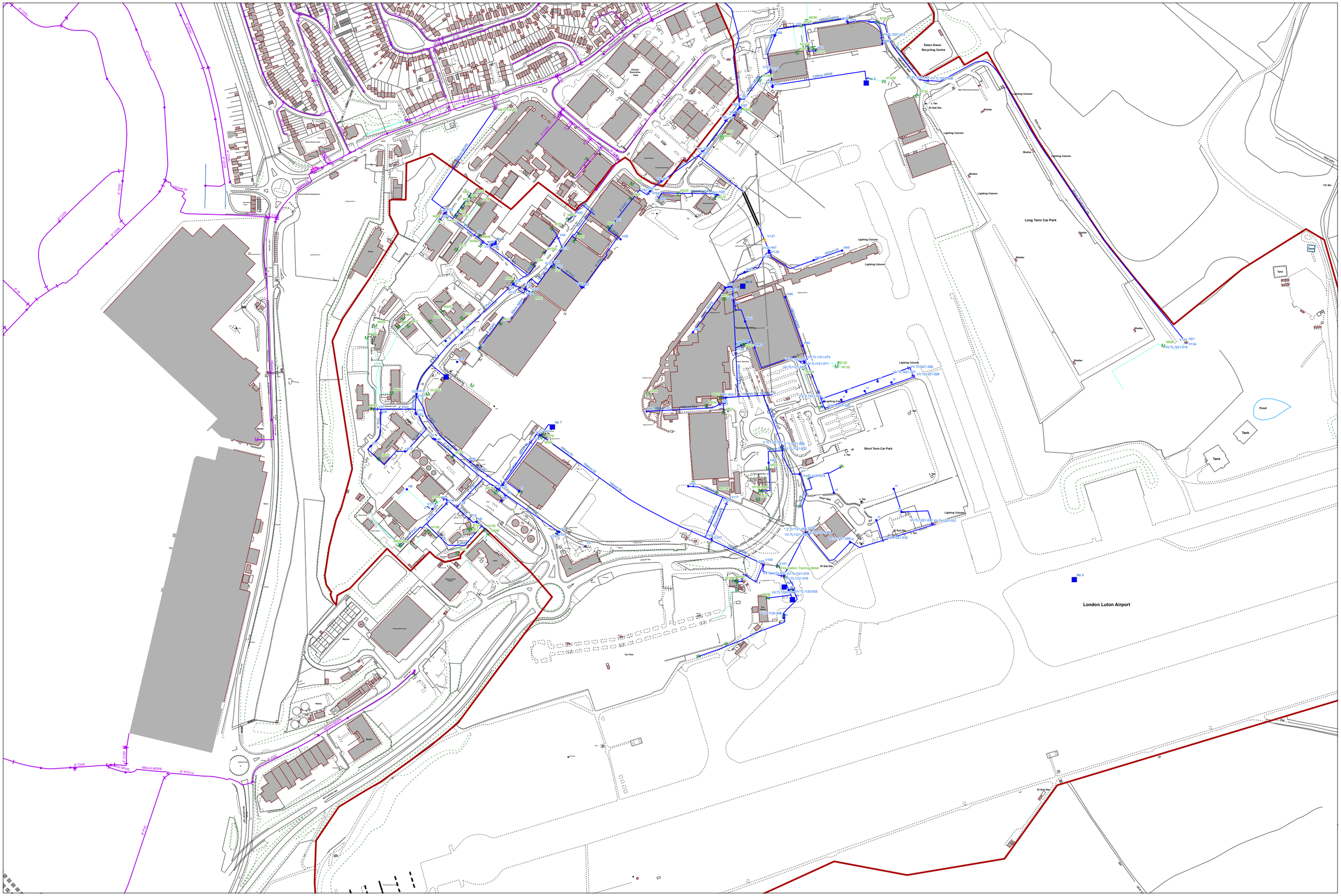
Appendix E – Veolia potable water network

VEOLIA

POTABLE NETWORK

N

1:2,000



(16/07/2020)

Appendix F – Veolia surface water network

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

N

Eaton Green Recycling Centre
Wigmore Valley Park
Long Term Car Park
Short Term Car Park
London Luton Airport
Chiltern Hall
Burnt Wood
Birch Spring
Bute Street Farm

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

Long Term Car Park

Short Term Car Park

Wigmore Valley Park

Eaton Green Recycling Centre

Chiltern Hall

Burnt Wood

Birch Spring

Appendix H – Thames Water letter dated 1 September 2023

FAO: Marcus Scrafton

100 Embankment
Cathedral Approach
Manchester
M3 7FB

Developer Services – Major Projects

Our ref K317-A-111
Name Robert Ashiley
Phone [redacted]
E-Mail [redacted]

1st September 2023

Dear Marcus,

Please find this letter which addresses the key points between Luton Airport and Thames Water Utilities Limited (TWUL) regarding Luton Airport DCO.

TWUL accepts that it has a statutory duty to receive all domestic foul flows from the proposed buildings in the Terminal 2 development subject to any potential upgrades to the sewer network.

We will continue to work with Luton Airport to understand its trade effluent requirements, including contaminated surface water runoff. We will adopt our standard approach to assess the discharge of any Trade Effluent (including contaminated surface water runoff) from the Airport, in having regard to existing and likely future discharges of Trade Effluent.

We acknowledge our statutory duty under Section 94 of the Water Industry Act 1991 to use our Permitted Development rights for the necessary sewer network upgrades to accommodate the proposed increase to domestic foul flows within TWUL's network.

Any necessary upgrades to the East Hyde Treatment Works to accommodate increased flows (Domestic and Trade) from the airport, will be delivered using our Permitted Development rights. It's important to note that East Hyde STW is landlocked, and expansion possibilities are constrained.

Any connections to the public sewer network inside or outside of the order limits of the proposed development will require consent from us under Section 106 of the Water Act 1991.

Thames Water will continue to work with Luton Airport with issues identified during the DCO process and will continue to collaborate with you to help understand your wastewater infrastructure requirements.

Yours sincerely

[redacted]

Robert Ashiley
Design Manager - Developer Services Major Projects