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London Luton Airport Expansion

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**5.01 Chapter 4 The Proposed Development (Tracked
Change Version)**

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**London Luton Airport Expansion Development Consent
Order 202x**

**5.01 ENVIRONMENTAL STATEMENT CHAPTER 4: THE PROPOSED
DEVELOPMENT (TRACKED CHANGE VERSION)**

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Contents

| | Page |
|--|-----------|
| 4 THE PROPOSED DEVELOPMENT | 1 |
| 4.1 Introduction | 1 |
| 4.2 The Proposed Development | 1 |
| 4.3 Reference design and parameters | 2 |
| 4.4 Work Numbers (Work No.) | 3 |
| 4.5 Work Type 1 – Sitewide major works to enable development | 7 |
| 4.6 Work Type 2 – Airfield works | 12 |
| 4.7 Work Type 3 – Terminal and associated works | 20 |
| 4.8 Work Type 4 – Airport support facilities | 27 |
| 4.9 Work Type 5 – Landscaping and mitigation | 41 |
| 4.10 Work Type 6 – Highways | 48 |
| 4.11 Miscellaneous associated development | 63 |
| 4.12 Construction | 66 |
| 4.13 Operation | 70 |
| 4.14 Decommissioning | 74 |
| 4.15 Airspace change | 74 |
| Glossary and Abbreviations | 77 |

Tables

Table 4.1: Work No. in Proposed Development

Table 4.2: Indicative site clearance areas

Table 4.3: Other buildings to be demolished and indicative areas

Table 4.4: Off-site highway interventions in the Proposed Development

Insets

Inset 4.1: High-Level Construction Schedule

Inset 4.2: Forecast average airport power demand (MW), 2024 to 2050

Inset 4.3: Forecast total annual airport electrical demand (MWh), 2024 to 2050

Inset 4.4: Forecast annual fossil fuel consumption by airport operations, 2024 to 2050

4 THE PROPOSED DEVELOPMENT

4.1 Introduction

4.1.0 This chapter describes the Proposed Development for which consent is sought and on which the Environmental Impact Assessment (EIA) is based, as reported in this Environmental Statement (ES).

4.1.1 The Proposed Development is characterised by the retention of the existing runway, expansion of the existing passenger terminal, and the provision of a new passenger terminal on land owned by Luton Rising (a trading name of London Luton Airport Limited) ('the Applicant') and Luton Borough Council (LBC), to the north east of the runway. This would provide an overall passenger capacity of 32 million passenger per annum (mppa).

4.1.2 To achieve this additional capacity, the total number of aircraft stands needs to increase. the extent of the apron needs to expand and additional taxiways need to be provided. Additional infrastructure to serve increased passenger numbers, including terminal, surface access and expanded airport support facilities also need to be provided.

4.2 The Proposed Development

4.2.1 The Proposed Development builds on the current operational airport with the construction of a new passenger terminal and additional aircraft stands on land owned by the Applicant located to the north east of the runway. This would increase the overall passenger capacity from 18 mppa to 32 mppa.

4.2.2 In addition to the above, and to support the initial increase in demand, the existing infrastructure and supporting facilities would be improved in line with the incremental growth in capacity of the airport.

4.2.3 **Chapter 1** of this ES [TR020001/APP/5.01] provides an overview of the main elements of the Proposed Development. This chapter provides a clear, detailed description of the Proposed Development through all phases of construction and operation. It sets out the full description of the Proposed Development that has been considered in this assessment, in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

4.2.4 The Proposed Development would deliver additional capacity incrementally to meet the forecast growth in demand. Assets and facilities would be delivered only when they are required. For the purposes of assessment, a feasible construction programme and sequencing has been developed and is provided in **Appendix 4.1** of this ES [TR020001/APP/5.02].

4.2.5 To describe this clearly, the sequence has been divided into two phases related to increasing capacity at the existing terminal (assessment Phase 1), and the construction of the new terminal (assessment Phase 2). However, given the length of time over which the Proposed Development would be constructed, and the step change in passenger numbers from the end of assessment Phase 1 to final full capacity, an interim assessment phase has also been considered to

understand environmental effects over the time the Proposed Development is constructed while the airport remains in operation.

- 4.2.6 For the purposes of assessment only, three **assessment phases** are considered and are referred to throughout out this ES, as follows:
- a. Assessment Phase 1: Expansion of existing Terminal 1 (T1) to increase capacity from 18 to 21.5 mppa. It is currently anticipated that assessment Phase 1 works would commence in 2025 and be complete by mid 2027;
 - b. Assessment Phase 2a: Construction of new Terminal 2 (T2) and associated facilities to increase capacity from 21.5 mppa to 27 mppa upon opening of T2. It is currently anticipated that assessment Phase 2a works would commence in early 2033 ending 2036 and would enable a step up in capacity in the first quarter of 2037; and
 - c. Assessment Phase 2b: Expansion of T2 and associated facilities. It is currently anticipated that assessment Phase 2b works would commence in 2037, and would deliver incremental capacity increases from 27 mppa to 32 mppa. T2 would have capacity for 12 mppa once complete. The works would be completed incrementally with the full capacity provided by 2043.

- 4.2.7 In developing this construction sequence, flexibility is sought as to when individual activities (or Works as defined in **Section 4.4** below) are delivered as required to support the forecast and realised passenger demand; therefore, each Work is described as being 'anticipated' in a given assessment phase, to allow the assessment to be completed. There are key construction steps that limit this flexibility and allow a robust reasonable worst case to be assumed, for example, earthworks would need to be complete and settled before apron or buildings constructed on them and the time that these works take are fixed, or works to maximise the existing terminal would be completed before the new terminal works, and subsequent work would not be delivered if passenger demand was not realised.

- 4.2.8 The construction information generated based on this sequence has been developed with conservative estimates, for example, numbers of workers, simultaneous activities, to allow the reasonable worst case to be considered in the indicative programme. Each environmental aspect assessment in this ES (**Chapters 6 to 20 [TR020001/APP/5.01]**) that employs this construction data further describes assumptions to ensure that a reasonable worst case is being considered, for example, assessing the peak construction activity in each assessment phase and combining that with the maximum operational capacity to assess the reasonable worst case effect for that assessment phase. This ensures that there is reasonable flexibility in the incremental delivery of the works within the environmental effects reported in this ES.

4.3 Reference design and parameters

- 4.3.1 Reference designs have been developed to allow appropriate consideration of the potential scale, parameters, function and construction and operational resource requirements of each of the assets identified within the Proposed

Development. Further descriptive information for these reference designs is provided in the **General Arrangements Drawings [TR020001/APP/4.09]** and **Airport Access Road and Luton DART Long Section Drawings [TR020001/APP/4.11]** provided as part of the application. These designs were used to generate the parameters which have informed this ES, within which they would be delivered, providing the best available understanding of the likely requirements at this stage.

- 4.3.2 To retain necessary flexibility in the final design, maximum parameters for height and extent have been defined and used in this assessment of environmental effects to ensure a reasonable worst case has been assessed. The use of parameters in EIA is an accepted approach and is further described in **Chapter 5 Approach to assessment of this ES [TR020001/APP/5.01]**. Further assumptions and methods to ensure a reasonable worst case scenario is considered are provided in each aspect chapter to this ES where relevant.

4.4 Work Numbers (Work No.)

- 4.4.1 A numbering system has been developed to allow each element of the Proposed Development to be described, and the location and anticipated timing of the work understood for this assessment.

- 4.4.2 The Proposed Development has been divided into Works according to six main types of Works listed below:

1. Site wide major works to enable development;
2. Airfield works;
3. Terminal and associated works;
4. Airport support facilities;
5. Landscape and mitigation; and
6. Highways.

- 4.4.3 Each Work is numbered with an individual work number (e.g. Work No. 1a); for context a list of all Work No. identified under each of the types listed above is provided in **Table 4.1**, with an outline description of that Work and the assessment Phase in which it is anticipated that Work would be undertaken. A detailed description of each Work, where relevant to this assessment, is provided in the corresponding sections of this chapter.

- 4.4.4 The corresponding location of each Work No. is shown on the **Works Plans [TR020001/APP/4.04]**. However, for ease of reference Illustrative Works Locations are provided at **Figure 4.1** for assessment Phase 1, **Figure 4.2** for assessment Phase 2a and **Figure 4.3** for assessment Phase 2b to this ES **[TR020001/APP/5.03]**.

- 4.4.5 The maximum extent and area of each Work No. are shown on the Works Plans and Illustrative Works Location figures; with the approximate level of the finished works, the height of the structure (m) and/or maximum parameter height (mAOD (Above Ordnance Datum)) within which this Work would be undertaken described in the corresponding text in this chapter. These maximum

extents for each Work No. are also described in Schedule 2 of the **Draft Development Consent Order (DCO) [TR020001/APP/2.01]** and would be secured in the final DCO. Further information on the highway interventions is provided in the **Transport Assessment [TR020001/APP/7.02]** and **Framework Travel Plan [TR020001/APP/7.14]**.

4.4.6 The operational phasing, based on the constrained construction phasing and sequencing and forecast demand, is then described together with an outline construction programme.

4.4.7 The development consent order would also authorise ancillary works in connection with the construction of any of the works described in this chapter, such as work to roads, street furniture, access, footpaths, drains, site preparation, works to trees, and fencing for example. These ancillary works may not have specific work numbers but are included in the Proposed Development described in this chapter where relevant and considered in the ES.

Table 4.1: Work No. in Proposed Development

| | Title | Anticipated Assessment Phase |
|--------------------------|--|------------------------------|
| Work Type 1 | Sitewide major works to enable development | |
| Work No.1a | Earthworks - Landform Platform | Phase 1, 2a and 2b |
| Work No.1b | Landfill Remediation | Phase 1, and 2a |
| Work Type 2 | Airfield Works | |
| Work No. 2a(01) | New Stands/Taxiway to Foxtrot | Phase 1 |
| Work No. 2a(02) | New Surface Movement Radar (SMR) | Phase 1 |
| Work No. 2b(01) | New Runway Access and Rapid Exit Taxiways | Phase 2a |
| Work No. 2b(02) | New Airfield Equipment | |
| Work No. 2b(03) | New Apron for Stands, Taxilanes and Ground Service Equipment (GSE) | |
| Work No. 2b(04) | New Taxiways and Isolation Stand | |
| Work No. 2c(01) | New Apron for Stands, Taxilanes and Taxiways | Phase 2b |
| Work No. 2c(02) | New Runway Access and Rapid Exit Taxiways | |
| Work No. 2c(03) | New Hangar Aprons | |
| Work No. 2c(04) | Airfield Access Roads Upgrade | |
| Work No. 2d | Fire Training Ground | Phase 2b |
| Work No. 2e | Existing Engine Run Up bay (ERUB) Updates | Phase 1 |
| Work No. 2f | New ERUB | Phase 2a |
| Work No. 2g | Relocated ERUB | Phase 2b |
| Work No. 2h(01) and (02) | Airside Utilities Corridor | Phase 2a and 2b |
| Work Type 3. | Terminal and Associated Works | |
| Work No. 3a(01) | T1 New Pier C and External Canopy | Phase 1 |

| | Title | Anticipated Assessment Phase |
|--------------------|---|-------------------------------------|
| Work No. 3a(02) | T1 Immigration Extension | |
| Work No. 3a(03) | T1 Departure Lounge South Extension | |
| Work No. 3a(04) | T1 Departure Lounge North Extension | |
| Work No. 3a(05) | T1 Baggage Hall Extension | |
| Work No. 3b(01) | New Terminal 2 (T2) | |
| Work No. 3b(02) | T2 Extension | Phase 2b |
| Work No. 3c(01) | New T2 West Pier | Phase 2a |
| Work No. 3c(02) | New T2 East Pier | Phase 2b |
| Work No. 3d | Coach Station | Phase 2a |
| Work No. 3e(01) | New Passenger Drop Off Zone | Phase 2a |
| Work No. 3e(02) | New Passenger Drop Off Zone | Phase 2b |
| Work No. 3f | T2 Plaza | Phase 2a |
| Work No. 3g | Luton DART (Direct Air-Rail Transit) T2 Station and Tunnel Extension | Phase 2a |
| Work No. 3h | T2 Support Facilities and Buildings | Phase 2a |
| Work No. 3i | Airport Operations and Maintenance | Phase 2b |
| Work Type 4 | Airport Support Facilities | |
| Work No.4a | Hotel | Phase 2b |
| Work No. 4b | Hangars A and B | Phase 2b |
| Work No. 4c(01) | Fuel Storage Facility | Phase 2a |
| Work No. 4c(02) | Fuel Pipeline | |
| Work No. 4d | Water Treatment Plant | Phase 2a |
| Work No. 4e | Solar Battery Storage | Phase 2b |
| Work No. 4f | Airside Security and Access | Phase 2a |
| Work No. 4g | Car Park P1 (known as Tiered Car Park) | Phase 2a |
| Work No. 4h | Car Park P2 (known as Trailer Car Park) | Phase 2a |
| Work No. 4i | Car Park P3 (known as Mid-Stay Car Park) | Phase 1 |
| Work No. 4j | Car Park P4 (known as T1 Multi Storey Car Parks 1 and 2) | Phase 1 |
| Work No. 4k(01) | Car Park P5 - Adjusted Surface Car Park | Phase 1 |
| Work No. 4k(02) | Car Park P5 - New Decked Car Park | Phase 2a |
| Work No. 4l(01) | Car Park P6 - New Temporary Surface Car Park | Phase 1 |
| Work No. 4l(02) | Car Park P6 - Adjusted Temporary Surface Car Park | Phase 2a |
| Work No.4m(01) | Car Park P7 - New Temporary Surface Car Park | Phase 1 |
| Work No.4m(02) | Car Park P7 - Adjusted Temporary Surface Car Park | Phase 2a |
| Work No. 4n | Car Park P8 – Temporary Surface Car Park | Phase 2a |
| Work No. 4o(01) | Car Park P9 - Existing Staff/Car Hire Car Park Modified for Staff Car Parking | Phase 1 |
| Work No. 4o(02) | Car Park P9 - Adjusted Car Park P9 Staff Parking Affected by AAR East | Phase 2a |
| Work No. 4p(01) | Car Park P10 – New Long Stay car park | Phase 2a |
| Work No. 4p(02) | Car Park P10 – Adjusted New Long Stay car park | Phase 2b |
| Work No. 4q(01) | Car Park P11– New Long Stay car park | Phase 2a |
| Work No. 4q(02) | Car Park P11– Expanded Long Stay car park | Phase 2b |

| | Title | Anticipated Assessment Phase |
|--------------------|--|-------------------------------------|
| Work No. 4r | Car Park P12 - New T2 Multi Storey Car Park | Phase 2b |
| Work No. 4s | Airport Access Road permanent car Parking Replacement Provision | Phase 2a |
| Work No. 4t(01) | Airport Access Road permanent car Parking Replacement Provision | Phase 2a |
| Work No. 4t(02) | Airport Access Road permanent car Parking Replacement Provision | Phase 2a |
| Work No. 4t(03) | Airport Access Road permanent car Parking Replacement Provision | Phase 2a |
| Work No. 4t(04) | Airport Access Road permanent car Parking Replacement Provision | Phase 2a |
| Work No. 4t(05) | Airport Access Road permanent car Parking Replacement Provision | Phase 2a |
| Work No. 4t(06) | Airport Access Road permanent car Parking Replacement Provision | Phase 2b |
| Work No. 4u | Police Station | Phase 2a |
| Work No. 4v | Infiltration Tank | Phase 2a |
| Work No. 4w | Substation | Phase 1 |
| Work No. 4x | Substation | Phase 2a |
| Work Type 5 | Landscape and Mitigation | |
| Work No. 5a | Terminal Approach | Phase 2a |
| Work No. 5b(01) | Enhancements to existing Wigmore Valley Park | Phase 1 |
| Work No. 5b(02) | Replacement open space | Phase 1 |
| Work No. 5b(03) | Replacement open space - New footpath linking FP38 to FP43 | Phase 1 |
| Work No. 5b(04) | Replacement open space - New bridleway linking FP43 to Winch Hill Road | Phase 2b |
| Work No. 5b(05) | Replacement open space - New bridleway linking BW52 with FP41. | Phase 2b |
| Work No. 5b(06) | Footpath FP41 | Phase 1 and 2b |
| Work No. 5b(07) | Footpath FP43 | Phase 1 and 2b |
| Work No. 5c(01) | Landscape Restoration | Phase 1 |
| Work No. 5c(02) | Landscape Restoration | Phase 2b |
| Work No. 5d(01) | Habitat Creation | Phase 1 |
| Work No. 5d(02) | Habitat Creation | Phase 2a |
| Work No. 5e | Off-site Hedgerow Restoration and Screening | Phase 1 |
| Work Type 6 | Highways | |
| Work No. 6a(01) | Airport Access Road and Link Road | Phase 1 |
| Work No. 6a(02) | Airport Access Road and Link Road | Phase 2a |
| Work No. 6a(03) | Airport Access Road and Link Road | Phase 2b |
| Work No.6b(01) | Airport Public Roads | Phase 1 |
| Work No.6b(02) | Airport Public Roads | Phase 2a |
| Work No.6b(03) | Airport Public Roads | Phase 2b |
| Work No. 6c(01) | Airport Operational Roads | Phase 1 |
| Work No. 6c(02) | Airport Operational Roads | Phase 2a |
| Work No. 6c(03) | Airport Operational Roads | Phase 2b |

| | Title | Anticipated Assessment Phase |
|-------------|---|------------------------------|
| Work No. 6d | Airport road at Public Highways (Barriered Junctions). | Phase 2a |
| Work No. 6e | Off Site Highway Interventions | |
| (a) | Windmill Road and Kimpton Road | Phase 1 |
| (b) | A1081 New Airport Way, B653 and Gipsy Lane | Phase 1 |
| (c) | A1081 New Airport Way, A505 Kimpton Road and Vauxhall Way | Phase 2a |
| (d) | Eaton Green Road and Lalleford Road | Phase 1 |
| (e) | Wigmore Lane and Crawley Green Road | Phase 2a |
| (f) | Eaton Green Road and Wigmore Lane | Phase 2a |
| (g) | A1081/London Road (North) | Phase 1 |
| (h) | (A1081/London Road (South) | Phase 2a |
| (i) | Windmill Road/Manor Road/St. Mary's Road/Crawley Green Road | Phase 2a |
| (j) | Crawley Green Road/Lalleford Road | Phase 2a |
| (k) | A602 Park Way/A505 Upper Tilehouse Street | Phase 2a |
| (l) | A505 Moormead Hill/B655 Pirton Road/Upper Tilehouse Street | Phase 2a |
| (m) | A602 Park Way/Stevenage Road | Phase 2a |
| (n) | M1 J10 | Phase 1 |
| (o) | M1 J10 | Phase 2a |
| (p) | M1 J10 | Phase 2b |
| (q) | Eaton Green Road/Frank Lester Way | Phase 2a |
| (r) | A505 Vauxhall Way/Eaton Green Road | Phase 1 |

4.5 Work Type 1 – Sitewide major works to enable development

- 4.5.1 In preparation for construction of the Proposed Development, several activities or enabling works need to take place to create the site. A brief description is provided below, or a cross reference is given to where a brief description is provided.
- 4.5.2 All of the works described below are included in the Proposed Development and have been assessed in this ES.
- 4.5.3 The construction of the Proposed Development is a large multi-faceted project with its own project specific construction site clearance, demolition, site setup and construction logistical challenges. The Proposed Development would require multiple construction sites that would become increasingly constrained

over time as new earthwork operations change the landscape and as facilities, aprons, and building are built.

4.5.4 Before any work takes place, pre-construction activities would be undertaken. These would include, as a minimum, desktop studies, surveys, site investigations, the identification of existing services, any other planning pre-commencement requirements, stakeholder engagement, for example.

Site Clearance

4.5.5 Site clearance and demolition requirements are described in the Construction Method Statement and Programme Report provided as **Appendix 4.1** to this ES [TR020001/APP/5.02] with detailed areas and locations shown in the following drawings:

- a. Indicative site clearance assessment Phase 1 (**LLADCO-3C-ACM-WHS-SCL-DR-IN-0001**);
- b. Indicative site clearance assessment Phase 2a (**LLADCO-3C-ACM-WHS-SCL-DR-IN-0002**); and
- c. Indicative site clearance assessment Phase 2b (**LLADCO-3C-ACM-WHS-SCL-DR-IN-0003**).

4.5.6 These site clearance and demolition works do not have individual Work Numbers as they would be undertaken as an integral part of and prior to the work described in individual Work No. described throughout this chapter.

4.5.7 A summary indicative total area of the key types of clearance during each assessment phase has been collated and is provided in **Table 4.2** to provide an overview and scale for these preparatory works.

Table 4.2: Indicative site clearance areas

| Type of Item Cleared in Assessment Phase | Area (m ²) |
|---|------------------------|
| Assessment Phase 1 | |
| Hardstanding | 130,000 |
| Highway | 4,500 |
| Vegetation | 396,500 |
| Trees | 18,000 |
| Other (Earth bund, HV (High-voltage) cables, substation) | 7,500 |
| Assessment Phase 2a | |
| Hardstanding | 238,500 |
| Highway | 15,000 |
| Vegetation | 810,000 |
| Trees | 52,000 |
| Structures (Soakaways, blast fence, substation, underground tank) | 2,500 |
| Assessment Phase 2b | |
| Hardstanding | 136,000 |

| Type of Item Cleared in Assessment Phase | Area (m ²) |
|--|------------------------|
| Highway | 12,000 |
| Vegetation | 336,000 |
| Trees | 12,000 |
| Structures (Fire training ground, soakaways, underground tank) | 1,500 |

Building Demolition

4.5.8 A summary indicative total area of the key buildings demolished, in addition to the clearance and structures listed above, during each assessment phase is provided in **Table 4.3**.

Table 4.3: Other buildings to be demolished and indicative areas

| Building No. | Building to be Demolished in Assessment Phase | Area (m ²) |
|----------------------------|---|------------------------------|
| Assessment Phase 1 | | |
| B18 | Luton airport staff car park | 625 and shelter 58 |
| B19 | Car Hire centre and car park | 60 |
| Assessment Phase 2a | | |
| B1 | Building 137 (Eaton House) and Building 133 (Essex House) | 380 |
| B2 | Proctor Way, unknown/abandoned building | 120 |
| B3 | Building 140 | 310 |
| B4 | Building 123 (Percival Way) | Building 760 Annex 120 |
| B5 | Building 74 | Office 1,960 Workshop 400 |
| B6 | Building 108 | 784 |
| B7 | Building 107 | 660 |
| B11 | Building 24 | 1,650 |
| B15 | Building 95 (Halcyon House) | 732 |
| Assessment Phase 2b | | |
| B8 | Building 106 | Building 1,472 Annex 352 |
| B9 | Building 53 | 135 |
| B10 | Building 26 | 1,650 |
| B12 | Building 22 - Car hire preparation area | 165 |
| B13 | Reception building and entrance | 93 |
| B14 | Building 787 | 1,890 |
| B20 | Kensal House & Dehavilland House | 2,700 |
| B21 | Unit 1, 2, 3 and 4 President Way | 2,340 |
| B22 | Units 5-8 | 2,340 |

| Building No. | Building to be Demolished in Assessment Phase | Area (m ²) |
|--------------|---|-------------------------|
| B26 | Airside support building/substation | Building 85 Annex 15 |
| B27 | Building 126 | 493 |
| B28 | Building 132 | 220 |
| B29 | Building 90 | 1,439 |

Work No. 1a – Earthworks – landform platform

- 4.5.9 Earthworks are needed to create a new landform upon which the extension to the airfield and apron would be constructed and to be suitable for the new terminal, car parks and ancillary airport facilities.
- 4.5.10 Construction of the aviation platform would involve the excavation of approximately 1,700,000m³ of natural material and 1,100,000m³ of existing made ground and stockpiles. The natural material would be excavated from within the Main Application Site (as defined in **Chapter 2** of this ES [TR020001/APP/5.01], and shown in **Figure 2.2** [TR020001/APP/5.03] to the east of the platform.
- 4.5.11 The following illustrative figures have been provided with this ES [TR020001/APP/5.03] to inform this assessment and aid understanding of the current landform and proposed earthworks extent and changes to landform:
- Figure 4.4** shows the existing landform across the Main Application Site;
 - Figures 4.5 to 4.7** show the proposed landform at each of the assessment phases;
 - Figures 4.8 and 4.9** show cross sections (as shown on **Figure 4.7**) across the Main Application Site for existing and final proposed landform;
 - Figure 4.10** shows the excavation and deposition of landfill material; and
 - Figure 4.11 to 4.15** shown the level changes proposed through the assessment phases including the location and height of stockpiles and landscape restoration.
- 4.5.12 The new apron would be approximately 670m long and 350m wide at existing apron height. The side slopes are likely to be a 1 in 3 gradient up to 80m wide. The thickness of the platform would increase moving east from the existing apron.
- 4.5.13 The excavation area would vary in depth up to approximately 20m in the north of the area. This remains notably above predicted groundwater levels, and a requirement for the detailed design to provide at least 1m clearance between the highest water table and the underside of buried tanks and other underground structures is included in the Drainage Design Statement (**Appendix 20.4** of this ES [TR020001/APP/5.02]). The side slopes of the excavation are expected to have a 1 in 3 gradient.

- 4.5.14 The landform created by the excavation would provide platforms for car parking, the Fuel Storage Area (Work No. 4c(01)) and the Water Treatment Plant (Work No. 4d). It would be coordinated with the level requirements of the permanent and temporary attenuation and infiltration tanks and other drainage provisions required by the development.
- 4.5.15 Excavation would result in part of the open space planned to be provided by the extant Green Horizons Park planning development being lost. The replacement open space (Work No. 5b(02)) would be in place and open to the public prior to the excavation works that directly impact Wigmore Valley Park commencing, and excavation would take place to the south of that open space. Excavation works, and the Proposed Development within that excavated area, would therefore be screened from residential and recreational receptors to the north of the Main Application Site.
- 4.5.16 On completion of the main earthworks the landform in the east of the Main Application Site (Work No. 5c (02)) would be regraded with suitable excavated material deemed technically unsuitable for use beneath the aviation platform to re-establish a more 'natural' and less 'engineered' appearance in this area. This would include the restoration of soil profiles suitable to receive the envisaged landscape treatments.

Work No. 1b – Landfill remediation

- 4.5.17 Part of the Proposed Development would be on an area of the former Eaton Green landfill. In these areas it is necessary to excavate approximately 390,000m³ of material to achieve the correct levels for construction. This material would be processed under an appropriate Environmental Permit (as described in the Consents and Agreements Position Statement **[TR020001/APP/2.03]**) and the majority would be reused on-site.
- 4.5.18 Foundations would be piled through the landfill to support the new buildings and infrastructure. Both rotary bored and continual flight auger (CFA) piling have been assessed as potential suitable piling techniques and it has been concluded that they present a low risk of creating a pollution pathway to the underlying aquifer. The decision on which piling method is used and its design in terms of number, depth and location would be made during detailed design development.
- 4.5.19 Work to the landfill would be undertaken in a separate screened area towards the middle of the Main Application Site.
- 4.5.20 The areas and changes in levels related to excavation, treatment, and deposition of material from the existing landfill are shown in **Figure 4.10** of this ES **[TR020001/APP/5.03]**.
- 4.5.21 The historic landfill has been the subject of extensive ground investigation, risk assessments, and consultation with stakeholder including the Environment Agency to develop appropriate mitigation and monitoring strategies. The findings of this work are further described in **Chapter 17** of this ES **[TR020001/APP/5.01]** and supporting appendices including an Outline

Remediation Strategy (for former Eaton Green Landfill) provided as **Appendix 17.5 [TR020001/APP/5.02]**.

4.6 Work Type 2 – Airfield works

- 4.6.1 These works include the expansion of the airfield for airside operations. No works are proposed to the existing runway, air traffic control tower or fire station which would remain in their current locations and continue to service the whole airport. Existing airport facilities including taxiways referred to in this chapter are shown in **Figure 2.3** of this ES [TR020001/APP/5.03].
- 4.6.2 New taxiways would be constructed to increase aircraft routings to/from the runway and to provide access to additional aircraft parking stands.
- 4.6.3 New aircraft parking apron would be created throughout the phases comprising:
- Stands, for parking of aircraft, to facilitate the loading/off-loading of passengers and baggage;
 - taxi lanes for aircraft to manoeuvre locally onto the stands; and
 - areas for storage of Ground Service Equipment (GSE) which is required to service the aircraft; and
 - appropriate lighting, power, drainage services.
- 4.6.4 The intention is to improve the ratio of contact stands¹ at the expanded airport so that 70% of all commercial passenger stands across the whole airport are contact stands.

Work No. 2a (01) – New stands/taxiway to east of Foxtrot

- 4.6.5 New stands would be provided in assessment Phase 1 to provide sufficient aircraft parking capacity to accommodate up to 21.5 mppa to be serviced from the existing terminal (T1).
- 4.6.6 The new stands comprise four Code C² aircraft stands (wingspan up to 36m) accessed via a new taxiway connection from the east side of Taxiway Foxtrot.
- 4.6.7 An additional Code C stand would be created adjacent to the existing Engine Run Up Bay (ERUB) as described in Work No. 2e. The existing ERUB bund would be removed, and a new blast deflector barrier provided enabling parking of two Code C aircraft within the Bay.
- 4.6.8 The new stands would be designed as rigid pavement construction (typically pavement quality concrete, of a suitable quality for use as the surfacing on airfield pavement) with the exception of the northernmost stand to the east side of Taxiway Foxtrot which would be constructed with an asphalt surface as a temporary measure, to mitigate the impact of settlements from the landfill under this stand.

¹ Contact stands include designated areas on the apron where an aircraft could use a passenger boarding bridge if required by the airline.

² Code [x] aircraft - International Civil Aviation Organisation aircraft categorisation based on size.

- 4.6.9 The proposed apron including stands, taxiways and equipment areas would cover an area of approximately 76,830m² with a surface level ranging from approximately 151.9m to 155.5mAOD to tie into the existing airfield, reflecting the variation across the large area.
- 4.6.10 An additional area of pavement would be provided for parking of GSE and a new link road north of the apron to provide a vehicular route across Taxiway Delta to T1.
- 4.6.11 The new stands would be equipped with High Mast Lighting around 25m in height but no other aircraft servicing facilities.
- 4.6.12 The drainage from the new stands would include linear drainage systems with catch-pits, an oil separator and attenuation storage, all located beneath the pavement (but not encroaching into the former landfill site) as described in this Work.
- 4.6.13 To access the four northern Code C stands, a section of new Taxiway Golf would be constructed with a link taxiway connecting this to Taxiway Foxtrot.
- 4.6.14 An extension to Taxiway Foxtrot to the north would be constructed to allow aircraft to bypass the existing T1 East Apron to minimise taxiway congestion.
- 4.6.15 The taxiway works would be constructed in asphalt concrete and incorporate the necessary drainage and aeronautical ground lighting (AGL).
- 4.6.16 The existing storage area for de-icing fluids associated with Taxiway Foxtrot de-icing stands is located within the clearances of Taxiway Foxtrot and proposed Taxiway Golf. This area would be relocated to a service yard area north of the proposed stands adjacent to the GSE area. Vehicular access for material delivery would be via the proposed new link road to T1.

Work No. 2a (02) – New Surface Movement Radar

- 4.6.17 A second Surface Movement Radar (SMR) would be required to supplement the existing SMR and provide coverage for the Proposed Development. This SMR would be located south of the runway in an area of land owned by the Applicant and classified as Green Belt.
- 4.6.18 The proposed SMR would have a maximum development area of 525m² which would be located somewhere within the total work area of approximately 5,017m² with a surface level ranging from approximately 158.3m to 161.9mAOD. The exact location within the total Work No. area will be confirmed during detailed design to meet operational and safety requirements.
- 4.6.19 The radar tower would likely be a steel lattice type structure with a maximum height of 14.3m and support a radar, giving a maximum parameter height of 176.2mAOD. It would likely be around 0.5m by 0.5m wide with a footprint of around 4m² and surmounted by a red obstruction light. An access track would be constructed from the existing airport perimeter road to provide access for maintenance.

- 4.6.20 The SMR would require power and communication services that would be taken from nearby substations. A security fence (2.8m in height with a cranked top) would be provided around the perimeter of the SMR and associated track.

Work No. 2b(01) – New runway access and rapid exit taxiway

- 4.6.21 To improve the capacity of the runway, new taxiways would be provided to improve access for departing aircraft to access the ends of the runway. This would improve taxiway routing, reduce runway occupancy time and reduce the need for aircraft to backtrack on the runway. Additional taxiways would provide additional taxiway routes and holding areas to allow aircraft to access/egress the existing runway enabling an increase in the hourly runway capacity.
- 4.6.22 A Rapid Exit Taxiway (RET) is proposed at the west end of the Runway as part of Work No. 2b(01) anticipated to be delivered during assessment Phase 2a. RETs are angled taxiways located at an appropriate position so that landing aircraft can exit the runway at higher speed, vacating the runway earlier to increase movement rates.
- 4.6.23 An additional taxiway link (07 link) extending Taxiway Bravo to the western end of the runway is also proposed.
- 4.6.24 The proposed taxiways would cover an area of approximately 108,498m² with a surface level ranging from approximately 154.9m to 160.6mAOD to tie into the existing airfield, reflecting the variation in level across the large area.
- 4.6.25 New taxiway facilities would incorporate the necessary drainage and AGL.

Work No. 2b(02) – New airfield equipment

- 4.6.26 To facilitate the construction of the western RET it would be necessary to relocate the existing Instrumented Runway Visual Range (IRVR) System. A new IRVR would be provided to the western end of the runway on the south side, with Precision Approach Pate Indicators. The IRVR comprises of a hardstanding area with equipment critical to safe runway operation, with the highest equipment piece expected to be a maximum of 3m above ground level. An access track to the equipment would be provided.
- 4.6.27 The proposed IRVR works would be localised small pieces of equipment with a maximum height of 3.3m over an area of approximately 37,300m² with a surface level ranging from 155.4m to 160.4mAOD, giving a maximum parameter height of 163.7mAOD. The exact location of the equipment within the work area is to be confirmed during detailed design.

Work No. 2b(03) – New apron, stands, taxilanes, and GSE

- 4.6.28 Twelve additional Code C stands are proposed within the reference design for the new apron area, anticipated to be delivered during assessment Phase 2a, making a total of 16 Code C stands within the new apron area. These stands would also accommodate three Code E (wingspan up to 65m) aircraft by using alternative stand centrelines. The proposals include a bank of seven Code C stands running north to south, located to the east of the existing taxiway

system. They would be serviced by a new taxilane (Juliet) and have direct access to the proposed new west pier building as described in Work No. 3c(01).

- 4.6.29 A number of these Code C stands would be constructed over the former landfill and these stands would be subject to settlement monitoring which may result in additional stand maintenance.
- 4.6.30 The proposed apron including stands, taxilanes, vehicular roads and equipment areas would cover an area of approximately 158,553m² with a surface level ranging from 152.4m to 154.7mAOD. The main taxiways are included in Work No. 2b(04).
- 4.6.31 The proposed layout includes a north-south taxilane which would provide aircraft access to the new apron. The cul-de-sac consists of twin Code C taxilanes and a central Code E taxilane to service the apron areas (Taxilane Juliet). This taxilane has a minimum width of 89m.
- 4.6.32 An extension of Taxiway Golf is proposed to connect this taxilane to the north with Taxiway Foxtrot to service the four Code C stands located west of the new terminal building. This is required to ensure that the operation of the existing taxiway network is not affected by aircraft manoeuvring onto or off these new stands.
- 4.6.33 Each aircraft stand within the new apron area would be provided with a range of equipment to aid the operation of the stand and facilitate a quick turnaround. The key elements proposed include:
- a. fixed electrical ground power units around 1.5m high. These remove the requirement to use the aircrafts auxiliary power unit or mobile ground power units which would be diesel operated;
 - b. a below ground fuel hydrant system servicing all the stands within the apron area with fuel to hydrants located on the stands thereby removing the requirement for fuel bowsers;
 - c. a stand entry guidance system, approximately 6m high for Code C aircraft, and up to 10m for Code E aircraft, located at the head of each stand centreline allowing the pilot to position the aircraft without the use of a marshal; and
 - d. lighting would also be provided to appropriate safety standards with masts around 25m in height.
- 4.6.34 The de-icing operations for the proposed new aircraft stands associated with T2 would be undertaken on the stands.
- 4.6.35 The expanded apron would include appropriate drainage with full retention interceptors to collect surface water for appropriate storage and treatment before discharge.
- 4.6.36 A fire hydrant system is also proposed within the new apron area with a fire hydrant located at the head of the stand approximately every 90m.

- 4.6.37 A proposed potable water filling point and a foul water discharge point would be located north of the apron area to the west of the new terminal (Work No. 3b(01)), for refilling and emptying of the aircraft.
- 4.6.38 Underground services beneath the apron would require protection to prevent infiltration of ground gases.
- 4.6.39 Locations both on stand and adjacent to the apron area have been provided for parking GSE. It is proposed that these areas would include GSE parking spaces complete with charging points as the GSE fleet would be replaced with electric vehicles over time. Individual items on these areas would not be higher than 4m.
- 4.6.40 The GSE storage areas are likely to be around 13,000m², with a height of typical equipment of approximately 4m.

Work No. 2b(04) – New taxiways and isolation stand

- 4.6.41 New parallel taxiways would be provided to the south of the apron area to connect the new apron to the existing taxiway network; anticipated to be delivered during assessment Phase 2a. These consist of a realigned Taxiway Alpha and the addition of Taxiway Charlie.
- 4.6.42 These works are integrated into the same Work No. area as they would be integral connecting routes at the same surface level as the apron ranging from approximately 152.3m to 160mAOD. Proposed taxiways would occupy an area of approximately 190,839m².
- 4.6.43 The Isolation Stand location has been designed in accordance with European Aviation Safety Agency (EASA) requirements, allowing a minimum of 100m between the parked position of an aircraft on the stand and other parked positions, buildings and public areas.
- 4.6.44 The Isolation Stand is an expanded piece of taxiway with the taxiway pavement widened either side.

Work No. 2c(01) – New aprons, stands, taxilanes

- 4.6.45 A further 12 additional Code C stands are proposed within the reference design for the new apron area, anticipated to be delivered during assessment Phase 2b, making a total of 28 Code C stands within the new apron area. These stands would also accommodate three additional Code E (wingspan up to 65m) aircraft by using alternative stand centrelines bring the total Code E stands to six.
- 4.6.46 The proposals include constructing three additional stands adjacent to Taxiway Golf above an area of landfill. These stands would be connected to the western pier constructed as part of Work No. 3c(01).
- 4.6.47 A new bank of seven Code C stands running north to south, located to the east of the current apron are also anticipated to be constructed in assessment Phase 2b. They are serviced by a new taxilane (Kilo) and have direct access to the proposed new pier building described in Work No. 3c(02).

- 4.6.48 The proposed apron would cover an area of approximately 69,410m² with a surface level ranging from approximately 152.7m to 153.6mAOD, reflecting the variation over the large area.

Work No. 2c(02) – New runway access and RETs

- 4.6.49 To further improve the capacity of the runway and reduce the distances that aircraft need to taxi on the ground, additional taxiways would provide the necessary manoeuvring space for aircraft to access/egress the existing runway to manage the increased aircraft movements.
- 4.6.50 New taxiways anticipated in assessment Phase 2b would be provided to improve access for departing aircraft to access the ends of the runway. This would improve taxiway routing and reduce runway occupancy time. New taxiway facilities would incorporate the necessary drainage and AGL.
- 4.6.51 A RET is proposed towards the east end of the runway. An additional taxiway link (25 link) extending Taxiways Alpha and Charlie to the eastern end of the runway is also proposed.
- 4.6.52 The proposed runway access and RETs would cover an area of approximately 121,669m² with a surface level ranging from approximately 150.2m to 158.6mAOD, reflecting the level variation over the large area.

Work No. 2c(03) – New hangar aprons

- 4.6.53 As part of the new hangar works as described under Work No. 4b an area of additional apron would be required at the frontage of these hangars to provide access for the aircraft, anticipated to be delivered during assessment Phase 2b.
- 4.6.54 The proposed extension to the existing apron area is approximately 21,964m² at a surface level ranging from approximately 153.6m to 159.8mAOD, with the access to the apron from Taxiway Bravo as is currently the case.

Work No. 2c(04) – Airfield access roads upgrade

- 4.6.55 The Fire Training Ground (FTG) is anticipated to be relocated as part of the assessment Phase 2b Works as described in Work No 2d. As part of these works the existing perimeter road from the Fire Station to the proposed FTG around the western end of the runway would need to be assessed and if necessary upgraded to suit the additional traffic and vehicular types that would use it to access the proposed FTG.
- 4.6.56 The proposed upgrade to the existing perimeter road would follow the existing levels in this area and cover an area of approximately 42,604m².

Work No. 2d – Fire training ground

- 4.6.57 The existing FTG is located to the east of the long stay car parking and south of Wigmore Valley Park. It would need to be re-located to accommodate the Proposed Development; its relocation is anticipated to take place in assessment Phase 2b.
- 4.6.58 The existing facilities comprise:

- a. storage units (6m x 3m);
- b. simulator control hut;
- c. Bristol Britannia Fuselage (35m x 6m);
- d. bulk storage calor gas containers;
- e. dual fuel fire simulator (60m x 16m);
- f. welfare facilities;
- g. drill tower (consisting of 3 floors);
- h. Compartment Fire Behaviour Training attack unit (14m x 4m);
- i. two storey breathing apparatus chamber (15m x 10m);
- j. classroom (6m x 3m);
- k. separator tanks; and
- l. two skips.

- 4.6.59 The FTG would be re-located in assessment Phase 2b to an area of available space, approximately 87,346m², south of the runway within the existing airport boundary, outside the Green Belt, approximately 300m away from the nearest residential property to the south west.
- 4.6.60 The new facilities would replace the existing and include assets of similar scale to those described above. The exact location of the various assets will be defined at detail design and cover a developed area of around 27,500m³.
- 4.6.61 The facilities would be used both during the day and night on average twelve times a month by the airport's fire services. In addition, external fire services use the facility for training periodically.
- 4.6.62 When the FTG is not being used, surface water runoff would discharge to a soakaway via a petrol interceptor. Under training operations, a penstock located upstream of the petrol interceptor would be closed and the contaminated discharge would be routed to a separate holding tank. The proposed tank size is 30,000 litres on the basis that this is the size of the emergency water tank which would supply fire training activities. The penstock would be re-opened following a wash down of the operational area and the run-off re-routed through the petrol interceptor to the soakaway. The operational discharge from the holding tank can then be removed to the proposed WTP (Work No. 4d) by tanker or taken off-site for appropriate treatment.
- 4.6.63 Access to/from the facility would be provided by means of two new access tracks from the existing perimeter road. To satisfy the required response times of the Fire Service to an emergency, an access road to the runway is proposed diagonally towards existing Taxiway C.
- 4.6.64 The maximum height of the various structures listed above is 15.4m above a surface level ranging from approximately 158.5m to 162.4mAOD, which gives a total maximum parameter height of 177.8mAOD.

Work No. 2e – Existing engine run-up bay updates

- 4.6.65 The area of hardstanding currently used as an ERUB, located to the east of Taxiway Foxtrot and accessed via Taxiway Alpha would need to be retained and expanded during assessment Phase 1 to provide space for 3 aircraft parking stands.
- 4.6.66 These works would include creating additional apron area (as described in Work No. 2a) to the east of the ERUB accessed from Taxiway Alpha. The ERUB location would shift to the east to occupy this new area allowing an additional aircraft stand to be constructed to the west of the ERUB.
- 4.6.67 The existing ERUB bund would be removed and a new blast deflector and noise attenuation barrier provided with a maximum height of 4.4m replicating the shape of the existing bund. The total area of the works would cover approximately 16,025m² with a surface level ranging from approximately 152.4m to 155mAOD, giving a maximum parameter height of 159.4mAOD..

Work No. 2f – New ERUB

- 4.6.68 A new ERUB would be needed in assessment Phase 2a so that the existing facility can be removed to enable construction of new taxiways as described in Work No. 2b(04).
- 4.6.69 This proposed ERUB facility needs to be in an accessible area of the apron, which would be at the east end of the new apron (Work No. 2b(03)), temporarily for the duration of assessment Phase 2a. Suitable high mast lighting would be installed as described for aprons Work No. 2b(03)
- 4.6.70 The proposed ERUB has been designed as a minimum to accommodate two Code C aircraft for parking or one aircraft for testing which would access/egress under their own power, but also for larger Code E aircraft which would need to be towed in/out of the enclosure. It would form a three-sided bay with the fourth side open so that aircraft can enter from and exit to the taxiway.
- 4.6.71 The proposed ERUB is orientated with the open side facing approximately south, away from receptors sensitive to noise to the north and on the apron. This would include a noise attenuation barrier of up to 13.2m in height on the other three sides of the bay.
- 4.6.72 The ERUB covers an area of approximately 12,525m², which is included in the overall apron area mentioned in Work No. 2b(03) with a surface level ranging from approximately 152.5m to 153.6mAOD, giving a maximum parameter height of 166.8mAOD.

Work No. 2g – Relocated ERUB

- 4.6.73 The ERUB would also need to be relocated to its final location in assessment Phase 2b to allow the apron area to expand. The new facility would have the same dimensions as Work No. 2f but would be relocated further east to the eastern extremities of the extended apron (Work No. 2c(01)) where surface level ranges from approximately 152.2m to 153.4mAOD, giving a maximum parameter height of 166.6mAOD within a work area of approximately 11,512m².

Work No. 2h – Airside utilities corridor

- 4.6.74 The construction of a new airside utilities corridor to connect into the proposed landside drainage is anticipated during assessment Phase 2a (Work No. 2h(01)) and assessment Phase 2b (Work No. 2h(02)). This would require airside working arrangements and consist of operations in a live airport environment.
- 4.6.75 The utility corridor would extend for 2,357m with an approximate width of 27.3m, covering an area of approximately 64,186m² in assessment Phase 2a, increasing by 12,298m² in assessment Phase 2b

4.7 Work Type 3 –Terminal and associated works

- 4.7.1 These works include proposed Work to increase the capacity of the existing terminal (T1), the development of a new passenger terminal building (T2), and all the facilities and assets required to support the operation of T2.
- 4.7.2 The works are numbered sequentially, as described below, and their location shown in the **Work Plans [TR020001/APP/4.04]** and provided as **Figure 4.1 to 4.3** of this ES **[TR020001/APP/5.03]** for ease of reference. The maximum extent and height of development proposed in that area are provided in the corresponding descriptions in subsequent sections of this chapter.

3a – Terminal 1 and associated works

- 4.7.3 T1 requires work to accommodate additional passengers above the current consented capacity of 18 mppa. The capacity of T1 is anticipated to be 21.5 mppa achieved in assessment Phase 1.
- 4.7.4 The work to T1 has been designed to avoid, where possible, extension of the existing facilities impacting on airfield and landside facilities and to minimise the scale of additional building.
- 4.7.5 Additional capacity is anticipated to be achieved by five extensions of the existing terminal as described in separate Work No. 3a (01), (02), (03), (04), and (05) described in subsequent sections of this chapter. Refurbishment works on key terminal facilities within the current building would also be required to provide the necessary capacity to handle the additional demand.

Work No. 3a(01) – T1 New Pier C and external canopy

- 4.7.6 A new pier is proposed to provide passenger boarding gates to service the stands to the west of Taxiway Delta south east of the T1, and the south apron stands. This facility would be located to the south of, and be accessible from, the existing Pier B with a bridge over the Luton DART T1 station. This facility is anticipated to be two storeys to operate departures and arrivals with an approximate area of 4,133m².
- 4.7.7 A canopy would be provided to protect passengers from the elements and facilitate passenger boarding operations from the southern end of the proposed pier to the south apron.

- 4.7.8 The overall operational area is approximately 6,300m² including bridge, pier and canopy with a finished surface level at the same height as the apron, ranging from approximately 152.6m to 157.2mAOD. The maximum building height would be 16.5m giving a maximum parameter height of 173.7mAOD.

Work No. 3a(02) – T1 immigration extension

- 4.7.9 Expansion work to the existing T1 building in the north side is proposed to increase the operative area of immigration; this extension of the terminal extends approximately 5.5m north of the existing façade with an area approximately 270m² at ground floor level. The surface level ranges from approximately 157.8m to 158.2mAOD and a maximum proposed building height of 9.4m gives a maximum parameter height of 167.6 AOD.

Work No. 3a(03) – T1 departure lounge south extension

- 4.7.10 An extension of the current building would be required to increase the ground floor area check-in facilities as well as the departure lounge at first floor; this would require an extension of the building in the south side. At ground floor, the extension to the south would provide an additional area of approximately 350m² to increase the capacity of key terminal facilities such as check-in and security for departing passengers.

- 4.7.11 At first floor, extension the building to the south to increase the departure lounge by providing additional seating dedicated to departing passengers waiting for the call to gate, would be within a work area of approximately 957m² with a surface level ranging from approximately 152.2m to 152.4mAOD. The maximum building height proposed is 18.7m giving a maximum parameter height of 171.1mAOD.

Work No. 3a(04) – T1 departure lounge north extension

- 4.7.12 To increase the departure lounge area at the northern side of the existing building, an extension is proposed to provide additional seating dedicated to departing passengers waiting for the call to gate. The extension would be at first floor only and would have an area of approximately 400m² and surface level ranging from approximately 160m to 162mAOD. The maximum building height would be 9.4m giving a maximum parameter height of 171.4mAOD. The extension would be constructed above the existing operational areas at ground level (airside road system).

Work No. 3a(05) – T1 baggage hall extension

- 4.7.13 The baggage system is one of the key processes for the terminal operations and would be increased in capacity to accommodate the additional demand. An extension of the existing baggage hall area would provide additional space to the baggage system equipment at ground floor, with operative offices at mezzanine floor. This extension would be approximately 1,104m² with a surface level ranging from approximately 152.2m to 152.4mAOD. The maximum building height would be 11.6m giving maximum parameter height of 164.0mAOD and would be built partially under the existing overhang of the main terminal building.

Work No. 3b – Terminal 2

- 4.7.14 A new passenger terminal building (T2) would be provided, comprising a main building and two piers which would interface with the aircraft parking stands, and aprons, to the south. T2 would be accessed from the north, either by rail (Luton DART) or public/private road vehicles via a Drop off Zone. A plaza would be provided immediately north to provide a pedestrian friendly point of entry to the terminal and meet security standards. It is anticipated that T2 would be delivered over assessment phases Phase 2a and 2b.
- 4.7.15 The new passenger terminal would be ultimately sized to process up to 12 mppa, taking the total airport capacity to 32 mppa. T2 has been designed to allow incremental construction to meet forecast passenger demand, with the initial phase catering for 7 mppa on opening.
- 4.7.16 T2 has been designed using conventional vertical stacking over two storeys, with baggage sorting on the lower level, and the Arrivals and Departures passenger processing areas on the upper level.
- 4.7.17 The passenger experience would be supported with a range of facilities including food kiosks, cafes, restaurants, retail and welfare facilities. Support accommodation and operational areas would be provided for airport staff required to operate the terminal including airlines, retail, terminal management, security screening, customs, immigration, baggage handling and ground staff.
- 4.7.18 The proposed engineered servicing of the terminal building would be designed to meet exacting standards with regards to energy conservation and sustainable principles, including to at least 'BREEAM Excellent' status where practicable, or applicable equivalent at the time the design is developed. For example, photovoltaic and solar water heating panels would be installed on the roof, as well as ground source heating and cooling systems under the terminal to deliver a source of sustainable energy.
- 4.7.19 Parameters have been established to represent the approximate scale and massing of the proposed terminal building. They present a maximum height and footprint for the purposes of assessing the environmental impact. A potential design solution, called the Reference Design, has been developed to meet the project brief requirements and form the basis for setting the Parameters. Further information on the Reference Design is provided in the **General Arrangement Plans and Engineering Drawings and Sections [TR020001/APP/4.10]** and the **Design and Access Statement [TR020001/APP/7.03]**.

Work No. 3b(01) – New Terminal 2

- 4.7.20 The footprint area of the new terminal anticipated in assessment Phase 2a is approximately 30,470m² within a work area of approximately 46,600m² with a surface level ranging from approximately 153m to 154mAOD. The proposed maximum building height is 26.5m, giving a maximum parameter height of 180.5m AOD. The proposed maximum building volume is 672,067m³.
- 4.7.21 T2 would include photovoltaic (PV) panels on its roof with an approximate area of 21,364m² anticipated in assessment Phase 2a.

Work No. 3b(02) – Terminal 2 extension

- 4.7.22 To provide additional passenger capacity, the terminal would be widened by 45m across its entire length (to the east elevation) in assessment Phase 2b increasing the maximum footprint by 10,635m² with a surface level ranging from approximately 153m to 154mAOD. The proposed maximum building height remains the same, at 26.5m giving a maximum parameter height of 180.5m AOD.
- 4.7.23 T2 extension would include PV panels on its roof with an approximate additional area of 6,310m².

3c – New terminal piers

- 4.7.24 T2 would include two boarding piers serving contact stands providing direct access onto the aircraft stands from the new terminal building. It is proposed that the piers form a continuation of the T2 departures hall. Each pier could serve 14 Code C aircraft stands, 6 of which would be configured in pairs to service larger Code E aircraft. The piers are likely to comprise circulation, amenity, and gate areas at first floor Departures Level with some retail/food beverage concessions.
- 4.7.25 At ground level an arrivals corridor would connect passengers back to the main terminal via a lift and escalator core, with vehicle and pedestrian access routes and parking areas outside. Plant, operational areas and some staff accommodations are also likely to be provided. Each pier would have the potential for stand access circulation nodes to be provided at each aircraft stand which would be capable of accommodating passenger boarding bridges should the airlines require these in the future.

Work No. 3c(01) – New T2 west pier

- 4.7.26 Anticipated in assessment Phase 2a, a total work area of approximately 15,070m² with a surface level ranging from approximately 154.2m to 155.2mAOD. Proposed maximum building height is 14.4m giving a maximum parameter height of 169.6m AOD. Proposed maximum volume is 69,364m³.

Work No. 3c(02) – New T2 east pier

- 4.7.27 Anticipated in assessment Phase 2b, the footprint of the east pier is approximately 15,060m². Proposed maximum building height is 14.4m giving a maximum parameter height of 168.5m AOD). Proposed maximum volume is 69,433m³.

Work No. 3d - Coach station

- 4.7.28 A new bus and coach station would be provided to cater for increased passenger numbers and improve the public transport offering to the airport from local and national destinations.
- 4.7.29 The new facility, anticipated in assessment Phase 2a, would be located to the east of the Drop Off Zone (DOZ) (Work No. 3e(01)). This location provides

connection to the proposed road network, and easy pedestrian access to the new terminal, and forecourt.

- 4.7.30 The Coach Station forms an integral part of the surface access system and consists of an additional 16 coach stands, a canopy running along the head of stands and a centralised ticketing, amenities and waiting facilities building.
- 4.7.31 The area of the work is approximately 8,675m² with a surface level ranging from approximately 151m to 153.5mAOD. The proposed maximum building height is 8.3m, giving a maximum parameter height of 161.8mAOD. The proposed maximum volume is around 49,172m³.

Work No. 3e – Drop off zone

- 4.7.32 The terminal forecourt area located north of the proposed T2 (Work No.3b) and Terminal Plaza (Work No. 3f) would have bus, taxi and passenger drop-off and pick up zone and would be directly accessible to and from the surface access network to the north of the new terminal. The DOZ would also connect to the adjacent coach station and have direct pedestrian access to departures and arrivals in the new terminal.
- 4.7.33 The DOZ would be expected to provide around 90 car parking spaces, 30 taxi parking spaces and 10 coach parking bays.
- 4.7.34 The public realm associated with Work No. 3e would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees).

Work No. 3e(01) – Drop off zone

- 4.7.35 The Work area anticipated for assessment Phase 2a, is approximately 14,490m² at surface level of approximately 153.5mAOD .

Work No. 3e(02) – Drop off zone

- 4.7.36 The Work area anticipated in assessment Phase 2b increases to a maximum area of 30,135m², at the same surface level of 153.5mAOD. The Short-Stay Multi-Storey Car Park (MSCP) (Work No. 4r) is constructed above it in assessment Phase 2b.

Work No.3f – Terminal 2 plaza

- 4.7.37 The T2 Plaza, anticipated in assessment Phase 2a, would be located between the DOZ (Work No. 3e(02) and T2 building (Work No. 3b), providing a dedicated pedestrian zone. This area would allow passengers and employees accessing/egressing the terminal access to a central circulation area, the Coach Station (located to the east) and Luton DART station (located to the west).
- 4.7.38 The area would cover approximately 4,050m² in assessment Phase 2a, increasing to 5,930m² in assessment Phase 2b, at a surface level of approximately 153.5mAOD.

- 4.7.39 Pedestrian movement routes would be provided along key desire lines and sufficiently sized to ensure their ability to accommodate predicted footfall. The design of this area would also consider those potentially likely to use the space, ensuring surface treatments are accessible to all users and that suitable shelter is provided along principal connecting routes. The positioning of signage would also be coordinated to ensure information is clear and routes are clearly demarcated.
- 4.7.40 The T2 Plaza would help to support the functionality and uses of the terminal itself, including:
- a. provision for passengers and visitors to wait, prior to checking-in or collecting those arriving at the airport (with seating or perching areas);
 - b. provision of sheltered areas for smokers and for use during inclement weather;
 - c. provision for luggage trolley parking and other air travel facilities;
 - d. cycle parking provision;
 - e. other street furniture and security measures;
 - f. break-out areas for airport staff and visitors;
 - g. muster points; and
 - h. other land uses (e.g. retail or café/restaurant).
- 4.7.41 The public realm would include both hard and soft landscaped parts and would be designed to ensure that visitors can easily navigate the space and get from their place of arrival (i.e. car park, DOZ, Luton DART station) into the terminal building and vice-versa.
- 4.7.42 Soft landscaping associated with the T2 Plaza is envisaged to be formal and to include street trees, clipped hedgerow, and ornamental shrub planting.

Work No. 3g – Luton DART T2 station and tunnel extension

- 4.7.43 The Luton DART, expected to be opened in 2023, provides a direct mass passenger rail link between Luton Airport Parkway railway station and T1.
- 4.7.44 It is proposed that in assessment Phase 2a this would be extended to serve T2 connecting from the T1 station. Luton DART trains would link all three stations with a 10 minute frequency and approximately 10 minute journey time between the new terminal and Luton Parkway railway station.
- 4.7.45 The proposed Luton DART tunnel extension is anticipated to be constructed using cut and cover (as described in **Appendix 4.1** to this ES [TR020001/APP/5.02]) and would run from the east of the T1 station and would extend under Taxiway Delta and Foxtrot for approximately 500m, terminating at a new station adjacent to the west of T2. The tunnel would occupy approximately 9,200m² and be entirely below ground; the tunnel dimensions are typically a 7m deep section with a 1.5m cover and a width which varies from 13m to 22m.

- 4.7.46 The proposed vertical and horizontal alignment of the Luton DART extension are provided as part the **Airport Access Road and Luton DART Long Section Drawings [TR020001/APP/4.11]** submitted as part of the application for development consent. Both the tunnel and the new terminal station would operate as landside facilities and have no direct connection to the airside facilities.
- 4.7.47 Most of the station, including platform areas and maintenance area relocated from T1 Luton DART Station, would be below ground, with only the station entrance, key station operational buildings and critical skylights above ground. The station design has been developed in keeping with the smoke ventilation requirements of a semi-open station, the style of that being constructed at T1.
- 4.7.48 Additional cars would be added to the light rail system in order to increase system passenger capacity to meet forecast demand.
- 4.7.49 The T2 station would occupy an above ground work area of approximately 26,790m² with a maximum above ground height of 23.7m, giving a maximum parameter height of 177.2mAOD.
- 4.7.50 The public realm associated with this Work No. would include both hard and soft landscaped areas. Movement routes around the Luton DART T2 station would be sufficiently sized to ensure their ability to accommodate predicted footfall. The design of this area would also consider those potentially likely to use the space, ensuring surface treatments are accessible to all users and that suitable shelter is provided along principal connecting routes. The positioning of signage would also be coordinated to ensure information is clear and routes are clearly demarcated. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees).

Work No. 3h – T2 support facilities

- 4.7.51 Located to the west of T2, provision is made in assessment Phase 2a for buildings and areas of hard standing required to support the terminal function and operation. The Work area provided to accommodate these facilities is approximately 11,265m² with a surface level ranging from approximately 154.2m to 154.5mAOD.
- 4.7.52 The maximum height of the building would be 12.8m giving a maximum parameter height of 167.2mAOD. This Energy Centre would include chillers, heat pumps and electrical and heat storage, as no combustion is proposed there is no stack required.
- 4.7.53 This Work area includes space for a service yard to provide the controlled access point for deliveries to T2. This area would allow for deliveries to be processed and stored, with sufficient vehicle manoeuvring space. This would be at a proposed surface level ranging from approximately 154.2m to 154.4mAOD with the total area for the Energy Centre. The maximum structure height proposed in this area is 5m giving a maximum parameter height of 159.5mAOD.
- 4.7.54 In addition, an emergency vehicle assembly area approximately 4,858m² is anticipated to the north of T2 at proposed surface level ranging from approximately 153m to 154.2mAOD. This would be a designated area for

emergency vehicles during emergencies only and would be vacant at all other times. A small welfare unit with an approximate area of 190m² would be installed with a maximum height of 5m, giving a maximum parameter height of 159.2m AOD.

- 4.7.55 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be naturalised in appearance (i.e. native shrub vegetation, mixed-species hedgerow and woodland).

Work No. 3i – Airport operations and maintenance

- 4.7.56 These works include landside and airside buildings and hard standing required to support the core functions of the airport, two to four buildings could be constructed on the site, anticipated in assessment Phase 2b, approximately 22,100m² with a surface level ranging from approximately 149m to 153.5m AOD. The maximum proposed building height of 15.2m gives a maximum parameter height of 168.7m AOD. The exact number and functions of buildings in this area would depend on the evolving nature of future airport operation and are likely to include (but not limited to) the following functions: security gatehouse, ground operations staff and vehicle facilities; vehicle maintenance; vehicle charging and other similar support operational facilities.
- 4.7.57 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be naturalised in appearance (i.e. native shrub vegetation, mixed-species hedgerow and woodland).

4.8 Work Type 4 – Airport support facilities

- 4.8.1 These works include all the facilities and assets required to support the operation of the expanded airport, including ground operations, hangars, car parks, water treatment and fuel storage.
- 4.8.2 The works are numbered sequentially, described below, and their location shown in the **Work Plans [TR020001/APP/4.04]** and provided as **Figures 4.1 to 4.3** of this ES **[TR020001/APP/5.03]**. The maximum extent and height of development proposed in each area are provided in the description in this chapter.

Work No. 4a – Hotel

- 4.8.3 A hotel is anticipated in assessment Phase 2b to meet the need for additional hotel capacity driven by airport and business-related demand at 32 mppa. The hotel would be located to the north east of T2, surrounded by a MSCP (Works No. 4r) to the west, the Coach Station to the south (Works No. 3d) and by part of airports roads (Works No. 6b.(02)) and embankment to the east.
- 4.8.4 It would be linked to the proposed road network from its eastern side allowing connection to the main access road. Its location facilitates pedestrian access to T2 (less than 100m away) and public transport including the Coach Station (Works No. 3d) and Luton DART Station (Works No. 3g).

- 4.8.5 The hotel would provide around 400 beds and car parking linked to the new T2 Public Realm³. External vehicle and pedestrian access, and servicing areas would also be included.
- 4.8.6 The work area would occupy approximately 9,441m² with a surface level ranging from approximately 150.7m to 153.5mAOD. The maximum building height proposed is 22m giving a maximum parameter height of 175.5mAOD.
- 4.8.7 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be naturalised in appearance (i.e. native shrub vegetation, mixed-species hedgerow and woodland).

Work No. 4b – Hangar A and B

- 4.8.8 Three existing buildings, located along President Way between Airport Approach Road and Prince Way, would be demolished and replaced in assessment Phase 2b of the Proposed Development. They are to the north of the existing terminal located adjacent to the existing northern aircraft apron. These are currently standard commercial units which would be replaced by two new single bay general aviation or aircraft maintenance hangars to serve the increasing demand from the growing aircraft fleet.
- 4.8.9 The hangars have been designed to accommodate up to Code C aircraft and would include provision for approximately 120 no. staff car parking spaces.
- 4.8.10 The two hangars would be located in the same areas previously occupied by the buildings they are replacing, to the south of the proposed Airport Access Road (AAR) providing access to the east of the airport (previously referred to as the Century Park Access Road) (Work No. 6a(02)), with access provided from Work No. 6a(02) with new internal roads.
- 4.8.11 The total work area is approximately 16,641m², excluding the apron area described in Work No. 2c(03), with a surface level ranging from approximately 156.5m to 157.5mAOD. The maximum building height of the two hangars would be 27.5m giving a maximum parameter height of 185m AOD, and proposed building gross external area 11,760m².
- 4.8.12 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be naturalised in appearance (i.e. native shrub vegetation, mixed-species hedgerow and woodland).

Work No. 4c(01) – Fuel storage facility

- 4.8.13 The expansion would require a new larger fuel storage facility than currently available. The existing fuel storage facilities would be retained and continue to serve the existing terminal.

³ Public Realm relates to areas in the built environment including between buildings, streets, squares, plazas, that are accessible to the public.

- 4.8.14 The new fuel storage facility, anticipated in assessment Phase 2a, would be provided landside to the east of the proposed earthworks and car parking, within the excavated area at ground level approximately 27m below the proposed apron level.
- 4.8.15 The new fuel storage facility would consist of the following:
- a. four large fuel storage tanks, with a combined capacity of 22,000m³, provided for settling, storage and backup purposes with heights of up to 24.2m;
 - b. a fuel interface tank is required to isolate any contaminants from the fuel intake before it reaches the main storage tanks. It has a capacity of 1,000m³ and a height of approximately 13m;
 - c. a bund wall surrounding fuel storage tanks, with a capacity of 6,600m³, provided for safety and pollution prevention measures designed in compliance with requirements of the Control of Major Accident Hazards (COMAH) Regulations 2015. Some of these measures include, spill prevention between tanks into drainage and water systems, controlled containment, recovery and treatment of spilled material, and, prevention of contamination of land and groundwater.
 - d. ancillary building with a footprint of 200m² for administrative would be two storeys with maximum height of approximately 9m;
 - e. an area for fuel bowsers and road tankers to park and carry out the required operation, the drainage system in this area includes the provision of interceptors and oil water separators to contain spillages and prevent fuel entering the drainage system and groundwater systems; and
 - f. fuel lines installed during the development of the airfield to connect the new fuel storage facility to the existing fuel storage facilities to the west of the existing terminal on Percival Way.
- 4.8.16 It is anticipated that a variety of fuel types would need to be accommodated as changes in aircraft technology are developed, moving from traditional fuel engines to Sustainable Aviation Fuel (SAF), electric and/or hydrogen aircraft, which are recognised as playing an important role in the decarbonising the aviation sector. Where opportunities arise, the Proposed Development has been designed to accommodate the potential uptake of, or transition to, these technologies as and when they come forward.
- 4.8.17 It is anticipated that SAF will be manufactured, blended into, and distributed by fuel companies. The Proposed Development is therefore future proofed to accommodate a transition to the use of SAFs as no new or different infrastructure is anticipated to be required to support such a transition.
- 4.8.18 Electric aircraft are being developed now, although commercially and operationally viable aircraft of the size which the Proposed Development would serve will not be available for some time. Whilst the impact and detail of these new technologies remains uncertain, the Proposed Development has been designed to safeguard for the potential future use of electric aircraft by providing a new electricity substation at Terminal 2 and incorporating space on each

stand within the proposed apron footprint for additional infrastructure required to charge the aircraft.

- 4.8.19 It is anticipated that if the industry transitions through a significant take-up of electric aircraft, additional electrical infrastructure would be needed. Initial analysis indicates that two additional 33kV sub-stations may be required to support the planned growth at the airport if electric aircraft make up a substantive part of the aircraft fleet in the future. As it is not yet known precisely when a transition to electric aircraft may take place, the provision of these additional substations is necessarily beyond the scope of the Proposed Development.
- 4.8.20 To future proof the design of the Proposed Development such that a transition to electric aircraft could be facilitated at the airport if and when it arises in future, an initial assessment of potential locations for additional sub-stations has identified several land use options, for example, through the reconfiguration of a limited number of car parking spaces. The infrastructure necessary to support this transition could be accommodated at the airport alongside delivery of the Proposed Development.
- 4.8.21 The use of hydrogen as fuel for aircraft is immature, which makes it challenging to predict at this stage what airports may need to provide to support such technology should it come forward in future. At this stage, it is expected that a transition to the use of hydrogen aircraft would require substantial changes to aircraft technology, and fuel distribution and storage.
- 4.8.22 Early studies indicate that hydrogen fuel could potentially be delivered by tankers and, as uptake increases, by pipeline. As the transition to hydrogen aircraft matures, it is expected that the existing infrastructure for current aircraft technologies would no longer be required at the same scale, and the fuelling infrastructure at the airport would be reconsidered as a whole to service the transition to hydrogen aircraft.
- 4.8.23 Landside access to the new fuel storage facility would be provided for general use of the facility, along with an emergency access track from the airside road network for firefighting purposes.
- 4.8.24 The Work area for the new fuel storage facility is approximately 83,700m² with a surface level ranging from approximately 126.2m to 126.9mAOD. The maximum parameter height would be 151.1mAOD.
- 4.8.25 Soft landscape treatments would be included at the frontage of this facility and comprise street trees, ornamental planting, and mown grassland.

Work No. 4c(02) – Fuel pipeline

- 4.8.26 A new fuel pipeline is planned in assessment Phase 2a to create a connection between the new fuel storage facility and the existing fuel pipeline located to the east of the airport.
- 4.8.27 The Work area of the fuel pipeline connection point would occupy approximately 460m², in a total work area of 8,355m, with a surface level of approximately 134.8m to 135.8AOD This would comprise a fenced hard standing area with

access to connecting pipes and valves for maintenance and operational purposes, accessed from the local road network via a single access track. It would have a maximum building height of 4.6m giving a maximum parameter height of 140.4m AOD.

- 4.8.28 The new fuel pipeline would run for a length of approximately 700m at a depth to be determined during detailed design but likely to range from around 1.5m to 7m below ground. It is likely to be constructed using cut and cover technique, depending on final required profile, as this would likely have the least impact on the Green Belt and require least remediation to reinstate existing conditions.
- 4.8.29 The existing fuel pipeline passes through the Green Belt, so the proposed connection point and above ground pipework installation in the building described above in **Paragraph 4.8.27** needs to be located at this point within the Green Belt.
- 4.8.30 The new fuel pipeline that runs between the existing fuel pipeline and the new fuel storage facility is also within the Green Belt. However, since the pipeline would be buried the land above it would be reinstated once constructed.

Work No. 4d – Water treatment plant

- 4.8.31 A new WTP is anticipated in assessment Phase 2a, to be in operation circa 2036. The new WTP design will be dependent on the detailed drainage design and whether the preferred (foul and contaminated surface water discharged to Thames Water network) or reserve option (T2 foul and contaminated surface water treated and discharged to ground) is implemented. For the reserve option (requiring the more significantsubstantial, multi-process water treatment plant), it is proposed to treat sewage from the new terminal and other facilities in the Proposed Development, aircraft, and contaminated surface water runoff from the aprons, runways and taxiways. Sewage would be collected from within the Main Application Site via a new dedicated foul drainage system, and ~~combined with the~~ surface water run-off in its own drainage system, prior to treatment through their respective processes.
- 4.8.32 Each leg of the surface water catchment infrastructure from the apron, taxiway, stands, and runway would have oil interceptors with monitoring instrumentation. Contaminated surface water is likely to contain glycol, small amounts of aviation fuel, diesel, petrol, other ~~hydrocarbon-based~~hydrocarbon-based compounds as well as ~~salt other de-icing agents, and~~ grit and wear particles. The system has been designed to contain the first two hours of a storm event, the ‘first-flush’ likely to contain the contaminants, and discharge it to the WTP in a controlled manner for treatment prior to discharge to the infiltration tank (Work No. 4v).
- 4.8.33 The WTP ~~has been designed~~concept has been developed to reduce Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (NH₄-N), ~~and~~ Total Suspended Solids (TSS) and other contaminants to an acceptable level to be discharged to ground under an Environmental Permit regulated by the Environmental Agency, as described in the Consents and Agreements Position Statement **[TR020001/APP/2.03]**. Whichever option is selected as appropriate, -consent for discharge will be sought from the relevant regulator and/or undertaker. Further details on the

principles, design, and assumptions used in developing the WTP are provided in **Appendix 20.4** in of this ES [TR020001/APP/5.02].

~~4.8.334.8.34~~ 4.8.34.8.34 ~~;~~ The WTP would be separated into three streams, the anticipated key conceptual elements of the WTP could include:

- a. The **effluent treatment process** (treating potentially contaminated surface water) would consist of screening, ultrafiltration followed by two-stage reverse osmosis for the recovery and separation of de-icing fluids. The recovered de-icing fluids would be taken off-site for re-cycling.
- b. The **sewage treatment process** (treating foul water if this cannot be discharged to sewer) would consist of screening, settlement followed by a membrane bio-reactors (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** (treating clean surface water for re-use on site) would consist of grit removal, followed by media filtration and ultraviolet disinfection.
 - ~~a. Primary treatment using rake screens, grit centrifugal separators and FOG (Fat/Oil/Grease) tank. Screenings, grit, and FOG shall be removed from site in skips for disposal off site.~~
 - ~~b. Biological treatment through use of Moving Biological Bed Reactors; (MBBRs).~~
 - ~~c. Secondary treatment through multi-streamed Dissolved Air Flootation (DAF) plant,~~
 - ~~d. Final treatment via ultrafiltration (UF).~~
 - ~~e. Disinfection with UV or chlorination.~~
 - ~~f. Sludge produced on site from MBBRs and DAFs would be thickened and stored for tankering32inkering 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 malodorous 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.~~

~~4.8.344.8.35~~ 4.8.344.8.35 The WTP would be located in the east of the Main Application Site in the area excavated as part of the earthworks. The WTP would therefore be at a lower level than the aviation platform, and the open space, landscaping and habitats provided at existing ground level to the east.

~~4.8.354.8.36~~ 4.8.354.8.36 This work would occupy an area of approximately 6,760m² with a surface level ranging from approximately 126.5m to 127.1mAOD. The maximum

building height is expected to be 13.9m_r, giving a maximum parameter height of 141.0m AOD. These parameters allow for the full extent of the WTP described above which includes the infrastructure for each option under consideration. Therefore, a reasonable worst case for assessments that use this information has been assessed and reported.

4.8.364.8.37 Soft landscape treatments would be included at the frontage of this facility and comprise street trees, ornamental planting, and mown grassland.

Work No. 4e – Solar energy battery

4.8.38 Located to the north east of T2 and anticipated in assessment Phase 2b, a solar battery storage facility would be constructed to collect the energy created by the Long Stay car park (Work No. 4q(02)) photovoltaic canopies and roofs and connect it into the airport network. This area would include storage containers, drainage infrastructure, lighting, access and worker parking, and small ancillary buildings.

4.8.374.8.39 The Work area is approximately 5,270m² with a surface level ranging from approximately 131.5m to 132.6m AOD. The maximum proposed height is 7.2m giving a maximum parameter of 139.8m AOD.

Work No. 4f – Airside security and access

4.8.384.8.40 Security at the airfield created in assessment Phase 2a requires a sufficient number of control gates to allow the airport to operate efficiently. Airside areas need to be surrounded by security fencing with entrances as required.

4.8.394.8.41 There would be a 6m wide security strip, approximately level and free from either hardstanding or utilities (except those crossing the boundary) with the security fence located centrally in this strip. The height of the security fence line would be approximately 2.8m and would be installed with a cranked top.

4.8.404.8.42 An additional 24hr manned control Vehicle Control Point (VCP) would be required in the vicinity of T2 and associated apron area to support access to and from the airfield. The proposed VCP would require an area of approximately 95m x 25m, comprising a two-lane entry (2 x 6.5m) and one-lane exit (5m), two layby areas, a control check point facility (area 110m²), security barriers (6 no.) and pedestrian accesses.

4.8.414.8.43 The facility would require power, communications, potable water and foul drainage connections to support the security accommodation. The plot area for the VCP is approximately 2,870m² in total with small single storey structure providing accommodation for security staff, occupying a small fraction of the area. The maximum structure height would be 5m giving a maximum parameter height of 158.0m AOD.

Work No. 4g – Car park P1 (known as Tiered Car Park)

4.8.424.8.44 Provision of staff parking is anticipated in assessment Phase 2a to the south west of the Main Application Site, along New Airport Way near Luton Airport Parkway railway station. This location would benefit from the future accessibility

to the terminals afforded by the Luton DART system which on opening will reduce demand on the road network at the airport.

4.8.434.8.45 Staff parking would be provided as a MSCP accessed from the Luton Airport Parkway Station approach road, adjacent to a similar facility serving the Luton Airport Parkway railway station. The MSCP would provide around 1,000 parking spaces.

4.8.444.8.46 This work would occupy an area of approximately 14,105m², with a building height of 20.4m, and a maximum external parameter height of 135.4m AOD. This height allows for the upper level to have canopies/roofing to support photovoltaic panels over Car Park P1.

Work No. 4h – Car park P2 (known as Trailer Car Park)

4.8.454.8.47 A surface level car park would be constructed in assessment Phase 2a to the south west of the Main Application Site, north of the Midland Mainline railway line, near Luton Parkway Airport railway station. This facility would include staff parking only with around 450 parking spaces.

4.8.464.8.48 This work would occupy an area of approximately 20,760m². A proposed height of 5m with a maximum parameter of 133m AOD. This height allows for canopies/roofing to support photovoltaic panels over Car Park P2.

Work No. 4i – Car park P3 (known as Mid-Stay Car Park)

4.8.474.8.49 Car Park P3 is the airport's existing Mid-stay Car Park. It would be retained during the Proposed Development with minor amendments to the northern boundary of the car park in order to accommodate work to the adjacent A1081 / Percival Way and Work No. 6a.02 junctions. The amendments to the northern extent of the car park are anticipated to take place in assessment Phase 1 and would result in a reduction in the overall area of parking, to provide a capacity of around 1,700 parking spaces.

Work No. 4j – Car park P4 (known as T1 Multi-Storey Car Parks 1 and 2)

4.8.484.8.50 Existing T1 Multi-storey Car Park 1, level 2 valet parking area would be reconfigured through changes to internal white lining and road markings in assessment Phase 1 to provide additional valet parking, giving a total valet provision of around 75 spaces.

Work No. 4k(01) – Car park P5 adjusted surface car park (known as Long Stay Car Park)

4.8.494.8.51 The existing Long Stay Car Park, upon which T2 and aircraft stands would be built, currently accommodates 4,500 parking spaces. The area required for the proposed apron would be vacated for surcharging⁴ and new aircraft stands in assessment Phase 1. The residual area of parking would be 47,092m² which

⁴ Surcharging is a process by which a load (such as excavated material) is used to provide pressure on a ground surface to accelerate consolidation of the material beneath it.

would accommodate around 2,450 cars in a block parking⁵ arrangement, which maximises efficiency. The balance of parking provision lost in Car Park P5 would be re-provided in other airport car parks.

4.8.504.8.52 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees).

Work No. 4k(02) – Car park P5 new decked car park (known as Long Stay Car Park)

4.8.514.8.53 In assessment Phase 2a the existing Long Stay Car Park is anticipated to further reduce in size to an area of 22,536m² and would be single storey decked to accommodate around 1,200 cars with a maximum building height of 7.7m, resulting in a maximum external parameter height of 163.2m AOD. This height would allow for the upper level to have canopies/roofing to support photovoltaic panels over the Car Park P5. The balance of parking lost would be re-provided in Car Park P11 (Work No.4q).

Work No. 4l(01) – Car park P6 – new temporary surface car park

4.8.524.8.54 A surface level car park would be constructed to the north east of the existing airport, south west of the Wigmore Valley Park Pavilion and near to the LBC Tidy Tip. This facility would accommodate approximately 1,250 cars block parked for assessment Phase 1.

4.8.534.8.55 This Work would occupy an area of approximately 27,606m² and would include a small, single storey structure associated with car park management.

Work No. 4l(02) – Car park P6 – adjusted temporary surface car park

4.8.544.8.56 In assessment Phase 2a Car Park P6 would be reconfigured and extended to provide approximately 1,620 cars block parked. This area of parking would be completely replaced with Green Horizons Park office buildings in assessment Phase 2b. At this time, the Car Park P6 parking would be re-provided in other airport car parks.

4.8.554.8.57 This work would occupy an area of approximately 27,032m² and would include a small, single storey structure associated with car park management.

Work No. 4m(01) – Car park P7 – new temporary surface car park

4.8.564.8.58 A surface level car park would be constructed to the east of the existing airport, to the south side of Car Park P6 and near to the existing Long Stay Car Park. This facility would be introduced to accommodate approximately 3,090 cars in assessment Phase 1 with a work area of 68,516m².

⁵ A managed parking arrangement where vehicles can be parked in locations that block other vehicles in. The controllers of the site can move vehicles to allow owner to exit when required.

Work No. 4m(02) – Car park P7 – adjusted temporary surface car park

4.8.574.8.59 Car Park P7 would be reduced to an area of 29,780m² in assessment Phase 2a to make way for the construction of T2 (Work No. 3b.01), Car Park P8 (Work No. 4n) and the Coach Station (Work No. 3d). The revised area would accommodate 1,230 cars. The balance of parking provision would be provided in Car Parks P10 (Work No. 4p(01) and P11 (Work No. 4q(01)).

4.8.584.8.60 Car Park 7 would not be available in assessment Phase 2b and the spaces would be re-provided in other airport car parks.

Work No. 4n – Car park P8 - temporary surface car park

4.8.594.8.61 A surface level car park to accommodate the Car Hire facility would be constructed to the east side of T2 assessment Phase 2a. This facility would accommodate approximately 600 cars within an area of approximately 20,978m².

4.8.604.8.62 In assessment Phase 2b Car Park P8 would be replaced with the extension of T2 (Work No. 3b(02)) and Airport Operations and Maintenance facilities (Work No. 3i). At this time the car hire parking from Car Park P8 would be re-provided within Car Park P10 (Work No. 4p(02)).

Work No. 4o(01) – Car park P9 staff parking

4.8.614.8.63 This Work identifies the area allocated for extended staff parking which is needed as a result of the relocation of the Car Hire facility in assessment Phase 1. Reconfiguration of the existing staff parking area and conversion of the Car Hire facility into staff parking would provide approximately 1,075 surface level parking spaces within an area of approximately 24,604m².

4.8.624.8.64 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would, to allow flexibility in future use, be located only at the perimeter and adjoining principal road corridors. Soft landscape treatments would comprise street trees, ornamental planting and mown grassland.

Work No. 4o(02) – New decked car park (adjusted car park P9 staff parking affected by Work No. 6a(02) east)

4.8.634.8.65 This Work identifies the area allocated for maximising the retention of staff car parking potentially lost with the construction of the Work No. 6a(02) approximately located from the existing President Way / Prince Way junction eastwards. The remaining area of existing car parking north of the London Luton Airport Cargo Centre and Signature hangar would be redeveloped, extended east through the area of parking previously used as TUI parking, and partially decked to accommodate approximately 1,200 cars.

4.8.644.8.66 This Work would occupy an area of approximately 27,362m², with a building height of 7.7m, and a maximum parameter height of 161.6m AOD. This height

allows for the upper level to have canopies/roofing to support photovoltaic panels over Car Park P9. The balance of parking lost is to be re-provided in other airport staff car parks.

Work No. 4p(01) – Car park P10 – new long stay car Park

4.8.654.8.67 A surface level car park would be constructed to the east of the new apron (Work No. 2b(03)) and north of the eastern end of the runway. This facility would be constructed in assessment Phase 2a within the area excavated as part of the earthworks giving a surface level ranging from approximately 129m to 137m AOD. The work area would be approximately 28,969m² and accommodate approximately 1,150 cars. Canopies for photovoltaic panels and shelters at 5m gives a maximum parameter height of 142.0m AOD.

4.8.664.8.68 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would, to allow flexibility in future use, be located only at the perimeter of this Work Zone or adjoining principal road corridors; and in locations unaffected by assessment Phase 2b. Soft landscape treatments would comprise street trees, ornamental planting and mown grassland.

Work No. 4p(02) – Car park P10 – reconfiguration of new long stay car park

4.8.674.8.69 In assessment Phase 2b it is anticipated Car Park P10 would be expanded to accommodate approximately 3,165 cars with a Work area of approximately 71,410m².

4.8.684.8.70 The proposed maximum height of the final Car Park P10 would be 5m giving a maximum height of 135.0m AOD. This height allows for canopies/roofing to support photovoltaic panels over Car Park P10.

4.8.694.8.71 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would, to allow flexibility in future use, be located only at the perimeter of this Work or adjoining principal road corridors. Soft landscape treatments would comprise street trees, ornamental planting and mown grassland.

Work No. 4q(01) – Car park P11 - new long stay car park

4.8.704.8.72 A surface level car park would be constructed to the east of the proposed T2 (Work No. 3b(01)) and north of the eastern end of the runway. This facility would be constructed in assessment Phase 2a within the area excavated as part of the earthworks giving a surface level ranging from approximately 128.0m to 132.0m AOD. The Work area would be approximately 45,045m² and accommodate approximately 2,700 cars. The proposed maximum height of the would be 5m giving a maximum height of 137.0m AOD. This height allows for canopies/roofing to support photovoltaic panels over the car park.

4.8.714.8.73 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would, to allow flexibility in future use, be located only at the perimeter of this Work or adjoining principal road corridors; and in locations unaffected by assessment Phase 2b. Soft landscape treatments would comprise street trees, ornamental planting and mown grassland.

Work No. 4q(02) – Car park P11- expanded long stay car park

4.8.724.8.74 In assessment Phase 2b Car Park P11 would be expanded to accommodate approximately 5,350 cars with an additional Work area of approximately 51,789m².

4.8.734.8.75 The proposed maximum height of the final Car Park P11 would be 5m giving a maximum parameter height of 137.0mAOD. This height allows for canopies/roofing to support photovoltaic panels over Car Park P11.

4.8.744.8.76 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would, to allow flexibility in future use, be located only at the perimeter of this Work or adjoining principal road corridors. Soft landscape treatments would comprise street trees, ornamental planting and mown grassland.

Work No. 4r – Car park P12 – new T2 multi storey car park

4.8.754.8.77 In assessment Phase 2b it would be necessary to accommodate the Short-Stay parking facility within a new multi storey car park built over the DOZ (Work No. 3e(01)). The Work area would be approximately 25,070m².

4.8.764.8.78 The maximum height of the final Car Park P12 would be approximately 17.1m giving a maximum parameter height of 170.6m AOD. This height allows for the upper level to have canopies/roofing to support photovoltaic panels over Car Park P12.

4.8.774.8.79 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees).

Work No. 4s – Airport Access Road permanent car parking replacement provision

4.8.784.8.80 In assessment Phase 2a an area of surface level car parking would be located within the area currently occupied by Hangar 24, to provide replacement car parking for spaces affected when it is demolished as part of the construction for Work No. 6a(02). This facility would accommodate approximately 80 cars within an area of approximately 1,917m².

Work No. 4t(01)- Airport Access Road permanent car parking replacement provision

4.8.794.8.81 In assessment Phase 2a an area of surface level car parking is proposed to replace spaces which are affected by the construction of Work No. 6a(02). This Work is located to the north of the ex-Monarch training facility and would comprise approximately 25 spaces within an area of approximately 557m².

Work No. 4t(02) – Airport Access Road permanent car parking replacement provision

4.8.804.8.82 In assessment Phase 2a an area of surface level car parking is proposed to replace spaces which are affected by the construction of Work No. 6a(02). This Work comprises three car parks in the vicinity of the proposed junction with Provost Way, to the west of GKN. The three car parks covered by this Work would comprise approximately 275 spaces within a total area of approximately 8,988m².

4.8.814.8.83 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would include mown grass, ornamental shrub, and/or street trees as appropriate.

Work No. 4t(03) – Airport Access Road permanent car parking replacement provision

4.8.824.8.84 In assessment Phase 2a an area of surface level car parking is proposed to replace spaces which are affected by the construction of Work No. 6a(02). This Work comprises works to the front and rear of David Berryman within Luton Airport Executive Park, and seeks to re-provide any existing parking spaces affected by Work No. 6a(02) within the Proposed Development boundary.

4.8.834.8.85 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would include mown grass, ornamental shrub, and/or street trees as appropriate.

Work No. 4t(04) – Airport Access Road permanent car parking replacement provision

4.8.844.8.86 In assessment Phase 2a an area of surface level car parking of approximately 4,050m² at around +157m to 158m AOD is proposed to replace spaces which are affected by the construction of Work No. 6a(02). This Work comprises works within Luton Airport Executive Park, and seeks to re-provide any existing parking spaces affected by Work No. 6a(02) within the existing Proposed Development boundary. Up to 100 parking spaces would be affected by the proposed AAR (Work No. 6a(02)), and these would be re-provided through amendments to areas of landscaping and existing parking areas. There would be no net loss of parking as a result of the proposals. These areas of replacement parking would only be provided at assessment Phase 2a, as this entire area is planned to be reconfigured to accommodate additional hangars at

assessment Phase 2b (Work No. 4b), with removal of existing buildings and car parks.

4.8.854.8.87 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would include mown grass, ornamental shrub, and/or street trees as appropriate.

Work No. 4t(05) – Airport Access Road permanent car parking replacement provision

4.8.864.8.88 In assessment Phase 2a an area of surface level car parking is proposed to replace spaces which are affected by the construction of Work No. 6a(02). This Work comprises works within an area to the north of Luton Airport Cargo Centre and provides approximately 90 spaces within a total area of approximately 1,833m².

4.8.874.8.89 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would include mown grass, ornamental shrub, and/or street trees as appropriate.

Work No. 4t(06) – Airport Access Road permanent car parking replacement provision

4.8.884.8.90 In assessment Phase 2b an area of surface level car parking is proposed to replace spaces which are affected by the construction of Work No. 6a(02). This Work comprises two car parks in the vicinity of the proposed signalised junction with Provost Way and the link to President Way, to the west of GKN and south of Work No. 6a(02). The two car parks covered by this Work would comprise approximately 120 spaces within a total area of approximately 2,671m².

4.8.894.8.91 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would include mown grass, ornamental shrub, and/or street trees as appropriate.

Work No. 4u – Police station

4.8.904.8.92 A new Police Station would be provided to replace the existing police station, located north west of T1, replacing three existing buildings, anticipated to be undertaken in assessment Phase 2a.

4.8.914.8.93 The Work area of the Police Station would occupy approximately 6,780m². This would comprise of a single compound and be a mixture of 1 and 2 storeys dependant on function. It would also include a connection to the proposed AAR. The Work area has a maximum proposed height of approximately 12.1m with a maximum parameter height of 173.5m AOD.

Work No. 4v – Infiltration tanks

4.8.924.8.94 The new drainage system anticipated in assessment Phase 2a would provide effective surface water drainage, with a high level of flood risk

protection over the long term both within and downstream of the development while reducing risk of water pollution.

4.8.934.8.95 There are two infiltration tanks proposed below ground to reduce the risk of bird strikes and to lessen visual impact:

- a. Tank 2 - located to south east of the airport, would be 75,000m³ and would contain uncontaminated surface water discharge from the airside and the landside, approximately 5m below ground level. The area above the tank would allow for containment of localised flooding in extreme storm events. It has been sized such that it would generally remain mostly dry, apart from severe storm events; and
- b. Tank 3 - located north of the WTP (described in Work No. 4d), would be 15,590m³ and would be located approximately 10m below the existing ground level, under a long stay car park. It would drain the overflow of the recycled surface water from the WTP.

Work No. 4w – Substation

4.8.944.8.96 A new primary substation would be provided to replace the existing primary substation to meet predicted energy demand. It would be located landside, north from the existing terminal and immediately west of the proposed Car Park P9 and would be installed in assessment Phase 1.

4.8.954.8.97 The new primary substation would comprise a hardstanding area for the location of the substation building and perimeter fence, in addition to an access track for maintenance. The work area would be approximately 4,005m², and the maximum height of the substation would be 7.6m giving a maximum parameter height of 162.0m AOD.

Work No. 4x – Substation

4.8.964.8.98 A second primary substation would be provided to meet predicted energy demand as it increases with the Proposed Development. It would be located landside, immediately west from the proposed T2 (Work No. 3b(01)) and would be installed in assessment Phase 2a.

4.8.974.8.99 The new primary substation would comprise a hardstanding area for the location of the substation building and perimeter fence. The work area would be approximately 3,600m², and the maximum height of the substation would be 7.6m giving a maximum parameter height of 162.1m AOD.

4.9 Work Type 5 – Landscaping and mitigation

4.9.1 These works include the landscaping to be implemented as part of the Proposed Development in and around the airport. This includes the replacement open space which would be required to mitigate the loss of Wigmore Valley Park, the urban realm within the airport infrastructure, and habitats and screening vegetation required to mitigate landscape, visual, heritage and biodiversity impacts identified as a result of the EIA.

- 4.9.2 The Work Nos. are numbered sequentially and described in subsequent sections of this chapter, and their location shown on the **Work Plans [TR020001/APP/4.04]** and on the Illustrative Work Location **Figures 4.1 to 4.3** of this ES **[TR020001/APP/5.03]**. The maximum extent and height of development proposed in that area are provided in the description in this chapter. Areas of habitats and types of vegetation provided in this section are approximate and subject to refinement during the detailed design stage.
- 4.9.3 Further illustrative information on the landscape proposals and principles to be adopted in the detailed landscape scheme, as required by the DCO, is provided in the **Strategic Landscape Masterplan** provided as part of the application for development consent **[TR020001/APP/5.10]**.

Work No. 5a – Terminal approach

- 4.9.4 Strategic landscape mitigation would be delivered alongside Work No 6a(02) anticipated in assessment Phase 2a, on and adjoining the escarpment to the west of the airport. The proposed layout of this strategic landscape mitigation has been agreed with LBC as it is anticipated that this would be adopted by LBC as the highway authority, and would comprise the management of 0.5ha of existing woodland, the planting of 0.15ha of native scrub, the seeding of 1.1ha of neutral meadow grassland and the creation of 650m² of exposed chalk on lower-lying shallow slopes, as shown in **Figure 14.12** of this ES **[TR020001/APP/5.03]**. Proposed landscape treatments would reflect the principles described in the Outline Landscape and Biodiversity Management Plan (LBMP) provided as **Appendix 8.2** of this ES **[TR020001/APP/5.02]**.
- 4.9.5 Various public realm improvements, including the seeding of amenity grassland and planting of street trees, clipped hedgerows and ornamental shrubs, would be delivered adjoining the AAR, at the frontage to the new terminal and within the development area to the north of the airfield in assessment Phases 2a and 2b. These measures also form part of the landscape mitigation and are described in the other Work No. where relevant.

Work No. 5b Provision of Open Space

- 4.9.6 The overall total open space provided following completion of the Proposed Development would be at least 10% greater than that currently provided and include retention of existing aspects of Wigmore Valley Park, conversion of agricultural land to open space to replace that lost from Wigmore Valley Park, and the provision of public rights of way to maintain connectivity. These works are described below under individual Work numbers.
- 4.9.7 Soft landscape treatments provided in the total overall open space provision would include the management of over 3.4ha of existing woodland (with a further 1.7ha woodland retained and managed to enhance biodiversity as described in Work No. 5c(01)), alongside the provision of over 6ha of new broadleaved woodland, 8ha of amenity grassland, 21.9ha of neutral meadow grassland, 1.8ha of native scrub vegetation and creation or restoration of more than 4.2km of mixed-species hedgerows with hedgerow trees. Existing and proposed vegetation would be managed to meet LBC maintenance standards

and to achieve biodiversity aims, as described in the Outline LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02].

- 4.9.8 Soft landscape treatments associated with this Work would be secured as part of the Proposed Development and would be delivered prior to existing open space being lost.

Work No. 5b(01) – Enhancements to existing Wigmore Valley Park

- 4.9.9 These works would retain and enhance approximately 11ha of land within the north and eastern parts of the existing Wigmore Valley Park as shown on **Figure 4.1** of this ES [TR020001/APP/5.03]. These enhancements would be delivered in assessment Phase 1 ahead of any works not associated with provision of open space taking place within the existing Wigmore Valley Park. The proposed layout, habitats and facilities for the enhanced open space are shown in **Figure 14.11** of this ES [TR020001/APP/5.03].
- 4.9.10 These works would retain the existing main entrance into Wigmore Valley Park, adjoining Wigmore Hall/Wigmore Pavilion, and would be implemented around the enhanced facilities to be delivered in this area under the extant planning consent for Green Horizons Park (i.e. the improved skate park and play facilities, the improved Wigmore Pavilion and most of the proposed surfaced footpaths).
- 4.9.11 The existing boundary vegetation along the northern edge of Wigmore Valley Park and a section of the mature hedgerow vegetation to the south east of the existing parkland, would be retained.
- 4.9.12 The enhancements to the existing park would also further improve the connectivity, screening and biodiversity value of the retained parkland area, through the creation of additional surfaced paths linking to the replacement open space provision (Work No. 5b(02)), and through the planting of additional scrub and woodland vegetation.
- 4.9.13 Landscape treatments proposed within this open space would reflect the principles described in the Outline LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02], have been agreed with LBC, and would be secured as part of the Proposed Development.
- 4.9.14 The proposals would largely maintain the existing landform, with most areas experiencing only localised adjustments to improve access and user facilities. Localised land raising and the construction of an earth bund is proposed to the south west of the existing Wigmore Valley Park entrance for screening purposes north and east of the Work No. 6a(02).
- 4.9.15 Appropriate signage and facilities would be included in the detailed design to help facilitate various user groups using the space including but not limited to; families, teenagers, school groups, the elderly, walkers, joggers, plane-spotters, cyclists, skaters and horse riders, as illustrated **Strategic Landscape Masterplan** [TR020001/APP/5.10].
- 4.9.16 It is envisaged additionally that the enhancements to the existing park would deliver opportunities for unstructured or natural play, picnicking and exercise.

- 4.9.17 Soft landscape treatments would include the management of over 2.1ha of existing woodland, alongside the provision of over 0.66ha of new broadleaved woodland, 5ha of amenity grassland, 1ha of neutral meadow grassland, 0.27ha of native scrub vegetation and creation or restoration of more than 0.4km of mixed-species hedgerows with hedgerow trees.

Work No. 5b(02) – Replacement Open Space

- 4.9.18 The replacement open space provision would be located to the east of the existing greenspace at Wigmore Valley Park and would be at least 36ha in size, as shown in **Figure 4.1** of this ES [TR020001/APP/5.03]. It would be delivered in assessment Phase 1 ahead of works not associated with the provision of open space taking place within the existing Wigmore Valley Park and would largely maintain the existing landform, with only localised adjustments to improve user access. The proposed layout, habitats and facilities for the replacement open space are shown in **Figure 14.11** of this ES [TR020001/APP/5.03].
- 4.9.19 The proposals would retain a section of the mature hedgerow vegetation to the south east of the existing parkland and would encompass the mature hedgerow and coniferous plantation on the top of the ridge line of Winch Hill, and would deliver improvements to the management of these features to increase their value for biodiversity.
- 4.9.20 The replacement open space has been located to be accessible to the adjoining communities it serves, including the potential future communities promoted under emerging policy to the east of Luton, and would include several surfaced paths to upgrade connection into the surrounding communities and rights of way network.
- 4.9.21 Landscape treatments proposed within the replacement open space would reflect the principles described in the Outline LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02] and **Strategic Landscape Masterplan [TR020001/APP/5.10]**, have been selected in response to existing site conditions and local character guidance and have been positioned strategically to improve habitat connectivity, provide visual screening, and frame people's views away from the airport and Proposed Development. Landscape treatments have been agreed with LBC, North Hertfordshire District Council (NHDC) and Hertfordshire County Council (HCC), as part of the works are proposed in each of these council areas, and would be secured as part of the Proposed Development and Requirement of the DCO.
- 4.9.22 Public access within the replacement open space would be encouraged through the resurfacing and in some instances upgrading, of existing Public Rights of Way and through the creation of new surfaced paths.
- 4.9.23 Appropriate signage and facilities would be accommodated to help facilitate various user groups using this space including but not limited to; families, teenagers, school groups, the elderly, walkers, joggers, plane-spotters, cyclists, skaters and horse riders.

- 4.9.24 It is envisaged that the replacement open space would deliver additional opportunities for unstructured or natural play and would also include some additional recreational facilities, the specific nature of which is still to be determined but could potentially include additional picnicking facilities, play equipment, gym equipment or trim-trail measures.
- 4.9.25 Soft landscape treatments would include the management of over 1.3ha of existing woodland (with a further 1.74ha woodland retained and managed to enhance biodiversity as described in Work No. 5c(01)), alongside the provision of over 5.4ha of new broadleaved woodland, 3ha of amenity grassland, 20.9ha of neutral meadow grassland, 1.5ha of native scrub vegetation and creation or restoration of more than 3.7km of mixed-species hedgerows with hedgerow trees.
- 4.9.26 Within this Work bridleway Kings Walden 052 would be upgraded to a multi-user track between Darley Road and Colmore Road

Work No. 5b(03) – Replacement Open Space - New footpath linking Footpath 38 to Footpath 43

- 4.9.27 The creation of a new public right of way (footpath), 140m in length, linking the northern end of Footpath 38 (FP38) with the north-western extent of Footpath 43 (FP43) in assessment Phase 1. The location and extent of this PRow, and those described below, are shown on the **Streets, Rights of Way and Access Plans [TR020001/APP/4.08]**.

Work No. 5b(04) – Replacement Open Space - New bridleway linking Footpath 43 to Winch Hill Road

- 4.9.28 The creation of a new public right of way (multi-use bridleway), 1,040m in length, connecting Footpath 43 (FP43) to Winch Hill Road, anticipated in assessment Phase 2b.

Work No. 5b(05) – Replacement Open Space - New bridleway linking Bridleway 52 with FP41

- 4.9.29 The creation of a new public right of way (multi-use bridleway), 400m in length, connecting Bridleway 52 (BW52) with Footpath 41 (FP41) via a new at-grade crossing of Winch Hill Road, anticipated in assessment Phase 2b.

Work No. 5b(06) - Footpath FP41

- 4.9.30 This Footpath would be upgraded to a multi-use track during assessment Phase 1 and formally adopted as bridleway in assessment Phase 2b, from its western extent at the junction with Eaton Green Road and FP43, to the intersection of the new length of bridleway forming Work No. 5b(05) leading south east to Winch Hill Road.

Work No. 5b(07) - Footpath FP43

- 4.9.31 This Footpath would be upgraded to a multi-user track during construction for assessment Phase 1 and formally adopted as a bridleway during construction for assessment Phase 2b, from its western extent at the junction with Eaton

Green Road and FP41, to the intersection of the new bridleway forming Work No. 5b(04) leading south east to Winch Hill Road.

Work No. 5c(01) – Landscape restoration

- 4.9.32 Approximately 650m of mixed-species hedgerows with hedgerow trees would be delivered as strategic landscape mitigation planting, adjoining Winch Hill Road and on the eastern boundary of the field to the east of Winch Hill Road, for screening purposes in assessment Phase 1. The planting and management of proposed mixed-species hedgerows and hedgerow trees would reflect the principles described in the Outline LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02]. As a narrow hedgerow subject to further confirmation during detailed design development this work is not shown in the Illustrative Works Location figures.
- 4.9.33 Approximately 4.8ha of existing woodland vegetation within this Work would also experience changes to land management to enhance biodiversity in assessment Phase 1, such as staged felling and removal of coniferous trees, to develop broadleaved woodland, as described as Woodlands 1 to 4 in the Outline LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02]. These four areas of woodland fall within the extent of three other Work areas within assessment Phases 1, 2a and 2b, however management would commence during assessment Phase 1 for all four areas, the activity is therefore described here. They include 1.7ha of Woodlands 1 and 2, both of which are located in the replacement open space (Work No.5b(02)), Woodland 3 which is 0.7ha and located within the habitat creation area (Work No. 5d(02)), and 2.4ha of Woodland 4 which is located within the landscape restoration area (Work No. 5c(02)).
- 4.9.34 Also, approximately 1.9ha of ancient woodland (Winch Hill Woods) adjoining the aviation platform and to the west of Winch Hill Road would be retained and enhanced through provision of protective fencing, and opportunities to create woodland glades and increase structural diversity where appropriate.
- 4.9.35 Management of Winch Hill Wood would include sensitive thinning and coppicing to open up the canopy, and improve the structural diversity of the woodland, along with targeted planting. It is envisaged that some localised tree pruning or removal would be undertaken within the ancient woodland for arboricultural reasons in assessment Phase 1, as shown in the site clearance drawings provided in **Appendix 4.1** and described in **Appendix 14.3** Arboricultural Impact Assessment of this ES [TR020001/APP/5.02].

Work No. 5c(02) – Landscape restoration

- 4.9.36 Landscape restoration would be delivered in assessment Phase 2b, following the earthworks described in Work No.1a, which would include also the re-grading of landform east of the proposed fuel storage facility (Work No. 4c(01)) with excavated material deemed technically unsuitable for use beneath the aviation platform to re-establish a more 'natural' and less 'engineered' appearance in this area; and the restoration of soil profiles suitable to receive the envisaged landscape treatments. The proposed layout, habitats and facilities for this Work No. have been agreed with LBC, NHDC and HCC as

works are proposed in, and visible from receptors in, these areas and are shown in **Figure 14.13** of this ES [TR020001/APP/5.03].

- 4.9.37 Strategic landscape mitigation on the platform embankment and engineered slopes surrounding the car parks to the west of Work No. 4c(01) would include the seeding of approximately 8 ha of amenity grassland, alongside the planting of over 1.4ha of broadleaved woodland and approximately 1.2ha of neutral meadow grassland adjacent to Work No. 6b(03).
- 4.9.38 Strategic landscape mitigation proposed to the east of Work No. 4c(01) would be more varied and include the planting of a further 0.9ha of broadleaved woodland, the planting or enhancement of a further 2.1km of mixed-species hedgerows and hedgerow trees, and the establishment of a further 2.5ha of neutral meadow grassland. 12.8ha of calcareous grassland (with a further 2.4ha of woodland retained and managed to enhance biodiversity as described in Work No. 5c(01)) would also be delivered in this area that would be managed through low intensity grazing.
- 4.9.39 Proposed landscape treatments and their management would follow the principles described in the Outline LBMP provided as **Appendix 8.2** of this ES [TR020001/APP/5.02].

Work No. 5d(01) – Habitat creation

- 4.9.40 Habitat creation is proposed to the east of the Main Application Site in an area of existing arable land owned by the Applicant in assessment Phase 1. The landscape strategy for this plot has been developed in close collaboration with the project ecologists and includes the creation or restoration of approximately 4.2km of mixed species boundary hedgerows with hedgerow trees and the creation of over 27.7ha of neutral meadow grassland that would be managed through a mixture of cutting and low-intensity grazing.
- 4.9.41 Over 4.4ha of woodland planting is proposed on areas of raised land east of the junction between Winch Hill Road and Darley Road, and on the eastern and northern boundary of this Work, to provide screening from bridleway Kings Walden 052; and in the low-lying land to the west of this Work to improve habitat connectivity along the valley. Three small ponds, each with a surface area of approximately 100m², of varied depths and profiles, would also be delivered in the valley for biodiversity value.
- 4.9.42 Approximately 0.4ha of existing woodland vegetation within this Work would be retained.
- 4.9.43 Habitat creation areas would be secured as part of the Proposed Development, have been agreed with representatives from LBC, NHDC and HCC and are shown in **Figure 14.11** of this ES [TR020001/APP/5.03].

Work No. 5d(02) – Habitat creation

- 4.9.44 A further 11.5ha of existing arable land owned by the Applicant would, reflecting the principles set out in the LBMP, be converted to low-intensity grazed meadow for habitat creation reasons in assessment Phase 2a, and 0.13ha to meadow grassland (with a further 0.66ha of woodland retained and managed to

enhance biodiversity as described in Work No. 5c(01)), following construction of the fuel pipeline connection and its associated maintenance access track (Work No 4c(02)).

Work No. 5e – Off-site hedgerow restoration and screening

- 4.9.45 This Work is formed from several areas of arable field boundaries that are not owned by the Applicant, located outside of the Main Application Site to the north, east and south, but included in the Order Limits, in addition to hedgerow restoration on land the Applicant does own as described in Work No. 5b and 5d. Over 6.5km of mixed species hedgerow restoration and/or hedgerow tree planting is proposed to strengthen landscape character and structure, and to mitigate potentially significant effects on people's visual amenity when living or undertaking recreational activities in the surrounding area.
- 4.9.46 The planting of off-site hedgerows and hedgerow trees would be undertaken in assessment Phase 1 and would reflect the principles set out in the LBMP. Planting and management would be achieved using existing field access and circulation routes wherever feasible. The proposed off-site planting locations have been agreed with LBC, NHDC, HCC and Central Bedfordshire District Council (CDBC) as works are proposed in these districts and are shown in **Figure 14.11** of this ES [TR020001/APP/5.03].

4.10 Work Type 6 – Highways

- 4.10.1 Extensive traffic modelling has been undertaken to inform the **Transport Assessment [TR020001/APP/7.02]**. A number of highway interventions have been identified to mitigate impacts on the highway network as a result of the increased passenger numbers associated with the Proposed Development.
- 4.10.2 Each highway intervention included as part of the Proposed Development is numbered sequentially, described below, and their location shown in the **Work Plans [TR020001/APP/4.04]** and Illustrative Work Locations in **Figures 4.1 to 4.3** of this ES [TR020001/APP/5.03]. Outline design drawings showing the proposed Work, and further descriptive details, are provided in the **Transport Assessment [TR020001/APP/7.02]** and specific drawings referred to in the summary descriptions provided below.

Work No. 6a – New road providing access to the east of the airport

- 4.10.3 The majority of passengers arriving by road approach and depart through Luton and via the M1 motorway. A new road providing access to the east of the airport, the AAR (previously referred to as the Century Park Access Road) was consented as part of the Green Horizons Park planning consent. However, the Applicant has incorporated the entire alignment of this access road within the Proposed Development.
- 4.10.4 The design of the AAR has been developed to account for increased passenger throughput enabled by the Proposed Development. The proposed vertical and horizontal alignment of the AAR as a whole are provided as part the **Airport Access Road and Luton DART Long Section Drawings**

[TR020001/APP/4.11] submitted as part of the application for development consent. This new road would be delivered as three Work Nos. over the three assessment phases of the Proposed Development as described below.

Work No. 6a(01)

- 4.10.5 The extents of this Work, anticipated in assessment Phase 1, comprise improvements and reconfiguration of the roundabout junction between A1081 New Airport Way, Airport Way and Percival Way. It is proposed to create a four-arm signalised junction at this location in order to provide additional capacity. The proposed outline design is shown in **Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0010** of the **Transport Assessment [TR020001/APP/7.02]**.
- 4.10.6 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees) immediately adjacent to the carriageway but would include native scrub vegetation and neutral meadow grassland on re-graded slopes. Soft landscape treatments would consider highway requirements, service corridors and visibility splays.

Work No. 6a(02)

- 4.10.7 This Work No., anticipated in assessment Phase 2a, includes a new dual-carriageway link road, which connects to A1081 New Airport Way via a new three-arm signalised junction to the immediate west of Work. No. 6a(01). The alignment of the road runs north from the A1081, travelling roughly parallel to Percival Way to the point at which a new three-arm roundabout is provided adjacent to Provost Way. At this point, the proposed road alignment travels south as a short length of dual-carriageway, before connecting to the existing alignment of Percival Way via a three-arm roundabout. This western length of dual-carriageway is 1,010m in length between the A1081 and connection with Percival Way.
- 4.10.8 Minor amendments to kerblines and white lining are proposed along the section of Percival Way, between Provost Way and Frank Lester Way. As part of this Work, amendments are also proposed to Frank Lester Way to make the road one-way northbound between Percival Way and Eaton Green Road. This proposal ties into the junction proposals at Eaton Green Road, which is delivered as part of within the East Luton Study⁶.
- 4.10.9 To the east of the junction with Frank Lester Way, the proposed dual carriageway continues in an easterly direction up to a four-arm roundabout at the junction with President Way, in the vicinity of the existing Car Hire centre. This junction is provided to give access to President Way and a new area of parking to the north side of the dual-carriageway. In addition, the roundabout

⁶ The East Luton Study is a series of other highway works that are proposed by LBC. These works will be undertaken by LBC and form part of the future baseline, not part of the Proposed Development. These other highway works will be considered appropriately in the cumulative assessment as they are considered other developments for the purpose of that assessment.

enables easier access to/from some of the retained sites along the dual-carriageway.

- 4.10.10 A direct link from the retained section of President Way and the new airport link road is provided to the south of the road, to minimise the impact on access to and from various properties and reduce the need for dead end routes.
- 4.10.11 East of the roundabout, the dual carriageway continues east for approximately 200m, at which point a four-arm signalised junction is proposed to give access to T2, the planned Green Horizons Park development, and a link road which leads north to connect with Eaton Green Road.
- 4.10.12 To the east of the four-arm signalised junction, the road would continue east to a compact four arm roundabout, which provides access to the planned Green Horizons Park development, operational areas within the airport, and the excavated area which houses areas of car parking and other operational facilities associated with the airport. This eastern length of dual-carriageway is 900m in length between the junction with Frank Lester Way and the Green Horizons Park roundabout.
- 4.10.13 Minor amendments are proposed to the junction within Work No. 6a(01) in order to accommodate the new dual-carriageway alignment.
- 4.10.14 The location and area of this Work in shown in the **Figure 4.2** of this ES [TR020001/APP/5.03] and the outline design is shown in **Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0023** of the **Transport Assessment** [TR020001/APP/7.02].
- 4.10.15 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees) immediately adjacent to the carriageway but would include native scrub vegetation and neutral meadow grassland on re-graded slopes (refer also to Work No. 5a). Soft landscape treatments would consider highway requirements, service corridors and visibility splays.

Work No. 6a(03)

- 4.10.16 This Work, anticipated in assessment Phase 2b, comprises amendments to the length of Percival Way between Provost Way and Frank Lester Way, together with a new section of dual-carriageway to tie into the works delivered in Work No. 6a(02).
- 4.10.17 The three-arm roundabout shown along the proposed dual-carriageway to the west of Provost Way, would be replaced with a four-arm signalised crossroads. A realigned link road connects the new signalised junction with the retained section of Percival Way, with a dedicated access to areas of parking and businesses to the north of the proposed junction.
- 4.10.18 East of the proposed signalised crossroads, a new dual-carriageway link passes through a number of existing buildings which are required to be demolished, including part of the GKN site. This new section of dual-

carriageway road connects the eastern and western lengths of dual-carriageway created as part of Work No. 6a(02). This section of dual-carriageway is 345m in length between the realigned junction with Provost Way and Frank Lester Way.

- 4.10.19 The location and area of this Work is shown in **Figure 4.3** in this ES [TR020001/APP/5.03] and the proposed outline design is shown in **Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0033** of the **Transport Assessment [TR020001/APP/7.02]**.
- 4.10.20 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees) immediately adjacent to the carriageway but would include native scrub vegetation and neutral meadow grassland on re-graded slopes (refer also to Work No. 5a). Soft landscape treatments would consider highway requirements, service corridors and visibility splays.

Work No. 6b – Airport public roads

- 4.10.21 Throughout the Proposed Development a series of access and distributor roads are proposed. These roads would provide access to the various planned facilities and areas and to the areas within the planned Green Horizons Park development which do not form part of the Proposed Development. These roads would also form the arterial routes for statutory and other services. It is not proposed that these roads would not be adopted and would be the responsibility of the airport.
- 4.10.22 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees) and consider highway requirements, service corridors and visibility splays.

Work No. 6b(01) - Airport public roads

- 4.10.23 The airport public roads at assessment Phase 1 comprise modifications to and extension of the existing Long Stay Car Park access roads, which lead from the eastern extent of President Way. The proposed carriageway would continue north east from the current extents of the existing car park access road as a two-lane single carriageway, to provide access to Work No. 4l(01) (New Temporary Surface Car Park P6) and Work No. 4m(01) (New Temporary Surface Car Park P7).

Work No. 6b(02) - Airport public roads

- 4.10.24 The airport public roads proposed in assessment Phase 2a comprise highways which provide access to T2, and airport related facilities within the excavated area. These roads lead from the eastern end of Work No. 6a(02), and continue south towards T2 as a dual carriageway. The length of road which continues east to the excavated area is initially formed of a length of dual carriageway

over a length of approximately 75m, before joining a four-arm roundabout which gives access to various other Works. East of the roundabout the carriageway continues as a two-lane single carriageway as it travels towards Work No. 4c(01) (Fuel Storage Facility) and Work No. 4d (Water Treatment Plant).

Work No. 6b(03) - Airport public roads

- 4.10.25 The airport public roads proposed in assessment Phase 2b comprise realignment and widening of the section of assessment Phase 2a highway which leads into the excavated area from the eastern end of Work No. 6a(02). The realigned section of carriageway begins to the east of the four-arm roundabout created at assessment Phase 2a and is once more formed of a two-lane single carriageway that leads into the excavated area. The road continues to provide access to Work No. 4c(01) (Fuel Storage Facility) and 4d (Water Treatment Plant), in addition to Work 4q(02) (Long Stay Car Park P11) and Work 4p(02) (Long Stay Car Park P10).

Work No. 6c - Airport operational roads

- 4.10.26 The proposed non-public operational roads would require new or enhanced barriered junctions to the public highway, as they would not be accessible by the public.
- 4.10.27 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees) and consider highway requirements, service corridors and visibility splays.

Work No. 6c(01) - Airport operational roads

- 4.10.28 The proposed work associated with this Work No. includes roads around the stands and the terminal, and roads around the perimeter of the airfield. These roads consist of: inter-stand roadways, head of stand roads, access roads on either side of T2 to access the baggage hall, a road to the vehicle control point east of the terminal, a road from the ERUB to the east to connect the apron roads to the airfield perimeter track and part of the perimeter track to west of the airport to be realigned due to the new runway link.

Work No. 6c(02) - Airport operational roads

- 4.10.29 The proposed work associated with this Work No. includes the roads around the new stands and parts of the airfield perimeter track. These roads consist of: inter-stand roadways, head of stand roads, a road east of Taxiway Kilo to the ERUB and beyond to connect with the airfield perimeter track, runway access roads from the new Fire Training Ground location south of the runway and upgrade of the airfield perimeter track west of the runway to allow for Firefighting Trucks to be able to travel from the Fire Station to the Fire Training Ground.

Work No. 6c(03) - Airport operational roads

- 4.10.30 The proposed work associated with this Work No. includes the roads around the new aircraft stands and parts of the airfield perimeter track required in assessment Phase 2b. These paved roads would be capable of supporting the heaviest vehicles that will use them (to be determined at detailed design) and be usable in all weather conditions and include: 6m wide inter-stand roadways; 10m wide, two-way, head of stand roads; a road east of Taxiway Kilo to the ERUB (Work No.2g) and beyond to connect with the airfield perimeter track (4-9m wide); and a 10m wide emergency access road from the east of the apron area through the airside/landside perimeter fence line to the new Fuel Storage Facility (Work No.4c(01)).

Work No. 6d – Work to Airport Road at public highways (barriered junctions)

- 4.10.31 The proposed work associated with this Work No. includes the roads to airport support facilities that require a barrier to prevent public access to them, required in assessment Phase 2a. These roads consist of: a paved 10m wide emergency access road from the existing Fire Training Ground to the new Fuel Storage Facility (Work No.4c(01)) capable of supporting the heaviest vehicles that will use them (to be determined at detailed design) and be usable in all weather conditions and an access track to the new fuel pipeline above ground installation (Work No. 4c(02)) accessed from the local road network on Winch Hill Lane via a single 5m wide hardcore access track with a concrete turning head adjacent to the above ground installation with dimensions approximately 25m by 20m.
- 4.10.32 The public realm associated with this Work No. would include both hard and soft landscaped areas, signage, and surface treatments accessible to a wide range of users. Soft landscape treatments would be formal in appearance (i.e. mown grass, ornamental shrub and hedgerow planting and street trees) and consider highway requirements, service corridors and visibility splays.

Work No. 6e Off-Site highway interventions

- 4.10.33 Local and strategic traffic modelling has been undertaken based on forecast passenger demand. This modelling has identified a series of highway interventions that are off-airport (referred to here as the 'Off-Site Highway Interventions') required as a result of the Proposed Development to mitigate potential adverse effects on the highway network, and preliminary designs have been developed to improve junction function and capacity at a number of locations, to be delivered as airport capacity increases.
- 4.10.34 These Off-Site Highway Interventions are within the Order Limits and have been considered as part of the Proposed Development in this ES, and their location is shown on **Figure 4.1 to 4.3** of this ES [TR020001/APP/5.03]. A brief outline description of each location of works, assigned a letter and showing when they are required, is provided in **Table 4.4** below with reference to a corresponding drawing showing the outline design proposed provided in the **Transport Assessment [TR020001/APP/7.02]**.

4.10.35 Proposed work for these Off-Site Highway Interventions would be within the highway boundary. No buildings would be directly impacted by the proposed highway Work.

Table 4.4: Off-site highway interventions in the Proposed Development

| Work No. 6e | Name | Form of Mitigation and Anticipated Delivery | | |
|-------------|--|---|-----------------------------------|-----------------------------------|
| | | Assessment Phase 1 | Assessment Phase 2a | Assessment Phase 2b |
| (a) | Windmill Road / Kimpton Road (East Luton Study with further airport related enhancements) | <p>Minor widening of the carriageway and kerb realignment on Windmill Road to convert the mini-roundabout into a three-arm signalised junction.</p> <p>There would be no anticipated impact on the highway boundary or third - party land.</p> <p>Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0006</p> | No additional mitigation required | No additional mitigation required |
| (b) | A1081 New Airport Way / B653 / Gipsy Lane | <p>Reconfiguration is shown to the A1081 to provide three lanes in both directions through the signalised junction with Gipsy Lane. This widening is achieved by narrowing the central reserve, with no amendments required to the existing outer kerb lines. The existing right turn lane from A1081 into Gipsy Lane is to be removed.</p> <p>Widening is indicated along Gipsy Lane on the immediate approach to the A1081 junction, to provide additional left turn entry lanes to the A1081. This widening would be provided in existing landscaped areas.</p> <p>Widening is also indicated to the A505 Gipsy Lane to the north of the roundabout with Lower Harpenden Road to provide additional entry capacity to the roundabout. This widening is accommodated within an existing verge area.</p> | No additional mitigation required | No additional mitigation required |

| Work No. 6e | Name | Form of Mitigation and Anticipated Delivery | | |
|-------------|--|---|---|-----------------------------------|
| | | Assessment Phase 1 | Assessment Phase 2a | Assessment Phase 2b |
| | | Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0005 | | |
| (c) | A1081 New Airport Way / A505 Kimpton Road / Vauxhall Way | - | Additional widening is indicated along A1081 New Airport Way to provide a dedicated left turn lane into A505 Kimpton Road. These works are in addition to the planned works forming part of the East Luton Study, to be undertaken by others. Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0016 | No additional mitigation required |
| (d) | Eaton Green Road / Lalleford Road | Mini roundabout to be replaced with a three-arm signalised junction. Minor kerb line amendments are necessary along Eaton Green Road and Lalleford Road. All Work contained within the highway boundary. Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0011 | No additional mitigation required | No additional mitigation required |
| (e) | Wigmore Lane / Crawley Green Road | - | Including works to: (i) the Junction of Wigmore and Crawley Green Road, including the removal of the existing roundabout junction and conversion to a signalised junction, the provision of signalised pedestrian crossings, the provision of give-way left-turn flares and the realignment and widening of the carriageway; (ii) Wigmore Lane, including the realignment and widening of | No additional mitigation required |

| Work No. 6e | Name | Form of Mitigation and Anticipated Delivery | | |
|-------------|---------------------------------|---|--|-----------------------------------|
| | | Assessment Phase 1 | Assessment Phase 2a | Assessment Phase 2b |
| | | | the lane and removal of a bus stop layby; and (iii) the junction of Wigmore Lane and Raynham Way, including the removal of the existing roundabout junction and conversion to a signalised junction, the provision of signalised pedestrian crossing and the realignment and widening of the carriageway; Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0012 | |
| (f) | Eaton Green Road / Wigmore Lane | - | Roundabout to be replaced with a four-arm signalised junction, incorporating the Wigmore Place arm. Local widening along Wigmore Lane to provide two lanes in either direction, with the Asda mini-roundabout converted to signals. Reconfiguration of the existing Eaton Green Road carriageway to provide two entry and two exit lanes from the Wigmore Lane junction, with widening to the south of Eaton Green Road into existing verge areas. Work would tie into the Work No. 6a(02) link road which runs to the south east and connects with Work No. 6a(02). Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0013 | No additional mitigation required |

| Work No. 6e | Name | Form of Mitigation and Anticipated Delivery | | |
|-------------|--|---|--|-----------------------------------|
| | | Assessment Phase 1 | Assessment Phase 2a | Assessment Phase 2b |
| (g) | A1081 / London Road (North) | <p>Amendments to the road markings to provide a spiral operation. Minor amendments to kerb lines on the east of the roundabout to provide a dedicated exit lane onto the A1081 eastbound.</p> <p>Partial signalisation of the roundabout on two of the arms; the northbound off-slip from the A1081 and the exit from Newlands Park.</p> <p>Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0008</p> | No additional mitigation required | No additional mitigation required |
| (h) | A1081 / London Road (South) | - | <p>Part-time signals to be introduced on the roundabout (PM only)</p> <p>Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0017</p> | No additional mitigation required |
| (i) | Windmill Road / St. Mary's Road / Crawley Green Road | - | <p>Widening, reconfiguration and signalisation of roundabout to provide additional traffic capacity. Widening to the circulatory carriageway through realigning and narrowing of the central island, with all arms of the roundabout to be signalised. Amendments are required to the extents of the subway portals to accommodate the widened roundabout carriageway.</p> <p>Kerb line amendments are also shown along Windmill Road to provide a two-lane diverge from the roundabout.</p> | |

| Work No. 6e | Name | Form of Mitigation and Anticipated Delivery | | |
|-------------|--|---|--|-----------------------------------|
| | | Assessment Phase 1 | Assessment Phase 2a | Assessment Phase 2b |
| | | | Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0015 | |
| (j) | Crawley Green Road / Lalleford Road | - | <p>Mini roundabout to be replaced with a three-arm signalised junction. Minor kerb line amendments are necessary along Crawley Green Road and Lalleford Road, with all of the Work contained within the highway boundary.</p> <p>Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0018</p> | No additional mitigation required |
| (k) | A602 Park Way / A505 Upper Tilehouse Street | - | <p>Minor widening is proposed to the roundabout entries, to provide increased lengths of two lane entry. The widening on Park Way would be contained within an existing grass verge / landscape area, with the proposed realignment of Upper Tilehouse Street potentially requiring amendments to an existing retaining structure and vehicle restraint system.</p> <p>Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0027</p> | No additional mitigation required |
| (l) | A505 Moormead Hill / B655 Pirton Rd / Upper Tilehouse Street | - | <p>Minor widening and realignment of Upper Tilehouse Street entry is proposed, to provide an increased length of two lane entry to the existing mini-roundabout. All of the Work would be contained within the existing highway boundary.</p> | No additional mitigation required |

| Work No. 6e | Name | Form of Mitigation and Anticipated Delivery | | |
|-------------|--|---|--|-----------------------------------|
| | | Assessment Phase 1 | Assessment Phase 2a | Assessment Phase 2b |
| | | | Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0026 | |
| (m) | A602 Park Way / Stevenage Road | | <p>Minor widening of carriageway and realignment of various kerb lines is proposed on A505 Park Way, Hitchin Hill and A602 Stevenage Road to provide increased lengths of two lane entry to the roundabout. These Work are restricted to existing grass verge and landscaping areas, within the highway boundary.</p> <p>Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0028</p> | No additional mitigation required |
| (n) | M1 J10 (All proposals would be subject to ongoing development and agreement with National Highways) | <p>Widening to the northbound off-slip to provide a third lane on the approach to the roundabout, with the widening accommodated in existing verge and embankment. Widening to the western circulatory carriageway to provide four circulating lanes, with this widening accommodated in the existing landscaped area on the inside of the roundabout. Amendments to the exit from the roundabout onto the A1081, to allow three lanes to diverge from the roundabout. This widening would be accommodated within existing verge area.</p> <p>Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0009</p> | See Work No. 6e(o) | See Work No. 6e(p) |
| (o) | M1 J10 | - | Widening to the A1081 westbound carriageway to enable two left turn lanes to continue onto the M1 | See Work No. 6e(p) |

| Work No. 6e | Name | Form of Mitigation and Anticipated Delivery | | |
|-------------|--------------------------------------|--|--|--|
| | | Assessment Phase 1 | Assessment Phase 2a | Assessment Phase 2b |
| | | | southbound on-slip, where widening is also proposed. Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0024 and LLADCO-3C-ARP-SFA-HWM-DR-CE-0025 | |
| (p) | M1 J10 | - | - | Widening of the western circulatory carriageway to provide five lanes. Realignment of the A1081 exit to enable three lanes to exit roundabout onto A1081, with segregated left turn lane removed and junction of southbound off-slip signalised. Provision of two southbound merging lanes onto M1 through All-Lane Running. Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0029 and LLADCO-3C-ARP-SFA-HWM-DR-CE-0030 |
| (q) | Eaton Green Road / Frank Lester Way | - | Roundabout to be replaced with a signalised junction, and Frank Lester Way to be made one-way northbound as per the adjacent Work No. 6a(02) proposals. Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0014 | No additional mitigation required |
| (r) | A505 Vauxhall Way / Eaton Green Road | Roundabout to be partially signalised. Signalisation of roundabout is proposed in addition to works planned as part of the East Luton Study, to be undertaken by others. Signalisation of roundabout is only required at 21.5 mppa, in advance of delivery of Work 6a. | No additional mitigation required | No additional mitigation required |

| Work No. 6e | Name | Form of Mitigation and Anticipated Delivery | | |
|-------------|------|---|---------------------|---------------------|
| | | Assessment Phase 1 | Assessment Phase 2a | Assessment Phase 2b |
| | | Drawing LLADCO-3C-ARP-SFA-HWM-DR-CE-0007 | | |

4.11 Miscellaneous associated development

- 4.11.1 The construction of the Proposed Development would impact upon a number of existing utilities which would need to be diverted, extended, relocated or made redundant. These diversion works would need to be carefully planned to ensure continuity of service is maintained to allow the current operation of the airport to continue.
- 4.11.2 The exact service extensions required to each Work No. would need to be developed in detailed design for each of them. Schedule 1 (Authorised Development) of the **draft DCO [TR020001/APP/2.01]** provides for further associated development to be carried out in connection with the construction of any of the numbered works within the Order Limits. This includes necessary works to place, alter, divert, relocate, remove or maintain the position of apparatus, services, plant and other equipment in a street, or in other land, including mains, sewers, drains, pipes, lights and cables. An outline of the site wide works is described in this section to inform this assessment.

Power and communication

- 4.11.3 The power (high and low voltage) and communication networks serving the existing airport would be extended and diverted within the Order Limits as necessary to connect these networks to supply the Proposed Development, where needed. These extensions would be provided via underground utilities corridors which would primarily follow the alignment of proposed highways.
- 4.11.4 Additional substations are required to ensure adequate power supply to the expanded airport, these have been included as part of the Proposed Development and are described further under Work No. 4w and 4x.
- 4.11.5 There will be no gas supply to T2 or the associated new buildings.

Water supply

- 4.11.6 The water supply to the Proposed Development has been reviewed and the Environment Agency, Affinity Water (as water supplier) and Thames Water (as sewerage undertaker) have been consulted to confirm the proposals due to the scarcity of available potable water and capacity of existing drainage networks in the area.
- 4.11.7 Assessment Phase 1 would involve the utilisation of the existing infrastructure and address the excess demand in water consumption through introduction of water efficiency measures and rainwater harvesting. Information provided by Veolia, indicates a baseline of 7.5l/s water consumption in 2019, the last year that the airport was operating at permitted capacity. Based on water demand forecasts, the aforementioned water savings are intended to compensate the increased passenger throughput within T1, albeit with the seasonal variations linked to rainwater harvesting.
- 4.11.8 An existing Thames Water overflow pipe extending from the Thames Water soakaway to the north of the airport would need to be diverted as part of these

works in assessment Phase 1, to enable the development of Works No. 4l and 4m.

- 4.11.9 Assessment Phase 2 would include the construction of a Water Treatment Plant (WTP) (Work No. 4d) where the foul water discharged by the newly constructed T2 and surrounding buildings/hotels would be treated (if not discharged to Thames Water). The treatment process will allow some recycling of treated water for irrigation and the re-use of some of the attenuated surface water, which would be pumped to the WTP for ~~the removal of grit using centrifugal separator treatment~~, so that greywater can be returned to the terminals via a holding tank. This would reduce the demand of potable water from Affinity Water and reduce the discharge into the Thames Water sewerage network.
- 4.11.10 Further information of predicted water use is provided in **Appendix 20.5** Water Cycle Strategy of this ES [TR020001/APP/5.02].

Drainage

- 4.11.11 The conceptual drainage strategy for the Proposed Development is described in the Drainage Design Statement provided as **Appendix 20.4** of this ES [TR020001/APP/5.02], as summary of the key concepts is provided below.

Assessment Phase 1 drainage strategy

- 4.11.12 The proposed drainage strategy for assessment Phase 1 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.
- 4.11.13 The proposed apron catchment area would discharge into the existing Central Soakaway, with Class 1 Oil Interceptors installed to safeguard for any spillages or pollutants entering the system and subsequently the Central Soakaway.
- 4.11.14 An attenuation tank of approximately 4,000m³ 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. 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 tank should pollutants be detected. Detection levels will be confirmed at detailed design stage.
- 4.11.15 The proposed car park (P7, Work No. 4m(01)) north east of the airport, would discharge to the Thames Water network at President and Frank Lester Way to the north of the airport. 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 8,750m³. This tank would be constructed above the landfill and would be suitably designed to avoid risks of contamination. Class 1

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

- 4.11.16 The rainwater harvesting strategy is proposed to reduce the demand for potable water supplied by Affinity Water as well as minimising the increase in discharge into the Thames Water network and Central Soakaway. A conservative volume required for the storage tanks is approximately 3,000m³ to maintain a constant monthly supply throughout the year.

Assessment Phases 2a and 2b drainage strategy

- 4.11.17 The main drainage infrastructure proposed in assessment Phases 2a and 2b include the installation of the new WTP, attenuation tanks and infiltration tanks. The Proposed Development would replace the existing Central Soakaway with new infiltration tanks.
- 4.11.18 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 treat where pollutants are present before final discharge into the new infiltration tanks. The extension of the apron will retain the attenuation tanks installed below the apron constructed in assessment Phase 1 and will continue to restrict the discharge rate, now to the WTP.
- 4.11.19 The network discharging to the Northern Soakaway would not be diverted, the existing connections to the Thames Water network from the existing T1 and aprons would continue to discharge into that network.
- 4.11.20 Surface water runoff from T2 and the new car parks to the north of T2, will be directed into the untreated infiltration tank (Tank 2) or permeable paving. This water will not be contaminated by aircraft de-icing agents and oil separators will be provided locally as required. The infiltration tank will be underground to reduce the risk of bird attraction. The areas of Green Horizons Park (formerly New Century Park) which under assessment Phase 1 discharge into the Thames Water network will be diverted and will discharge into the new infiltration tank (Tank 2). Any spillage from car parking such as oils can pass through a passive treatment train which will start with surface run-off through an oil interceptor before entering the attenuation tank prior to infiltration.
- 4.11.21 Permeable paving for car park P11 (Work No. 4q) is proposed to treat any spillage on the car park through a series of filter beds before fully infiltrating. Design and maintenance of the assets will be based on manufacturer/product specification and will be further developed during the detailed design stages.
- 4.11.22 Airside surface water runoff will also be directed towards the infiltration tank (Tank 2), however, the water quality will be continuously monitored and diverted to a holding tank (Tank 1) for treatment when de-icing trigger levels are reached. Contaminated water will then be treated by the WTP and would be discharged to the treated effluent infiltration tank (Tank 3) north of the WTP. If uncontaminated, the valve to the storage tanks will be closed and the water will bypass the WTP and will discharge directly to the infiltration tank (Tank 2).

- 4.11.23 The surface water drainage will be designed, where possible, as a gravity system. All surface water drainage is to be designed 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.
- 4.11.24 The parameters for key above (WTP, Work No. 4d) and below ground assets (infiltration tanks, Work No. 4v) required for the drainage and treatment system are described in **Section 4.8** to this chapter, Work No. 4 – Airport Support Facilities.

4.12 Construction

4.12.1 This section presents a summary list of the detailed construction information used to inform this ES which is provided in full in the Construction Method Statement and Programme Report provided as **Appendix 4.1** of this ES [TR020001/APP/5.02]. That report contains the detailed construction information on which this assessment has been based, and should be read in conjunction with this chapter; including:

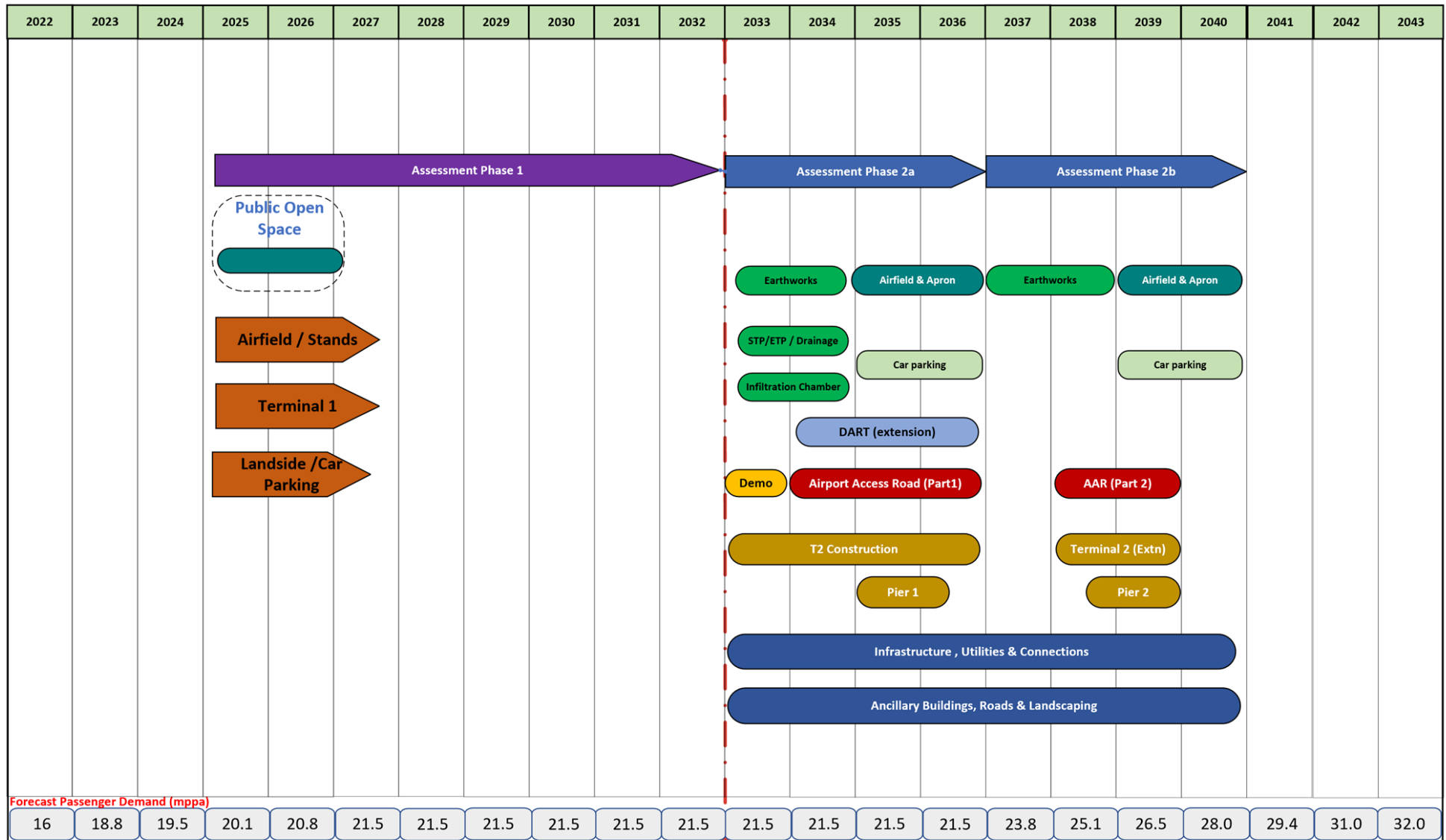
- a. project construction phases;
- b. construction programme;
- c. further information for each construction phase:
 - i. key construction constraints and interfaces;
 - ii. construction programme and phasing; and
 - iii. construction methodology.
- d. project logistics, including:
 - i. construction management;
 - ii. health and safety;
 - iii. working hours;
 - iv. number of operatives;
 - v. construction logistics plan;
 - vi. specialist logistics contractor;
 - vii. number of construction operatives;
 - viii. proposed construction compounds;
 - ix. security;
 - x. concrete batching plant;
 - xi. construction traffic and transport;
 - xii. construction vehicle numbers;
 - xiii. temporary site haul roads;
 - xiv. construction plant and equipment;
 - xv. craneage and tall equipment plan;
 - xvi. environmental management;
 - xvii. surface water drainage;
 - xviii. water environment;
 - xix. removal of temporary structures and buildings;
 - xx. removal of temporary infrastructure; and
 - xxi. neighbours.
- e. appendices, with further detail on:

- i. outline programme;
- ii. phasing diagrams;
- iii. vehicle numbers;
- iv. site clearance drawings;
- v. water demand;
- vi. primary construction plant;
- vii. waste quantities;
- viii. primary material quantities; and
- ix. assumptions.

Construction phasing and outline schedule

- 4.12.2 The Proposed Development would be delivered incrementally but is described in two principal construction phases. As described in **Paragraph 4.2.4**, however, for the purposes of assessment three assessment phases are considered with each phase delivered to meet the forecast passenger demand. The majority of construction is scheduled to take place during assessment Phase 2a and assessment Phase 2b.
- 4.12.3 It is recognised that delivery of the Proposed Development would take several years, during which time the airport is to remain operational. An indicative outline programme is provided in **Inset 4.1**.
- 4.12.4 The key construction activities anticipated to take place in each phase are described in **Appendix 4.1** to this ES [TR020001/APP/5.02]. These have been developed with conservative estimates, for example, numbers of workers, simultaneous activities, to allow the reasonable worst case to be considered in the indicative programme. Each environmental aspect assessment in this ES (**Chapter 6 to 20 [TR020001/APP/5.01]**) that employs this construction data further describes assumptions to ensure that a reasonable worst case is being considered, for example, assessing the peak construction activity in each assessment phase and combining that with the maximum operational capacity to assess the reasonable worst case effect for that assessment phase. This ensures that there is reasonable flexibility in the incremental delivery of the works within the environmental effects reported in this ES.

Inset 4.1: High-level Indicative construction schedule



Code of Construction Practice

- 4.12.5 The Code of Construction Practice (CoCP) provided as **Appendix 4.2** to this ES [TR020001/APP/5.02] describes comprehensive control measures and standards proposed to be implemented throughout the construction of the Proposed Development. The CoCP is likely to be considered further and amended with a final revision of the CoCP agreed during the examination process.
- 4.12.6 Whilst multiple construction works would run concurrently throughout the Proposed Development, the CoCP would act as the overarching document for all construction related activity. The CoCP would present a consistent approach to the environmental management of construction activities for the duration of construction of the Proposed Development, subject to periodic review to reflect current best practice and standards.
- 4.12.7 The CoCP provides outline principles which would be used to inform the development of more detailed management plans by the lead contractor as defined in the CoCP and prepared and implemented as part of their certified Environmental Management System, in consultation with the Local Planning Authorities as a Requirement of the DCO.
- 4.12.8 The content and structure of the CoCP are outlined as:
- a. Policy and Environmental Management Principles: an overview of the Applicant's Sustainability Policy and the identified environmental management systems (EMS) to be implemented during construction;
 - b. Management approach: the mechanisms by which broader environmental commitments and detailed requirements in local community areas are passed from the Applicant to the lead contractor;
 - c. Community relations and stakeholder engagement: an overview of engagement with the local community, including the mechanisms for communications, enquiries and complaints;
 - d. General requirements, including hours of work, good housekeeping, security; and
 - e. Requirements by environmental topic: an outline of the measures that would be employed to reduce disturbance from construction activities, as far as reasonably practicable including:
 - i. accident and incident prevention and control;
 - ii. agriculture land quality;
 - iii. air quality;
 - iv. biodiversity;
 - v. climate change and greenhouse gases;
 - vi. cultural heritage;
 - vii. health and community;
 - viii. noise and vibration;
 - ix. resources and waste;
 - x. soils and geology;
 - xi. traffic and transport; and

- xii. water resources.

Relationship with other developments

- 4.12.9 A number of airport related developments are currently underway in and around the Main Application Site. These are listed and described in **Chapter 2 Site and Surroundings** of this ES [TR020001/APP/5.01], along with a brief description of their status and how they relate to the Proposed Development.

4.13 Operation

Passengers and flights

- 4.13.1 The airport would be operational throughout the delivery of the construction of the Proposed Development. The passenger numbers currently anticipated at each of the assessment phases are described in **Chapter 5** of this ES [TR020001/APP/5.01]. Following completion of construction of the Proposed Development, the airport would continue at the maximum consented passenger capacity of 32 mppa if a cap is applied by the DCO, or within the environmental envelope defined by the environment effects reported in this ES and controlled through the application of the regime described in the **Green Controlled Growth Explanatory Note** [TR020001/APP/7.08].
- 4.13.2 Future operational demand forecasts have been developed into detailed outputs to allow the environmental assessment work to be undertaken, as well as to support capacity planning and highways modelling. Key outputs include:
- a. Busy Day timetables for airport capacity planning and October Day Timetables for highways modelling and surface access;
 - b. annual fleet;
 - c. 92-Day fleet mix for noise assessment; and
 - d. assumed world region split for each aircraft type and average range to each region.
- 4.13.3 The methodology used to generate demand forecasts, assumptions and key output data are discussed in the **Need Case** [TR020001/APP/7.04] provided as part of the application for development consent.

Surface access vehicles

- 4.13.4 Incorporating the passenger demand forecasts outlined above, detailed traffic modelling has been undertaken to generate operational traffic data used in this assessment. The CBLTM (Central Bedfordshire and Luton) model available for the region was modified to generate a new strategic CBLTM-LTN model for this Proposed Development. The detailed method, assumptions and conclusions of this modelling exercise, and a breakdown of operational car parking spaces at each phase are provided in the **Transport Assessment** [TR020001/APP/7.02] and **Travel Plan** [TR020001/APP/7.14].

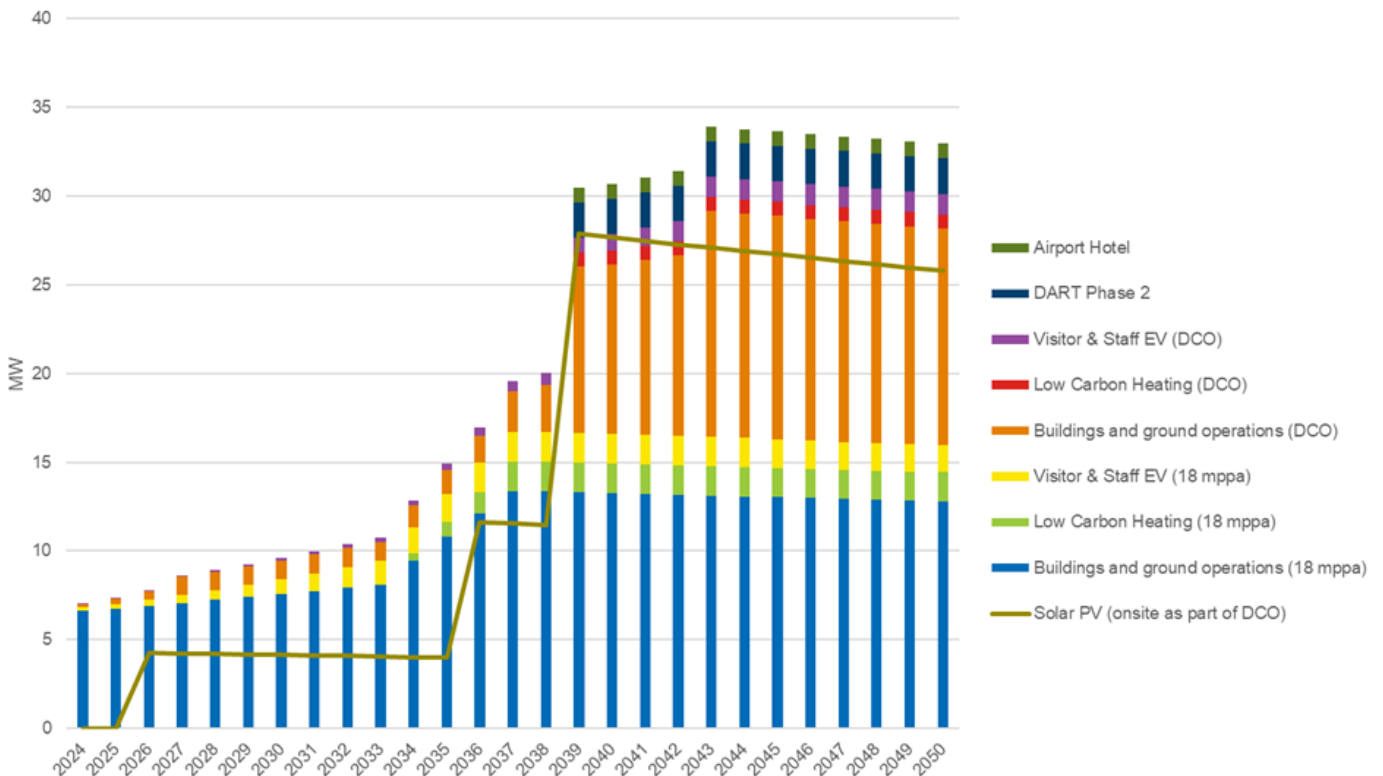
Energy demand

- 4.13.5 Estimates of energy demand for the Proposed Development have been generated to inform the design and this assessment and are summarised in this section with further details described in the Energy Statement provided as **Appendix 4.3** to this ES [TR020001/APP/5.02].
- 4.13.6 This Energy Statement describes measures incorporated into the Proposed Development, delivered by the DCO, to minimise energy consumption and decarbonise the airport allowing the energy use and carbon emissions associated with the Proposed Development to be calculated and reported. It goes on to further describe other measures considered to deliver the net zero strategy for the airport which are not included in the Proposed Development and therefore not secured by the DCO but provide context in delivery and enabling a net zero trajectory for aviation. This ensures that the proposed infrastructure has the appropriate electrical capacity and flexibility to enable, and contribute to, achieving net zero targets for the sector as future technology is developed and adopted.

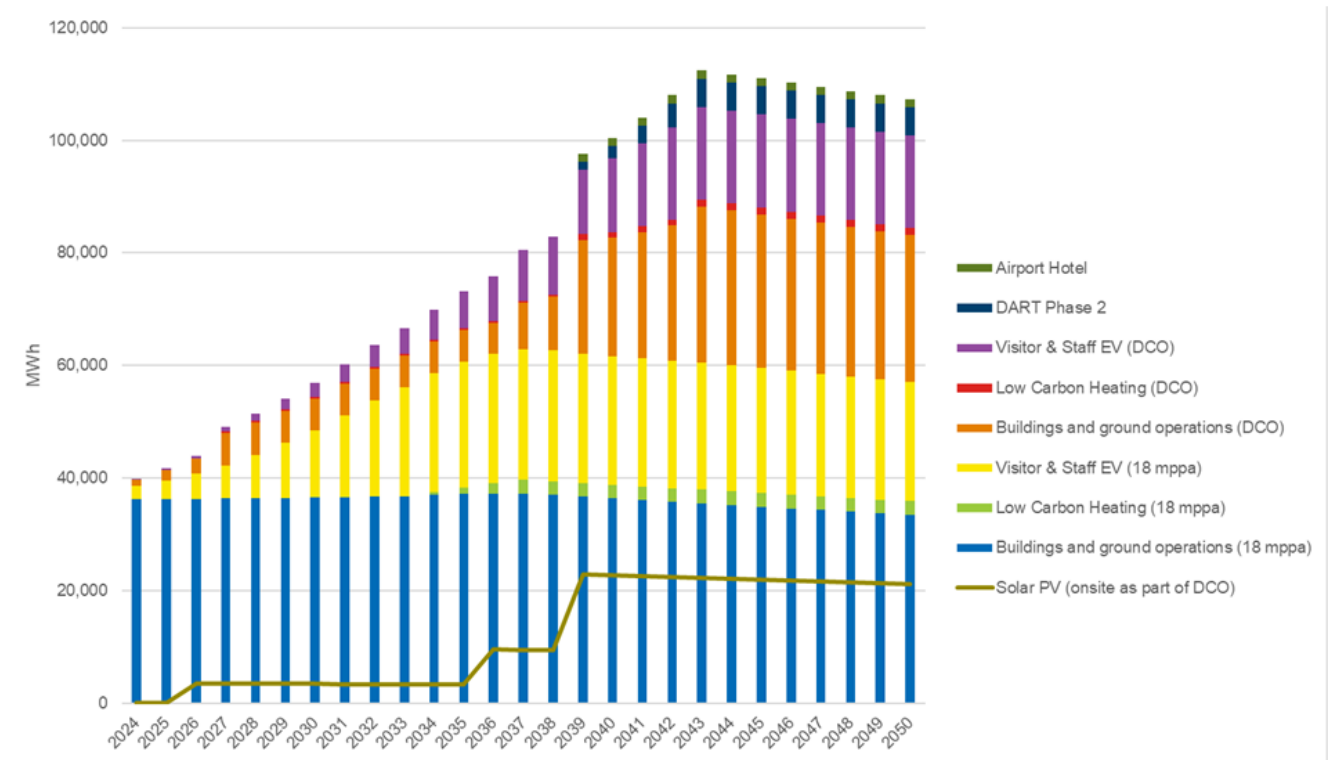
Electricity

- 4.13.7 The predicted average power demand and total annual electrical energy demand for the airport up to 2050 is shown in **Inset 4.2** and **Inset 4.3** respectively. As these energy calculations are to ensure the correct capacity for the whole airport is accounted for, therefore demand graphs include other elements of the airport as well as the Proposed Development.

Inset 4.2: Forecast average airport power demand (MW), 2024 to 2050



Inset 4.3: Forecast total annual airport electrical demand (MWh), 2024 to 2050

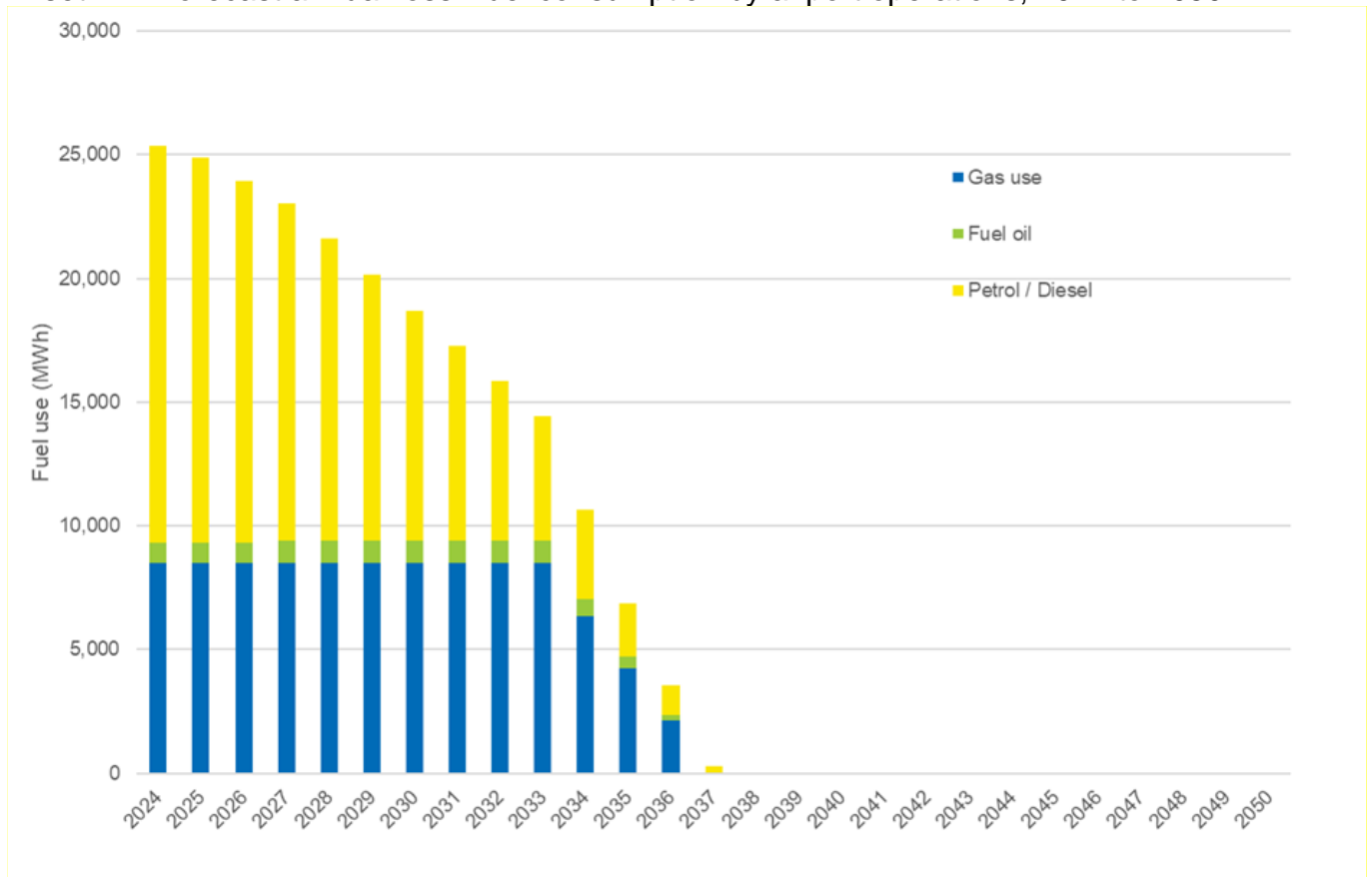


Natural gas

4.13.8 The new terminal and associated buildings would not include connection to the natural gas network as part of the strategy to decarbonise the existing airport in line with expected government policy. Existing buildings which rely on gas for heating or services would transition to other sources of heat and power as part of the operator’s asset renewals programme.

4.13.9 The above electrical demand forecasts assume the existing gas boilers are replaced by 2037 and the heating is switched to low carbon heat pumps. The predicted consumption of natural gas, as well as other fossil fuels, is reported in the Energy Statement provided as **Appendix 4.3** to this ES [TR020001/APP/5.02] and shown in **Inset 4.4**.

Inset 4.4: Forecast annual fossil fuel consumption by airport operations, 2024 to 2050



Water

4.13.10 The drainage strategy for the airport, including the Proposed Development has been developed in consultation with the key stakeholders, including statutory undertakers. The Proposed Development includes measures that would allow water demand to be controlled and not increase proportionally with passenger numbers; these include rainwater harvesting, a new on-site WTP, and recycling for suitable uses. The currently anticipated operational water consumption during delivery of the Proposed Development, and assumed to continue after final capacity is reached, is described in the Drainage Design Statement provided as **Appendix 20.4** and the Water Cycle Strategy provided as **Appendix 20.5** of this ES [TR020001/APP/5.02].

Other operational aspects

4.13.11 Resource consumption and waste generation are discussed in **Chapter 19** of this ES [TR020001/APP/5.01]. Land use and soil used/lost during construction are described in **Chapter 6** to this ES [TR020001/APP/5.01], no operational effects are expected. Biodiversity loss and net gain is discussed in **Chapter 8** to this ES [TR020001/APP/5.01], no operational loss is expected and long term management during operation is described in the Outline LBMP provided as **Appendix 8.2** to this ES [TR020001/APP/5.02].

4.14 Decommissioning

- 4.14.1 The assessment of potentially significant effects arising from the decommissioning of the Proposed Development has been scoped out of the EIA. The Planning Inspectorate agreed with this approach in the Scoping Opinion.
- 4.14.2 It is considered that the airport, once operational, would be a permanently functional airport, and that the site would not be undertaking activities that pose a long-term risk requiring detailed decommissioning plans or assessment. There are no foreseen elements of the airport which would become redundant during the lifespan of the Proposed Development.
- 4.14.3 Any unforeseen future decommissioning which arises after the consent of the Proposed Development would be subject to appropriate planning and assessment requirements.

4.15 Airspace change

- 4.15.1 The Government is co-sponsoring the Airspace Modernisation programme with the Civil Aviation Authority. Its commitment to the Airspace Modernisation programme was confirmed in 'Flightpath to the Future' in June 2022:

“Airspace modernisation will deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace. It has an important role to play in ensuring the UK can meet its decarbonisation ambitions, and embrace opportunities presented by new and novel aircraft. The Government is committed to ensuring UK airspace can support the sustainable growth of the aviation sector.

In 2018 the CAA published its Airspace Modernisation Strategy (AMS), setting out the initiatives required to modernise UK airspace. A key component of the AMS is the Future Aviation Strategy Implementation (FASI) initiative. FASI is a programme of terminal redesign of airspace to facilitate efficiencies. This programme, at the request of DfT and the CAA, will be coordinated by the independent Airspace Change Organising Group.

- 4.15.2 To support the achievement of these objectives, the Government has provided funding to help assist airports in developing specific airspace change proposals.
- 4.15.3 Given the complex interactions between the airspace requirements of a wide range of users, including airports, responsibility for coordinating the delivery of airspace modernisation has been delegated to ACOG (Airspace Change Organising Group). ACOG is developing a Masterplan for Airspace Change over the South East of England (known as the FASI-S programme), which would set out the interactions between the differing requirements and how these can be resolved. Iteration 2 of this Masterplan was approved by the CAA in January 2022, enabling individual airports to progress their proposals to the next stage.
- 4.15.4 London Luton Airport has now passed Initial Options Appraisal stage (Gateway 2B) and is now undertaking further evaluation work ahead of full consultation

later in 2023. The timescale for consultation is linked to the interfaces with change proposals by other airports and the need for coordination through ACOG as part of the refinement of the Masterplan. Changes may be required to flightpaths for the airport to fit in with the overall airspace Masterplan regardless of whether the DCO is granted or not and **the DCO itself does not directly require changes to flightpaths** over the ground to achieve the increase in runway movements. However, the nature of these wider airspace changes is not known pending the coordination exercise by ACOG.

- 4.15.5 Nonetheless, realising the modernisation of the airspace is necessary to enable the growth envisaged across the London airports to be achieved, including the growth envisaged through this Proposed Development as well as at the other airports, including the potential third runway at Heathrow. Given the priority being accorded to airspace change by the Government, it is envisaged that the wider airspace changes would be delivered in time to meet the predicted growth with this Proposed Development.
- 4.15.6 While the required changes to flightpaths are not yet known, National Air Traffic Services (NATS) had originally identified the airport as one of the airports which stands to gain most from a reduction in the population affected by aircraft noise if aircraft are able to climb more freely. In the NATS Feasibility Report into Airspace Modernisation in the south of the UK, published alongside Aviation 2050 in December 2018, NATS projected a potential 27.8% reduction in the size of the area affected by aircraft noise around the airport on a like for like basis.
- 4.15.7 Given the current progress with the broader airspace modernisation programme, the noise implications of the Proposed Development have been assessed **based on current flightpaths** at this stage. However, there is a reasonable expectation that there will be changes, particularly to aircraft climb profiles over neighbouring settlements and potential for respite routes which will reduce the noise implications below those assessed over time.
- 4.15.8 Some sensitivity testing, particularly of the noise implications, of potential variation in the use of existing flightpaths has been undertaken for an option with potential to result in change to noise through respite routes, as described in **Section 5.4 of Chapter 5** of this ES [TR020001/APP/5.01], and reported in each of the technical aspect assessment **Chapter 6 to 20** of this ES [TR020001/APP/5.01]. It is an important principle of the airspace change process that any changes to noise exposure on the ground are minimised but the sensitivity test provides some assurance that options currently under consideration could be accommodated within the proposed Noise Envelope.
- 4.15.9 **Paragraph 2.2.24** of the EIA Scoping Opinion states that “*The Inspectorate understands the relationship between the Proposed Development and the future air space change process, which may not run in parallel. However, the Inspectorate considers that the ES methodology should be compatible with the methodological approaches outlined in the CAA’s CAP 1616 and CAP 1616a documents to ensure consistency and continuity between the two assessment processes. Where the ES methodology is not consistent with the CAA’s CAP approach, this should be identified and explained*”. A response to this request is

provided in **Chapter 5** Approach to the Assessment of this ES [TR020001/APP/5.01].

GLOSSARY AND ABBREVIATIONS

| Term | Definition |
|--------------------------|---|
| AAR | Airport Access Road |
| AGL | Aeronautical Ground Lighting |
| AOD | Above Ordnance Datum |
| A-VDGS | Advanced Visual Docking Guidance Systems |
| Block Parking | A managed parking arrangement where vehicles can be parked in locations that block other vehicles in. The controllers of the site can move vehicles to allow owner to exit when required. |
| BOD | Biochemical Oxygen Demand |
| CAA | Civil Aviation Authority |
| CoCP | Code of Construction Practice |
| Code [x] aircraft | International Civil Aviation Organisation aircraft categorisation based on size. |
| Contact Stands | Contact stands include designated areas on the apron where an aircraft could use a passenger boarding bridge if required by the airline. |
| CTA | Central Terminal Area |
| Luton DART | Luton Direct Air-Rail Transit |
| DCO | Development Consent Order |
| DOZ | Drop-off Zone |
| EASA | European Aviation Safety Agency |
| East Luton Study/Project | The East Luton Study is a series of other highway works that are proposed by LBC. These works will be undertaken by LBC and form part of the future baseline, not part of the Proposed Development. These other highway works will be considered appropriately in the cumulative assessment as they are considered other developments for the purpose of that assessment. |
| EIA | Environmental Impact Assessment |
| ERUB | Engine Run-up Bay |
| ES | Environmental Statement |
| FASI-S | Future Airspace Strategy Implementation |
| FEGP | Fixed Electrical Ground Power |
| FTG | Fire Training Ground |
| GEA | Gross External Area |
| GSE | Ground Servicing Equipment |
| ha | Hectare |
| IATA | International Air Transport Association |

| Term | Definition |
|--------------------|--|
| ICAO | International Civil Aviation Organisation |
| IRVR | Instrumented Runway Visual Range System |
| km | Kilometre |
| LBC | Luton Borough Council |
| Luton Rising | A trading name for London Luton Airport Limited (the Applicant) |
| the airport | London Luton Airport |
| m | Metre |
| m ² | Metre squared |
| m ³ | Metre cubed |
| mppa | Million passenger per annum |
| MSCP | Multi-storey Car Park |
| NCP | New Century Park |
| NH ₄ -N | Ammoniacal Nitrogen |
| Noise Envelope | The Noise Envelope is a legally binding framework to monitor, manage and control aircraft noise, including a defined mechanism to share the noise reduction benefits of future technological improvements in aircraft between the airport and local communities. |
| PSZ | Public Safety Work |
| Public Realm | Public Realm relates to areas in the built environment including between buildings, streets, squares, plazas, that are accessible to the public. |
| Q1-4 | Quarter 1-4 |
| RET | Rapid Exit Taxiway |
| SAF | Sustainable Aviation Fuel |
| SMR | Surface Movement Radar |
| Surcharging | Surcharging is a process by which a load (such as excavated material) is used to provide pressure on a ground surface to accelerate consolidation of the material beneath it. |
| TDOZ | Temporary Drop Off Work |
| TSS | Total Suspended Solids |
| UKPN | UK Power Networks |
| VCP | Vehicle Control Point |
| WTP | Water Treatment Plant |