City Airport Development Programme (CADP1)

Condition 4: Construction Phasing Plan

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QUALITY MANAGEMENT

Prepared by:	**Philippa Coates (Senior Environmental Consultant) and David Thomson**
Authorised by:	**David Thomson (Senior Director)**
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CONTENTS

1 INTRODUCTION 1
2 PROPOSED CONSTRUCTION PHASING PLAN 6
3 ASSESSMENT OF ENVIRONMENTAL EFFECTS - STATEMENT OF CONFORMITY 9
4 CONCLUSION 20
APPENDIX 1: 2019 REVISED CONSTRUCTION PHASING PLAN 21
APPENDIX 2: 2019 OUT OF OPERATIONAL HOURS (OOOH) PROGRAMME 23
APPENDIX 3: INDICATIVE CONSTRUCTION PHASING PLANS FOR YEARS 1 TO 8 24
APPENDIX 4: DETAILED NOISE ASSESSMENT 26

1 INTRODUCTION

Background and Purpose of this Report

1.1 The City Airport Development Programme (CADP) 1 planning application (13/01228/FUL) was granted planning permission by the Secretaries of State for Communities and Local Government and Transport in July 2016 following an appeal and public inquiry which was held in March/April 2016.

1.2 The London Borough of Newham (LBN) has subsequently approved various minor non-material design changes to the CADP1 Planning Permission, including: 5th January 2017 (ref: 16/03797/NONMAT), 27th September 2017 (ref: 17/02865/NONMAT), 10th July 2018 (ref: 18/01001/NONMAT), 16th August 2018 (ref: 18/02109/NONMAT) and 8th October 2018 (ref: 18/02611/NONMAT). These approved minor amendments have been incorporated into the details provided to satisfy this condition.

1.3 Condition 4 of the CADP1 planning permission requires that:

"No Development shall be Commenced unless and until a Construction Phasing Plan providing details of the phases and the order in which the Development shall be Commenced has been submitted to and approved in writing by the local planning authority. Thereafter the Development shall only be carried out in accordance with the approved Construction Phasing Plan.

Reason: To ensure that the development is constructed in accordance with the UES."

1.4 The Airport submitted a Construction Phasing Plan to LBN pursuant to Condition 4 of the CADP1 permission in February 2017. It was proposed to build out CADP1 as a single uninterrupted period of construction over 5 years split into two distinct phases. Consistent with terminology used in the 2015 Updated Environmental Statement (UES), the two phases were referred to as the 'Interim Works' and the 'Completed Works' – each delivering different parts of the CADP infrastructure. The Interim Works would be delivered first and would be immediately followed by the Completed Works. This Construction Phasing Plan was approved by LBN in March 2017 (ref. 17/00500/AOD).

1.5 Subsequently, an Accelerated Construction Phasing Plan was submitted to and approved by LBN in May 2018 (Ref. 18/01290/AOD). The Accelerated Construction Phasing Plan superceded the previously approved programme and reduced the duration of the construction programme, delivering the full CADP1 infrastructure in an accelerated single phase and removing the distinction between the 'Interim Works' and the 'Completed Works'.

1.6 The build out of the CADP1 infrastructure in a single phase has been subject to several unforeseen delays including to the ongoing piling and deck works within KGV Dock. These delays have occurred at the same time as unprecedented growth in passenger numbers using the terminal buildings. As explained below, the delays to construction require some consequential changes to the previously Construction Phasing Plan: namely, to re-sequence some of the build to allow for the continued, uninterrupted operation of the terminal during construction. This resequencing of the works is hereafter referred to as the *2019 Revised Construction Phasing Plan* presented in **Appendix 1** of this document. It should be noted that the duration of particular activities shown on

this Phasing Plan and described within this report, are indicative only as Condition 4 does not require the approval of such details.

1.7 This *2019 Construction Phasing Plan* is not dissimilar to the *Updated Construction Programme* originally assessed in the Updated Environmental Statement (UES Appendix 6.1, September 2015), albeit that earlier plan envisaged construction of the CADP1 infrastructure in a somewhat different order and in two distinct phases (the Interim Works and the Completed Works) with the total works lasting 80 months and spanning 7 calendar years. Including the construction works which have already been completed[1], the *2019 Revised Construction Phasing Plan* spans 90 months and 8 calendar years but does not involve any greater intensity of works to that which has been assessed previously. Moreover, *2019 Revised Construction Phasing Plan* does not increase the frequency of Out of Operational Hours (OOOH) and aligns with the requirements of the planning conditions attached to the CADP1 permission, in particular Condition 82 which requires that all piling that needs to be conducted during OOOH is completed within a maximum of 32 weeks in total. A revised *2019 OOOH Programme* is presented at **Appendix 2** of this report.

1.8 The extended single-phase build proposed in the *2019 Construction Phasing Plan* is required primarily due to delays during the piling and deck works (such as pile collapse) and clearance of unexploded ordinance (UXO) and other previously unrecorded debris across the dock bed. These delays have caused several additional knock-on effects to the delivery of other elements of CADP1, as described further below.

1.9 Due to the delays to construction, at the same time as increasing passenger numbers, there is a risk that key service-related infrastructure will not be complete and operational in time to accommodate the forecasted numbers of passengers without significantly compromising passenger experience. In 2019, the airport expects to handle over 5 million passengers for the first time. Given this rising passenger demand, it would not be possible to coordinate the building of the West Terminal Extension (WTE) and to reconfigure the existing terminal (as planned) without a reduction in available space for passengers and associated passenger processing facilities. These works must therefore be re-sequenced to take place at an appropriate time of year and avoid unacceptable levels of passenger disruption during the build.

1.10 In view of the above, it is proposed to re-sequence how the terminal buildings are delivered to accommodate passengers. This change comprises:

[1] The CADP1 construction works commenced on 25th October 2017 with site set up, erection of temporary construction noise barriers and demolition of Dolphin No. 7

- Extension of piling and deck works in the KGV Dock by approximately 6 months due to unforeseen circumstances, as described above. This does not however increase the frequency of OOOH and aligns with the requirements of the planning conditions attached to the CADP1 permission, in particular Condition 82 which requires that all piling that needs to be conducted during OOOH is completed within a maximum of 32 weeks in total;

- Prioritisation of the delivery of East Terminal Extension (ETE) and part of the East Pier to accommodate the increased passenger numbers, followed by the WTE and remainder of the New East Pier (NEP). This resequencing allows for new terminal facilities to be delivered to better accommodate the impact of more disruptive work (i.e. the WTE, redeveloping the existing terminal building and completing the NEP). This ensures that the most disruptive elements of work are only undertaken when enough alternative space has been provided and avoids unacceptable levels of passenger disruption during the ongoing works;

- The New East Pier will likely be built out in two parts commensurate with demand and the capacity being realised by the new terminal buildings. Temporary noise barriers (the details of which will be submitted pursuant to Condition 6 of the CADP1 permission) will be installed to mitigate any temporary impacts of operating new stands ahead of completing the full NEP;

- The resequencing and extended duration of the construction of the terminal buildings will inevitably extend the overall duration of the build period. This means that the dockside development, which includes the forecourt, car parking and eastern access for example, will be completed towards end of the construction programme (consistent with the previously approved Accelerated Construction Phasing Plan) and once temporary construction facilities required to support and facilitate the construction of CADP1 have been removed; and

- Appropriate temporary measures will be put in place during the build to ensure that sufficient facilities (e.g. parking access) are in place commensurate with the increased capacity delivered by the CADP1 permission, and before the permanent dockside infrastructure is completed following removal of the construction compounds.

1.11 The revised sequence of construction works and durations of the primary activities are described further in Section 2.

1.12 The *2019 Revised Construction Phasing Plan* is independent of several temporary construction facilities being delivered under Part 4 of the Town and Country Planning (General Permitted Development) (England) Order 2015. The management of the effects of the construction of these temporary facilities is addressed separately by the S61 Agreement with LB Newham. Following the construction of relevant CADP1 infrastructure, these temporary construction facilities will be removed.

1.13 The UES assessed the potential operational environmental impacts of CADP1 using a Principal Assessment Year of 2025 - the point at which the airport was predicted to reach the maximum passenger and aircraft throughput facilitated for by the new infrastructure (and to which limits were subsequently imposed by the CADP1 planning permission). Under the *2019 Construction Phasing Plan,* construction of CADP1 is expected to be completed by mid-2025. Accordingly, the basis of the UES assessment with respect to the assessment of operational environmental impacts remains valid.

1.14 As with previously approved versions of the Phasing Plan, the sequencing and delivery milestones for specific infrastructure shown on the *2019 Revised Construction Phasing Plan* are indicative only. Precise sequencing and delivery milestones are subject to change depending on when certain future works commence and overall progress during the ongoing CADP1 build.

1.15 As discussed in Section 3 of this document, the increase in the duration of the construction programme by 10 months compared to the *Updated Construction Programme* assessed in the UES does not give rise to any materially different or additional 'likely significant environmental effects' from those identified in the UES.

1.16 The consequential changes to the programme and other revised details within this document are shown in blue font in order for LBN to readily identify these changes.

1.17 This submission to LBN includes:

1) A description of the proposed *2019 Revised Construction Phasing Plan* (Section 2);

2) The *2019 Revised Construction Phasing Plan* (Appendix 1), together with indicative figures including a Piling Zones Plan (Appendix 2) and Updated Out of Operational Hours (OOOH) Programme (Appendix 3) included for information only;

3) An assessment of whether any new or materially different environmental effects will arise as a result of the *2019 Revised Construction Phasing Plan* compared to the impacts previously assessed in the UES (Section 3); and

4) Conclusions (Section 4).

1.18 This submission seeks approval from LBN for the phasing of the entirety of the remaining CADP1 works. The sequencing and delivery milestones for specific infrastructure shown on the *2019 Revised Construction Phasing Plan* and summarised below are, however, indicative only. Precise sequencing and delivery milestones are subject to change depending on when certain works commence and overall progress during the remaining CADP1 build.

1.19 This *2019 Revised Construction Phasing Plan* submitted for approval comprises a summary programme and sequencing of the main construction activities only. As agreed with LBN Officers, some of the construction programme details previously included in earlier versions of the Phasing Plan have been removed from this document. These details are instead covered under the S61 Agreement, submitted separately. Changes to the detailed construction programme will be subject to agreement with LBN through the S61 consenting process and will not be subject to a revised submission under Condition 4.

1.20 In addition, the *2019 Revised Construction Phasing Plan* submitted for approval is for the main building envelopes and external works only and does not include additional internal fit out works that will be undertaken upon completion of the main external construction activities. Internal works will be of a low intensity and are considered unlikely to give rise to any noticeable external effects such as a significant increase in vehicle movements, dust emissions, noise or visual effects. Accordingly, fit out works are not included in the phasing plan.

Scope of the CADP1 Works

1.21 Construction of the CADP1 infrastructure commenced in October 2017 with the demolition of Dolphin No.7 and the construction of the Temporary Construction Noise Barrier. Piling works and

construction of the deck over the KGV Dock commenced in June 2018 with airside attenuation works following later that year. The piling and deck works are now due to be complete by the end of 2020.

1.22 Under the proposed *2019 Revised Construction Phasing Plan,* the main remaining construction sequence includes: completion of the piling and decking over KGV Dock to create the new aircraft stands and parallel taxilane; the construction of East Terminal Extension (ETE) and half of the New East Pier (NEP); the East and West Energy Centres (EEC and WEC); and initial works to the dockside and forecourt. This will be followed by construction of the Western Terminal Extension (WTC) and remaining half of the NEP. Works to the final elements of the CADP1 infrastructure, including the decked passenger car park, dockside works (including new taxi feeder park, walkway and east access), surface car park, forecourt and landside attenuation works will take place last once sufficient space is available to construct these facilities.

1.23 It should be noted that all milestones in the CADP1 *2019 Revised Construction Phasing Plan* are subject to change depending on the progression of different construction activities.

2 PROPOSED CONSTRUCTION PHASING PLAN

Description of Phasing Plan

2.1 This section describes the indicative phasing and duration of individual components of CADP1 works. To assist LBN and other interested parties to appreciate the key components and durations of the works, the *2019 Revised Construction Phasing Plan* is provided at **Appendix 1.**

2.2 This *2019 Revised Construction Phasing Plan* takes into account and ensures compliance with the requirements of the planning conditions attached to the CADP1 permission, in particular Condition 82 which requires that all piling that needs to be conducted during OOOH is completed within a maximum of 32 weeks in total.

2.3 Once the new stands are constructed, the Airport will operate with a net capacity of 25 operational stands in accordance with the CADP1 planning permission. The 8 new stands and 4 reconfigured stands will be able to service Code C aircraft in a 'nose in' parking arrangement; constituting a further operational improvement at the Airport.

2.4 The main construction activities and approximate durations of the proposed continuous build are summarised in Table 2.1 below:

Table 2.1: Likely Construction Durations under *2019 Revised Construction Phasing Plan*

Activity Phase	Approximate Duration
Mobilisation	2 months
Stands Deck & Temporary Construction Noise Barrier*	37 months
Taxilane to Foxtrot	9 months
Airfield Services (including reconfiguration of aircraft stands)	25 months
Airside Attenuation Works	16 months
Eastern Energy Centre (EEC)	12 months
Western Energy Centre (WEC)	13 months
New East Pier (NEP)	32 (17+15 months)
Eastern Terminal Extension (ETE)	25+3+7 months
Western Terminal Extension (WTE)	25 months
Car Parking Deck	9 months
Forecourt / Hartmann Road Utilities (including demolition of City Aviation House)	14+12 months
Landside Attenuation Works	2+2+2 months
Dockside Upgrade (including Hartmann road upgrade) + Surface Car Parks	19 months
Floating RVP Pontoon	2 months
Overall Construction Duration	**90 months****

*includes opening of new stands, reconfiguration of existing Stands 21-24 and full length parallel taxiway.

** This is less than the sum of the above due to the overlapping nature of the above activities.

Sequencing of Works

2.5 The sequence and approximate dates that construction works are likely to occur for the main components under the *2019 Revised Construction Phasing Plan* are:

1. Completion of piling and deck over KGV Dock, including constructing the apron platform for all new stands, the full-length parallel taxiway and the deck for the ETE and NEP. These works are ongoing and due to be completed in late Year 3 (i.e. 2020) of the programme;

2. Airside Attenuation Works are ongoing and due to be completed in early Year 3;

3. Construction of new Forecourt: this will be undertaken in two primary phases. Initial works including utilities works in Hartmann Road are ongoing and due to be completed in early Year 3. Works on the forecourt will recommence in mid-Year 7 and last approximately one year. The latter phase will include demolition of City Aviation House;

4. Construction of EEC from mid-Year 2 to mid-Year 3;

5. Taxilane up to the new Foxtrot runway from mid-Year 2 to mid/ late Year 3;

6. Construction of Airfield Services: this will occur in several phases with the delivery of the new aircraft stands (in an initial self-manoeuvre arrangement) taking place from late Year 2 to late Year 5. Works will then recommence in early Year 6 to reconfigure the aircraft stands into nose-in position;

7. Construction of New East Pier (NEP): this will be completed in two conjoined phases, the first from early Year 4 to early Year 5 and the second from mid-Year 5 to late Year 6;

8. Construction of ETE: this will comprise several different elements of construction, with a total duration of 35 months but spanning five years (mid-Year 3 to mid-Year 8). The majority of the works will be undertaken in mid-Year 3 to mid-Year 5. Works would then recommence in mid-Year 7 with demolition of the existing East Pier, followed by construction of the Domestic Arrivals Vertical Circulation Core;

9. Construction of WEC from mid-Year 3 to mid-Year 4;

10. Construction of floating RVP Pontoon from mid-Year 3 to late Year 3;

11. Upgrade to the Dockside and construction of the Surface Car Park: The total duration of works will be approximately 19 months; however, this will be over three phases from early Year 4 to late Year 7;

12. Construction of WTE from early Year 5 to mid-Year 7;

13. Construction of the car parking deck from late Year 6 to mid-Year 7.

14. Landside Attenuation Works: these will be undertaken over three separate phases in conjunction with dockside development including carparks and upgrades. The first phase was completed in 2018. The latter two phases will be undertaken in early Year 7 and early Year 8.

2.6 Details of specific activities occurring within the main stages of construction will be further set out and agreed through the Section 61 Agreement.

2.7 Piling in the KGV Dock and construction of the deck commenced in June 2018. The piling rigs to construct the deck are working at the same time but in different locations. – this is the same approach as the piling methodology assessed in the UES. The ongoing OOOH piling will still be completed within 32 weeks, as required by Condition 82 of the CADP1 permission. The *2019 OOOH Programme* is presented at **Appendix 2** of this report.

2.8 It is proposed that all piling works in KGV Dock will be carried out continuously to deliver the entire deck over KGV Dock. This means that all of the piling required for CADP1 will be delivered upfront and will also allow for the pre-cast elements of the decking to be simultaneously placed on the completed piles. This enables the delivery of all other elements of the CADP1 works and provides a suitable platform to facilitate the future build out of the remaining works.

2.9 Figures 1-8 contained in **Appendix 3** of this report illustrate the proposed construction phasing and where works will be taking place during each year of the *2019 Revised Construction Phasing Plan.*

2.10 As the constructor's compound presented in the UES was indicative only, upon detailed review it was considered necessary to provide additional land requirements for lay-down and storage as well as maintaining flexibility to bring materials to and from the site using barges (see Condition 96: Construction Compound Operations and Hoarding for further details). This aligns with Condition 60 which seeks to maximize the use of the River Thames during construction.

3 ASSESSMENT OF ENVIRONMENTAL EFFECTS - STATEMENT OF CONFORMITY

Introduction

3.1 Chapter 6 and its appendices of the UES (Appendix 6.1, 6.2 and 6.6) presented two indicative construction programme scenarios; the *2015 Updated Construction Programme* which was based on a two phase approach over a period of approximately 6 years and 4 months, with a period of 6 months respite between phases (i.e. spanning a total of 7 calendar years); and the *2015 Accelerated Construction Programme* which considered a continuous single phase build out, with construction lasting 5 years and 2 months.

3.2 As described in Section 1 of this report, delays in construction works (namely the piling and deck works) has necessitated a further review of the construction programme and the resequencing of key activities in order to preserve the uninterrupted operation of the terminal buildings and other essential passenger processing facilities. CADP1 will still be built out over a single continuous phase as envisaged by the previously approved *Accelerated Construction Programme*. However, the whole construction works (i.e. including those already undertaken) will now span period of eight calendar years which is more akin to the timescales envisaged by *2015 Updated Construction Programme*.

3.3 The *2019 Revised Construction Phasing Plan* contained in Appendix 1 of this report now represents the programme which the Airport now wishes to implement, subject to approval by LBN.

3.4 The assessment presented below replicates, in summary form, the original EIA and compares the likely environmental effects of this *2019 Revised Construction Phasing Plan* with those concluded in the UES.

3.5 As described previously, these further revisions to the construction programme are unlikely to have any bearing on the longer-term operational effects of CADP1 given that the full, optimal utilisation of this infrastructure will still occur in 2025 (the 'Principal Assessment Year' adopted in the UES). As such, it is not considered necessary to revisit these operational phase effects within this document. Moreover, these operational effects will now be controlled through various restrictions imposed by the CADP1 planning permission (e.g. the maximum permitted aircraft movements and fixed noise contour).

Methodology

3.6 The assessment methodology described in Chapter 3: EIA Methodology and the relevant technical chapters of the UES remain applicable to this Statement of Conformity (SoC). Both professional judgement and quantified assessments (e.g. noise) have been used to validate the conclusions in this SoC, where applicable.

3.7 As the CADP1 construction works are ongoing at present, the airport and KGV Dock represent an altered and dynamic environment compared to their pre-construction state. However, this changing environment (including noise) is consistent with that predicted in the UES. It is also considered unlikely that baseline environmental conditions of the wider area around the airport will have altered

substantially in the intervening period, and not to such an extent that they would change the general findings of the assessments. As discussed below in Paragraph 3.10, while the ongoing construction of the ABP development to the north of the Royal Albert Dock and the planned commencement of the Silvertown Quays Development are expected to occur during the CADP1 construction works, these were accounted for in the cumulative assessment that formed part of the UES. Accordingly, the baseline conditions at the Airport and beyond have not been reassessed for the purpose of this exercise.

3.8 This assessment follows the same criteria for assessing the significance of an effect as used in the UES, to allow a like-for-like comparison. The details of proposed mitigation measures set out in the UES are reproduced where appropriate. In addition, where additional mitigation measures have been brought forward by the submission, and subsequent approval of, details to discharge the 'prior to commencement' conditions attached to the CADP1 planning permission these have been specified.

3.9 The residual effects of the CADP1 are set out, where necessary, with reference to Chapter 6: Development Programme and Construction, Chapter 8: Noise and Vibration and other technical chapters of the UES. A statement is then made outlining whether the findings remain consistent with those in the UES.

3.10 The cumulative schemes previously assessed within the UES have been reviewed, as set out in Chapter 18 of the UES. Notwithstanding the passage of time, it is considered that cumulative effects would be no worse than reported in the UES as there are no additional committed developments in close proximity to the Airport (i.e. which trigger the screening thresholds set out at paragraph 18.23 of the UES) that have come forward since submission of the UES. The cumulative effects of developments that have been approved since submission of the UES, such as Silvertown Quays to the west of the Airport, the ABP development north of the Royal Albert Dock, and Gallions Quarter to the north east, were previously assessed in Chapter 18 of the 2015 UES. Although the construction programme for CADP1 has varied from that assumed in the UES, this is not considered likely to result in any material changes in cumulative construction effects. On this basis, cumulative effects are not considered further within this report.

Assessment

3.11 The following sub-sections present an assessment of the environmental effects of the *2019 Revised Construction Phasing Plan* in comparison to the environmental effects and conclusions presented in the technical chapters of the UES based on the 2015 *Updated Construction Programme* (presented in Appendix 6.1 of the UES).

3.12 The UES found the environmental effects of the two-phase construction of CADP1 would generally be 'negligible', within a range from 'moderate beneficial' to 'moderate adverse' following the implementation of effective mitigation measures; whilst the sensitivity test (Appendix 6.6) confirmed the same order of effects with a single phase build out (i.e. none of which would be materially worse than under the two-phase delivery).

3.13 'Static' EIA topics such as ground conditions, cultural heritage and flood risk are unaffected by the changes to the construction programme because the same effects occur at the point of impact, irrespective of when this occurs. However, for completeness, a review of all the previously identified construction environmental effects has been undertaken.

3.14 The following text provides an assessment of the environmental effects of this *2019 Revised Construction Phasing Plan* on a topic-by-topic basis and compares these to the effects identified in the corresponding chapter of the UES after taking account of proposed mitigation measures. The order of topics replicates the UES chapters.

Socio-economics, Community and Recreation

3.15 Although the overall estimated value of the construction works has increased since 2015 (to approximately £500m) these capital costs are not expected to change significantly as a result of the *2019 Revised Construction Phasing Plan*.

3.16 The *2019 Revised Construction Phasing Plan* will extend the CADP1 construction by approximately 10 months compared to the *2015 Updated Construction Programme*. In 2018 the on-site construction workforce averaged around 500, which is somewhat in excess of the employment numbers estimated in the UES (i.e. approximately 350 FTE on site construction jobs, plus 106 indirect and induced jobs). Similar numbers are expected to be engaged in the works throughout 2019 (Year 3) and the early part of 2020 (Year 4) due to the intensity of the ongoing works during this period, including the completion of the piling and deck in KGV Dock. However, the overall level of activity will be somewhat lower during the second half of the programme and therefore annual construction employment numbers are anticipated to level out to around the 350 FTE estimated in the UES.

3.17 Notwithstanding the increased budget and higher peak employment numbers, it can be concluded that construction employment and associated Gross Value Added (GVA) effects would continue to constitute a '**moderate beneficial**' effect, as concluded in the UES.

3.18 These beneficial socio-economic effects will be further enhanced by the Local Education, Employment and Training commitments set out at Schedule 11 of the Section 106 Agreement for CADP1 (April 2016); especially clause 1.1(d) which requires at least 40% of new recruits for jobs which relate to the construction and which are advertised by contractors or sub-contractors engaged by the Airport Companies, to be residents in LBN.

Noise and Vibration

3.19 The main noise generating activities within the *2019 Revised Construction Phasing Plan*, being broadly in line with the *2015 Updated Construction Programme*, gives rise to similar noise effects. There are minor differences resulting from a slightly different order of activities, such as building out the apron deck in one continuous activity, as opposed to in two separate phases, and the extension of the programme activities. These lead to slight differences in the distribution of noise over time during OOOH works.

3.20 To evaluate the noise effects of the *2019 Revised Construction Phasing Plan*, construction noise modelling has been undertaken by Bickerdike Allen Partners (BAP) based on the same methodology as adopted in the UES but with some updated information concerning plant activities, types and on-time assumptions based on information received from the CADP Delivery Partner (Bechtel). The resulting noise maps are provided in Appendix 4 of this report. These maps identify the resulting noise during a 15 minute period of OOOH works for a given 3 month time slice. All activities are assumed to occur concurrently. However, in practice this is unlikely to occur, particularly given the approved construction mitigation measures and S61 agreement which seek to minimise simultaneous operation of the noisier activities where practical to do so.

3.21 Appendix 6 also includes a table of receptors indicating the worst case number of dwellings likely to be exposed to different levels of noise during the OOOH works, for each three month time slice. The distribution of the noise over the construction period differs slightly from the *2015 Updated Construction Programme Phasing Plan* as a result of a deferral of activities and resulting increase in duration of the works. This does not affect the overall numbers exposed to more than 55 dB $L_{Aeq,15min}$ although when considering those exposed to 50 to 55 dB $L_{Aeq,15min}$, the number has not increased above and beyond those already identified and treated under the Construction Sound Insulation Scheme (CSIS).

3.22 In accordance with the requirements of the approved details under Conditions 88, 90 & 91, the Airport has completed delivery of the CSIS for the 400 properties previously identified under the approved Construction Phasing Plan. The additional properties identified as a result of the *Accelerated Construction Phasing Plan* have also been offered works in accordance with the revised details included in the CNVMMS (Condition 88) submitted under separate cover.

3.23 A full list of eligible properties and a phasing plan for delivery is included in the CNVMMS. All eligible properties who accepted the offer of sound insulation works have now been treated. At completion of the CSIS, a total of 613 dwellings were offered these works and 554 dwellings have been treated. No newly eligible properties have been identified as a result of the *2019 Revised Construction Phasing Plan.*

3.24 The overall construction noise effect of the proposed *2019 Revised Construction Phasing Plan* is materially the same as identified previously in the UES. Based on this information, and with the offered mitigation in the UES (subsequently adopted as planning conditions), the residual construction noise effects will give rise to a **negligible** impact during daytime operational hours and **minor adverse** impact during Out of Operational Hours.

Air Quality

3.25 The *2019 Revised Construction Phasing Plan* involves some overlap of (primarily daytime) construction activities compared to those assessed in the UES. However, the potential for dust generation from construction activities is broadly the same as that identified previously.

3.26 As reported in Chapter 9 of the UES, with reference to the Institute of Air Quality Management and GLA's guidance, the CADP1 comprises a 'High Risk' for demolition, earthworks and construction activities. High Risk is the highest risk category for construction dust impacts. Accordingly, the *2019 Revised Construction Phasing Plan* does not introduce any greater risk of dust impacts before mitigation has been implemented.

3.27 The UES sets out the mitigation measures that should be applied to any notional 'High Risk' construction site to minimise the risk of dust impacts. These mitigation measures are detailed in the Construction Mitigation sub section of Chapter 9 of the UES (paragraph 9.279) which have been further specified in the Air Quality Construction Management and Mitigation Strategy (AQCMMS) that has been prepared in conjunction with the Construction Environmental Management Plan (CEMP) to discharge Condition 88 of the planning permission. In general, because of the sensitive operational environment of the Airport, all necessary measures are and will continue to be taken to prevent or reduce dust at source. It is noted that no significant dust incidents have been recorded to-date associated with the ongoing works.

3.28 As these measures will be applied consistently throughout each dust generating activity on the *2019 Revised Construction Phasing Plan*, then the overall significance of dust impacts during the construction period will remain as **not significant**.

3.29 The air quality impacts associated with emissions from construction traffic under the *2019 Revised Construction Phasing Plan* (see below) are concluded to remain as **not significant**

Townscape and Visual Effects

3.30 As stated in Chapter 10 of the UES, a small number of residential properties could potentially experience adverse visual effects during the construction phase. These properties are located within 100m of the Application Site and represent a very small proportion of the residential properties within the Silvertown area to the south of the Airport. Moreover, many of these properties will have no 'line of sight' of the works due to the erection of the 3m high Temporary Construction Noise Barrier required under condition 94 of the planning permission, which has now been constructed.

3.31 A construction lighting strategy has been submitted and approved by LBN to discharge Condition 92 of the CADP1 planning permission. This sets out good practice guidance to be followed by the contractor to mitigate any obtrusive night-time lighting effects that may impinge on sensitive receptors local to the Airport.

3.32 The *2019 Revised Construction Phasing Plan* would not change the residual construction effects on townscape and visual amenity that were presented in the UES which will remain **negligible to moderate adverse,** but temporary.

Surface Transport and Access

3.33 Estimates of construction vehicle movements associated with the *2019 Revised Construction Phasing Plan* indicate that HGV movements will reach a peak in second half of Year 3 to the beginning of Year 4 (up to a maximum of 579 two-way movements per month) whilst the main Piling & Deck works are completed. The expected HGV's deliveries for the terminal build will see these monthly figures reduce substantially. Thereafter, peak movements will remain below 500 two-way movements up to the completion of the CADP1 works in Year 8 (2025). These figures are lower than those estimated and assessed in the UES, which were: 585 two-way HGV movements per month in Year 1- 2, and 773 in Years 3 - 7 of the *2015 Updated Construction Programme.* Whilst these lower vehicle movements constitute a betterment, the overall change is not particularly significant in environmental terms (i.e. associated reductions in noise and emissions).

3.34 During construction, all Contractors appointed by the Airport are required to adhere to the mitigation measures set out in the CEMP prepared to discharge Condition 88 of the planning permission. In particular, they are required follow specific construction delivery routes and to implement various traffic management procedures and controls, in agreement with LBN's Highways Department. In order to discharge Condition 60: Use of the River Thames for Construction, a strategy has been developed that sets out how barges will be used to deliver suitable materials and plant and to transport waste materials away from the site using the River Thames. This approved strategy may lead to a further reduction in the HGV movements in future stages of the CADP1 works to those outlined above.

3.35 Notwithstanding any further potential reduction in peak HGV movements, the overall significance of effect is judged to be consistent with the findings of UES Chapter 11: Surface Transport and Access - being **minor adverse** and **not significant**.

Water Resources and Flood Risk

Flood Risk

3.36 During construction works the risk associated with a breach of the River Thames defences on construction activities / workers from tidal and fluvial flooding is still considered to be a **minor adverse** temporary effect, which can be mitigated through the introduction of a Flood Management Plan in consultation with the Environment Agency (as recommended in Chapter 11 of the UES).

3.37 Further flood control and attenuation measures will be introduced progressively as the CADP1 infrastructure is built out. These measures are set out in the Surface Water Drainage Scheme submitted in order to discharge Condition 69: Sustainable Drainage Systems. Additional mitigation measures are described in the approved CEMP.

3.38 Taking account of these measures, it is considered that the residual effect associated with surface water runoff during the construction phase will remain **negligible,** as concluded in the UES (Paragraph 12.96). The implementation of the *2019 Revised Construction Phasing Plan* does not change this conclusion.

Surface Water Quality

3.39 As set out in Chapter 12 of the UES, there is potential for construction materials, fuels, lubricants, debris and sediment entering the water in KGV Dock as a result of construction activities, or by accident. However, with appropriate controls in place, and based on the experience of the initial piling and deck works (where no significant pollution incidents have occurred), the risk of spillages or release of materials from future construction activities is considered to be to be **negligible.** Specific pollution control and monitoring measures are prescribed within the CEMP in accordance with Condition 88.

3.40 The *2019 Revised Construction Phasing Plan* would therefore not change the predicted **negligible** residual construction effects on water resources and flood risk, as concluded in the UES.

Ecology and Biodiversity

Direct Loss, Damage or Disturbance of Habitat

3.41 As set out in Chapter 13 of the UES, there are not anticipated to be any temporary or permanent loss of important terrestrial habitat during the construction of the CADP1. As the nature of the construction remains broadly the same, this conclusion holds true for the *2019 Revised Construction Phasing Plan*.

3.42 The loss of aquatic habitat within the Royal Docks SBINC comprises a section of the submerged KGV Dock wall which will be covered over by the construction of the deck. This was assessed in the UES as constituting a **minor** adverse effect. However, as recommended in the UES and now required by condition 68, artificial fish refugia (comprising wire mesh panels suspended from one of the concrete dolphins) were installed in the dock in 2017, prior to the main works commencing.

Over time, these refugia are predicted to be colonised by algae and aquatic invertebrates which will provide a food source and shelter for fish, thereby compensating for the loss of the dock wall. The location and timing of this mitigation feature is not altered in any way by the *2019 Revised Construction Phasing Plan*.

3.43 It is therefore considered that the direct loss, damage or disturbance of habitat during the *2019 Revised Construction Phasing Plan* will continue to have **no significant impact** on the Royal Docks SBINC or other ecological receptors such as breeding and wintering birds (which are discouraged in any case, for the reasons set out in the UES).

Cultural Heritage

3.44 KGV Dock has been identified through consultation with Historic England to constitute a 'non-designated heritage asset'. The construction of the new stands and taxilane extension has required the removal of coping stones from the top of the dock wall, with the front face of the wall cut down and levelled with in-situ concrete. This construction activity will be ongoing as the deck is built out and is not changed by the *2019 Revised Construction Phasing Plan.* Therefore, the direct physical effect on the north dock wall remains **minor adverse.**

3.45 The CADP1 construction also required the demolition of the westernmost dolphin, which occurred early on in the programme, and the breaking out of the dock wall on the western side of KGV Dock to enable the construction of the deck over which the ETE and associated building foundations and services infrastructure.

3.46 These features of the KGV Dock have already been the subject of an historic building recording exercise, forming part of a Written Scheme of Investigation (WSI) submitted to LBN and its archaeological advisers GLAAS in accordance with Condition 62 of the CADP1 planning permission.

3.47 As the above construction activities are not changed by the *2019 Revised Construction Phasing Plan,* so the effects on these heritage features is still assessed to be **minor adverse**.

3.48 In order to discharge other requirements of Condition 62, a programme of archaeological evaluation has been undertaken in accordance with the approved WSI. No significant archaeological deposits and remains have been recorded to-date.

3.49 The UES concluded that archaeological effects may vary from **neutral to moderate adverse** as reported in Chapter 14 of the UES. However, the lack of archaeology discovered through the evaluations undertaken to date suggest that the effects of the construction are at the lower end of this scale (i.e. neutral). The *2019 Revised Construction Phasing Plan* has no bearing on this assessment.

Waste

3.50 The implementation of the *2019 Revised Construction Phasing Plan* will not affect the quantities of construction, excavation and demolition waste reported in Chapter 15 of the UES. The effect on existing and proposed waste management infrastructure will therefore remain **negligible** to **minor adverse**.

3.51 In accordance with Condition 70 of the planning permission the approved waste management strategy sets out all necessary mitigation measures that will be implemented throughout the construction.

Ground Conditions and Contamination

3.52 As described in Chapter 16 of the UES, CADP1 construction works pose the following theoretical risks to sensitive receptors:

- Exposure of construction workers to previously unidentified contamination within shallow soils and dust during earthworks;
- Potential for off-site migration of contaminated soils and dust by wind entrainment to impact human health receptors, following removal of hard standing and during stockpiling of arisings;
- Piling works resulting in the potential for vertical migration of contaminants to the underlying aquifers;
- Lateral migration of contamination mobilised into groundwater during piling resulting in the potential to impact surface waters;
- Piling works into the King George V Dock leading to disturbance of contaminated sediment into the water column and exposure of surface water to contaminated pile arisings;
- Potential for previously unidentified contamination within soil and dust to become mobilised/ airborne and impact terrestrial and aquatic habitats following removal of hard standing; and
- Potential impact on infrastructure from hydrocarbon permeation into utility pipes and ground gas ingress into new buildings.

3.53 However, these risks are and will continue to be appropriately mitigated through the implementation of environmental controls and procedures specified in the approved CEMP (submitted to discharge Condition 88) and the mitigation measures set out in the Condition 39 AoD (RPS, March 2018) which provides an up to date 'conceptual risk model' with a proposed schedule of testing, segregation, disposal and other remediation actions in the event that unforeseen contamination is encountered. It should be noted that no significant ground contamination has been encountered by the works completed to date.

3.54 Assuming the proposed mitigation measures were adopted, the UES concluded that the residual construction effects arising from ground conditions at the site would be of **negligible** significance.

3.55 The *2019 Revised Construction Phasing Plan* does not change this assessment or have any bearing on the mitigation measures contained in the approved CEMP.

Climate Change

3.56 The *2019 Revised Construction Phasing Plan* would not change the conclusions presented in Chapter 17 of the UES i.e. that the construction phase effects on climate change factors are **insignificant** and so do not need to be assessed.

Summary

3.57 Table 3.2 presents a summary of the residual effects of the *2019 Revised Construction Phasing Plan* in comparison to those previously stated in the UES.

Table 3.2: Summary of Residual Effects

Topic	Residual Effects Identified in UES	Residual Effects of Condition 4 Construction Phasing Plan
Chapter 7: Socio Economics, Community & Recreation	The proposed CADP1 would bring about additional demolition and construction jobs; which is likely to have a **moderate beneficial** residual effect.	The *2019 Revised Construction Phasing Plan* would be undertaken over a marginally longer period of time than the *2015 Updated Construction Programme*. Therefore, the intensity of the works would on average be lower. However, the overall programme of 7 years and 6 months of ongoing construction activity will require broadly the same quantum of construction resources and personnel. As such, the construction employment numbers presented in the UES remain valid estimations and, as such, there is **no change** to the moderate beneficial impact conclusion.
Chapter 8: Noise and Vibration	The residual construction noise impact has been assessed as **negligible** for the daytime and **minor adverse** for OOOH works. **No significant** adverse impacts are predicted from construction vibration.	No material change
Chapter 9: Air Quality	There is a risk of slight adverse dust effects during both demolition and construction works, however, such effects are likely to be short lived and only occur during dry and windy periods. The residual effects are assessed as **not significant**.	No change.
Chapter 10: Townscape and Visual	Some temporary **adverse** visual impacts could be experienced by a few residents in the upper floor windows of	No material change, although there will be some potential additional screening from the

	apartment buildings and from elevated locations such as the deck of Sir Steve Redgrave Bridge. However, the proposed noise barriers at the south-eastern end of the site, around the construction compound, and along the southern boundary of KGV Dock will help to effectively screen the construction works from nearby residential areas at ground and first floor levels. Therefore, most visual receptors will experience a **negligible** to **minor adverse** impact during the CADP1 construction.	Temporary Construction Noise Barrier (required under Condition 94) and reduced impacts derived from Construction Lighting Strategy (required under Condition 92).
Chapter 11: Surface Transport and Access	With the implemented mitigation measures set out in the CLP and CEMP some residual effects could remain for traffic and transport under 'worst case' assumptions. Therefore, there is the potential for some temporary**, minor adverse effects** which are considered **not significant.**	The peak number of monthly HGV movements is somewhat less than estimated in the UES, particularly during the later years of the programme. However, overall, the conclusion of a minor adverse (not significant) effect remains applicable as a 'worst case' assumption.
Chapter 12: Water Resources and Flood Risk	The residual effects associated with surface water runoff, flood risk and water quality during construction is considered to be **negligible**.	No change
Chapter 13: Ecology and Biodiversity	The direct loss of Dock wall habitat as a result of the proposed CADP1 will have a **minor** impact on the aquatic invertebrates and fish fauna. For all other impacts, there is likely to be **no significant residual effect** after taking account of the proposed mitigation.	No change
Chapter 14: Cultural Heritage	The magnitude of impact on the setting of the KGV Dock has been assessed to be moderate with the overall effect on setting being a **minor** effect. Direct effects on any archaeological deposits and remains that may be present will vary from low to medium	Based on the results of the archaeological evaluations completed to-date, the effects of the ongoing works on buried archaeology are likely to be **neutral/ negligible.**

	significance, leading to an effect that could vary from **neutral to moderate**.	
Chapter 15: Waste	Overall, environmental effects from waste produced during the construction phase would be **negligible** to **minor adverse** (at worst).	No change
Chapter 16: Ground Contamination	With appropriate mitigation through the implementation of a construction environmental management plan, residual effects to sensitive receptors are **negligible.**	No change
Chapter 17: Climate Change	Construction phase impacts have not been assessed due to their temporary and **insignificant** nature.	No change

4 CONCLUSION

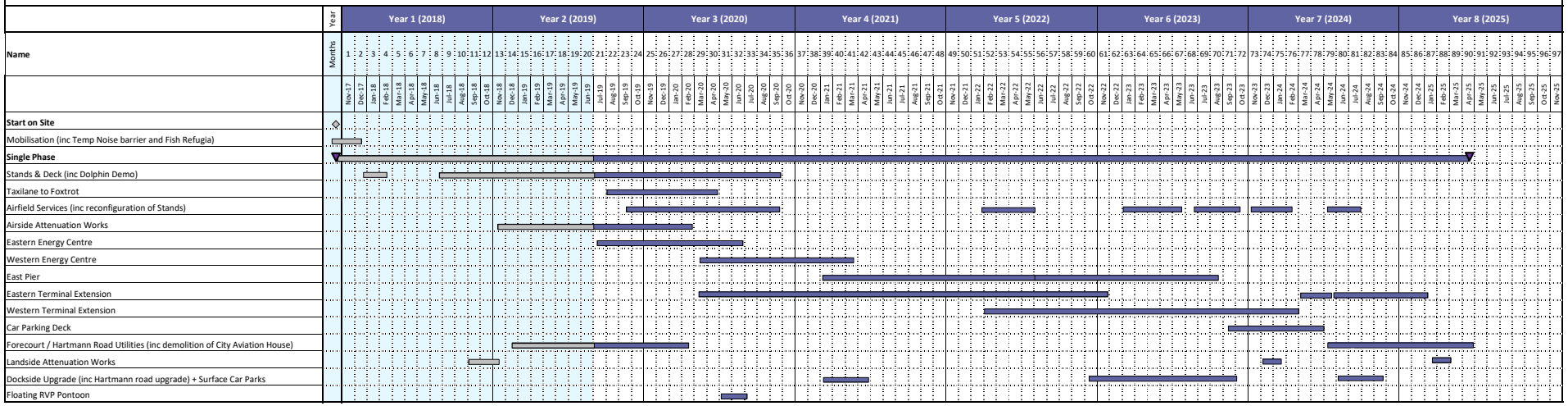
4.1 This *2019 Revised Construction Phasing Plan* represents a further progression of the two previously approved iterations of CADP1 construction programme. This has come about due to delays in the early piling and deck works. The consequence of these delays is that the 'critical path' of the construction programme has needed to be re-sequenced in order to maintain the uninterrupted operation of the terminal and other facilities, and thereby ensure that passenger experience is not significantly compromised.

4.2 With respect to Condition 3 of the CADP1 permission, the *2019 Revised Construction Phasing Plan* is not strictly "in accordance with" the UES prepared in 2015, and it would not have been possible to anticipate this scenario at the time of writing. As described in Section 2 of this report, this revised plan has been developed by the Airport and its Delivery Partner following careful reconsideration of the logistics and phasing of the works. The nature and frequency of construction impacts are fundamentally the same as assessed in the UES. In particular, the overall construction noise effects of the *2019 Revised Construction Phasing Plan* are materially the same as those identified in Chapter 8 of the UES (September 2015).

4.3 In conclusion, it is considered that the *2019 Revised Construction Phasing Plan* will not give rise to any materially different or additional 'likely significant environmental effects', both individually and in combination, and the conclusions of the UES therefore remain valid.

APPENDIX 1: 2019 REVISED CONSTRUCTION PHASING PLAN

2019 Revised Construction Phasing Plan Summary Programme



Bars for 2019 Revised Construction Phasing Plan

Bars for Completed Works

Rev 03

Date: 29-Aug-19

APPENDIX 2: 2019 OUT OF OPERATIONAL HOURS (OOOH) PROGRAMME

2019 Revised Construction Phasing Plan...

30-Aug-19

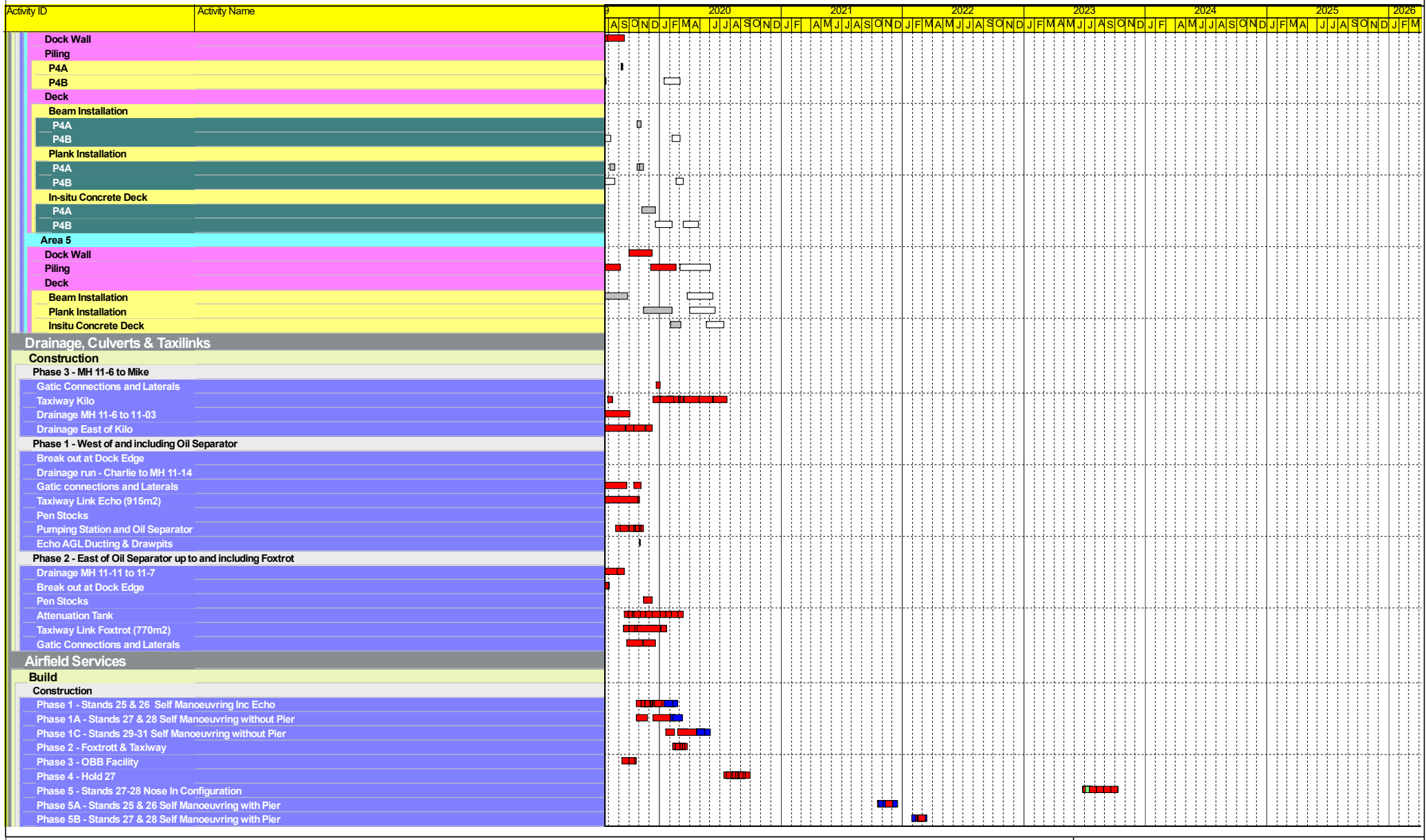
Activity ID	Activity Name
2019 Revised Construction Phasing Plan	
Fish Refugia	
Dolphin Demolition	
Piling & Deck	
Build	
Piling Programme	
Piling & Deck	
Area 1	
Area 2	
Dock Wall	
Piling	
P2A Stands 25&26	
P2B Stands 25&26	
P2C Stands 25&26	
P2 Trough	
Deck	
Beam Installation	
P2A Stands 25&26 - Night Shift / Airside	
P2B Stands 25&26 - Day Shift	
P2C Stands 25&26 - Day Shift	
P2 Trough - Day Shift	
Plank Installation	
P2A Stands 25&26 - Night Shift / Airside	
P2B Stands 25&26 - Day Shift	
P2C Stands 25&26 - Day Shift	
P2 Trough - Day Shift	
In-situ Concrete Deck	
P2A Stands 25&26 - Night Shift / Airside	
P2B Stands 25&26 - Day Shift	
P2C Stands 25&26 - Day Shift	
P2 Trough - Day Shift	
Area 3	
Dock Wall	
Piling	
P3A Parallel T'way & Foxtrot	
P3B Parallel T'way & Foxtrot	
P3C Stands 27-32	
P3 Trough NEP	
Deck	
Beam Installation	
P3A Parallel T'way & Foxtrot - Night Shift / Airside	
P3B Parallel T'way & Foxtrot - Day Shift	
P3C Stands 27-32 - Day Shift	
P3T NEP - Day Shift	
Plank Installation	
P3A Parallel T'way & Foxtrot - Night Shift / Airside	
P3B Parallel T'way & Foxtrot - Day Shift	
P3C Stands 27-32 - Day Shift	
P3T NEP - Day Shift	
In-situ Concrete Deck	
P3A - Night Shift / Airside	
P3B - Day Shift	
P3C - Day Shift	
P3 Trough - Day Shift	
Area 4	

OOOH-0% | OOOH >75% | OOOH <50%

Occasional <25% | OOOH Weekend wrks | OOOH <75%

2019 Revised Construction Phasing Plan...

30-Aug-19



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Occasional <25% | OOOH Weekend wrks | OOOH <75%

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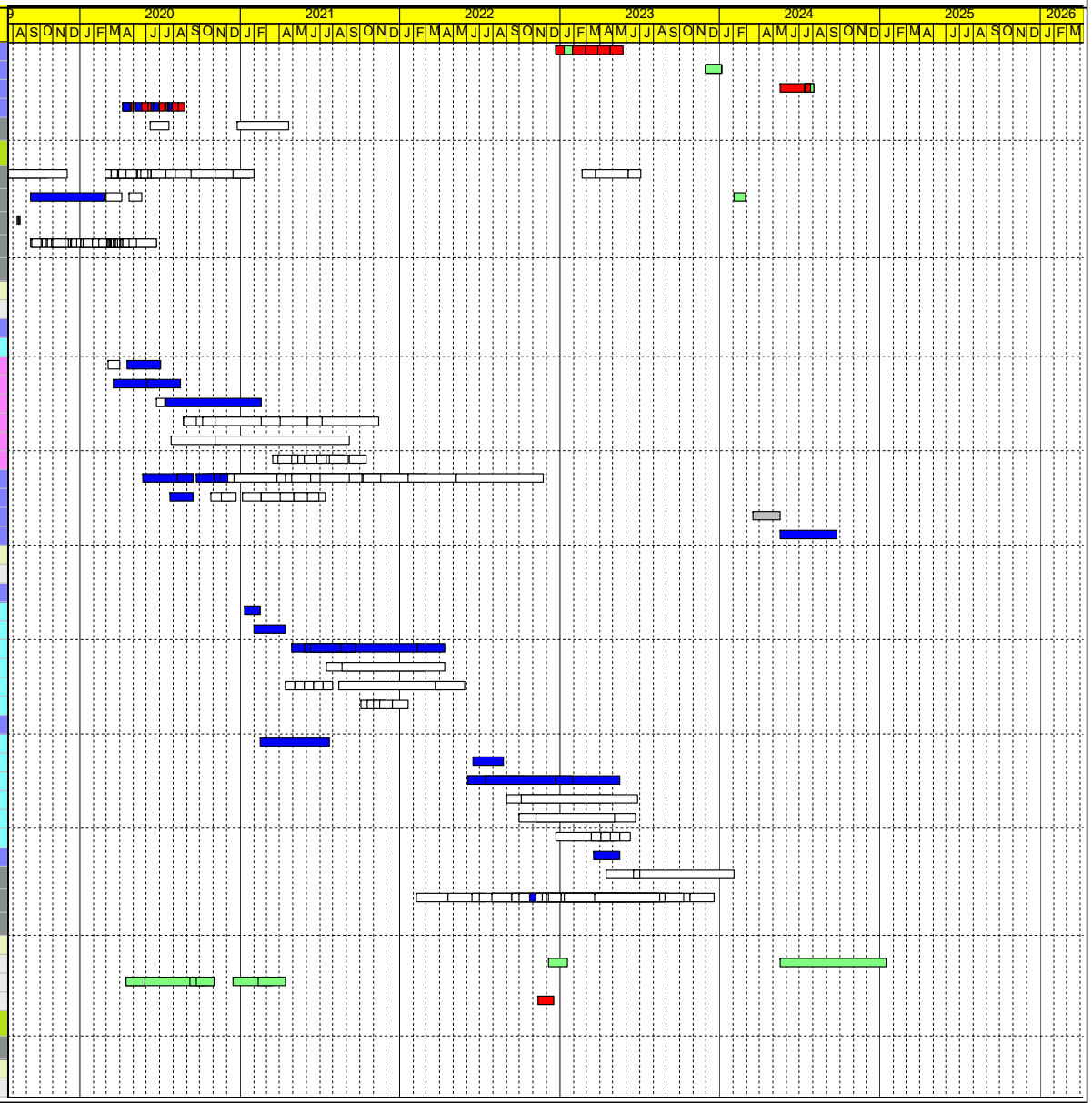
2019 Revised Construction Phasing Plan...

30-Aug-19

Activity ID	Activity Name
	Phase 6 - Stands 29-32 Nose in
	Phase 7 - Stands 25 & 26 Return
	Phase 8 - Stand 21-24 Return
	Phase 8A - Stands 21-24 Temp. FEGP
	RVP BRIDGE
	Rev04.00a Terminal
	WESTERN SERVICE YARD
	TEMP BAGGAGE @ STAND1/2
	OBB Services Diversion Works
	EASTERN ENERGY CENTRE
	EAST TERMINAL EXTENSION & EAST PIER (ETE & NEP)
	EASTERN TERMINAL EXTENSION
	Build: East Terminal
	Build: Eastern Terminal Extension - GL-E4 to E21
	CADP Scope
	C221 Frame
	C210 Civil
	C222 Envelope
	C230 Fit-Out
	C240 MEP
	C250 Lifts / Escalators
	Build: Eastern Terminal Extension -GL- E1 to E4
	Build: Eastern Terminal Extension - Part 1 Gold Box
	Build: Old East Pier Demo
	Build-Domestic Arrivals VCC
	EASTERN PIER EXTENSION
	Build: Eastern Pier Development
	Build: Eastern Pier Part 1- (GL-21-45)
	C210 - Civils
	C221 - Frame
	C222 - Envelope
	C230 - Terminal Fit-Out
	C240 - MEP
	C250 - Lifts / Escalators
	Build: Eastern Pier Part 2 -(GL-45-58)
	Civils
	Frame
	Envelope
	Terminal Fit-Out
	MEP
	Lifts / Escalators
	Build: Permanent Noise Barrier
	BAGGAGE SYSTEM(OBB)
	WEST TERMINAL EXTENSION (WTE)
	MAIN TERMINAL
	Build: Reconfiguration of Existing Terminal Space.
	Domestic Arrivals Route
	Departures VCC
	Demo Existing Air Traffic Control Tower
	Rev04.00a Dockside & Forecourt
	Dockside & Forecourt
	Build
	Dockside Package



OOOH-0% | OOOH >75% | OOOH <50%

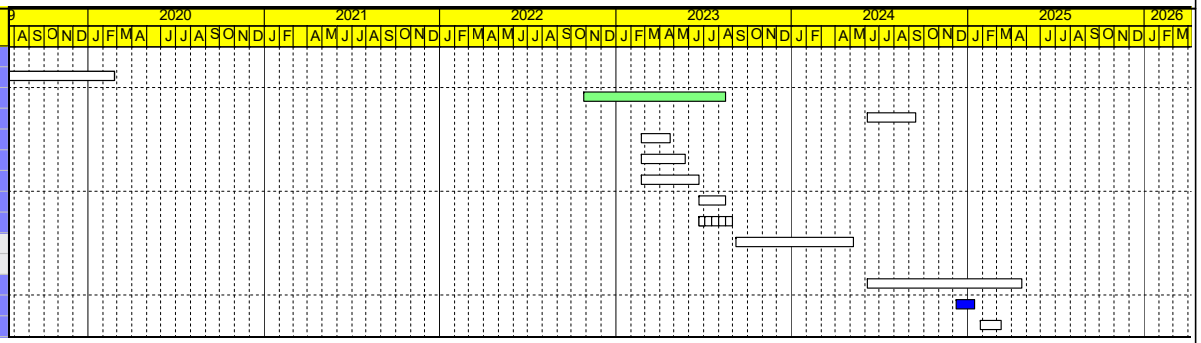
Occasional <25% | OOOH Weekend wrks | OOOH <75%

LCY-Planning Layout -OOOH- 2019CPP

2019 Revised Construction Phasing Plan...

30-Aug-19

Activity ID	Activity Name
Temp Noise Barrier and Hoarding	
Hartmann Road Utilities	
Hartmann Road Upgrade	
Taxi Feeder Park	
DLR Link Route	
Residential Link Route	
Dockside Path	
Eastern Gates Landscaping	
Temp Onsite Staff Car Park	
MSCP - G+1	
Final Forecourt	
Final Forecourt	
Demolition of City Aviation House (CAH)	
Attenuation tank	



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Occasional <25%
OOOH Weekend wrks
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LCY-Planning Layout -OOOH- 2019CPP

APPENDIX 3: INDICATIVE CONSTRUCTION PHASING PLANS FOR YEARS 1 TO 8

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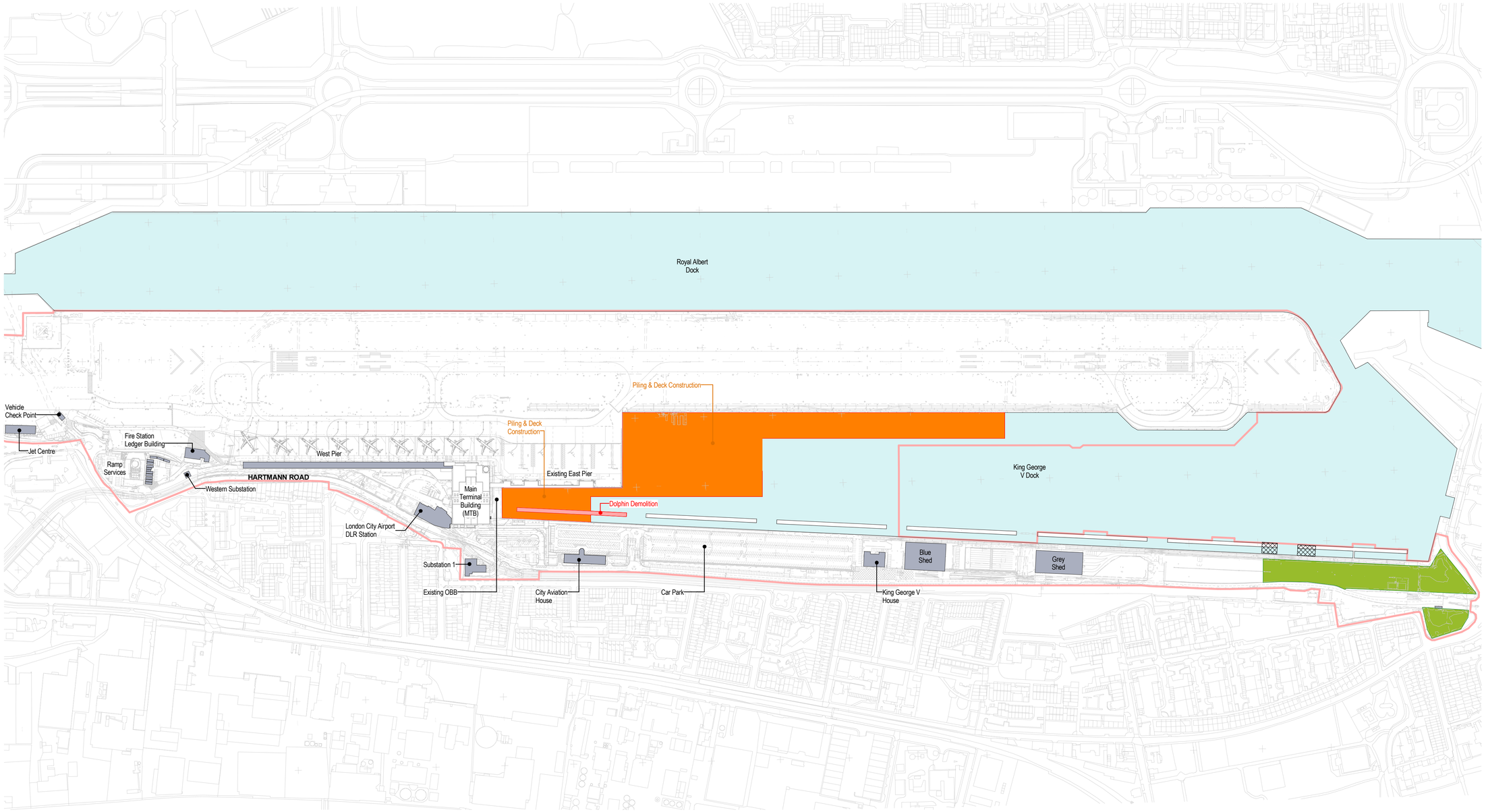

1 Sitewide Indicative Construction Phasing - Year 1

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Legend

- Under Construction
- Construction Complete
- Indicative Area of Contractors Compound
- Temporary Barge Berths & Crane Platforms
- Temporary Aircraft Noise Barrier
- Aircraft Noise Barrier
- Existing Facilities
- Demolished Works
- Application Boundary

SCALE BAR

N

Rev	Drn	Date	Description
F	JA	12/08/19	For Approval
E	RC	08/05/18	For Approval
D	MDS	09/01/18	For Approval
Previously Issued as A400-PAW-A-13-XXX-DR-GA-948-004			
C	MDS	02/12/16	For Approval
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Project Name: CITY AIRPORT DEVELOPMENT PROGRAMME

Title: CADP Site Wide Indicative Construction Phasing Year 1

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Architecture	For Approval
Drawing Originator: Pascall+Watson architects	Originators Job No.: 5077

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Approved By: MN	Approval Date: 09/01/18	Scale @ A1: 1 : 3000	

Building Grid Reference: CADP

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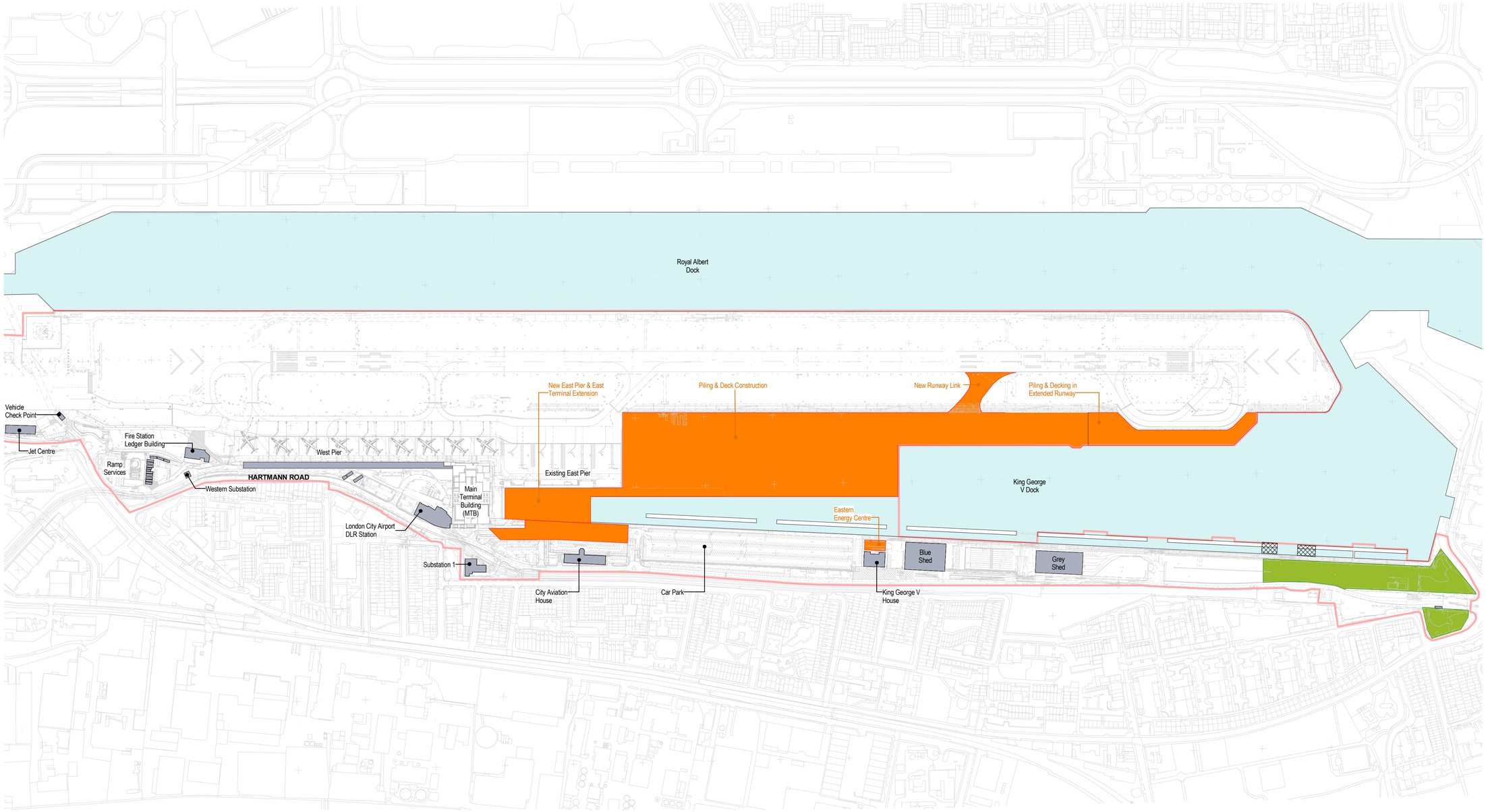

2 Sitewide Indicative Construction Phasing - Year 2

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- Application Boundary

SCALE BAR

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D	MDS	09/01/18	For Approval
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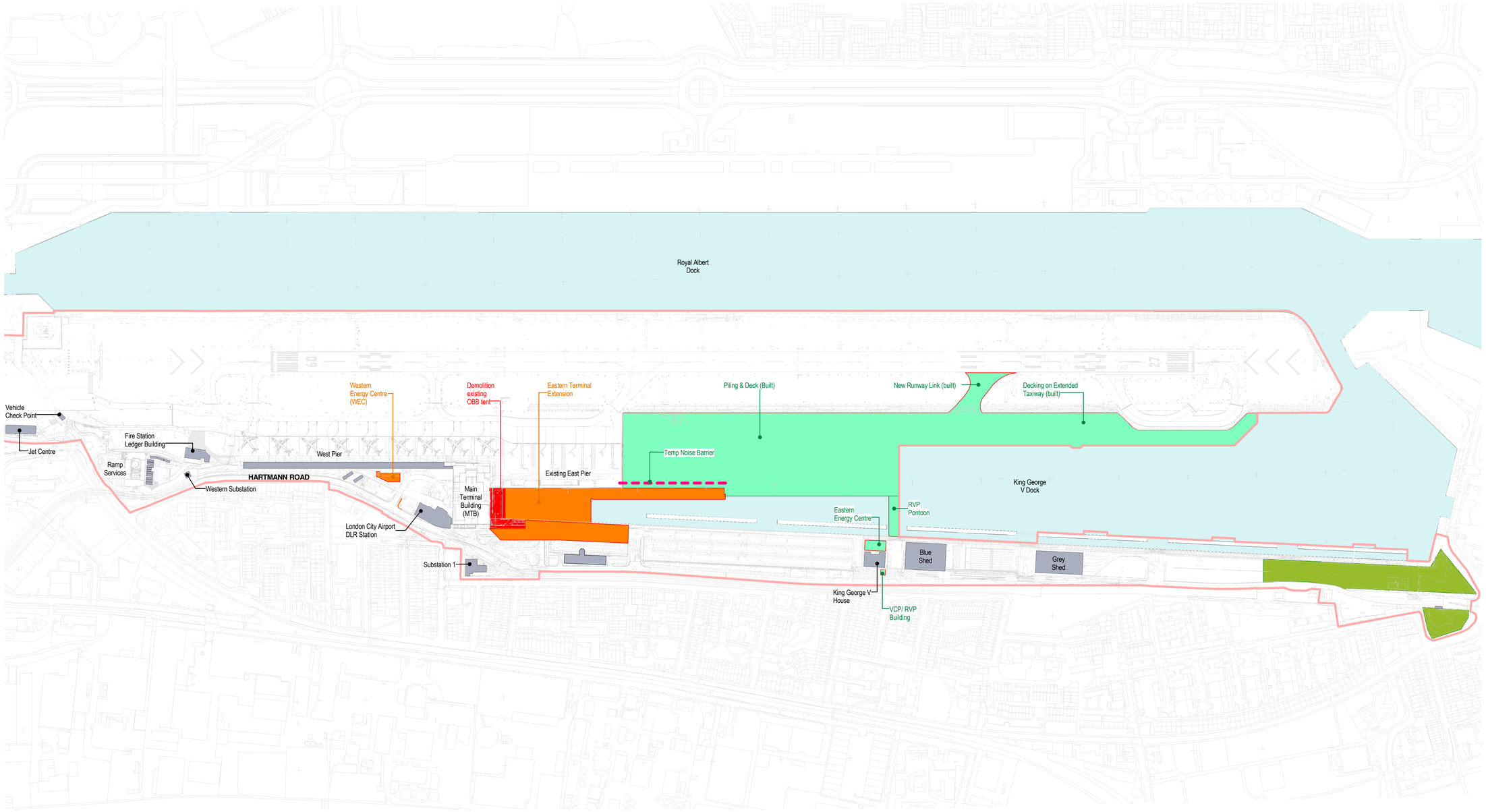

3 Sitewide Indicative Construction Phasing - Year 3

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- Aircraft Noise Barrier
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- Application Boundary

SCALE BAR

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Rev	Drn	Date	Description
G	EU	04/09/19	For Approval
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E	RC	08/05/18	For Approval
D	MDS	09/01/18	For Approval
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Project Name: CITY AIRPORT DEVELOPMENT PROGRAMME

Title: CADP Site Wide Indicative Construction Phasing Year 3

Discipline: Architecture
Purpose of Issue: For Approval
Drawing Originator: Pascall+Watson architects
Originators Job No.: 5077
Checked By: MN
Checked date: 07/08/19
Drawn By: MS
Drawn Date: 25/10/16
Approved By: MN
Approval Date: 09/01/18
Scale @ A1: 1 : 3000
Building Grid Reference: CADP

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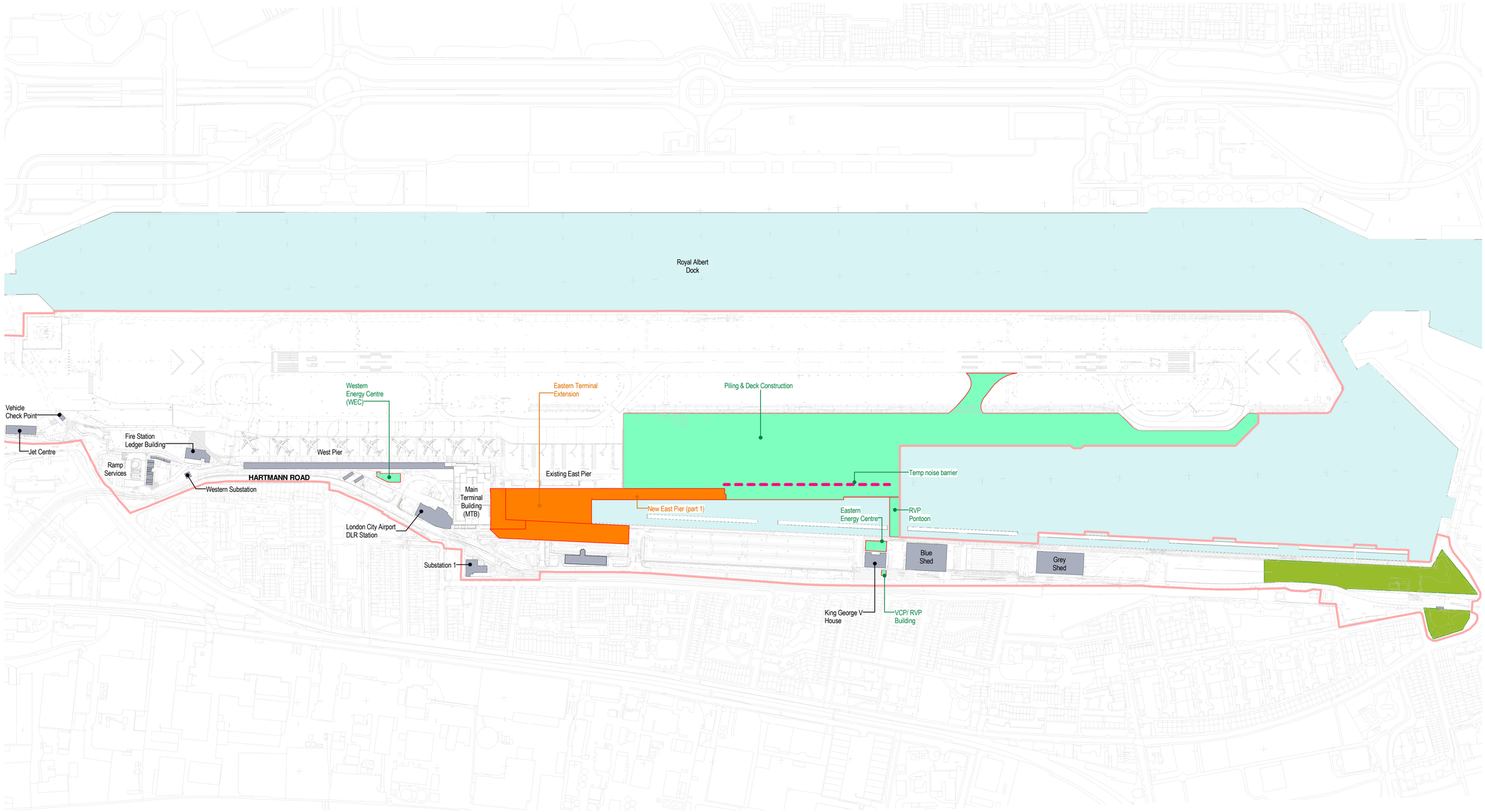

4 Sitewide Indicative Construction Phasing - Year 4

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Legend

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- Aircraft Noise Barrier
- Existing Facilities
- Demolished Works
- Application Boundary

SCALE BAR

N

Rev	Drn	Date	Description
G	EU	04/09/19	For Approval
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C	MDS	02/12/16	For Approval
B	MDS	10/11/16	For Planning Approval
A	MDS	25/10/16	For Planning Approval

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Client: LONDON CITY AIRPORT

Project Name: CITY AIRPORT DEVELOPMENT PROGRAMME

Title: CADP Site Wide Indicative Construction Phasing Year 4

Discipline	Purpose of Issue
Architecture	For Approval
Drawing Originator: Pascall+Watson architects	Originators Job No.: 5077

Checked By	Checked date	Drawn By	Drawn Date
MN	07/08/19	MS	25/10/16
Approved By: MN	Approval Date: 09/01/18	Scale @ A1: 1 : 3000	

Building Grid Reference: CADP

Proj.Code	Orig.	Disc.	Zone	Level	Tile	Type	Subtype	Org. Series/N0.	Rev.	Status
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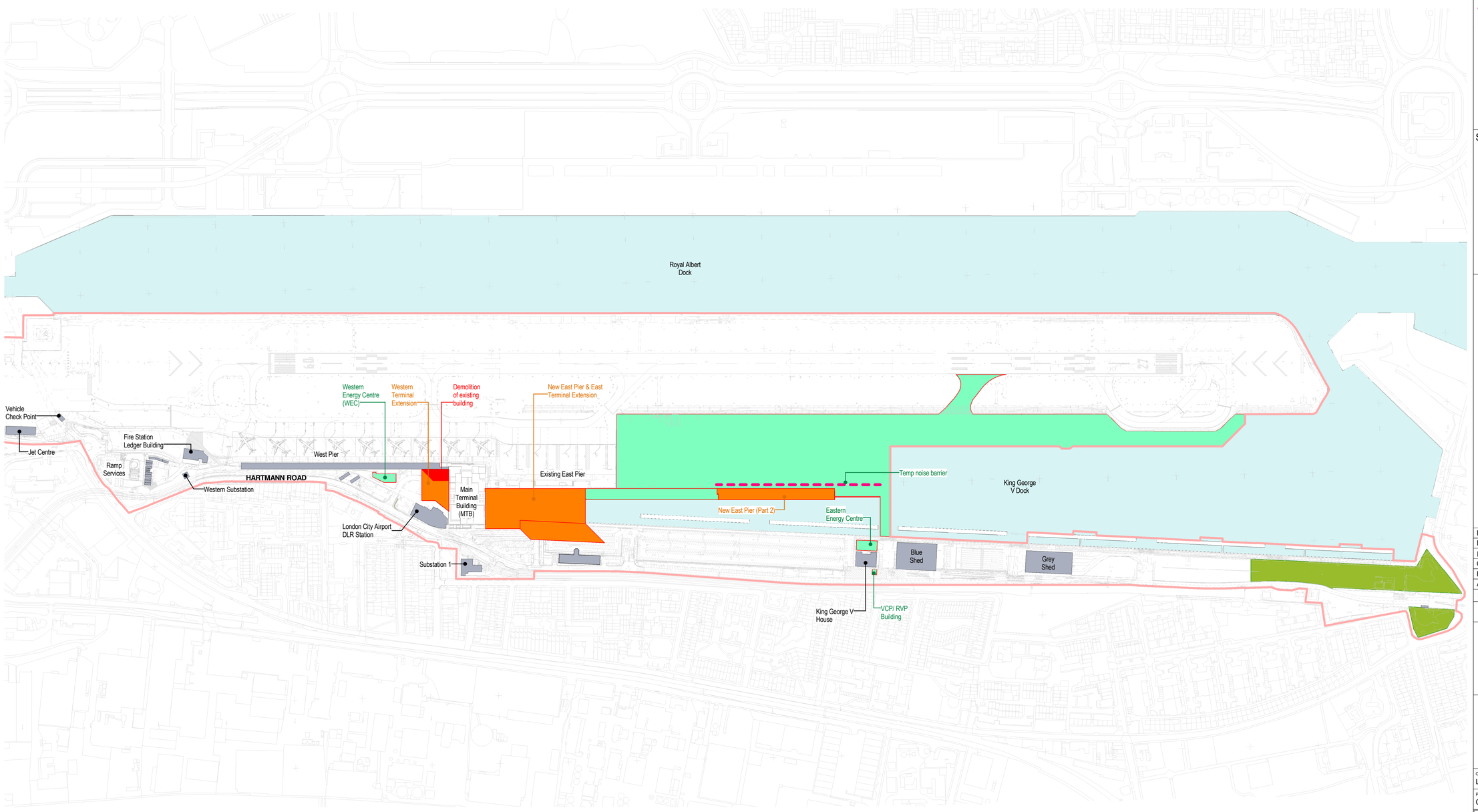

5 Sitewide Indicative Construction Phasing - Year 5

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- Base building survey information by LCY and MSA

Legend

- Under Construction
- Construction Complete
- Indicative Area of Contractors Compound
- Temporary Barge Berths & Crane Platforms
- Temporary Aircraft Noise Barrier
- Aircraft Noise Barrier
- Existing Facilities
- Demolished Works
- Application Boundary

SCALE BAR

N

Rev	Drn	Date	Description
E	JA	12/08/19	For Approval
D	MDS	09/01/18	For Approval
Previously Issued as A400-PAW-A-13-XXX-DR-GA-948-008			
C	MDS	02/12/16	For Approval
B	MDS	10/11/16	For Planning Approval
A	MDS	25/10/16	For Planning Approval

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Client: LONDON CITY AIRPORT

Project Name: CITY AIRPORT DEVELOPMENT PROGRAMME

Title: CADP Site Wide Indicative Construction Phasing Year 5

Discipline	Purpose of Issue
Architecture	For Approval
Drawing Originator	Originators Job No.
Pascall+Watson architects	5077

Checked By	Checked date	Drawn By	Drawn Date
MN	07/08/19	MS	25/10/16
Approved By	Approval Date	Scale @ A1	
MN	09/01/18	1 : 3000	

Building Grid Reference: CADP

Proj.Code	Orig.	Disc.	Zone	Level	Tile	Type	Subtype	Org. Series/N0.	Rev.	Status
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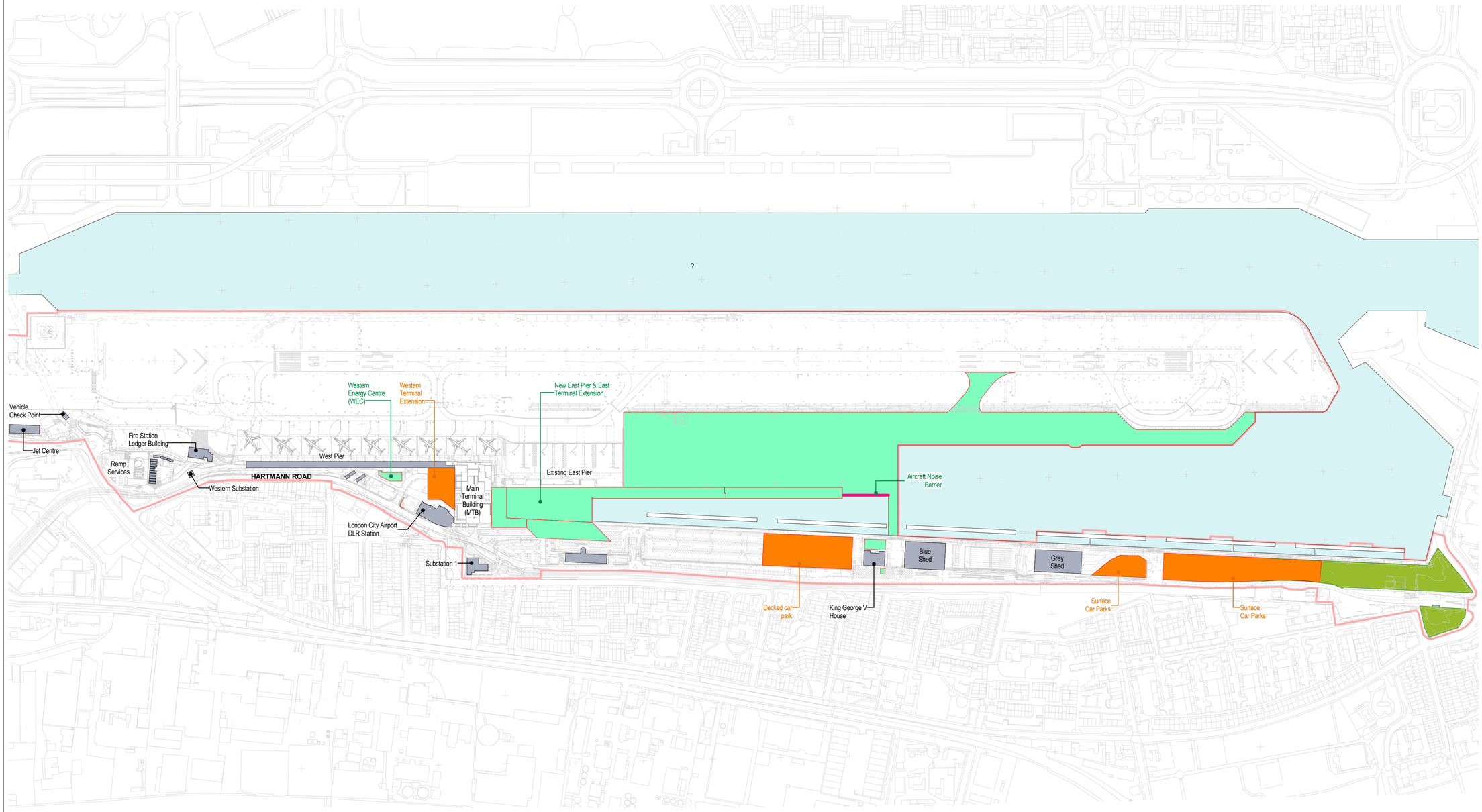

1 Sitewide Indicative Construction Phasing - Year 6

1 : 3000

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Legend

- Under Construction
- Construction Complete
- Indicative Area of Contractors Compound
- Temporary Barge Berths & Crane Platforms
- Temporary Aircraft Noise Barrier
- Aircraft Noise Barrier
- Existing Facilities
- Demolished Works
- Application Boundary

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Rev	Drn	Date	Description
A	JA	12/08/19	For Approval

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Client: LONDON CITY AIRPORT

Project Name: CITY AIRPORT DEVELOPMENT PROGRAMME

Title: CADP Site Wide Indincative Construction Phasing Year 6

Discipline	Purpose of Issue
Architecture	For Approval
Drawing Originator	Originators Job No.
Pascall+Watson architects	5077

Checked By	Checked date	Drawn By	Drawn Date
MN	07/08/19	JA	07/08/19
Approved By	Approval Date	Scale @ A1	
MN	07/08/19	1 : 3000	

Building Grid Reference: CADP

Proj.Code	Orig.	Disc.	Zone	Level	Tile	Type	Subtype	Org. Series/NO.	Rev.	Status
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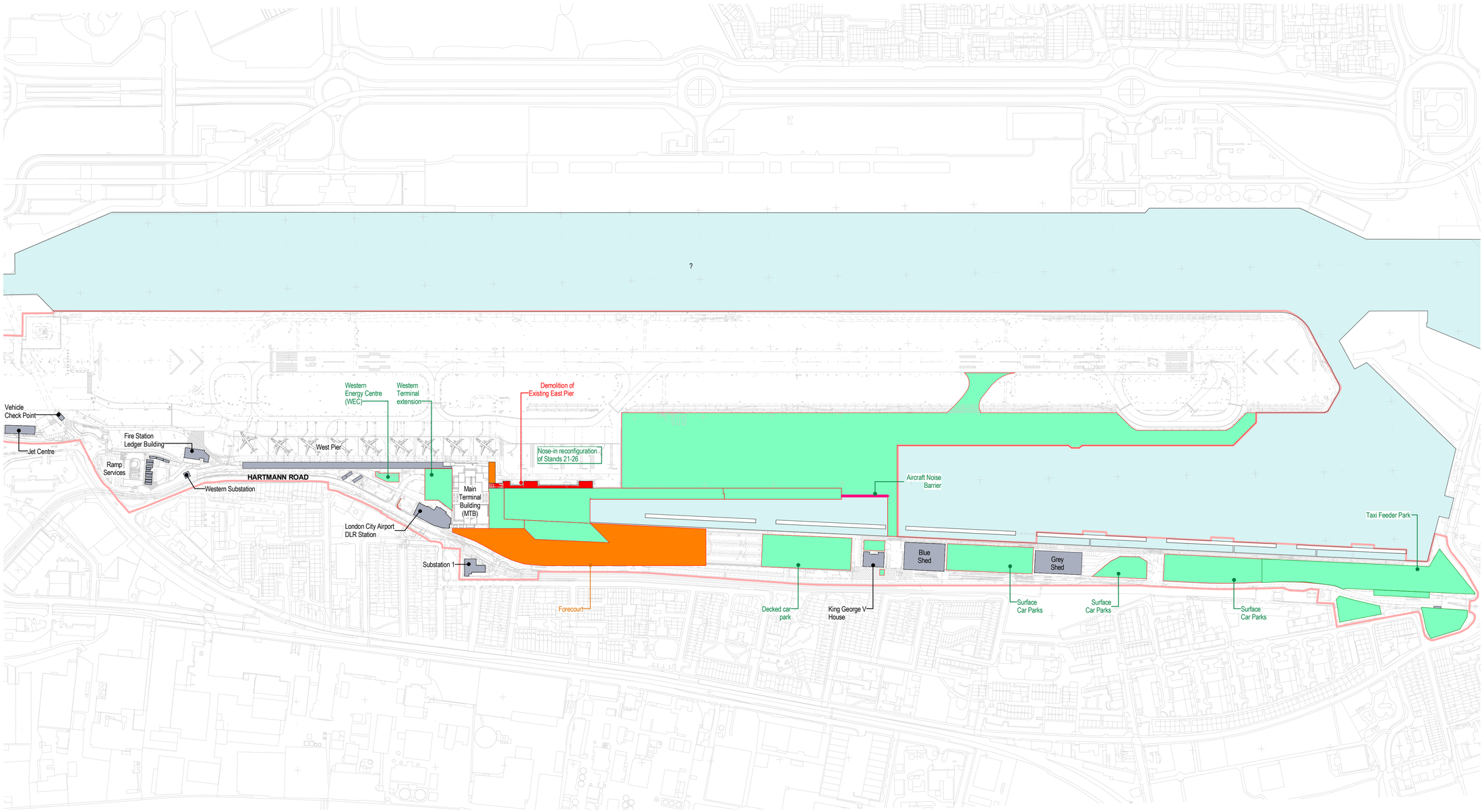

1 Sitewide Indicative Construction Phasing - Year 7

1 : 3000

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Legend

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- Temporary Aircraft Noise Barrier
- Aircraft Noise Barrier
- Existing Facilities
- Demolished Works
- Application Boundary

SCALE BAR

N

Rev	Drn	Date	Description
A	JA	12/08/19	For Approval

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Client: LONDON CITY AIRPORT

Project Name: CITY AIRPORT DEVELOPMENT PROGRAMME

Title: CADP Site Wide Indicative Construction Phasing Year 7

Discipline	Purpose of Issue
Architecture	For Approval

Drawing Originator	Originators Job No.
Pascall+Watson architects	5077

Checked By	Checked date	Drawn By	Drawn Date
Checker	07/08/19	Author	07/08/19

Approved By	Approval Date	Scale @ A1
Approver	07/08/19	1 : 3000

Building Gird Reference: CADP

Proj.Code	Orig.	Disc.	Zone	Level	Tile	Type	Subtype	Org. Series/NO.	Rev.	Status
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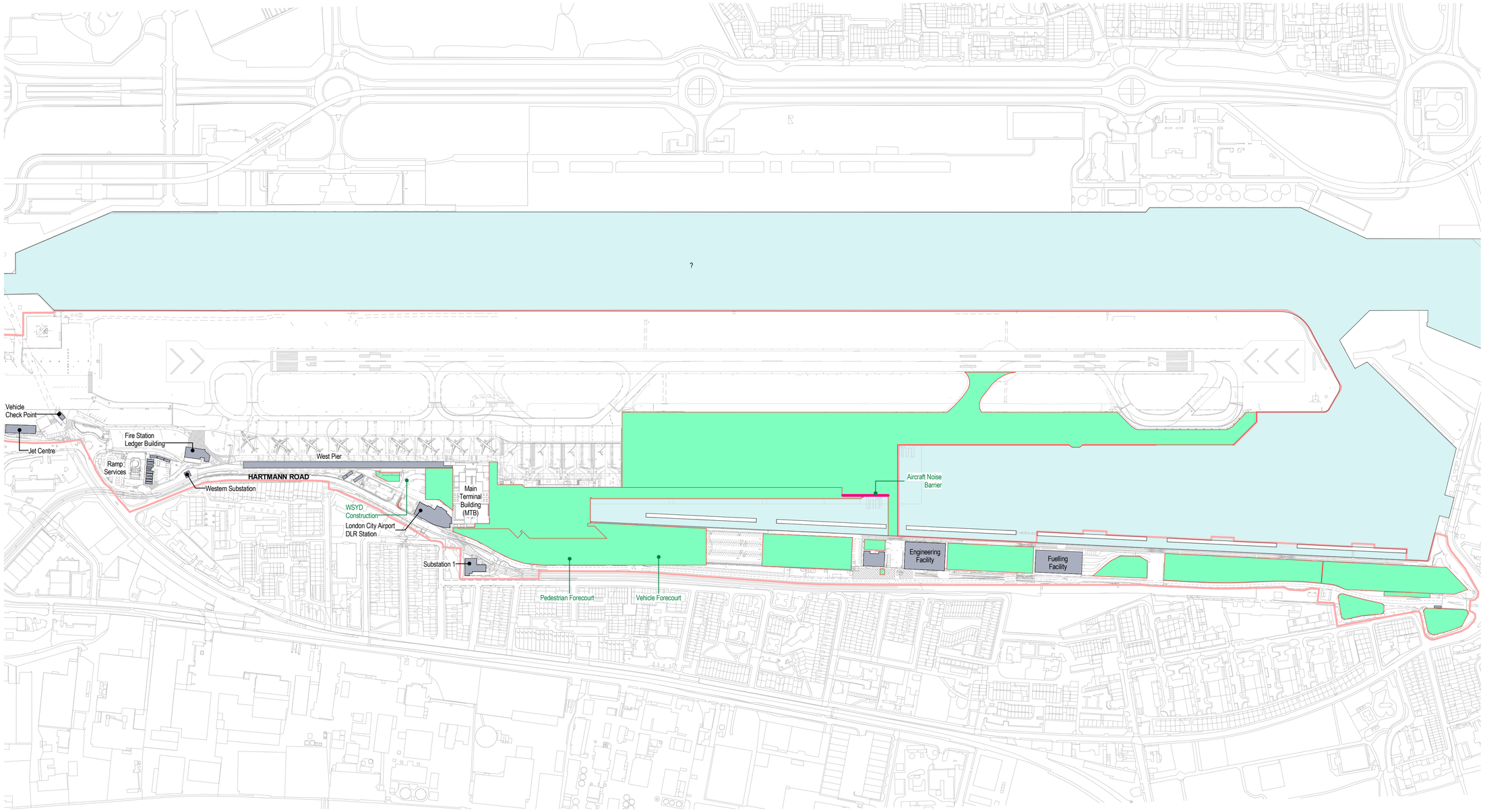

6 Condition 4 Construction Phasing Plan - Year 8

1 : 3000

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- Application Boundary

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Client: LONDON CITY AIRPORT

Project Name: CITY AIRPORT DEVELOPMENT PROGRAMME

Title: CADP Site Wide Indicative Construction Phasing Year 8

Discipline	Purpose of Issue
Architecture	For Approval
Drawing Originator	Originators Job No.
Pascall+Watson architects	5077

Checked By	Checked date	Drawn By	Drawn Date
MN	07/08/19	JA	07/08/19
Approved By	Approval Date	Scale @ A1	
MN	07/08/19	1 : 3000	

Building Grid Reference: CADP

Proj.Code	Orig.	Disc.	Zone	Level	Tile	Type	Subtype	Drg. Series/N0.	Rev.	Status
A400	PAW	A	14	XXX	XX	DR	GA	900-011	A	S3

APPENDIX 4*:* DETAILED NOISE ASSESSMENT

Bickerdike Allen Partners
Architecture
Acoustics
Technology

LONDON CITY AIRPORT

CADP RESEQUENCING

CONSTRUCTION NOISE ASSESSMENT

Report to

London City Airport
City Aviation House
Royal Docks
London
E16 2PB

A11293_01_R002_4.0
18th September 2019

121 Salusbury Road
London NW6 6RG
T 020 7625 4411
F 020 7625 0250
mail@bickerdikeallen.com
www.bickerdikeallen.com

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Partners (members)
David Charles, Philippa Gavey, Giles Greenhalgh, Roger Jowett, David Trew

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Acoustic Consultants: Expertise in planning and noise, the control of noise and vibration and the sound insulation and acoustic treatment of buildings.

Construction Technology Consultants: Expertise in building cladding, technical appraisals and defect investigation and provision of construction expert witness services.

Contents

Page No.

1.0 Introduction 4

2.0 Construction Noise 4

3.0 Summary 7

Appendix A: Glossary of Acoustic Terminology

Appendix B: Construction Noise Maps for OOOH Works

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1.0 INTRODUCTION

The City Airport Development Programme (CADP) planning application (13/01228/FUL) was granted planning permission by the Secretaries of State for Communities and Local Government and Transport in July 2016 following an appeal and public inquiry which was held in March/April 2016.

Planning Condition 4 of the CADP permission requires that:

No Development shall be Commenced unless and until a Construction Phasing Plan providing details of the phases and the order in which the development hereby permitted shall be Commenced has been submitted to and approved in writing by the Local Planning Authority. Thereafter the Development shall only be carried out in accordance with the approved Construction Phasing Plan.

BAP previously carried out noise assessments in relation to previous Construction Phasing Plans. The most recent was BAP report reference A11011-PC04-R01A-PH dated 4th May 2018. This construction noise assessment has been updated based on information provided to BAP on a re-sequenced construction programme.

This report sets out a detailed noise assessment associated with the proposed resequenced Construction Phasing Plan (CPP) which is required under Condition 4 of the planning permission.

2.0 CONSTRUCTION NOISE

The potential worst case out of operational hours (OOOH) noise effects of the proposed resequenced CPP are considered below. In summary, the proposed construction methodology and construction noise sources remain broadly the same under the proposed resequenced CPP as those described in the Updated Environmental Statement (UES) for the 2015 accelerated construction programme, although the detailed build programme is slightly different. The daytime construction noise effects for the proposed CPP will not change significantly over those reported in the UES.

A detailed assessment has been carried out of the worst case OOOH noise effects in quarterly time slices throughout the duration of construction. Table 1 presents the results of the noise assessment for the proposed resequenced CPP.

Table 1: Number of receptors exposed to construction noise under the proposed resequenced CPP

Contour and 3 monthly construction time slice	Description	< 45	≥45 ≤ 50	≥50 ≤ 55	Location of receptors[1]	≥55	Location of receptors[1]
2019 Oct	Section 5 Dock Wall Drainage, Culverts & Taxilinks Temporary OBB Facility	1396	603	185	Claremont, Dunedin House, Felixstowe Court, Newland Street, Rawsthorn Close, Storey Road, Westland & Queensland House, Winifred Street, Woodman Street	7	UEL
2020 Jan	Section 5 Piling Drainage, Culverts & Taxilinks Airfield Services Temporary OBB Facility	1417	484	283	Claremont, Dunedin House, Felixstowe Court, Grenadier, Rawsthorn Close, Storey Road, Westland & Queensland House, Winifred Street, Woodman Street	7	UEL, Claremont
2020 Apr	Drainage, Culverts & Taxilinks Airfield Services ETE Civil & Frame MTB Reconfiguration	1805	370	13	Claremont, Winifred Street, Woodman Street	3	UEL

Contour and 3 monthly construction time slice	Description	< 45	≥45 ≤ 50	≥50 ≤ 55	Location of receptors[1]	≥55	Location of receptors[1]
2020 Jul	Drainage, Culverts & Taxilinks Airfield Services ETE Civil & Envelope MTB Reconfiguration	1830	344	14	Claremont, Felixstowe Court, Winifred Street, Woodman Street	3	UEL
2020 Oct	ETE Envelope MTB Reconfiguration	2159	28	4	Claremont	0	-
2021 Jan	ETE Envelope NEP1 Civil MTB Reconfiguration	2157	30	4	Claremont	0	-
2021 Apr	NEP1 Frame NEP2 Civil	2157	30	4	Claremont	0	-
2021 Jul	NEP1 Envelope NEP2 Civil	2159	28	4	Claremont	0	-
2021 Oct	Airfield Services NEP1 Envelope	2191	0	0	-	0	-
2022 Jan	NEP1 Envelope	2159	28	4	Claremont	0	-
2022 Apr	NEP1 Envelope	2160	27	4	Claremont	0	-
2022 Jul	NEP2 Frame NEP2 Envelope	2159	28	4	Claremont	0	-
2022 Oct	NEP2 Envelope	2160	27	4	Claremont	0	-
2023 Jan	Airfield Services NEP2 Envelope Hartmann Road Works	2142	45	4	Claremont	0	-

Contour and 3 monthly construction time slice	Description	< 45	≥45 ≤ 50	≥50 ≤ 55	Location of receptors[1]	≥55	Location of receptors[1]
2023 Apr	Airfield Services NEP2 Envelope Hartman Road Works	2142	45	4	Claremont	0	-
2023 Jul	Airfield Services Hartmann Road Works	2142	45	4	Claremont	0	-
2023 Oct	-	-	-	-	-	-	-
2024 Jan	-	-	-	-	-	-	-
2024 Apr	-	-	-	-	-	-	-
2024 Jul	Airfield Services ETE Configuration MTB Reconfiguration	2159	28	4	Claremont	0	-
2024 Oct	MTB Reconfiguration	2160	27	4	Claremont	0	-
2025 Jan	-	-	-	-	-	-	-
2025 Apr	-	-	-	-	-	-	-
2025 Jul	-	-	-	-	-	-	-
2025 Oct	-	-	-	-	-	-	-

[1] – Excludes UEL halls of residence as individual receptors. Includes strategic fixed receptor locations previously used in CADP UES which includes a receptor on UEL dock edge.

The above predictions provide an objective quarterly timeslice snapshot as to the predicted noise levels for various representative OOOH periods under the proposed resequenced CPP. The assessment of night-time construction noise has found that, for the majority of the construction period, only a small number of receptors to the south of the airport may exceed noise levels in excess of 55 dB $L_{Aeq,15min}$. These are generally high level (2nd floor and above) receptors of properties closest to the works. A greater number are exposed to levels between 50 and 55 dB $L_{Aeq,15min}$. These receptors are predominantly the Westland, Queensland and Dunedin House flats which overlook the airport as well as the Camel Road and Drew Road

flats, all of which have been treated under the recent Construction Noise Sound Insulation Schemes as well as previous air noise schemes.

Under the proposed re-sequenced CPP, the number of receptors exposed to 55 dB $L_{Aeq,15min}$ or more remains much the same as described in the UES. The number of receptors exposed to 50 to 55 dB $L_{Aeq,15min}$ and 55 dB $L_{Aeq,15min}$ or more has been assessed assuming a 'worst case' whereby all activities including those estimated to only occur occasionally during the night (for 25% of the time) will take place during the same 15 minute period. However, in practice, given the occasional nature of some of these activities, these 'worst case' impacts are unlikely to transpire, particularly accounting for the measures set out in the Construction Noise and Vibration Monitoring and Mitigation Strategy (CNVMMS) developed in compliance with Condition 88.

The overall construction noise effect of the proposed resequenced CPP is therefore the same as for the accelerated CPP assessed in the May 2018 Condition 4 submission. Based on this information, with the offered mitigation, the residual construction noise effects will give rise to a **negligible** impact during daytime operational hours and a **minor adverse** impact out of operational hours.

Mike Pau
for Bickerdike Allen Partners LLP

David Trew
Partner

APPENDIX A

GLOSSARY OF ACOUSTIC TERMINOLOGY

The Decibel, dB

The unit used to describe the magnitude of sound is the decibel (dB) and the quantity measured is the sound pressure level. The decibel scale is logarithmic and it ascribes equal values to proportional changes in sound pressure, which is a characteristic of the ear. Use of a logarithmic scale has the added advantage that it compresses the very wide range of sound pressures to which the ear may typically be exposed to a more manageable range of numbers. The threshold of hearing occurs at approximately 0 dB (which corresponds to a reference sound pressure of 2×10^{-5} Pascals) and the threshold of pain is around 120 dB.

The sound energy radiated by a source can also be expressed in decibels. The sound power is a measure of the total sound energy radiated by a source per second, in watts. The sound power level, L_w is expressed in decibels, referenced to 10^{-12} watts.

Frequency, Hz

Frequency is analogous to musical pitch. It depends upon the rate of vibration of the air molecules that transmit the sound and is measure as the number of cycles per second or Hertz (Hz). The human ear is sensitive to sound in the range 20 Hz to 20,000 Hz (20 kHz). For acoustic engineering purposes, the frequency range is normally divided up into discrete bands. The most commonly used bands are octave bands, in which the upper limiting frequency for any band is twice the lower limiting frequency, and one-third octave bands, in which each octave band is divided into three. The bands are described by their centre frequency value and the ranges which are typically used for building acoustics purposes are 63 Hz to 4 kHz (octave bands) and 100 Hz to 3150 Hz (one-third octave bands).

A-weighting

The sensitivity of the ear is frequency dependent. Sound level meters are fitted with a weighting network which approximates to this response and allows sound levels to be expressed as an overall single figure value, in dB(A).

Environmental Noise Descriptors

Where noise levels vary with time, it is necessary to express the results of a measurement over a period of time in statistical terms. Some commonly used descriptors follow.

Statistical Term	Description
$L_{Aeq, T}$	The most widely applicable unit is the equivalent continuous A-weighted sound pressure level (LAeq, T). It is an energy average and is defined as the level of a notional sound which (over a defined period of time, T) would deliver the same A-weighted sound energy as the actual fluctuating sound.
L_{A90}	The level exceeded for 90% of the time is normally used to describe background noise.
$L_{Amax,T}$	The maximum A-weighted sound pressure level, normally associated with a time weighting, F (fast), or S (slow)

Perceived Noise Level, PNL

The perceived noise level is the sound pressure level corrected such that a given sound is numerically equal to the sound pressure level of a reference sound that is judged by listeners to have the same perceived noisiness of the given sound. The calculation procedure gives an approximation to the perceived noise level which is measured in dB and given the unit PNdB.

Sound Transmission in the Open Air

Most sources of sound can be characterised as a single point in space. The sound energy radiated is proportional to the surface area of a sphere centred on the point. The area of a sphere is proportional to the square of the radius, so the sound energy is inversely proportional to the square of the radius. This is the inverse square law. In decibel terms, every time the distance from a point source is doubled, the sound pressure level is reduced by 6 dB.

Road traffic noise is a notable exception to this rule, as it approximates to a line source, which is represented by the line of the road. The sound energy radiated is inversely proportional to the area of a cylinder centred on the line. In decibel terms, every time the distance from a line source is doubled, the sound pressure level is reduced by 3 dB.

Factors Affecting Sound Transmission in the Open Air

Reflection

When sound waves encounter a hard surface, such as concrete, brickwork, glass, timber or plasterboard, it is reflected from it. As a result, the sound pressure level measured immediately in front of a building façade is approximately 3 dB higher than it would be in the absence of the façade.

Screening and Diffraction

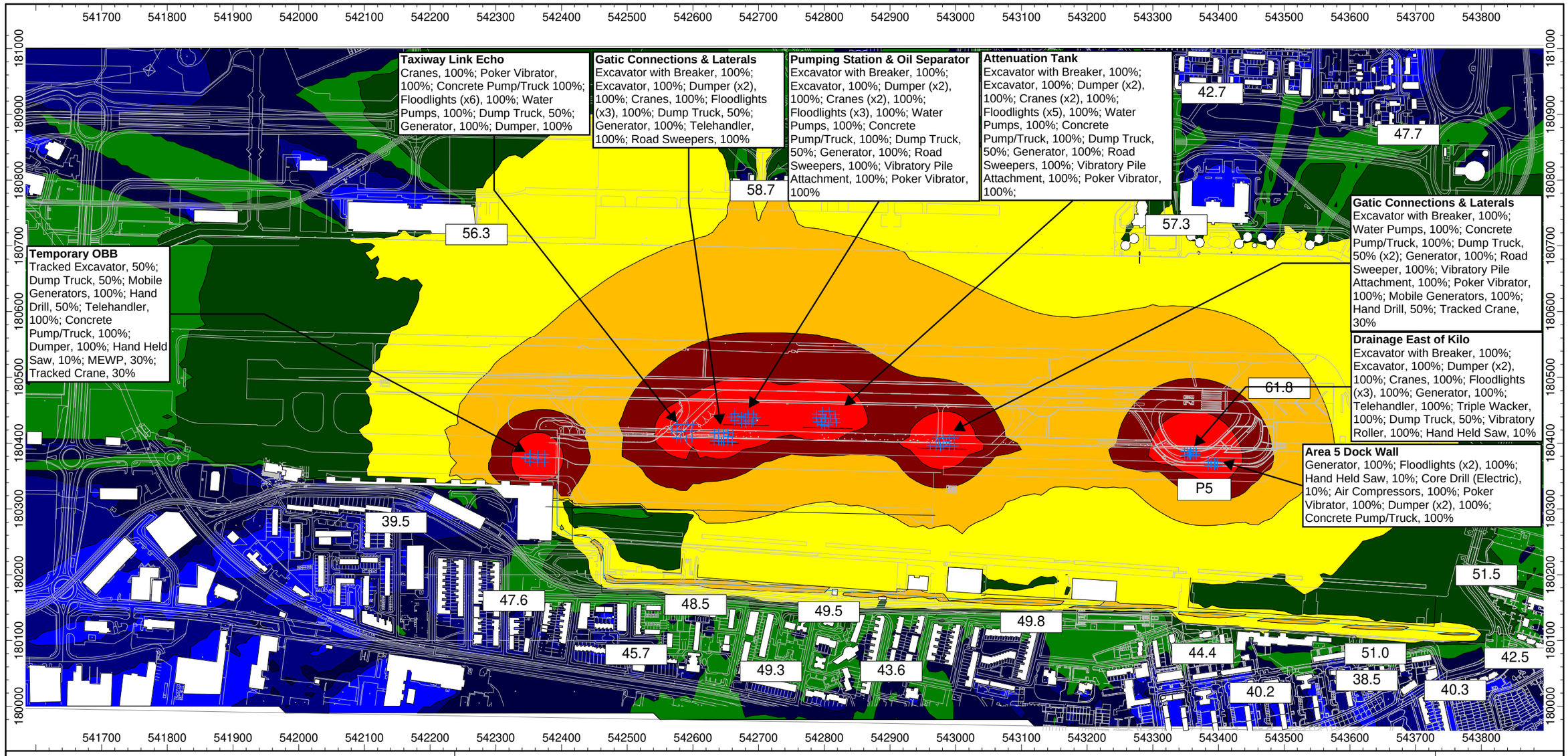
If a solid screen is introduced between a source and receiver, interrupting the sound path, a reduction in sound level is experienced. This reduction is limited, however, by diffraction of the sound energy at the edges of the screen. Screens can provide valuable noise attenuation, however. For example, a timber boarded fence built next to a motorway can reduce noise levels on the land beyond, typically by around 10 dB(A). The best results are obtained when a screen is situated close to the source or close to the receiver.

Meteorological Effects

Temperature and wind gradients affect noise transmission, especially over large distances. The wind effects range from increasing the level by typically 2 dB downwind, to reducing it by typically 10 dB upwind – or even more in extreme conditions. Temperature and wind gradients are variable and difficult to predict.

APPENDIX B

CONSTRUCTION NOISE MAPS FOR OOOH WORKS



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

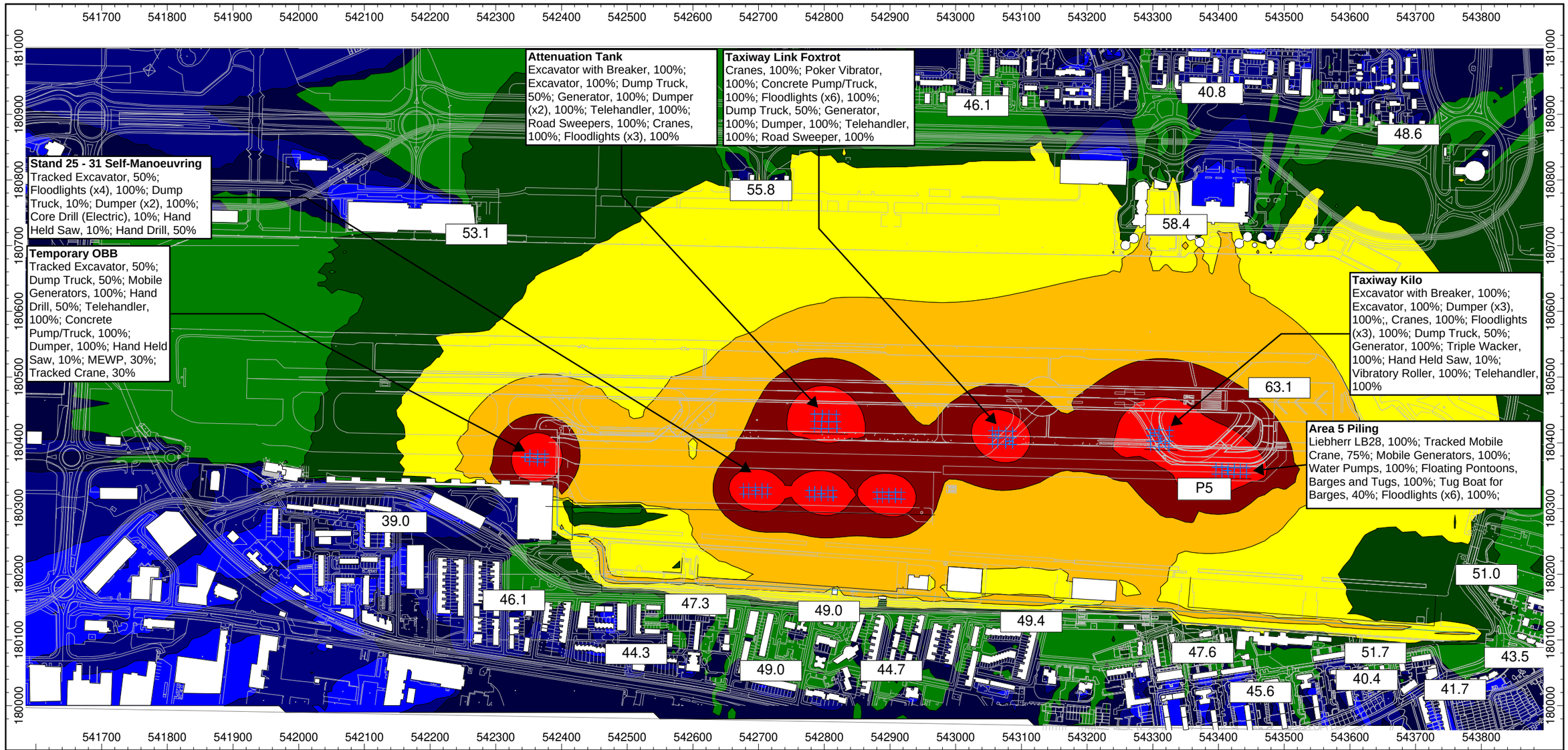
A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

... < 35.0 dB(A)
35.0 <= ... < 40.0 dB(A)
40.0 <= ... < 45.0 dB(A)
45.0 <= ... < 50.0 dB(A)
50.0 <= ... < 55.0 dB(A)
55.0 <= ... < 60.0 dB(A)
60.0 <= ... < 65.0 dB(A)
65.0 <= ... < 70.0 dB(A)
70.0 <= ... dB(A)

Out of Operational Hours (OOOH) Programme - October 2019

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

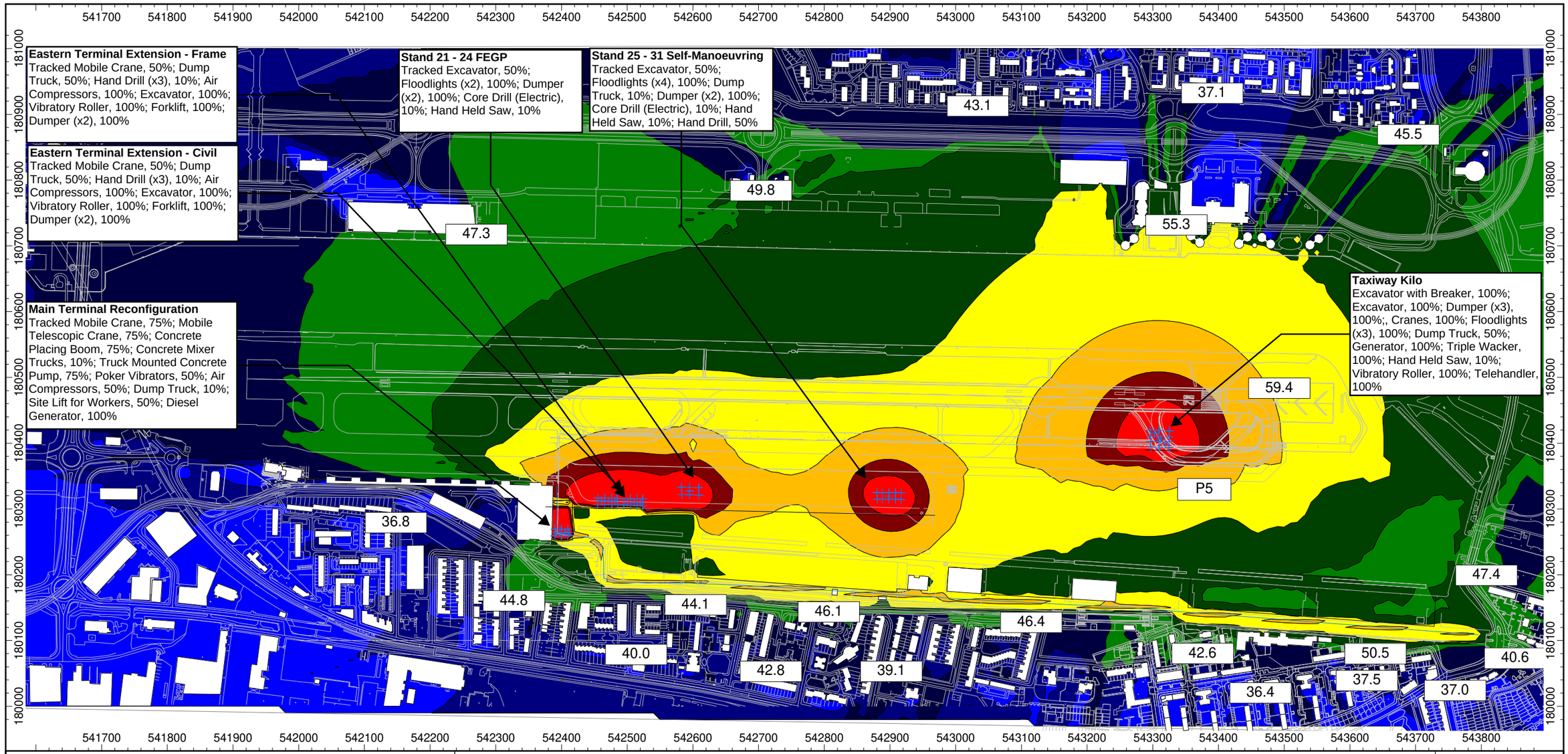
A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

... < 35.0 dB(A)
35.0 <= ... < 40.0 dB(A)
40.0 <= ... < 45.0 dB(A)
45.0 <= ... < 50.0 dB(A)
50.0 <= ... < 55.0 dB(A)
55.0 <= ... < 60.0 dB(A)
60.0 <= ... < 65.0 dB(A)
65.0 <= ... < 70.0 dB(A)
70.0 <= ... dB(A)

Out of Operational Hours (OOOH) Programme - January 2020

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

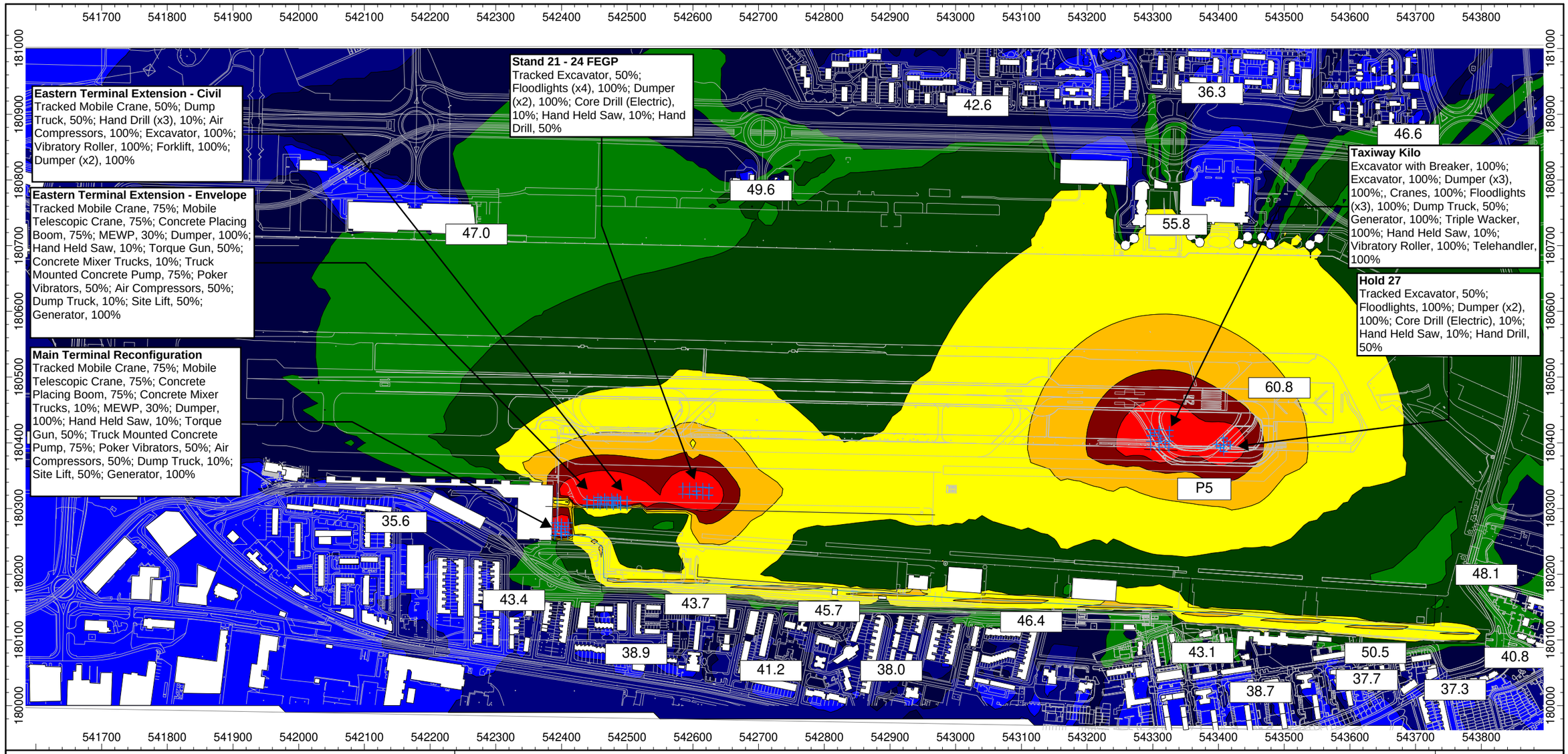
A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

- ... < 35.0 dB(A)
- 35.0 <= ... < 40.0 dB(A)
- 40.0 <= ... < 45.0 dB(A)
- 45.0 <= ... < 50.0 dB(A)
- 50.0 <= ... < 55.0 dB(A)
- 55.0 <= ... < 60.0 dB(A)
- 60.0 <= ... < 65.0 dB(A)
- 65.0 <= ... < 70.0 dB(A)
- 70.0 <= ... dB(A)

Out of Operational Hours (OOOH) Programme - April 2020

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

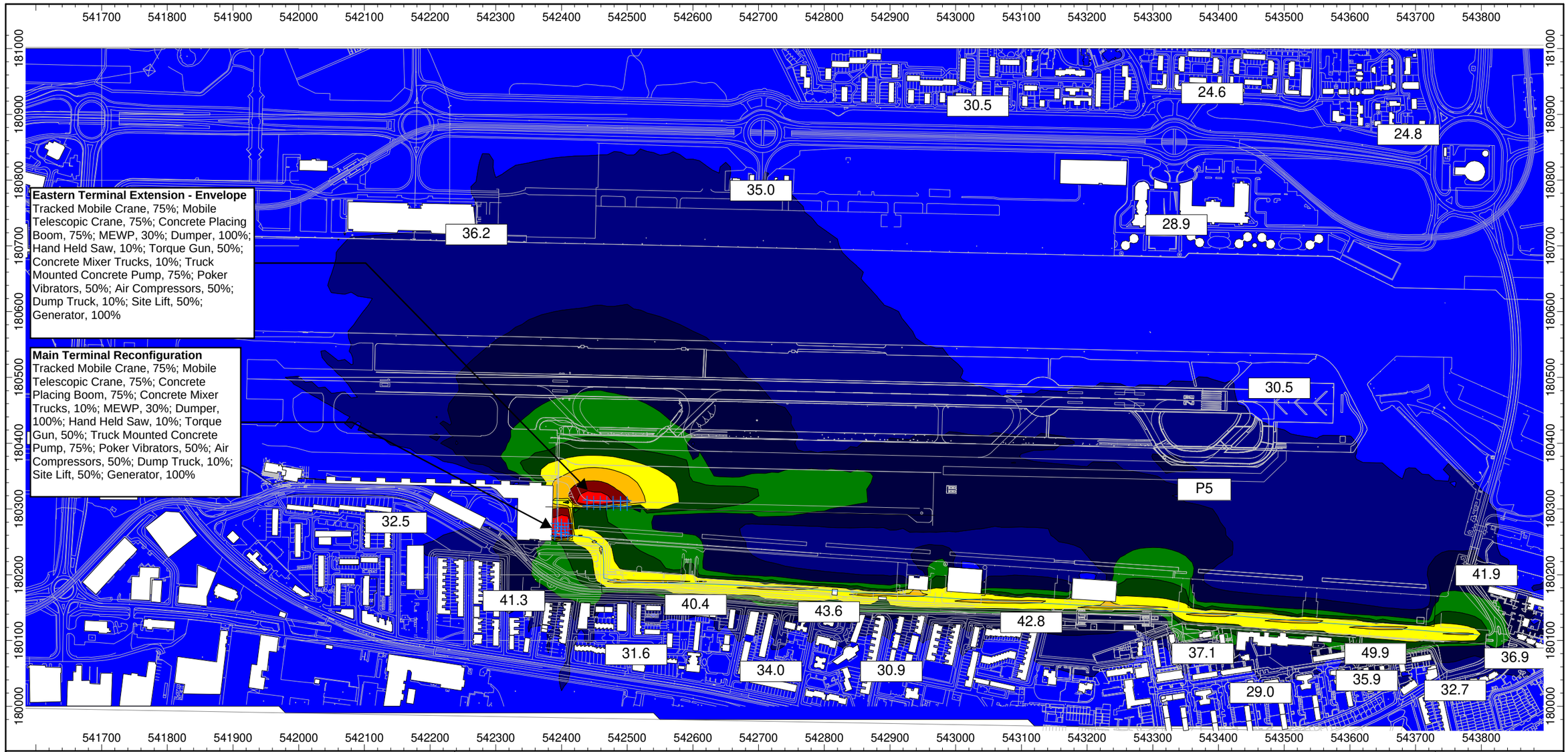
A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

- ... < 35.0 dB(A)
- 35.0 <= ... < 40.0 dB(A)
- 40.0 <= ... < 45.0 dB(A)
- 45.0 <= ... < 50.0 dB(A)
- 50.0 <= ... < 55.0 dB(A)
- 55.0 <= ... < 60.0 dB(A)
- 60.0 <= ... < 65.0 dB(A)
- 65.0 <= ... < 70.0 dB(A)
- 70.0 <= ... dB(A)

Out of Operational Hours (OOOH) Programme - July 2020

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

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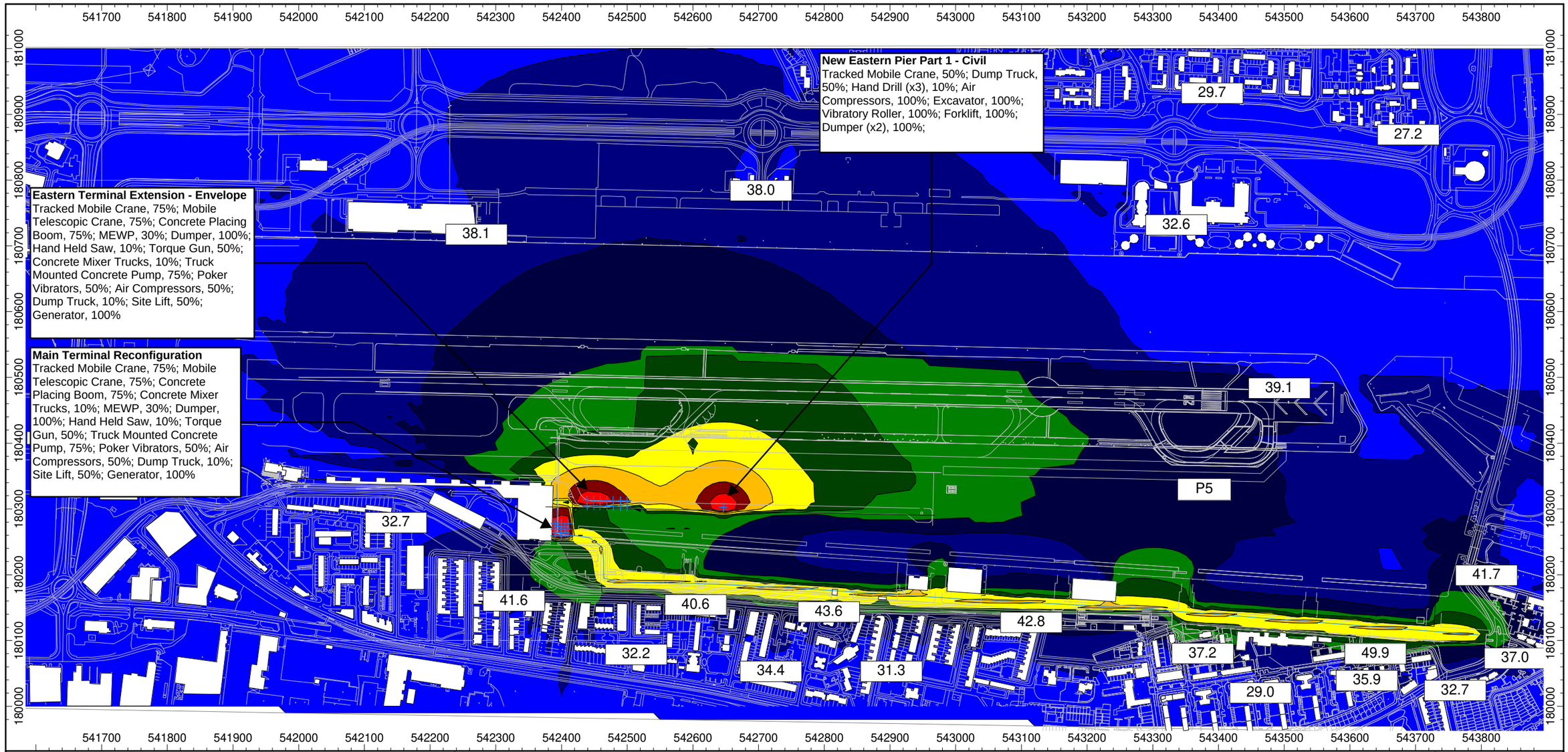
- 70.0 <= ... dB(A)

Out of Operational Hours (OOOH) Programme - October 2020

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

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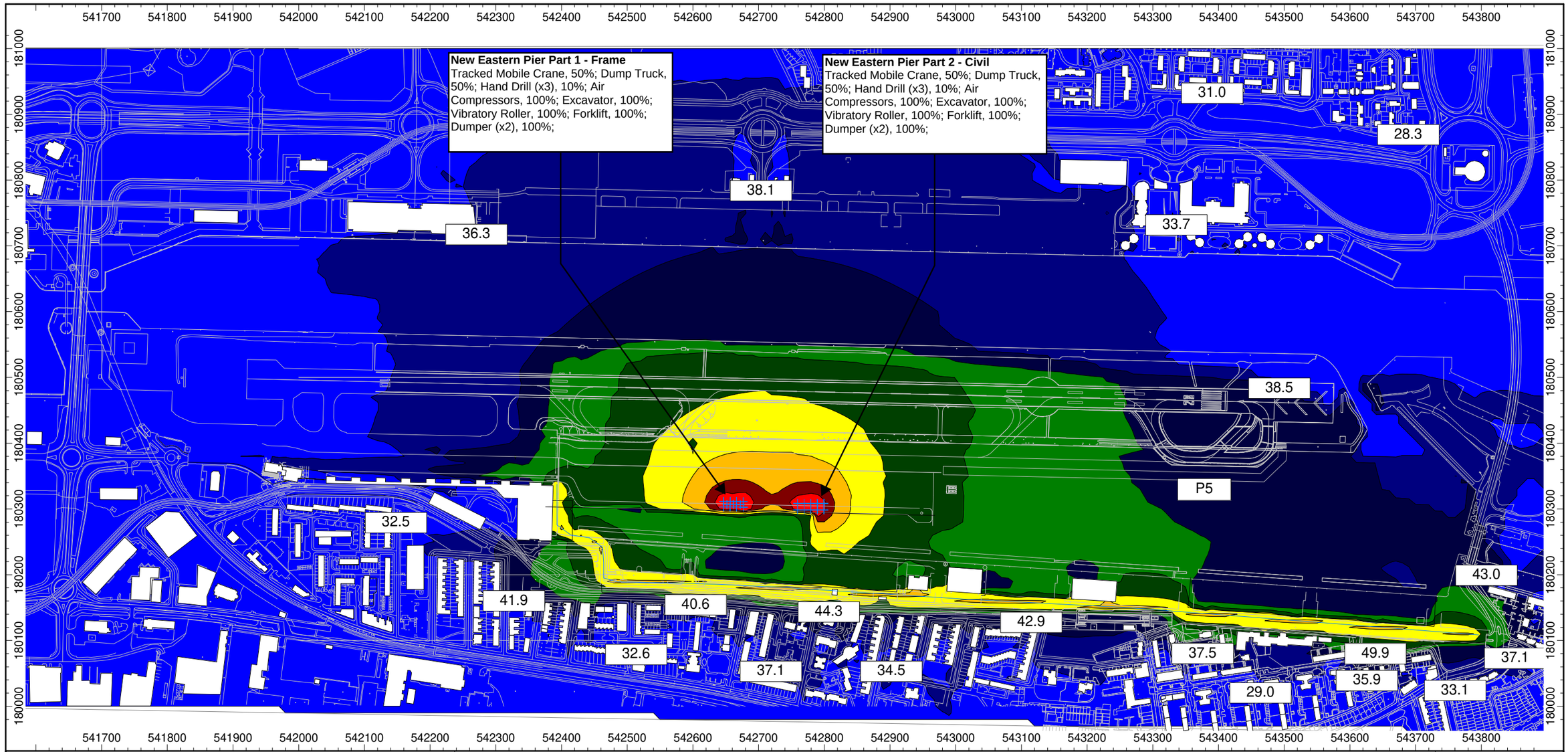
Out of Operational Hours (OOOH) Programme - January 2021

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

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A11293 - London City Airport - Construction Noise

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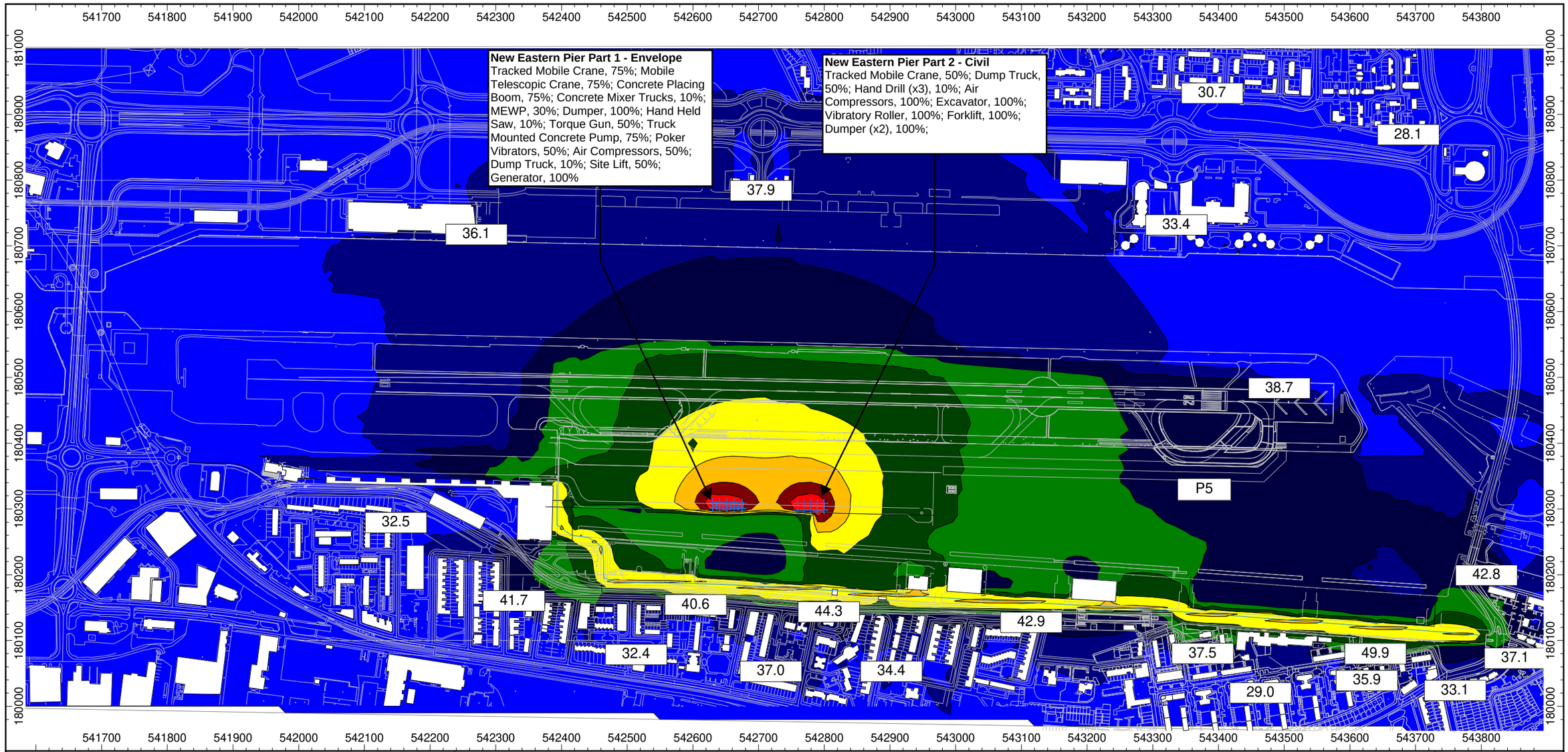
70.0 <= ... dB(A)

Out of Operational Hours (OOOH) Programme - April 2021

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

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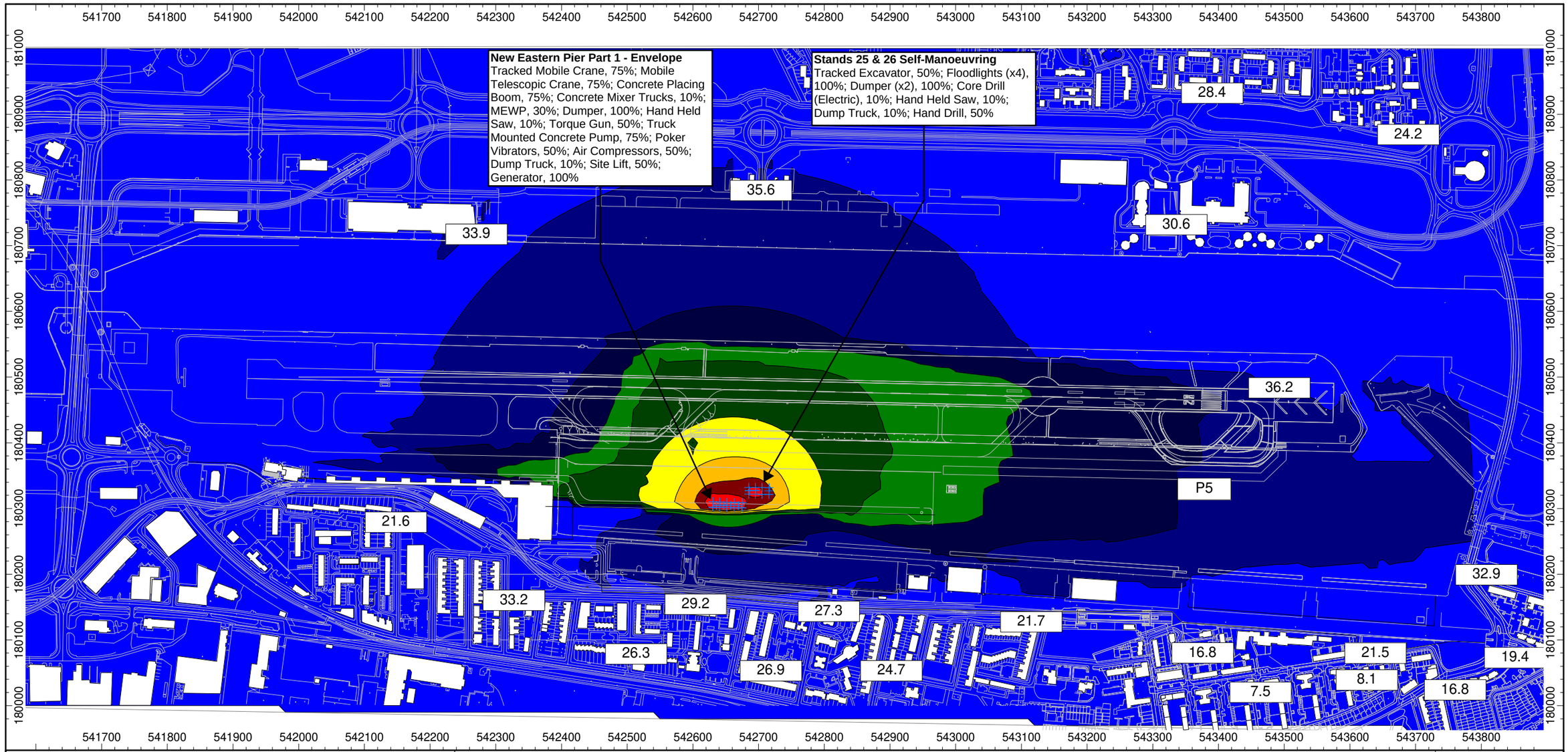
- 70.0 <= ... dB(A)

Out of Operational Hours (OOOH) Programme - July 2021

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

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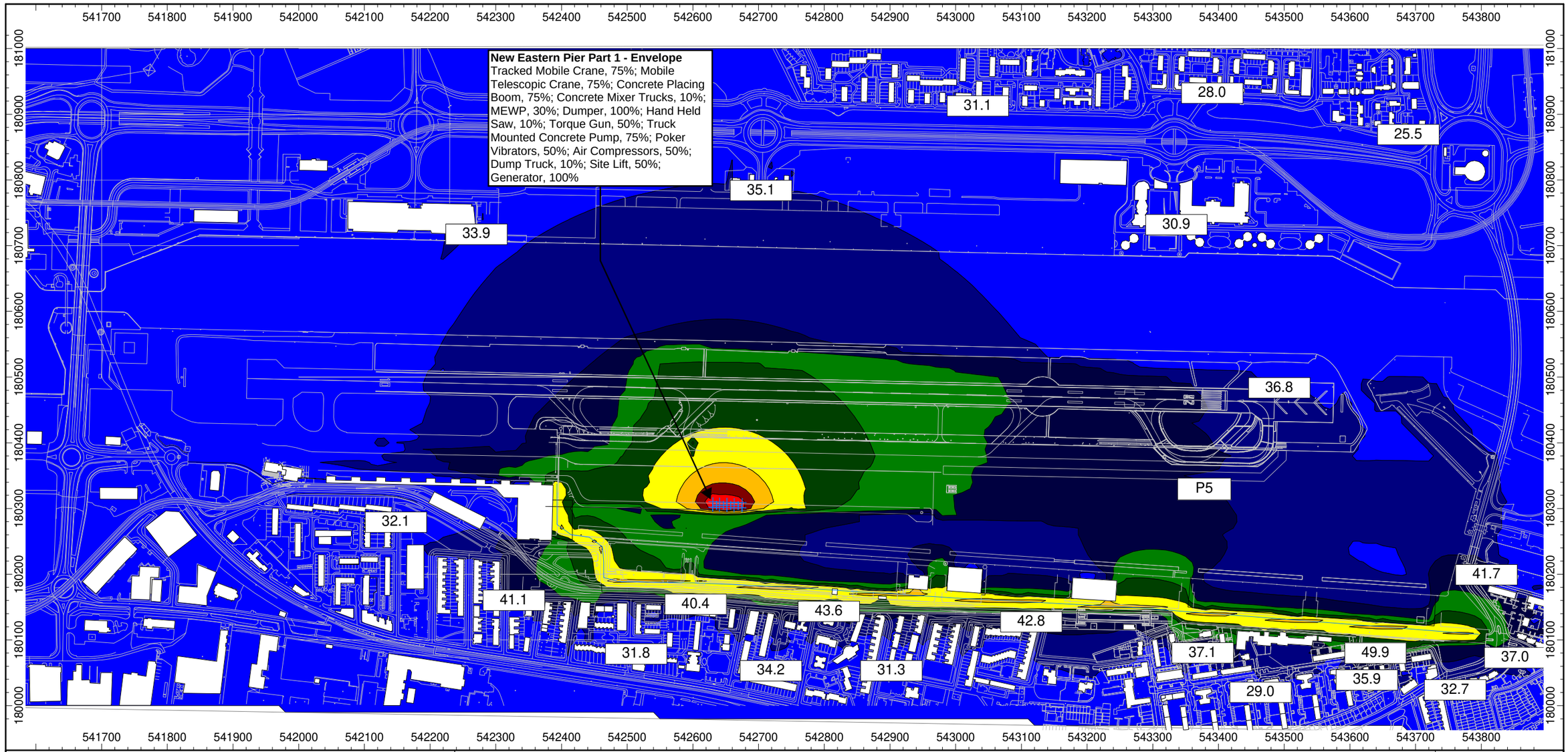
Out of Operational Hours (OOOH) Programme - October 2021

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

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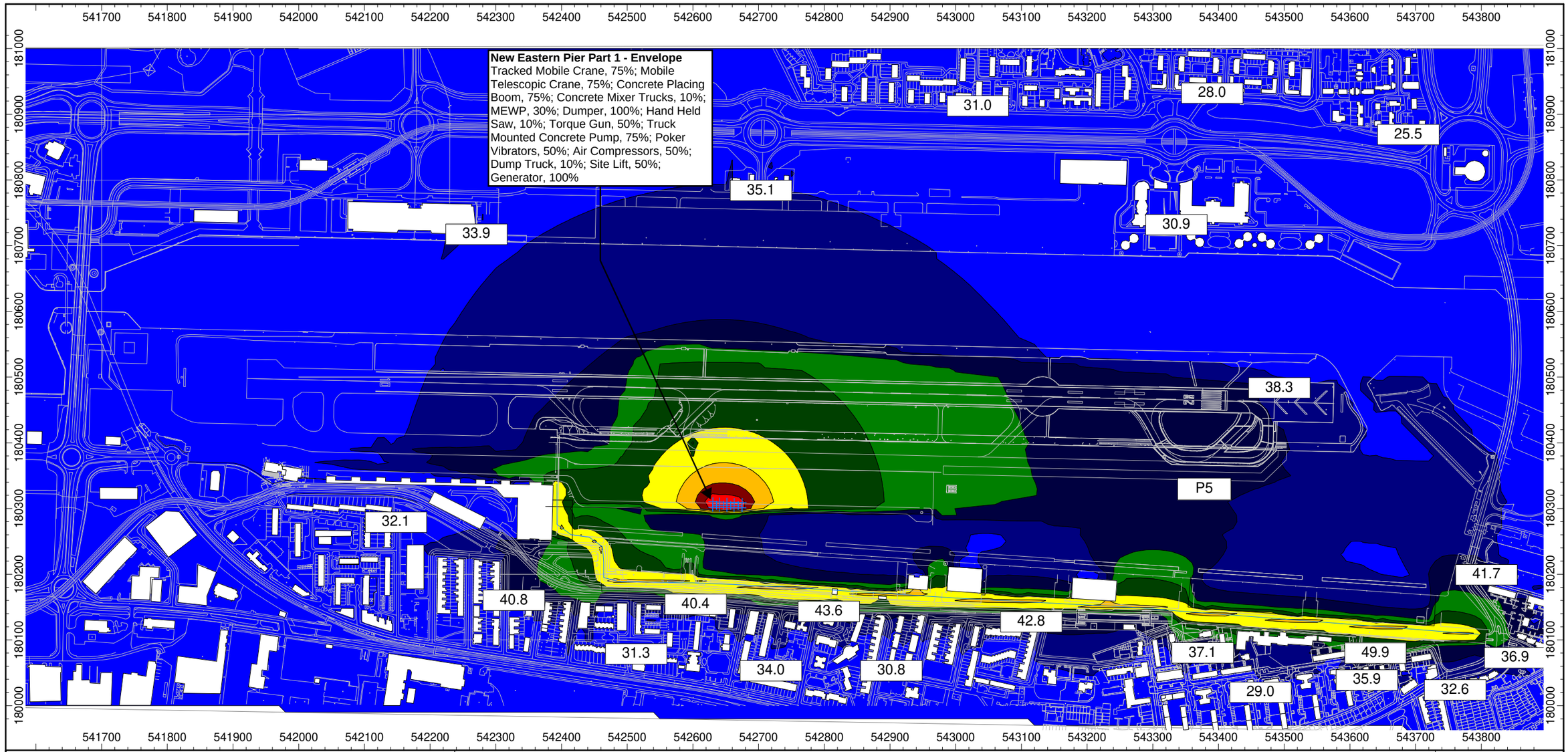
Out of Operational Hours (OOOH) Programme - January 2022

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

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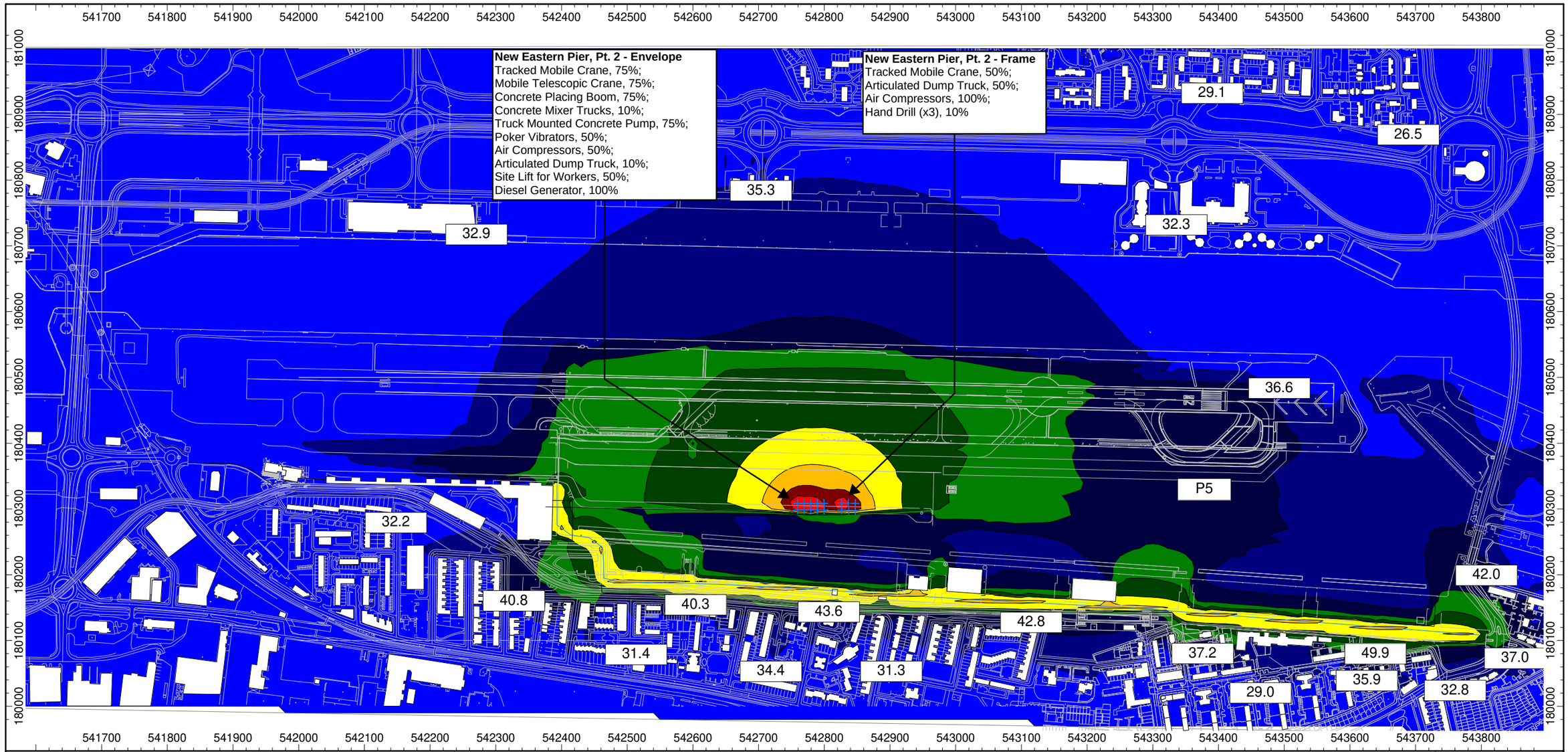
Out of Operational Hours (OOOH) Programme - April 2022

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
Grid spacing 20 x 20m

Not to scale

A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

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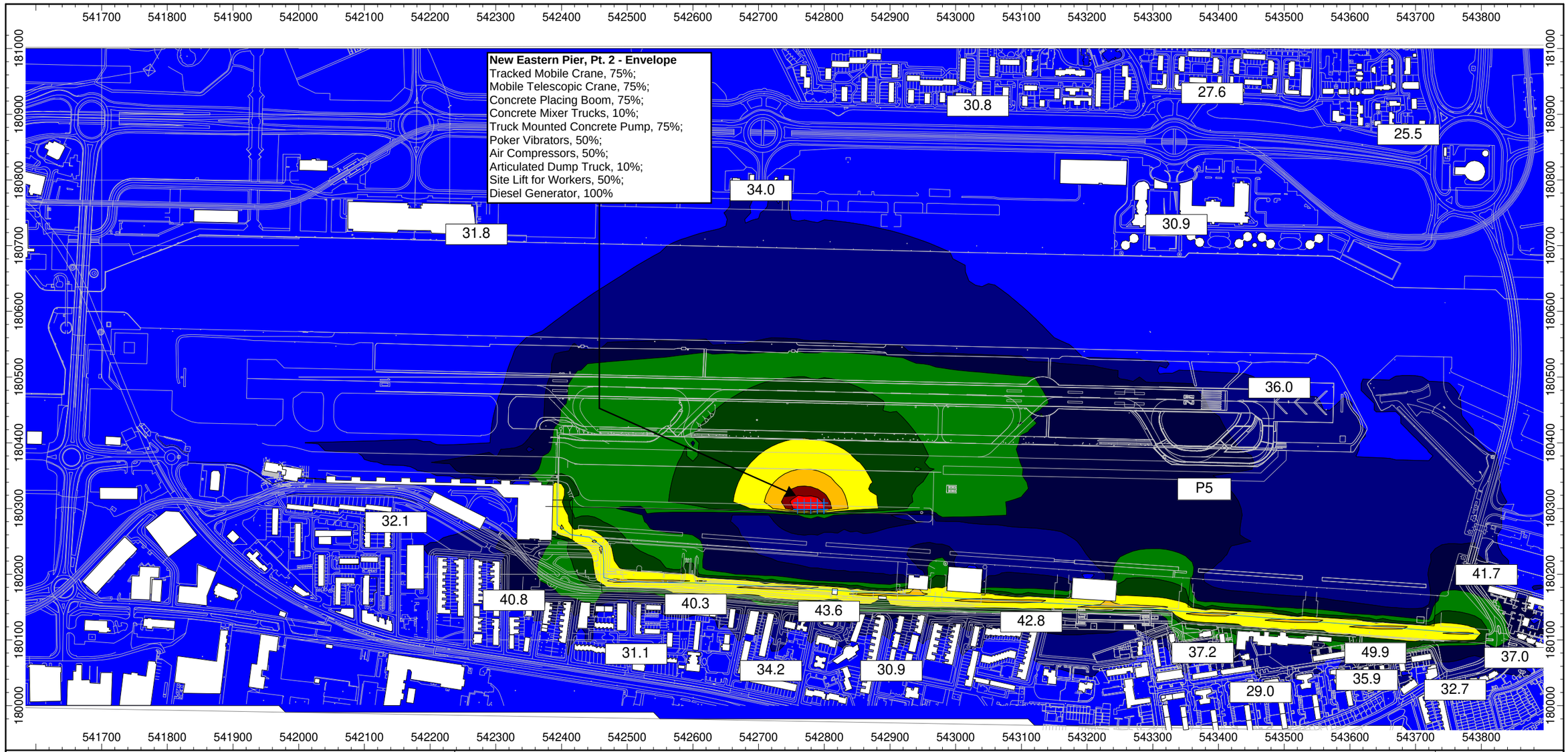
Out of Operational Hours (OOOH) Programme - July 2022

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
Receiver height 4m
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Not to scale

A11293_01_CM001_0.6

A11293 - London City Airport - Construction Noise

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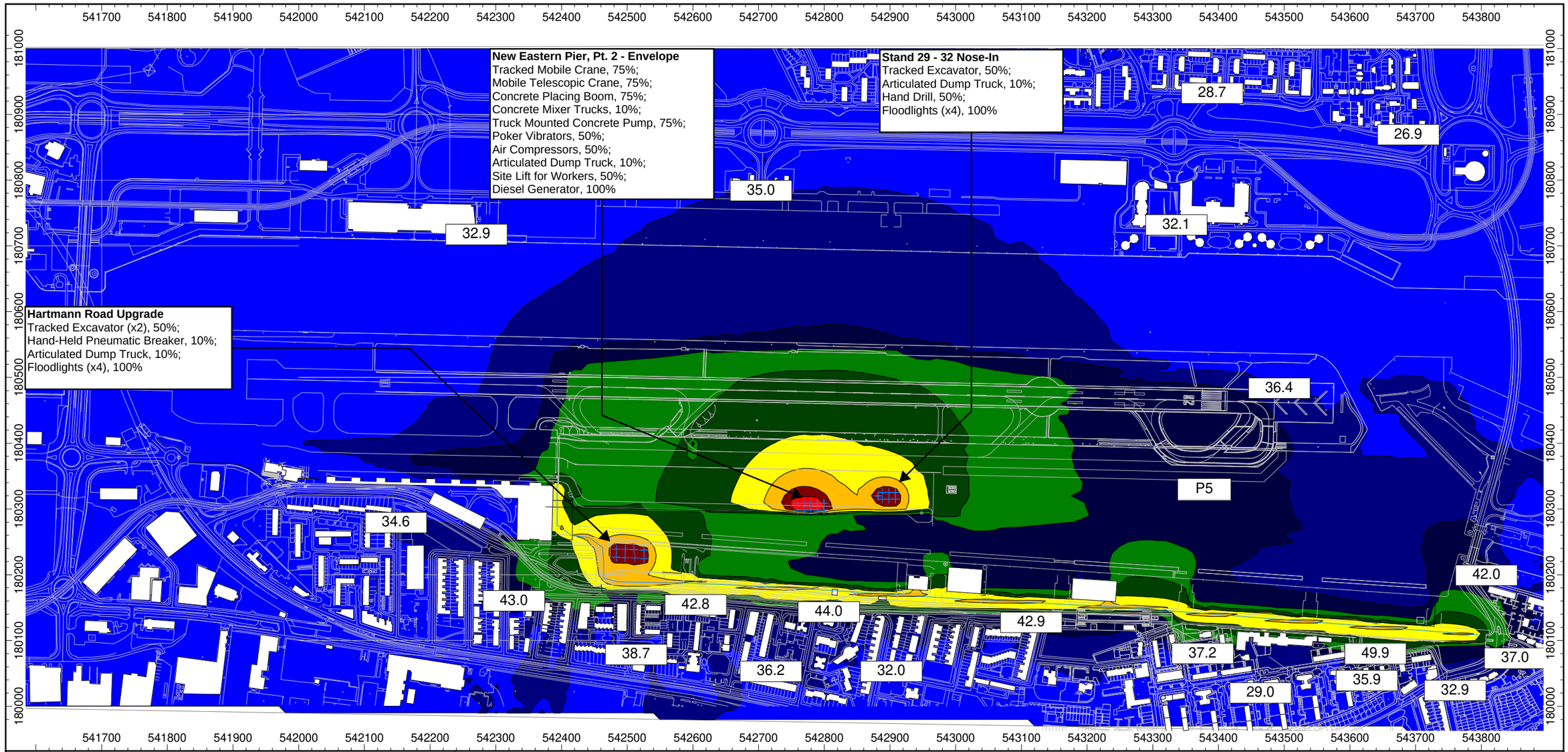
Out of Operational Hours (OOOH) Programme - October 2022

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
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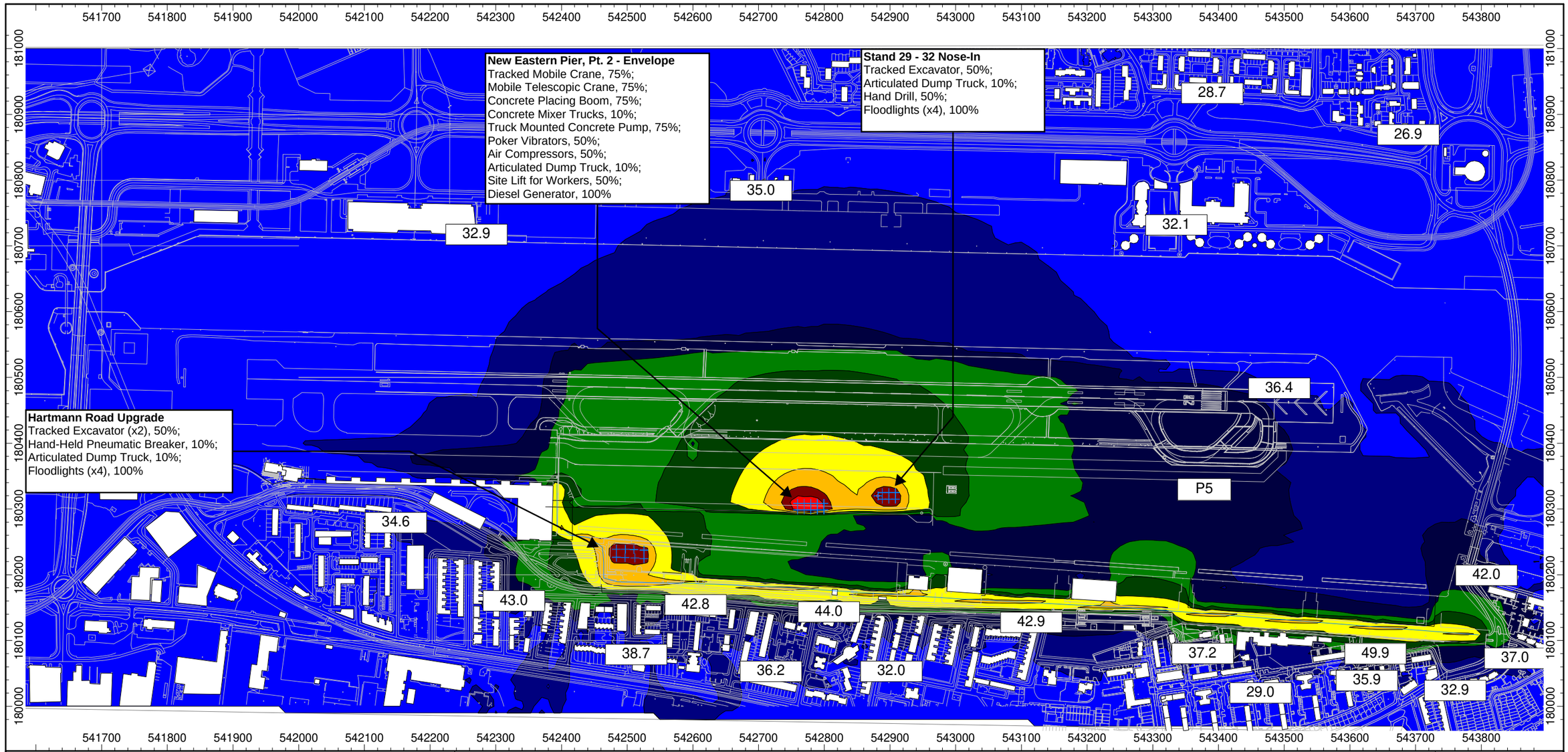
Out of Operational Hours (OOOH) Programme - January 2023

CadnaA Construction Noise OOOH Works



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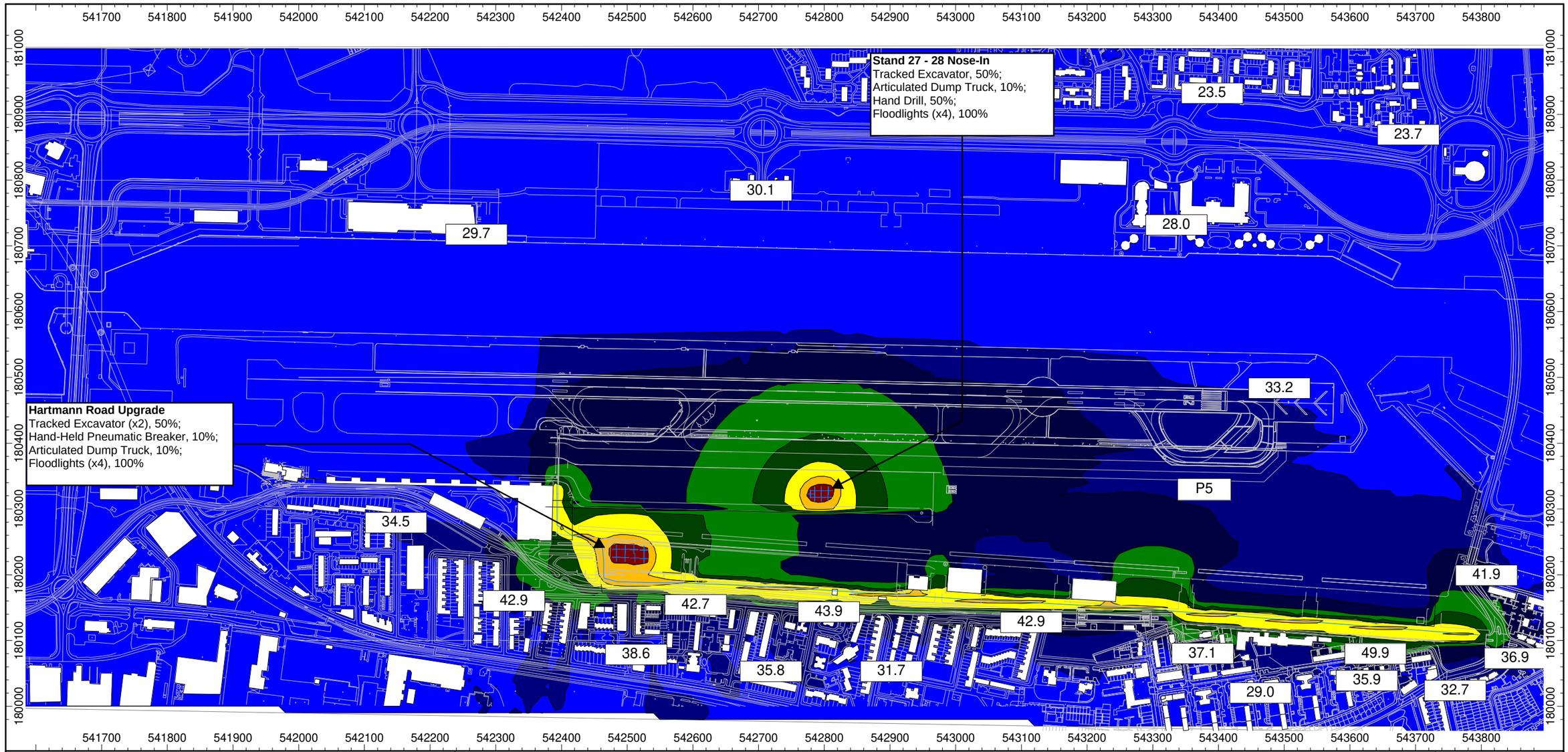
Out of Operational Hours (OOOH) Programme - April 2023

CadnaA Construction Noise OOOH Works



Construction noise LAeq,15min dB(A)
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A11293 - London City Airport - Construction Noise

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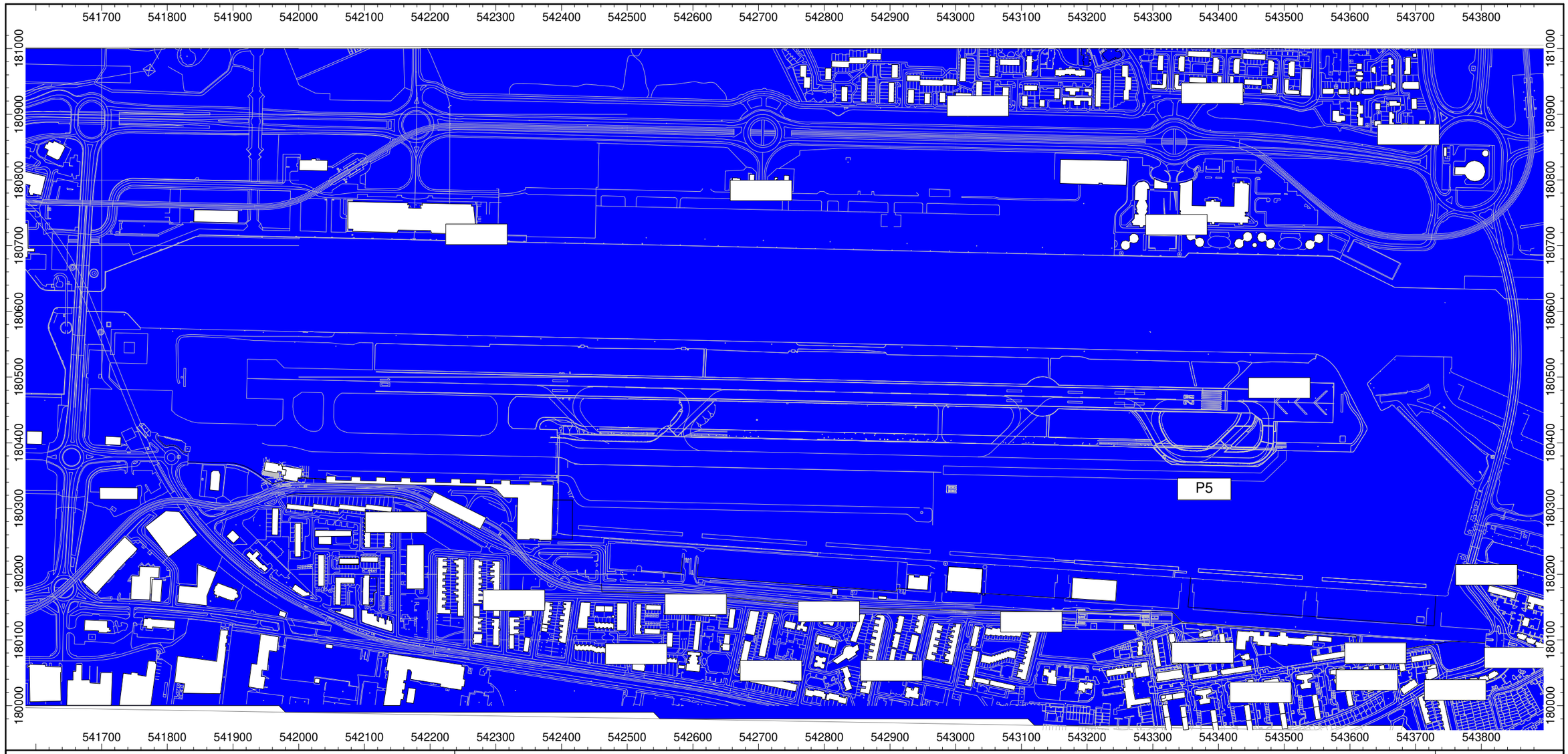
Out of Operational Hours (OOOH) Programme - July 2023

CadnaA Construction Noise OOOH Works



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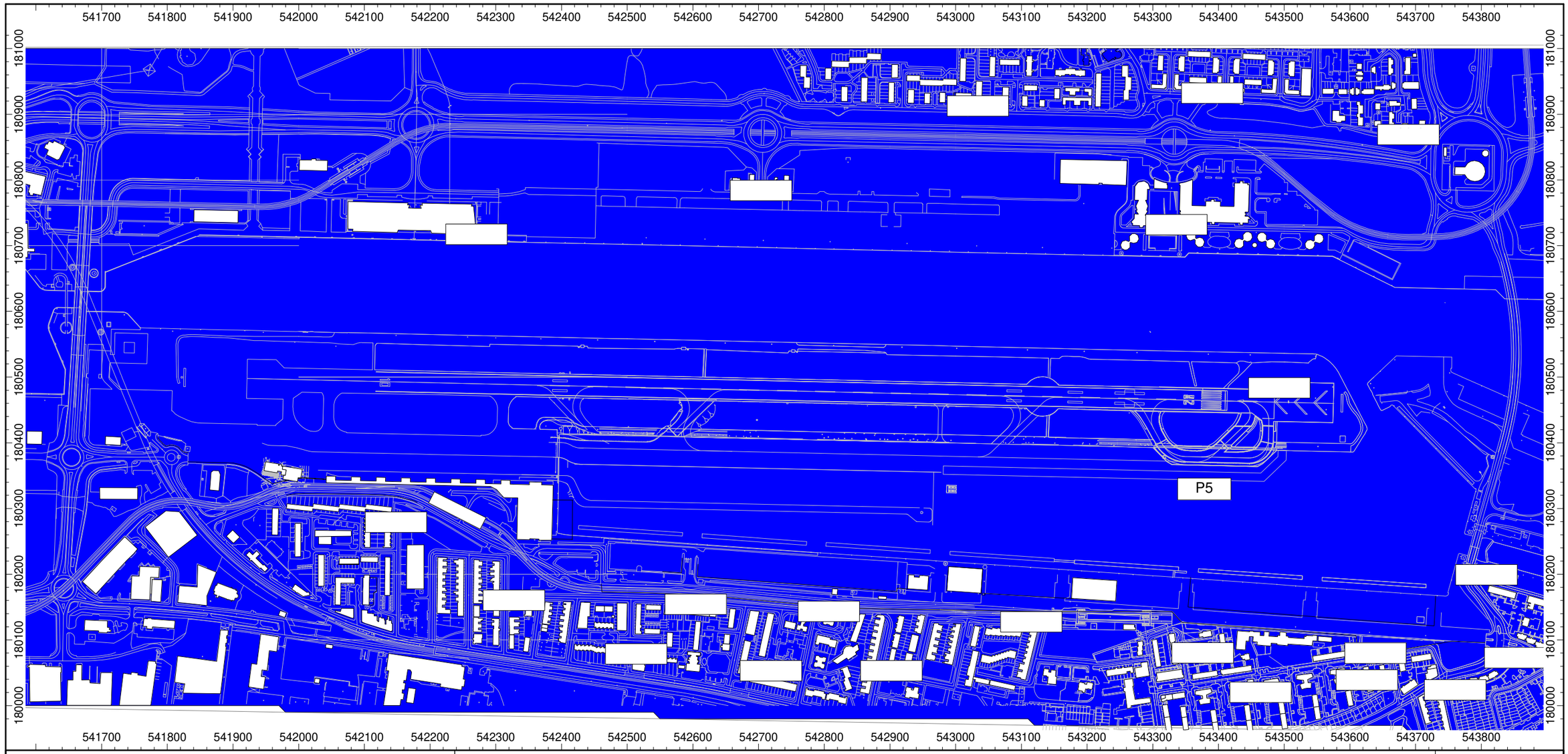
Out of Operational Hours (OOOH) Programme - October 2023

CadnaA Construction Noise OOOH Works



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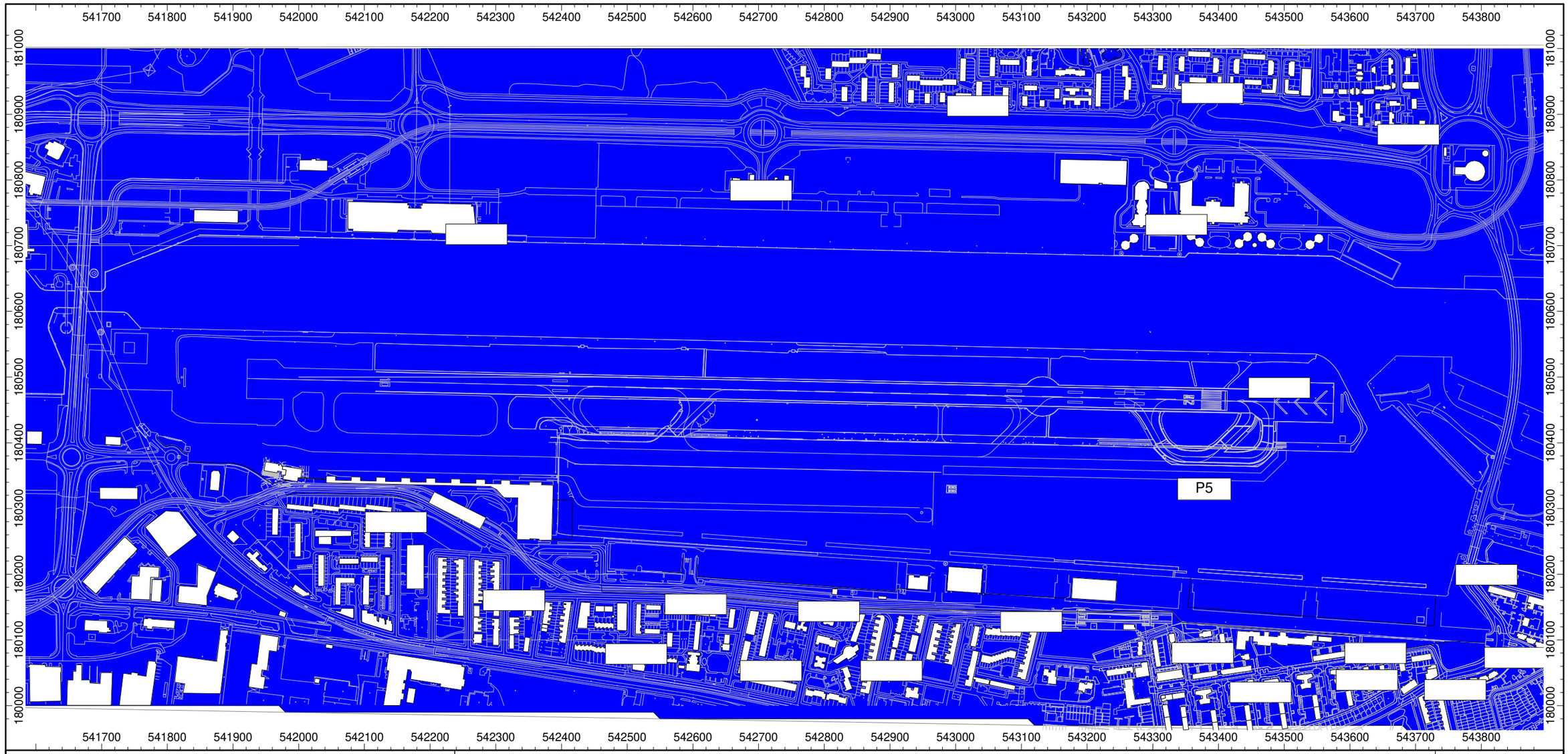
Out of Operational Hours (OOOH) Programme - January 2024

CadnaA Construction Noise OOOH Works



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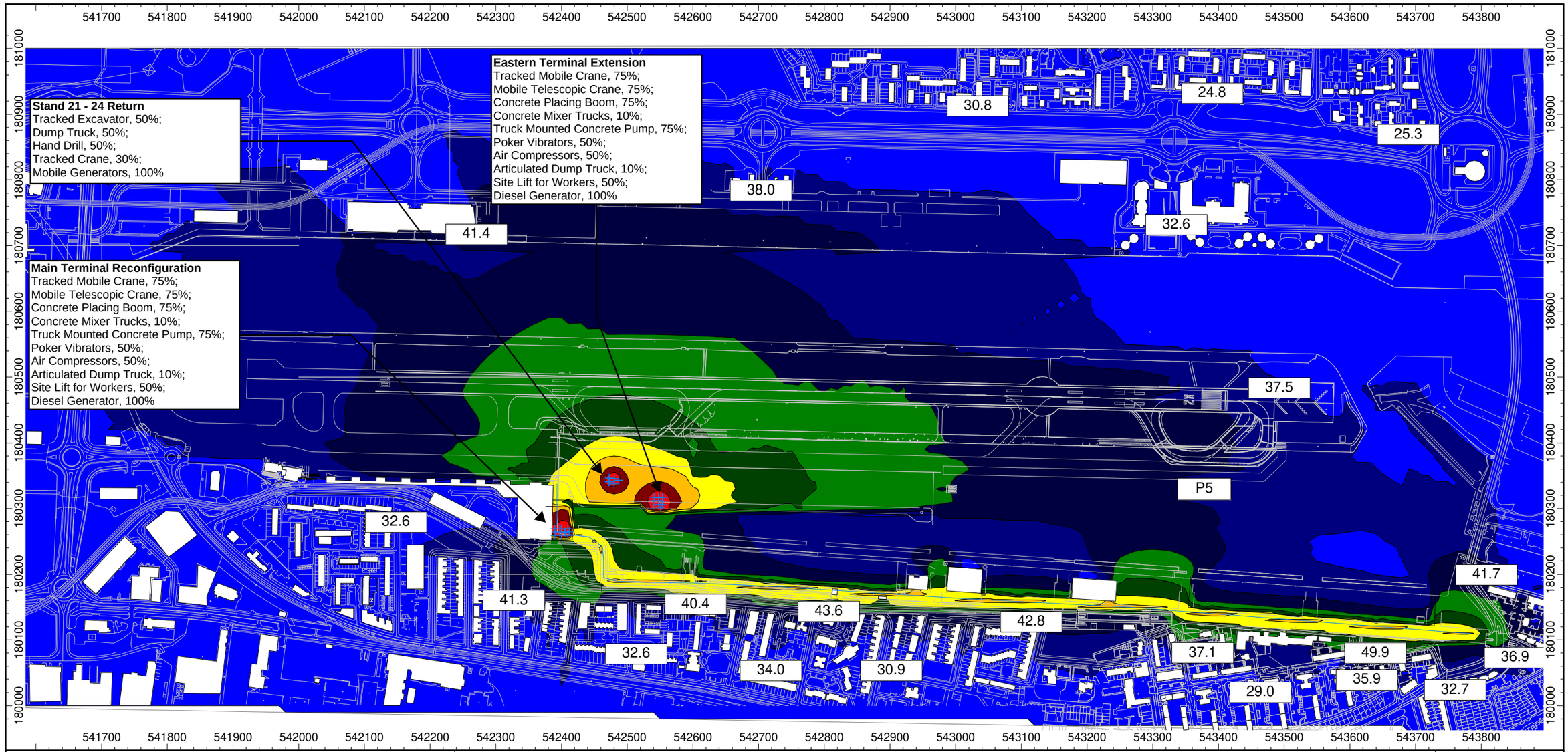
Out of Operational Hours (OOOH) Programme - April 2024

CadnaA Construction Noise OOOH Works



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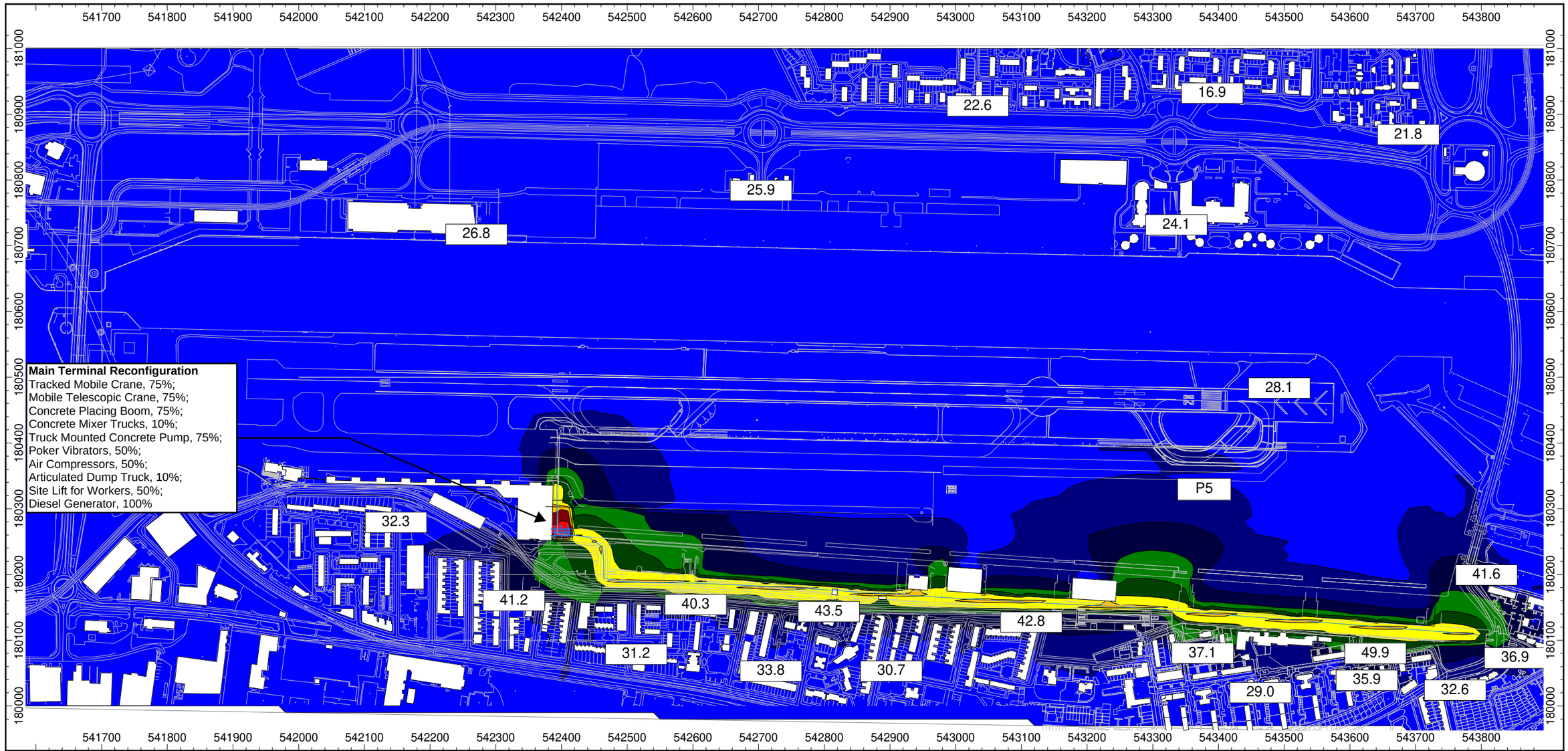
Out of Operational Hours (OOOH) Programme - July 2024

CadnaA Construction Noise OOOH Works



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Out of Operational Hours (OOOH) Programme - October 2024

CadnaA Construction Noise OOOH Works