The Sizewell C Project

9.115 Response by SZC Co. to RSPB's Comments at Deadline 8

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1 RESPONSE BY SZC CO. TO RSPB'S COMMENTS AT DEADLINE 8

1.1 Introduction

1.1.1 This report provides SZC Co.'s response to the Royal Society for the Protection of Birds (RSPB) Deadline 8 submission [REP8-171] relating to the potential noise levels from the desalination plant.

1.2 RSPB's Deadline 8 submission

1.2.1 In their Deadline 8 Responses to 'Change 19 Request submission' [REP8-171], RSPB has requested information on the potential noise levels from the desalination plant, stating at paragraph 1.1 [REP8-171, electronic page 2]:

> *"Although we note the updates with regard effects on noise receptors in section 3.5 (e) (epage 165) of the Fourth Environmental Statement Addendum indicate that changes to noise levels at human receptors are expected to be minimal, we request that potential changes to noise levels affecting terrestrial ecological receptors (in particular waterbirds of the Minsmere-Walberswick SPA using Minsmere South Levels and Sizewell Marshes and little terns of the Minsmere-Walberswick SPA) are also assessed. We also request clarification as to whether the increases in noise levels quoted apply to all phases of construction. We understand that the additive effects of different noise sources are limited when those sources emit similar noise levels but query the additional effects of the desalination plant during phases where other construction noise is lower."*

1.2.2 A similar point is made at paragraph 3.1 under the heading 'Shadow HRA Report Third Addendum' [REP8-171, electronic page 3]:

> *"The discussion of potential changes to noise levels affecting waterbirds of the Minsmere- Walberswick SPA (which should include those using the Minsmere South Levels and Sizewell Marshes) and little terns of the Minsmere-Walberswick SPA) appears limited in that it does not discuss all the additional noise sources arising from Change 19, noting in particular the omission of the additional HGV movements required to bring water to the construction site before the desalination plant is operational and the use of diesel generators in the early stages*

of operation of the desalination plant. We understand that the additive effects of different noise sources are limited when those sources emit similar noise levels but query the additional effects of the Change 19 during those construction phases where other construction noise is lower."

1.2.3 SZC Co.'s response set out here on the noise points provides the requested information to assist RSPB and the Examining Authority in advance of ISH15. On the matter of HGVs, the HGV cap will remain in place and the additional tankers will be accommodated within that cap. HGV numbers up to the cap have already been included in the noise predictions, so the tanker trips will not affect the outcomes.

1.3 SZC Co.'s Response

1.3.1 The desalination plant will be located in two locations; initially on the main platform area within the main construction area (MCA), approximately from 2023 to the end of 2025, and then within the temporary construction area (TCA) from the start of 2026 to the end of its use in 2030.

1.3.2 When located in its initial position in the MCA, the plant will be powered by a diesel generator capable of providing approximately 1.6MW of power. Source noise data for a specific model and type of generator is not available, so a suitable and representative value has been sourced from the library of data in BS5228-1: 2009+A1: 2014[1]. To be robust, it has been assumed that 2 no. generators are present, each based on the following noise source level:

- 2 no. diesel generators: 90dB L_{WA} each, based on Item 23 in Table C.8 in BS5228-1: 2009+A1: 2014 in its initial location in the MCA.

1.3.3 Once the desalination plant is relocated to the TCA, it will be powered by a mains electricity connection; the diesel generator will no longer be required.

1.3.4 In both locations, the desalination plant will include a series of containerised items of plant, including a number of pumps. Again, specific source noise data is not available for the plant items, so a suitable and representative value has been sourced from the library of data in BS5228-1: 2009+A1: 2014. It is assumed that there will be up to 10 no. pumps, each generating the following noise level:

[1] British Standard BS5228-1 Noise: 2009+A1: 2014 – Code of Practice for noise and vibration control at open construction sites – Noise

- 10 no. pumps: 96dB L_{WA} each, based on Item 40 in Table C.5 in BS5228-1: 2009+A1: 2014, in both of the proposed locations.

1.3.5 Mitigation will be applied to the plant, most notably from the containers themselves for the containerised plant. However, for the purposes of the assessment it has been assumed that no mitigation is present. This should lead to a worst-case assessment.

1.3.6 Submersible seawater intake pumps will be located within a wet well and will not be audible at ground level; noise from these pumps therefore does not need to be taken into account in the assessment.

1.3.7 It is understood that the desalination plant will operate at a constant duty 24 hours a day, seven days a week. Since the plant will operate at a constant duty at all times, irrespective of its location and power source, it can be reasonably concluded that there will be no material difference between maximum noise levels from the plant and time-averaged noise levels; in technical terms, the L_{Amax} and $L_{Aeq,T}$ values will converge for a source of constant level.

1.3.8 The noise levels likely to be generated by the desalination plant are shown graphically in Figures 1 and 2, for its initial location (MCA) and second location (TCA) respectively. Since the desalination plant will operate at a constant duty at all times, the L_{Aeq} and L_{Amax} levels are considered to be equal.

a) Combined Noise Effects

1.3.9 The potential for noise from the desalination plant to combine additively with noise from other construction activities at the main development site has been considered for the following scenarios:

- Scenario 1: when the desalination plant is in its initial location in the MCA.
- Scenario 2: when the desalination plant is relocated to its second location within the TCA.

i. Scenario 1

1.3.10 The desalination plant is expected to be in its initial location in the MCA from 2023 to the end of 2025, broadly spanning Phase 1 and part of Phase 2 of the main development site works.

1.3.11 The effects of noise on ecological receptors during Phases 1 and 2 of the main development site works considered maximum noise levels (refer to

paragraphs 8.8.64 to 8.8.78 of [APP-145, electronic page 423] and as updated in **section 8.3** of [AS-173, electronic page 75]), which do not readily combine in an additive way. For two maximum noise level events to combine in a way that increases the overall level that either would individually generate, they would need to occur to within 1/8 second of each other, and their noise profile, in terms of their rise and fall times and frequency content, would need to be almost identical.

1.3.12 Notwithstanding this lack of additive effect, the maximum noise levels from the desalination plant are predicted to be much lower than the previously-assessed maximum noise levels, so there is no prospect of those previously assessed scenarios altering in any event.

1.3.13 Where the desalination plant operates at night on its own, as is likely to be the case during Phase 1 and the early parts of Phase 2 of the main development site works, the noise levels are likely to be broadly similar to the levels shown in Figure 1.

1.3.14 Given the low maximum night-time noise levels predicted from the desalination plant on its own, and given that these noise levels are much lower than was assessed in relation to the night-time construction activities for the main development site during Phases 3 and 4 (see **Figures 8A.5 and 8A.6** in the **Shadow HRA addendum** [AS-178, electronic page 14]), then it can be concluded that noise from the desalination plant on its own at night will not result in any adverse effects on SPA bird populations. For the avoidance of doubt, this is the case irrespective of whether the desalination plant is the sole source of night-time noise associated with the main development site.

1.3.15 It is therefore considered that the assessment during Phases 1 and 2 of the main development site works will be unaffected by noise from the desalination plant in its initial location on the main platform area.

ii. Scenario 2

1.3.16 Once the desalination plant is relocated to its second location within the TCA, which is expected to occur at the start of 2026, Phase 3 is expected to be underway. The desalination plant will remain in place until 2030, so its operation at its second location will coincide with both Phases 3 and 4 of the main development site works.

1.3.17 The ecological assessment of noise for Phases 3 and 4 considered both the chronic (meaning relatively persistent or constant in the context of the Shadow HRA noise assessment) effect, in terms of the L_{Aeq} metric, and the acute (meaning impulsive in the context of the Shadow HRA noise assessment) effects, in terms of the L_{Amax} metric.

1.3.18 As with Scenario 1, it is highly unlikely that there will be any combined additive effects when considering maximum noise levels. The noises would have to almost exactly coincide and be sufficiently similar in profile and frequency content to combine in a way that results in a higher noise level. The possibility of maximum noise levels combining in this way is so remote that it can be reasonably dismissed; the maximum noise levels already assessed will remain the worst-case and the desalination plant will not alter the previous assessment.

1.3.19 For the chronic noise effects, in terms of the L_{Aeq} metric, it is possible that noise from the desalination plant will combine in an additive way with other concurrent construction works.

1.3.20 To determine the potential for combined effects to be greater than the previously-assessed outcomes, the daytime Phase 3/4 noise levels are shown in Figure 3, with Figure 4 showing the same Phase 3/4 noise levels with the desalination plant also included.

1.3.21 It can be seen from Figures 3 and 4 that there is no discernible difference in the predicted noise levels as a result of the desalination plant.

1.3.22 The same comparison has been made for the night-time period, when other activities are expected to be reduced and therefore quieter. This night-time period represents the scenario with the lowest noise levels from other works, and therefore the greatest potential for an increase in noise level as a result of the desalination plant.

1.3.23 Figures 5 and 6 show the night-time Phase 3/4 noise levels without and with the desalination plant respectively.

1.3.24 It can be seen from Figures 5 and 6 that there is no material difference between the noise levels, outside of the location of the desalination plant itself. There is a small increase in noise at the location of the desalination plant, but not beyond it.

1.3.25 It can therefore be concluded that the operation of the desalination plant in its second location within the TCA will not affect the previously-assessed noise levels, during the daytime and night-time.

b) Conclusions

1.3.26 On the basis of noise levels likely to be generated by the desalination plant in its two proposed positions, with its two proposed sources of power, it is concluded that the noise levels that have been previously-assessed will not materially alter. The findings of the previous assessments will therefore remain unaltered. In particular, as stated in the **Shadow HRA Third**

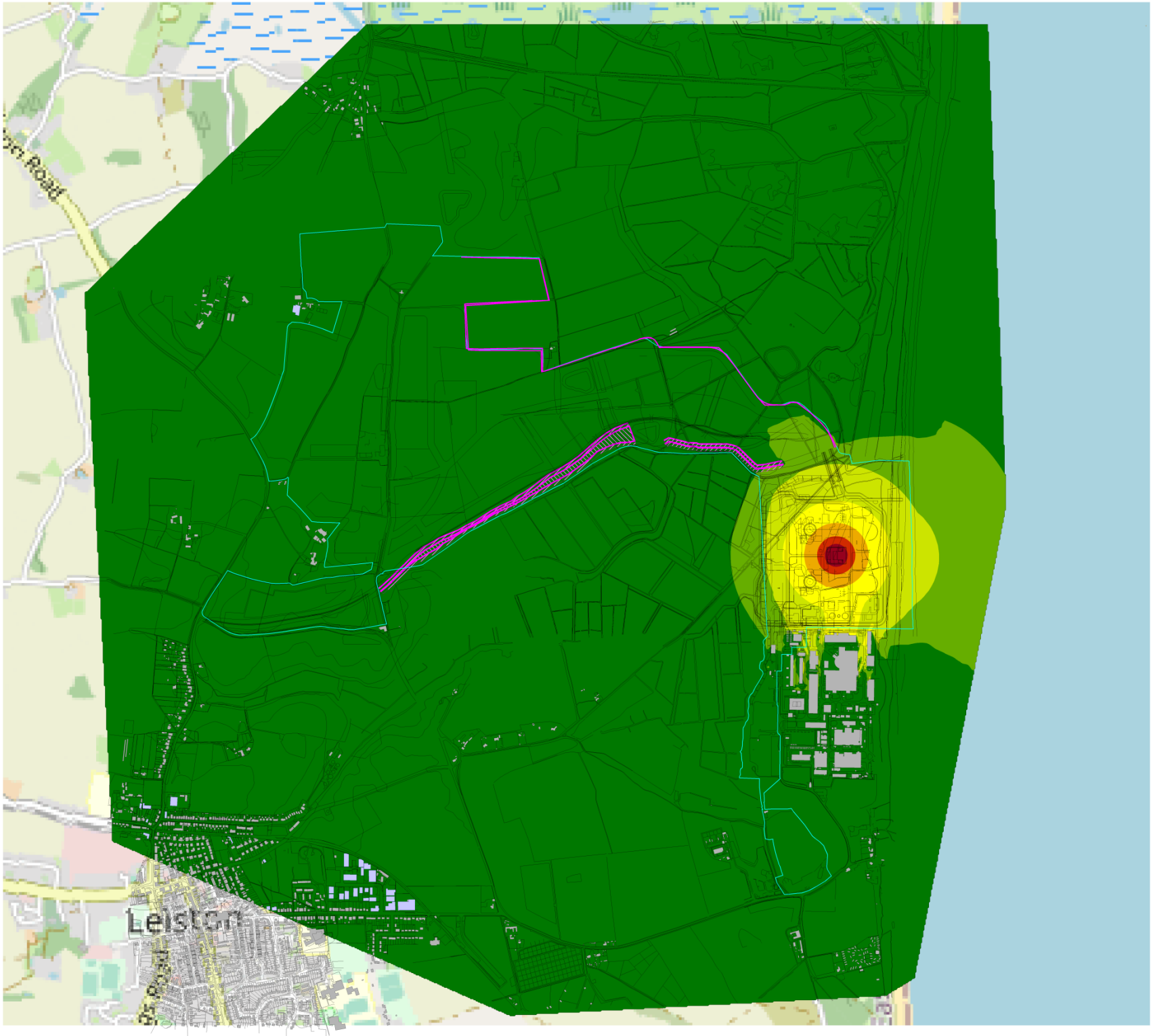
Addendum [REP7-279, electronic page 37, paragraph 8.2.2] effects remain within the scale of effects previously assessed in the **Shadow HRA Repor**t [APP-145] and the **first Shadow HRA Addendum** [AS-173] and the conclusion of no adverse effect on integrity is unchanged.

1.3.27 The conclusions are reached even though the desalination plant calculations assume no mitigation is applied, including that likely to be obtained from the containers within which much of the plant will be located.

1.3.28 The Phase 3/4 night-time period in particular represents the period with the greatest potential for an increase in noise from the desalination plant, as other activities will be at their quietest.

1.3.29 The outcomes for this quietest period relate most directly to RSPB's question in their Deadline 8 submission [REP8-171, electronic page 2, paragraph 1.1]. Since there is expected to be no material effect on the overall expected noise levels during this quietest period as a result of the operation of the desalination plant, it is concluded that there will also be no material effect at other times.

FIGURES



Construction Noise Levels

Desalination Plant only

Figure 1:

Initial Position

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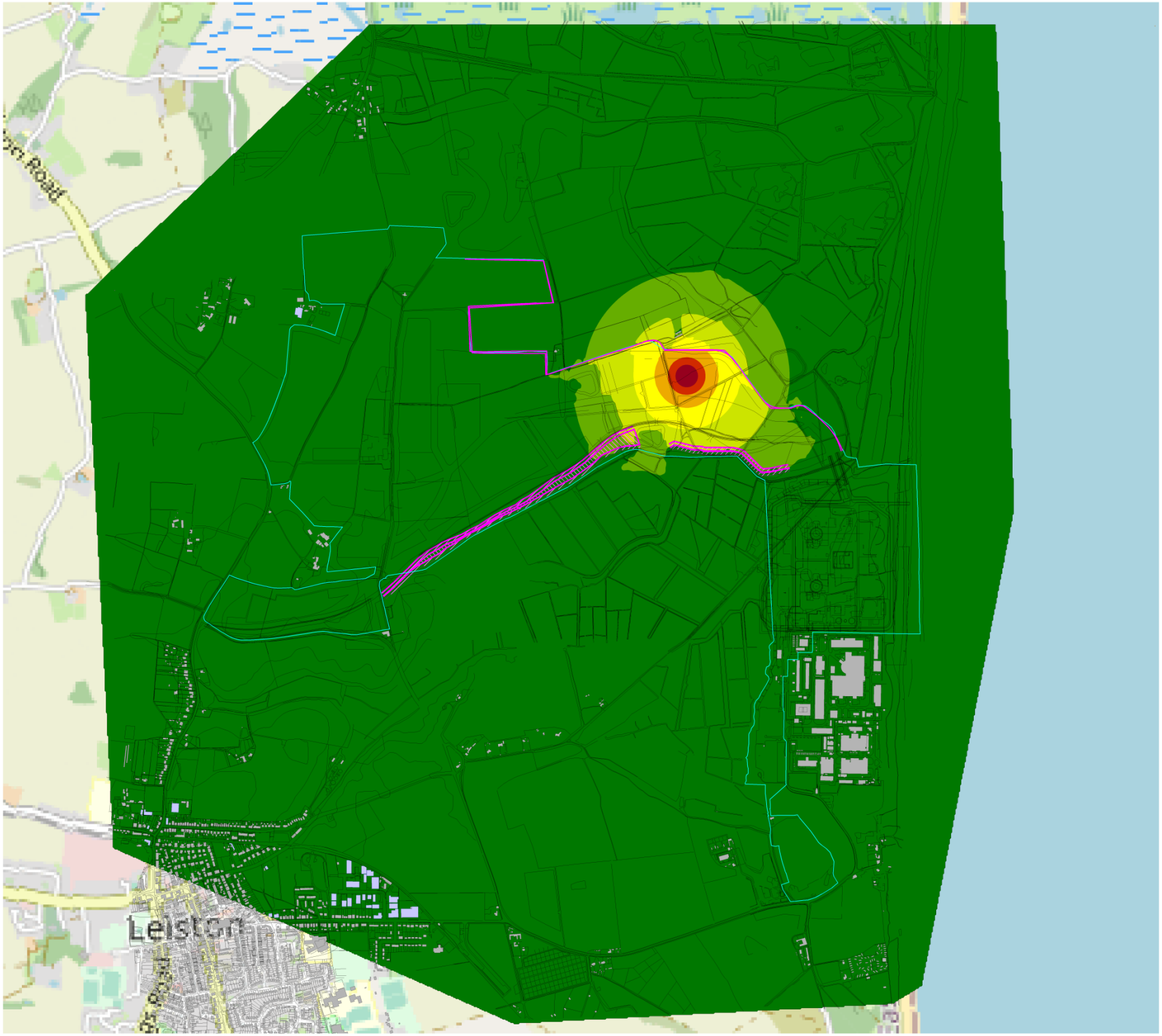

Construction Noise Levels

Desalination Plant only

Figure 2:

Second Position

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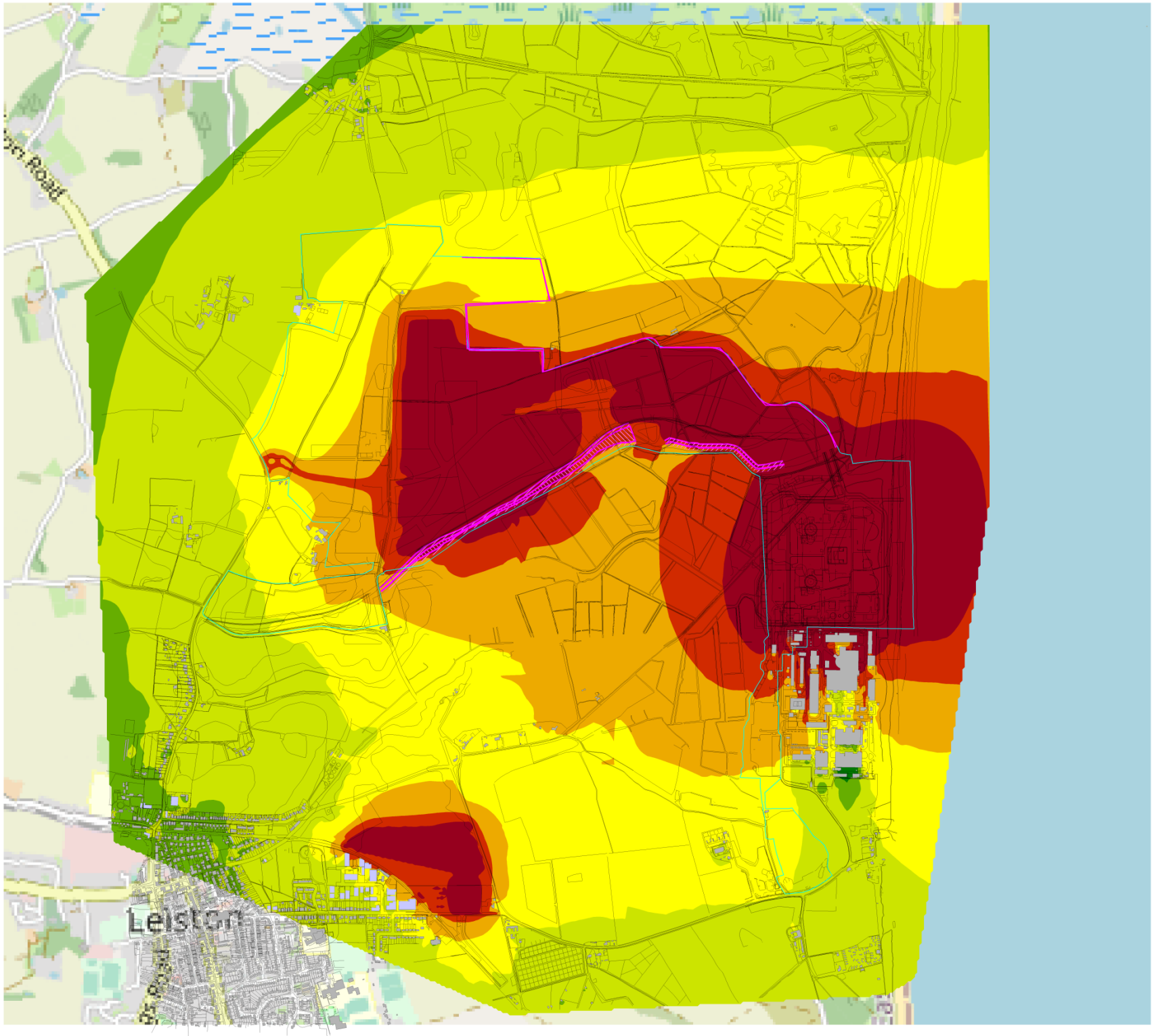

Construction Noise Levels

Phase 3/4

Figure 3:

Daytime Noise Levels

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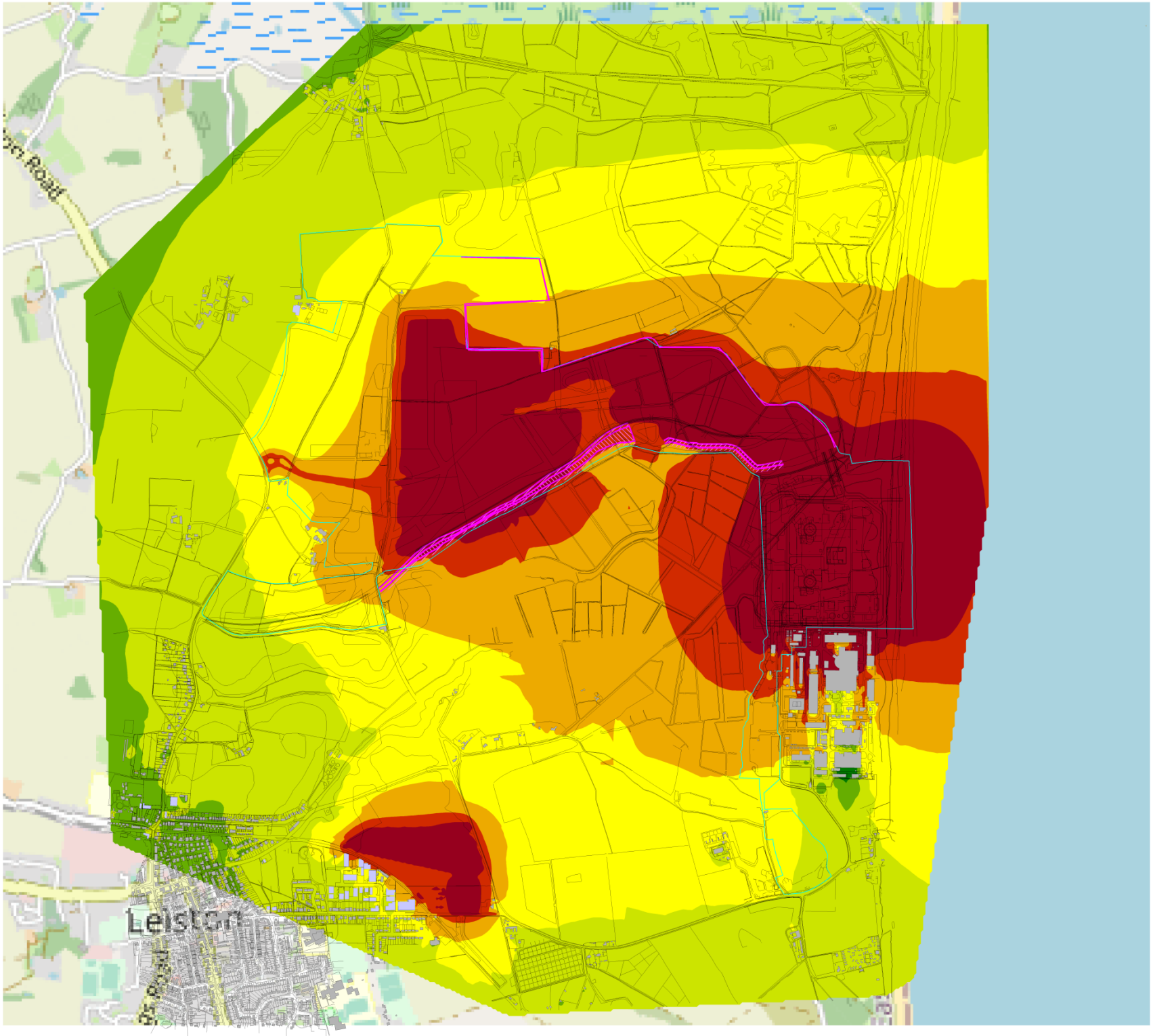

Construction Noise Levels

Phase 3/4

Figure 4:

Daytime Noise Levels

With Desalination Plant

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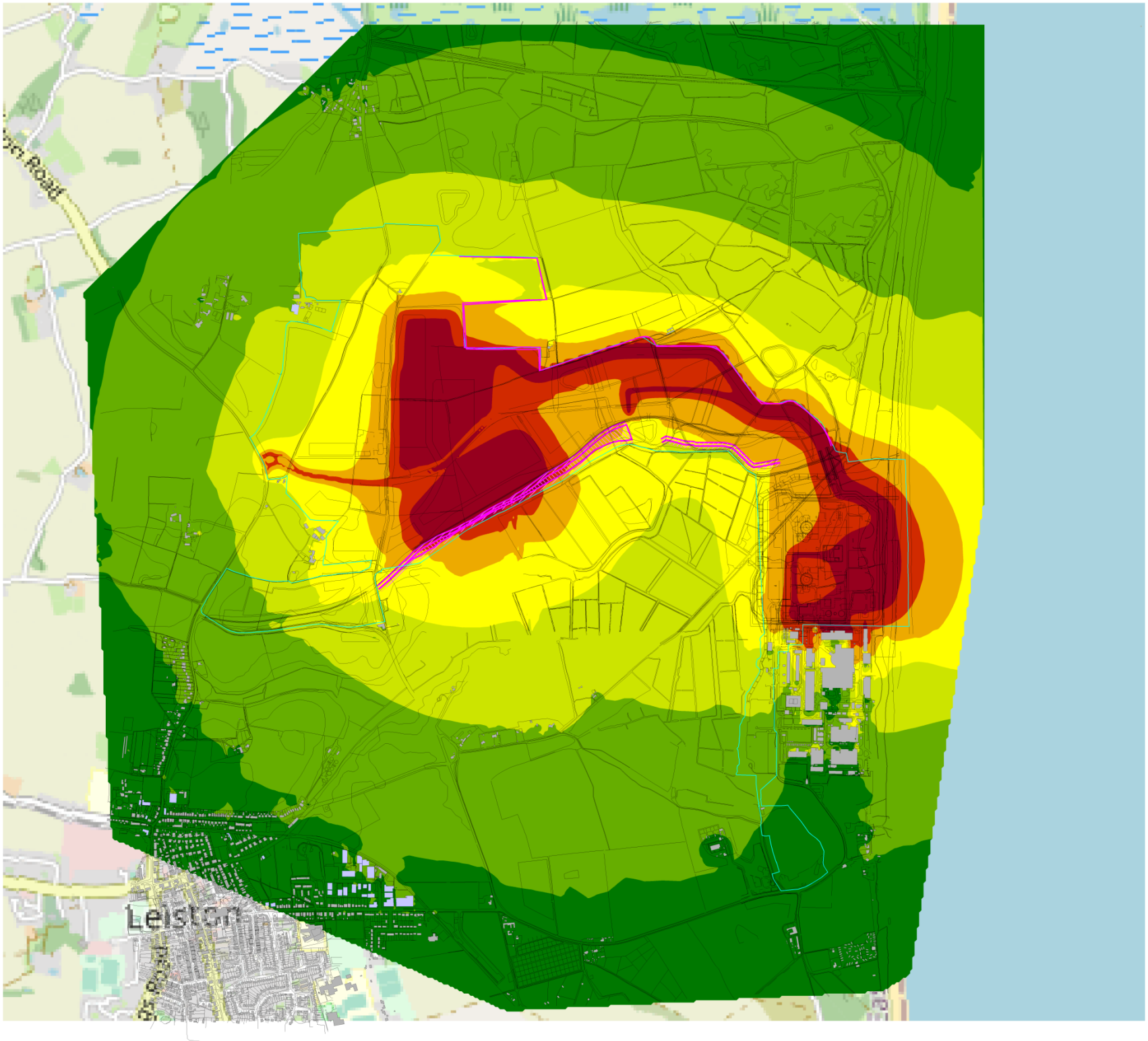
Noise Level
LAeq(T)
(dB)
<= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 <
Construction Noise Levels
Phase 3/4
Figure 5:
Night-time Noise Levels
Scale 1:16000
0 100 200 400 600 800 1000
m
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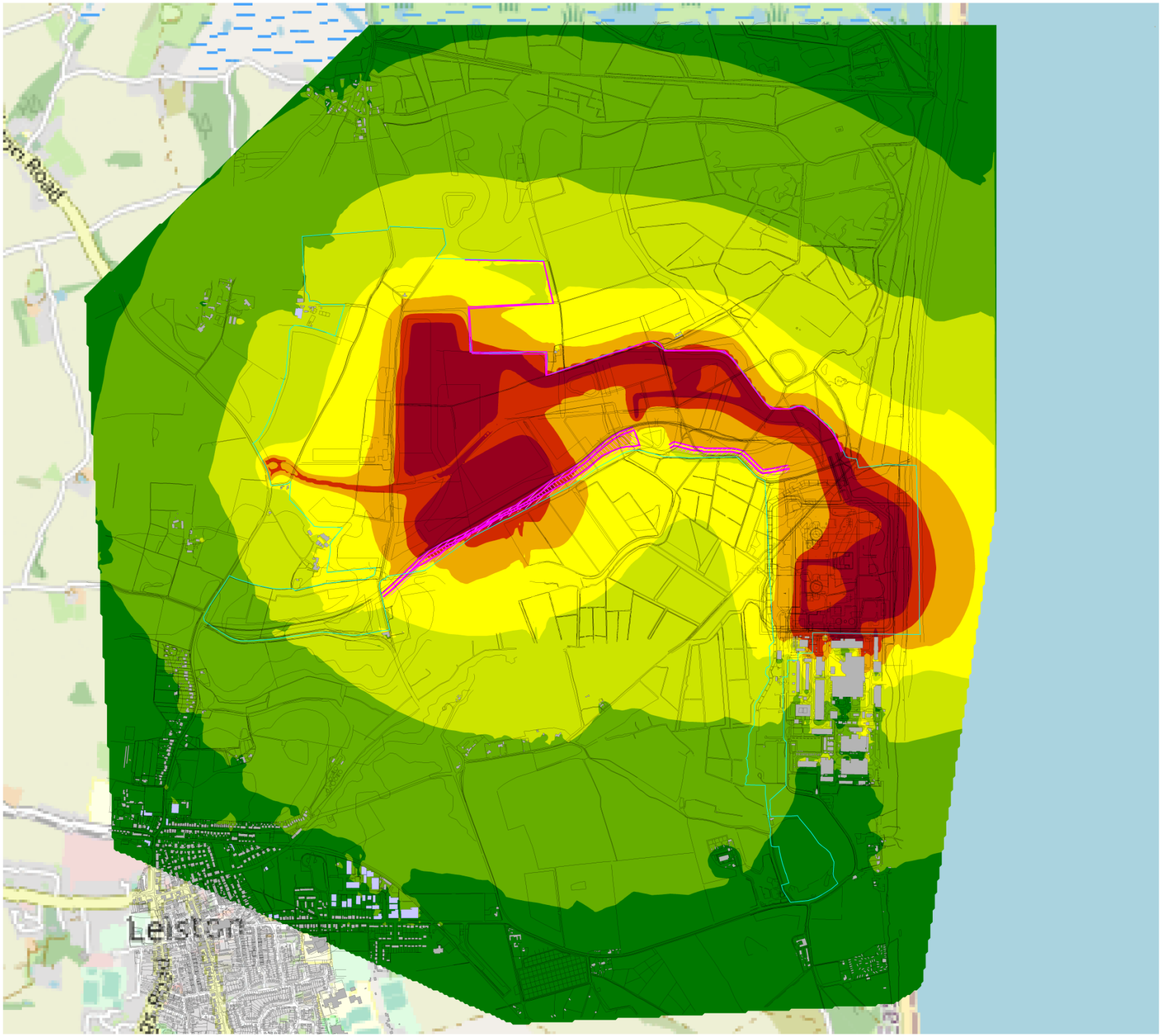
Noise Level
LAeq(T)
(dB)
<= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 <
Construction Noise Levels
Phase 3/4
Figure 6:
Night-time Noise Levels
With Desalination Plant
Scale 1:16000
0 100 200 400 600 800 1000
m
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