

APPENDIX 17.3.4: TECHNICAL NOTE ON POPULATION ESTIMATES FOR AIRCRAFT NOISE HEALTH IMPACT ASSESSMENT

1.0 INTRODUCTION

Available population data released by the Planning Department (PlanD) and Census and Statistics Department (CSD), including information on estimated future population set out in the 2009 Territorial Population and Employment Data Matrices (TPEDM) provided by PlanD have been adopted in estimating the future population in 2030 within the assessment area for the aircraft noise HIA. Other available site-specific information / data that are best available during the course of the assessment, have also been utilized as the basis in the calculation, e.g. the Stage 2 public consultation digest released in May 2013 for estimated future population for the planned Tung Chung East and West Development.

2.0 EXISTING DEVELOPMENTS WITHIN THE ASSESSMENT AREA

TPEDM 2009 contains spatial distribution of population for years 2011 to 2031 in 5-year intervals. The HIA evaluates the health impact under the worst case mode of operation defined as the future year with the maximum total noise emission, which has been identified as 2030 in the aircraft noise impact assessment. Therefore, population data of 2031 in TPEDM has been adopted to give a conservative estimate for existing developments.

According to the zoning plans in TPEDM, the HIA assessment areas of interest cover the following zones:

Areas	Zones in PDZ 405 Zoning System
Tung Chung	245, 246, 266, 282, 283 and 396
Ma Wan	338
Siu Lam	156, 157, 158 and 360

With reference to Table 5 of TPEDM, the average household sizes of the said zones are retrieved and listed below. The territory-wide numbers are also included for ease of reference.

Areas	Relevant Zone in PDZ 405 Zoning System	Average Household Size in 2031 (no. of people / unit)
Tung Chung	245	2.43
	246	3.12
	266	2.69
	282	2.76
	283	2.71
	396	2.69
Ma Wan	338	2.96
Siu Lam	156	2.80
	157	2.98
	158	2.79
	360	2.82
Metro	----	2.71
Non-Metro	----	2.77
Territory-Wide	----	2.74

Remark: The maximum amongst the zones is bolded.

It can be observed from the above table that household size in the relevant zones is in the range of 2.43 and 3.12. For the purpose of developing a conservative estimate, the maximum value amongst

the range (i.e., 3.12 people per unit) has been adopted in the noise HIA. The affected population estimated for existing buildings / property developments in each zone is calculated by available information on number of units (referencing to latest LandsD's survey maps and associated dataset for number of buildings, blocks, floors and units) multiplied by 3.12 people per unit.

3.0 PLANNED DEVELOPMENTS WITHIN THE ASSESSMENT AREA

For planned developments, site-specific information, where available, and reasonable assumptions that are best available during the course of assessment, have been adopted to give a conservative estimate of affected population.

Tung Chung

There are a number of planned developments in Tung Chung, including the planned Tung Chung New Town Extension (East and West) and developments along the seafront adjacent to the east portion.

Tung Chung New Town Extension: During the course of assessment, TCNTE Study Stage 2 Public Engagement Digest released in May 2013 is the key information available in public domain. In this digest, indicative development zoning plans of both east and west developments are included with associated plot ratios, total estimated populations and total estimated number of flats. Therefore, the estimated population in each unit land footprint for zoning with different plot ratios could be estimated. As such, the population that would be affected in the zone has been estimated by estimating the area of the encroached footprint with the said factor of estimated population per unit area according to available information on zoning plot ratio.

As a conservative estimate, amongst the two themes of east development in the Digest, Theme 1 is adopted taking into consideration its larger estimated population (110,000), comparing to that of Theme 2 (95,000).

Tung Chung Seafront: There are several planned property developments along the existing reclaimed land in Tung Chung east. With reference to the Departmental Development Layout Plan of PlanD as inspected in the public enquiry centre of the Department, the tentative zoning boundaries and associated planning parameters, including site area, estimated number of flats and population, have been obtained based upon the best available information for the assessment. Using the same estimation practice as described above, the affected population in each unit land footprint for each sub-zone has been estimated. For Area 56, available latest information as presented in a district council paper has been based upon for the population estimates.

Tung Chung Area 39: This is a public housing site. From the website of Housing Authority, a planning brief for the site is available, consisting of information on site area, estimated number of flats, design population, as well as building layout. As such, the estimated population for each building could be calculated and the affected population in this area is reflected in the calculation based on the buildings that would be encroached.

Siu Lam

There are a number of planned developments in form of comprehensive development areas (CDA) in Siu Lam.

CDA(SL), CDA(TM55) and CDA(SKW): From the Outline Zoning Plan (OZP) Portal of PlanD, relevant previously approved planning applications (Application No. A/TM-SKW/32-1, A/TM/288-1 and A/TM/432 respectively) are available, providing information on site area and proposed number of units for each of these sites. With adoption of the same assumption of estimated population per unit of 3.12 for existing developments, the estimated population in unit landuse footprint can be calculated. Using the same estimation practice adopted for Tung Chung New Town Extension and Seafront where committed building layout is not available, the estimated population in each unit land footprint for each sub-zone has been calculated.

CDA(LOP): For this CDA site at Area 59 which is the disused desalination plant site at Tsing Fat Street, it is understood from PlanD that there is a planned increase in population density and in the absence of committed building layout and related information, a plot ratio of 5 that represents a conservative assumption for developments that are situated along the seafront in the proximity of other existing developments in the area has been adopted in the calculation.

Same as above, the affected population in the zone is estimated by multiplying the area of the encroached footprint with the factor of estimated population per unit area respective to the zone.

Although there are no committed timeframes for development of the above CDA sites, in view of the assessment year of 2030 in the noise HIA, these planned developments have been assumed to be in place in the assessment year for giving a conservative estimate.

4.0 ESTIMATION APPROACH

For estimating the change in population that might be highly annoyed or sleep disturbed with the implementation of the 3RS compared with the 2RS, the exposure-response relationships for annoyance and self-reported sleep disturbance as presented in **Appendix 17.3.3** are adopted.

The population falling within each noise band under the 3RS and 2RS scenarios was estimated based on the L_{den} and L_{night} noise metrics for annoyance and sleep disturbance respectively. The population that would be highly annoyed or sleep disturbed were then estimated by the associated percentage of potential health effect as mentioned and the change in population between the 3RS and 2RS scenarios was calculated for each noise band. The overall change in population who might be highly annoyed or highly sleep disturbed could then be estimated.

It shall be noted that as this assessment is to evaluate the effect to the key health endpoints associated to aircraft noise by the project relative to the baseline situation without the project, rather than the absolute number of population to be affected. Therefore, when the estimates of affected population are repeated for both the 3RS and 2RS case, the difference would reflect whether the project would introduce an overall improvement or deterioration to the health endpoints.

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