

## Appendix 5.2.4 Estimation of Surface Roughness

### (A) Estimation of Area-weighted Average Surface Roughness for Reclaimed Land

Surface roughness of reclaimed land (RRL) = ST x 4000cm x 3% + FL x 0.8cm

where ST is the % of reclaimed land (including the existing Airport island, newly formed land and proposed HKBCF) occupied by structures  
 4000cm x 3% is the estimated surface roughness of the land occupied by physical structures with approximate average structure height of 4000cm  
 FL is the % of reclaimed land not occupied by structures, i.e., flat land  
 0.8cm is the surface roughness of flat land

Year	2015	2016	2017	2018 - 2020	2021 - 2023
ST	15.7%	14.5%	11.6%	10.8%	10.8%
FL	84.3%	85.5%	88.4%	89.2%	89.2%
<b>RRL (cm)</b>	<b>19.5</b>	<b>18.1</b>	<b>14.6</b>	<b>13.7</b>	<b>13.7</b>

### (B) Estimation of Area-weighted Average Surface Roughness within the 3-km Radius from the Project Boundary

Surface roughness of the entire area within 3km from the Project boundary (REA) = S x 0.01cm + TRL x RRL + L x 100cm

where S is the % of sea area  
 0.01cm is the surface roughness of sea  
 TRL is the % of reclaimed land  
 RRL is the surface roughness of reclaimed land as calculated in (A) above  
 L is the % of Lantau Island area  
 100cm is the surface roughness of new development area

Year	2015	2016	2017	2018 - 2020	2021 - 2023
S	73.6%	72.6%	69.3%	68.3%	68.3%
TRL	17.1%	18.3%	21.9%	23.1%	23.1%
L	9.3%	9.2%	8.7%	8.6%	8.6%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>REA (cm)</b>	<b>12.6</b>	<b>12.5</b>	<b>11.9</b>	<b>11.8</b>	<b>11.8</b>