

FUGRO TECHNICAL SERVICES LIMITED

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FINAL EM&A REVIEW REPORT

Client : SANG HING – KULY JOINT VENTURE

Contract Name : Castle Peak Road Trunk Sewer and Tuen Mun Village Sewerage (Sewage Pumping Station at Lok Chui Street near Castle Peak Villas)

Contract No. : DC/2014/01

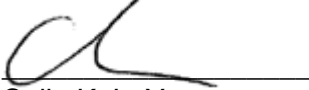
EP No. : EP-068/2000/A

Title of Project : Sewage Pumping Stations at Tai Lam Chung Tsuen Luen On San Tsuen, Tai Lam Valley and Lok Chui Street near Castle Peak Villas under the scope of "Tuen Mun Sewerage – Eastern Coastal Sewerage Extension"

Report No. : 0367/15/ED/1228

Prepared by : Wingo H. W. So

Reviewed by : Cyrus C. Y. Lai

Certified by : 
Colin K. L. Yung
Environmental Team Leader
Fugro Technical Services Limited



Drainage Services Department
42/F., Revenue Tower
5 Gloucester Road
Wan Chai
Hong Kong

Attention: Mr Lee Wai Chung

Your reference:

Our reference: HKDSD202/50/107266

Date: 23 April 2021

BY EMAIL & POST
(email: wcllee@dsd.gov.hk)

Dear Sirs

Agreement No.: PM 08/2014
Services for Independent Environmental Checker for
Construction of Lok Chui Street Sewage Pumping Station
Verification of Final Monthly EM&A Report (February 2016 to December 2019)

We refer to the emails of 18 February 2020, 29 March and 19 April 2021 attaching a monthly EM&A Report (February 2016 to December 2019) for the captioned project prepared by the ET.

We have no further comment and hereby verify the Final Monthly EM&A Report in accordance with Clause 3.5 of the Environmental Permit no. EP-068/2000/A.

Please do not hesitate to contact the undersigned or our Mr Edric Lau at 2618 2831 should you have any queries.

Yours faithfully
ANewR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LCCR/LTKE/lsm

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EXECUTIVE SUMMARY

- i. This is the Final EM&A Review Report presenting the environmental monitoring and audit (EM&A) works conducted from 29 February 2016 to 31 December 2019 (the reporting period).

Exceedance of Action and Limit Levels

- ii. There was no breach of Action or Limit levels for Air Quality (1-hr TSP) and Noise monitoring in the reporting period.

Complaint, Notifications of Summons and Successful Prosecutions

- iii. No complaints, notification of summons or successful prosecutions were received in the reporting period.

Review of Implementation of Mitigation Measures

- iv. The regularly site inspections and environmental impact monitoring ensured that all the environmental mitigation measures recommended in updated EM&A Manual were effectively implemented in the reporting period.



1. INTRODUCTION

1.1 Background

- 1.1.1 Contract No. DC/2014/01 – Castle Peak Road Trunk Sewer and Tuen Mun Village Sewerage (“the Project”) includes the construction of a sewage pumping station at Lok Chui Street near Castle Peak Villas as shown in **Figure 1**.
- 1.1.2 The environmental impact assessment (EIA) report (Tuen Mun Sewerage - Eastern Coastal Sewerage Extension) – EIA Report (Register No. AEIAR-034/2000) for the Project was approved by Environmental Protection Department (EPD) dated 7 June 2000. The EIA Report involves the construction of four sewage pumping stations at Tai Lam Chung Tsuen, Luen On San Tsuen, Tai Lam Valley and Lok Chui Street near Castle Peak Villas. The scope of this EM&A Manual focuses on the Sewage Pumping Station at Lok Chui Street near Castle Peak Villas in the EIA Report. The Project is designated under Schedule 2, section F3(b) and Q1 of the Environmental Impact Assessment Ordinance (EIAO). EPD subsequently issued the Environmental Permit (EP) EP- 068/2000 on 25 July 2000.
- 1.1.3 A Register of Change to Environmental Permit was submitted to EPD to register any change to the conditions in the EP for adoption of the latest design of the Pumping Station at Lok Chui Street and justify that the latest changes would not violate the conditions as stated in the approved EIA Report and EP based on the latest engineering design information. A Variation of Environmental Permit (VEP) EP-068/2000/A was issued on 10 April 2015 and it is the current permit for the Project.
- 1.1.4 The amended EP (EP-068/2000/A) is the current permit for the Project.
- 1.1.5 In accordance to EP-068/2000/A Condition 2.3 and 2.4, an updated EM&A Manual was duly certified by ETL and verified by IEC and submitted to EPD for approval on 18 January 2016.
- 1.1.6 The construction phase and EM&A programme of the Project commenced on 29 February 2016.
- 1.1.7 This is the Final EM&A Review Report presenting the environmental monitoring and audit (EM&A) works conducted from 29 February 2016 to 31 December 2019 (the reporting period). The purpose of this report is to summarize the finding in the EM&A works of the project over the reporting period and was prepared according to the requirements in Section 9.7 of the updated EM&A Manual.



1.2 Project Organization

1.2.1 The Project Organization structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Drainage Services Department, HKSAR (DSD)	Project Management	Mr. Lee Wai Chung	2594 7265	2827 8526
Engineer/Engineer's Representative (AECOM)	Resident Engineer	Ms. Jacqueline Chan	3127 5103	2441 1755
Independent Environmental Checker (ANEWR)	Independent Environmental Checker	Mr. Adi Lee	2618 2836	3007 8648
Contractor (SKLV)	Site Agent	Mr. Alan Lo	2674 3888	2674 6688
	Environmental Officer	Mr. Billy Wong		
Environmental Team (FTS)	Environmental Team Leader	Mr. Colin Yung	3565 4114	3565 4160

1.3 Construction Programme and Activities

1.3.1 The construction phase of the Project under the EP commenced on 29 February 2016.

1.3.2 The construction programme of the Project is shown in **Appendix A**.

1.4 Works undertaken during the Reporting Period

1.4.1 During this reporting period, the principal work activities within the project included:

Reporting Period	Construction Works
29/02/2016 - 31/03/2016	Hoarding Erection
	Pre-Drilling
	Earth Excavation
	Plant Mobilization
01/04/2016 - 30/04/2016	Soldier pile work
01/05/2016 - 31/05/2016	
01/06/2016 - 30/06/2016	Construction of lagging wall
01/07/2016 - 31/07/2016	Construction of Mini-pile
01/08/2016 - 31/08/2016	
01/09/2016 - 30/09/2016	
01/10/2016 - 31/10/2016	Proof drill and Loading Test
01/11/2016 - 30/11/2016	Construction of ELS
01/12/2016 - 31/12/2016	
01/01/2017 - 31/01/2017	Excavation of ELS
01/02/2017 - 28/02/2017	
01/03/2017 - 31/03/2017	
01/04/2017 - 31/05/2017	Construction of Wet Well Chamber
01/06/2017 - 30/11/2017	Construction of Pumping Station
01/12/2017 - 28/02/2018	Construction of Pumping Station
01/03/2018 - 30/04/2018	Construction of retaining wall
01/05/2018 - 31/05/2018	Retaining wall and internal finishing
01/06/2018 - 30/06/2018	Excavation of U-sharped retaining wall and internal finishing
01/07/2018 - 31/07/2018	Backfilling

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Reporting Period	Construction Works
01/08/2018 - 30/11/2018	Construction of U shape wall at permanent access
01/12/2018 - 31/03/2019	Reinstate and construct of access
01/04/2019 - 30/06/2019	Construction of vehicle access
01/07/2019 - 31/07/2019	Bricklaying
01/08/2019 - 31/08/2019	Laying paving blocks
01/09/2019 - 30/09/2019	Laid UU and construct road access
01/10/2019 - 31/10/2019	Construct road access and recycle timber
01/11/2019 - 30/11/2019	Laying paving block and construct draw-pits
01/12/2019 - 31/12/2019	Landscape works and install irrigation

1.5 Status of Environmental Licences, Notification and Permits

1.5.1 A summary of the relevant permits, licences and/or notifications on environmental protection for this Contract is presented in **Table 1.2**.

Table 1.2 Status of Environmental Licences, Notification and Permits

Permit / Direction / License	Ref No	Valid From	Valid Till
Environmental Permit	EP-068/2000/A	10/04/2015	N/A
Notification of Works Under APCO	391923	06/08/2015	N/A
Wastewater Discharge Licence	WT00022654-2015	23/10/2015	31/10/2020
Registration as a Chemical Waste Producer	5111-421-S3879-01	02/09/2015	N/A
Billing Account for Disposal of Construction Waste	7022922	06/08/2015	N/A



2. SUMMARY OF ENVIRONMENTAL MONITORING & AUDIT REQUIREMENTS

2.1 Monitoring Parameters and Monitoring Locations

2.1.1 In accordance with the updated EM&A Manual, monitoring of the 1 hourly average of Total Suspended Particulates (TSP) levels for air quality and the A-weighted equivalent continuous sound pressure level Leq_(30min) for the time period between 0700-1900 hours on normal weekdays for noise impact. The monitoring locations are shown in **Figure 2**.

2.2 Environmental Quality Performance Limits (Action and Limit Levels)

2.2.1 The adopted Action and Limit Levels for air quality and noise monitoring are presented in **Appendix C**.

2.3 Environmental Mitigation Measures

2.3.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EP and the updated EM&A Manuals.

2.3.2 Weekly site inspections and bi-weekly landscape and visual impact inspections were carried out to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. Detailed of site inspections during the reporting period are summarized in the appendices of the corresponding Monthly EM&A Reports.

2.3.3 The summary of implementation status of the environmental mitigation measures at the end of the reporting period are provided in **Appendix G**.

2.3.4 The Event and Action Plans are given in **Appendix F**.

2.4 Impact Monitoring Results and Observations

2.4.1 Impact monitoring for air quality and noise were undertaken in compliance with the EM&A Manual during the reporting period, and the results of monitoring were included in the individual Monthly EM&A reports and Quarterly EM&A Summary Reports covering this reporting period which have been already submitted.

2.4.2 The number of monitoring events and exceedances recorded during the reporting period are presented in **Table 2.1**.

Table 2.1 Summary of Monitoring Events and Exceedances

Monitoring Parameter	Monitoring Station	No. of Monitoring Events	No. of Action Level Exceedances	No. of Limit Level Exceedances
1-hr TSP (Air Quality)	LC6a	245	0	0
	LC9	245	0	0
LAeq _(30min) (Noise)	LC6a	245	0	0
	LC9	245	0	0



- 2.4.3 No Action and Limit Level exceedance in the reporting period.
- 2.4.4 Tables and graphical plots of the monitoring results in the reporting period are presented in **Appendix D** and **Appendix E**.
- 2.4.5 A summary of the monitoring weather conditions during the reporting period is presented in **Table 2.2**.

Table2.2 Summary of Monitoring Weather Conditions

Reporting Month (Quarterly)		Weather Conditions
Mar 2016	- May 2016	Cloudy, Fine, Sunny
Jun 2016	- Aug 2016	Cloudy, Fine, Sunny
Sept 2016	- Nov 2016	Cloudy, Fine, Sunny
Dec 2016	- Feb 2017	Cloudy, Fine, Sunny
Mar 2017	- May 2017	Cloudy, Fine, Sunny
Jun 2017	- Aug 2017	Cloudy, Fine, Sunny
Sept 2017	- Nov 2017	Cloudy, Fine
Dec 2017	- Feb 2018	Cloudy, Fine, Sunny
Mar 2018	- May 2018	Cloudy, Fine, Sunny
Jun 2018	- Aug 2018	Cloudy, Fine, Sunny
Sept 2018	- Nov 2018	Cloudy, Fine, Sunny
Dec 2018	- Feb 2019	Cloudy, Fine
Mar 2019	- May 2019	Cloudy, Fine
Jun 2019	- Aug 2019	Cloudy, Fine, Sunny
Sept 2019	- Nov 2019	Cloudy, Fine
Dec 2019		Cloudy, Fine

- 2.4.6 Wind data from the Hong Kong Observatory Weather Station were provided in the individual Monthly EM&A Reports covering the reporting period.
- 2.4.7 Apart from impacts caused by this project, the major dust sources and noise were from Lok Chui Street road traffic and the other construction site in the vicinity of the project site.



3. SUMMARY OF NON-COMPLIANCE (EXCEEDANCES)

3.1.1 There was no breach of Action or Limit levels for Air Quality (1-hr TSP) and Noise monitoring in the reporting period.

4. REVIEW OF REASONS FOR AND THE IMPLICATIONS OF NON-COMPLIANCE

4.1.1 N.A.

5. ACTIONS TAKEN IN THE EVENT OF NONCOMPLIANCE

5.1.1 N.A.

6. SUMMARY OF RECORD OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

6.1.1 No complaints, notification of summons or successful prosecutions were received in the reporting period.

7. REVIEW OF THE VALIDITY OF EIA PREDICTIONS

7.1.1 The environmental monitoring results indicated that the construction activities in general were in compliance with the relevant environmental requirements and were environmentally acceptable.

8. REVIEW OF THE EFFECTIVENESS AND EFFICIENCY OF THE MITIGATION MEASURES

8.1.1 The regularly site inspections and environmental impact monitoring ensured that all the environmental mitigation measures recommended in updated EM&A Manual were effectively implemented. Despite the minor deficiencies found during site audits, the Contractor had taken appropriate actions to rectify deficiencies within a reasonable timeframe. Therefore, the effectiveness and efficiency of the mitigation measures were considered high for most of the time.

9. REVIEW OF EM&A PROGRAMME

9.1.1 The environmental monitoring methodology and results were considered well established and compliance with relevant environmental requirements.

9.1.2 Effective follow up actions were promptly taken once environmental deficiencies were noted. The EM&A programme was considered successfully and adequately conducted in the reporting period.

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10. CONCLUSIONS

- 10.1.1 This is the Final EM&A Review Report presenting the environmental monitoring and audit (EM&A) works conducted from 29 February 2016 to 31 December 2019 (the reporting period).
- 10.1.2 There was no breach of Action or Limit levels for Air Quality (1-hr TSP) and Noise monitoring in the reporting period.
- 10.1.3 No complaints, notification of summons or successful prosecutions were received in the reporting period.
- 10.1.4 The EM&A programme was considered successfully and adequately conducted in the reporting period.

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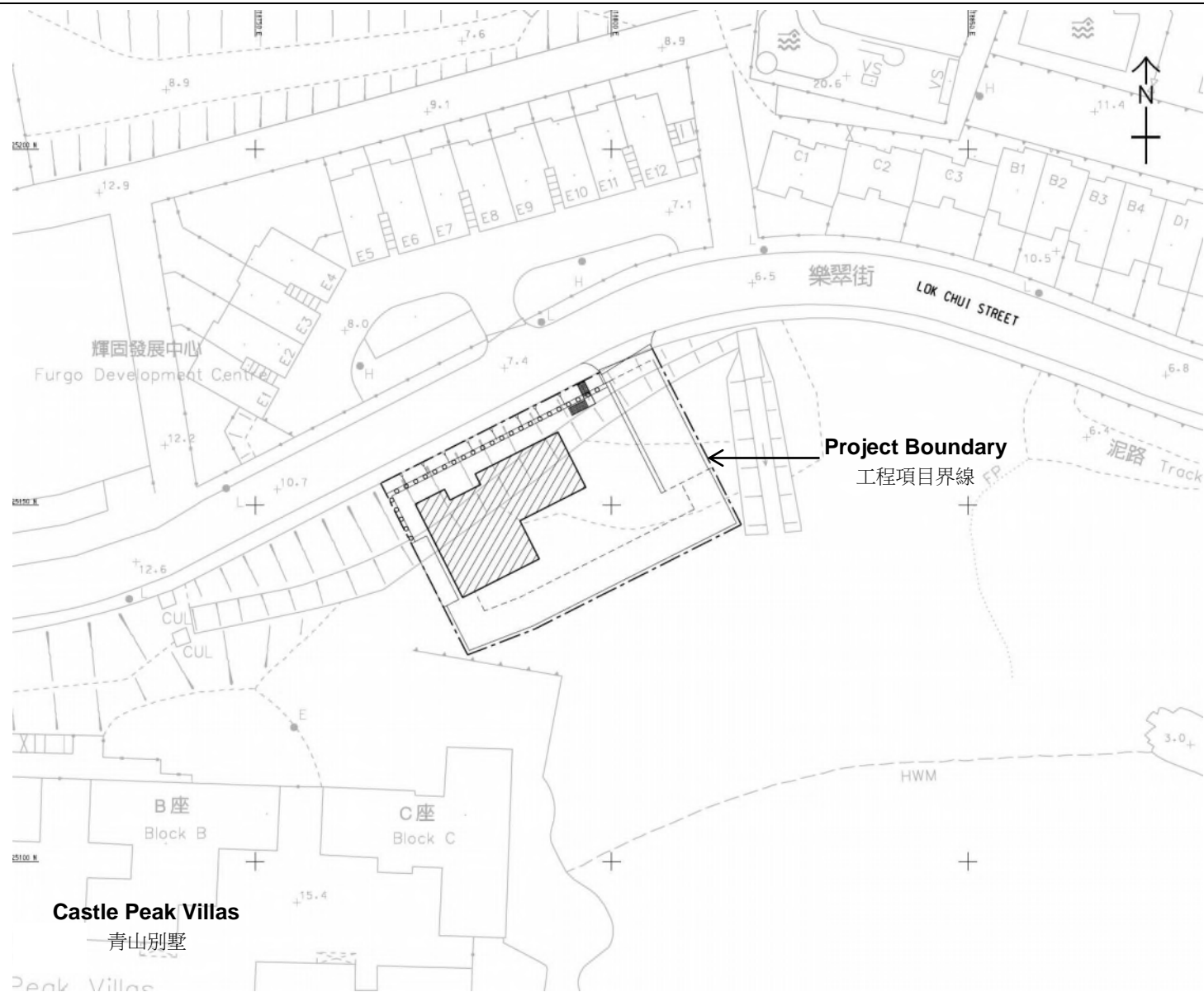
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Figure 1

Project General Layout



Location of the Proposed Sewage Pumping Station at Lok Chui Street near Castle Peak Villas
 位於樂翠街近青山別墅的擬建污水泵水站

Figure 1

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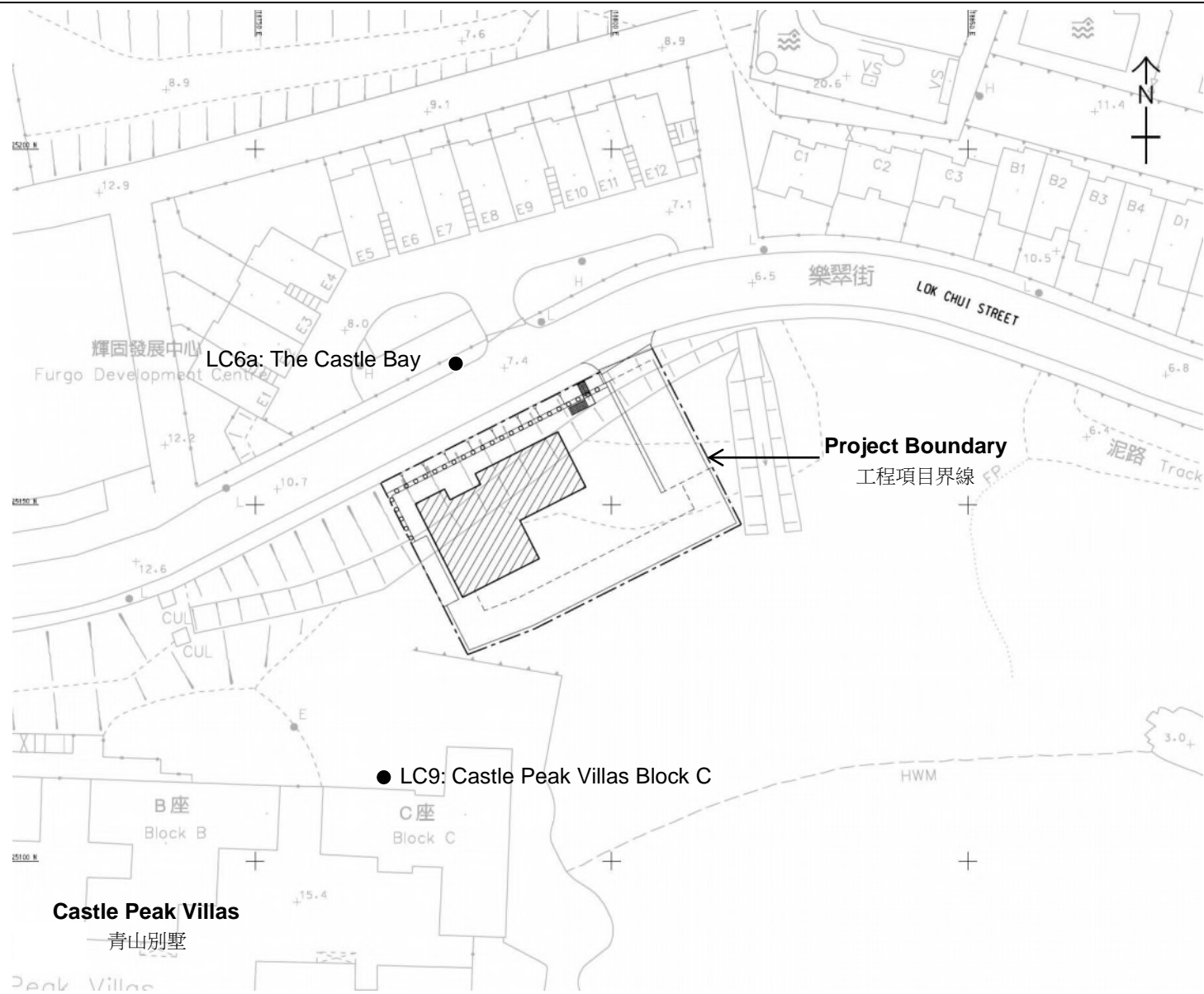
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Figure 2

Air and Noise Monitoring Locations



Air and Noise Monitoring Locations

Figure 2

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LC6a: The Castle Bay



LC9: Castle Peak Villas Block C



Note:

- 1) LC6a: The air and noise monitoring station is set at a point 1m from the exterior of the sensitive receiver fence wall, and set at a position 1.2m above ground. Façade measurement will be carried out for noise monitoring.
- 2) LC9: The air monitoring station is set at the top of parapet wall of sensitive receivers building and the noise monitoring station is set at a point 1m from the exterior of the sensitive receivers building façade and set at a position 5m above the ground.

- Legend:
- Proposed Air Monitoring Location
 - Proposed Noise Monitoring Location
 - 1m from the exterior building façade

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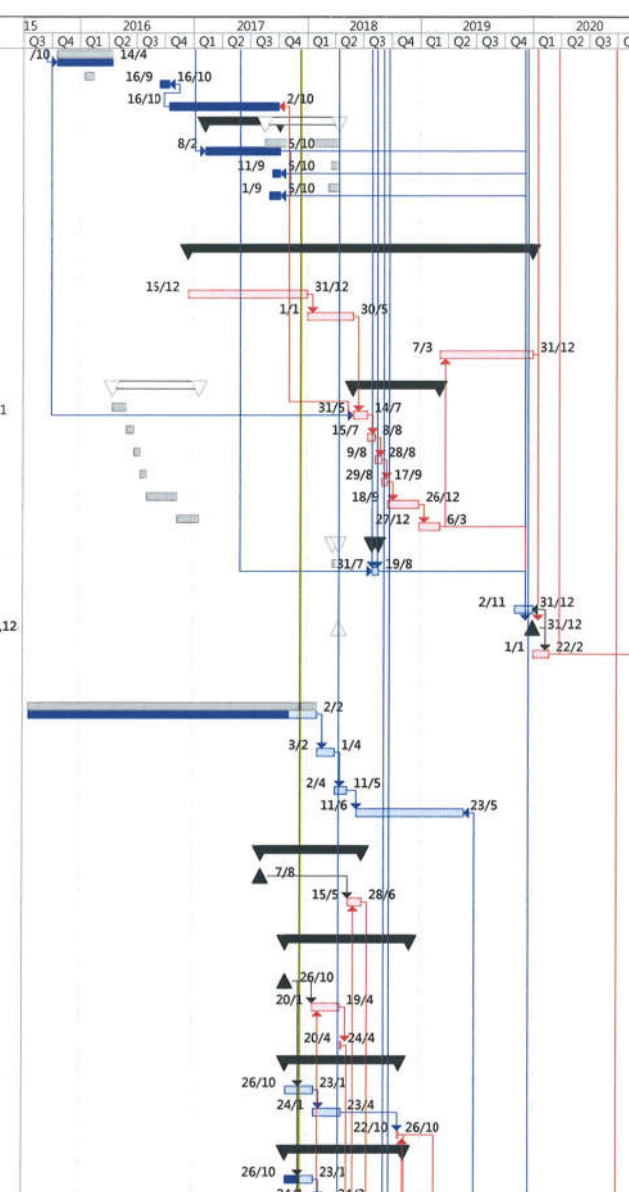
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Appendix A

Construction Programme

ID	Task Name	Baseline Duration	Duration	Baseline Start	Baseline Finish	Actual Start	Actual Finish	% Complete	Start	Finish	Predecessors	15/7/10	2016	2017	2018	2019	2020	
1301	✓ Trial pits proposal	180 days	180 days	Sun 18/10/15	Thu 14/4/16	Sun 18/10/15	Thu 14/4/16	100%	Sun 18/10/15	Thu 14/4/16	1297SS,1298SS							
1302	✓ Design of Temporary Work	30 days	30 days	Sat 16/1/16	Mon 15/2/16	Fri 16/9/16	Sun 16/10/16	100%	Fri 16/9/16	Sun 16/10/16	1303SF							
1303	✓ Submission of Design Temporary Work	0 days	351 days	Mon 15/2/16	Mon 15/2/16	Sun 16/10/16	Mon 2/10/17	100%	Sun 16/10/16	Mon 2/10/17	1314SF-60 days							
1304	✓ Hong Fai Road	240 days	240 days	Fri 18/8/17	Sat 14/4/18	Wed 8/2/17	Thu 5/10/17	100%	Wed 8/2/17	Thu 5/10/17								
1305	✓ From Manhole 1903 to 0716	240 days	240 days	Fri 18/8/17	Sat 14/4/18	Wed 8/2/17	Thu 5/10/17	100%	Wed 8/2/17	Thu 5/10/17	1282FS-210 days							
1306	✓ From Manhole 0703 to 0701	25 days	25 days	Wed 21/3/18	Sat 14/4/18	Mon 11/9/17	Thu 5/10/17	100%	Mon 11/9/17	Thu 5/10/17	1305FF							
1307	✓ Connection to Siu Lam Tsuen Road From Manhole 0716 to 0718	35 days	35 days	Sun 11/3/18	Sat 14/4/18	Fri 1/9/17	Thu 5/10/17	100%	Fri 1/9/17	Thu 5/10/17	1305FF							
1308																		
1309	EOT Claim 020 - Delay for construction of CSD Married Staff Quarter (On going event)	0 days?	1112 days?	NA	NA	NA	NA	0%	Thu 15/12/16	Tue 31/12/19								
1310	Pending ER confirm works details	0 days?	382 days?	NA	NA	NA	NA	0%	Thu 15/12/16	Sun 31/12/17								
1311	Design and Endorsement of TTA drawings and TTA Implementation	0 days?	150 days	NA	NA	NA	NA	0%	Mon 1/1/18	Wed 30/5/18	1310							
1312	Additional construction time due to revised TTA implementation period	0 days?	300 days	NA	NA	NA	NA	0%	Thu 7/3/19	Tue 31/12/19	1319							
1313	Access Road Leading to CSD Married Staff Quarter	280 days	280 days	Fri 15/4/16	Thu 19/1/17	NA	NA	0%	Thu 31/5/18	Wed 6/3/19								
1314	From Manhole 1104 to Manhole 1110	45 days	45 days	Fri 15/4/16	Sun 29/5/16	NA	NA	0%	Sat 14/7/18	1301SS+180 days,1311								
1315	From Manhole 1201 to Manhole 1203	25 days	25 days	Mon 30/5/16	Thu 23/6/16	NA	NA	0%	Sun 15/7/18	Wed 8/8/18	1314							
1316	From Manhole 2001 to Manhole 1203	20 days	20 days	Fri 24/6/16	Wed 13/7/16	NA	NA	0%	Thu 9/8/18	Tue 28/8/18	1315							
1317	From Manhole 1203 to Manhole 1110	20 days	20 days	Thu 14/7/16	Tue 2/8/16	NA	NA	0%	Wed 29/8/18	Mon 17/9/18	1316							
1318	From Manhole 1110 to Manhole 1118	100 days	100 days	Wed 3/8/16	Thu 10/11/16	NA	NA	0%	Tue 18/9/18	Wed 26/12/18	1317							
1319	From Manhole 1118 to Manhole 1122	70 days	70 days	Fri 11/11/16	Thu 19/1/17	NA	NA	0%	Thu 27/12/18	Wed 6/3/19	1318							
1320	Siu Lam Road	20 days	20 days	Mon 26/3/18	Sat 14/4/18	NA	NA	0%	Tue 31/7/18	Sun 19/8/18								
1321	Connection From Manhole 0901 to 0721 after trenchless	20 days	20 days	Mon 26/3/18	Sat 14/4/18	NA	NA	0%	Tue 31/7/18	Sun 19/8/18	1023SS,1049,1245							
1322	CCTV inspection	0 days?	60 days	NA	NA	NA	NA	0%	Sat 2/11/19	Tue 31/12/19	1323FF							
1323	Completion of Section 9C	0 days	0 days	Sat 14/4/18	Sat 14/4/18	NA	NA	0%	Tue 31/12/19	Tue 31/12/19	1321,1305,1306,1307,12							
1324	Section 9C - Inclement Weather Granted (EOT Claim No. 3.18, up to 31 July 2017)	0 days?	53 days	NA	NA	NA	NA	0%	Wed 1/1/20	Sat 22/2/20	1323							
1325																		
1326	Duration of Section 11A - Lok Chui Street Sewage Pumping Station	929 days	929 days	Mon 20/7/15	Fri 2/2/18	Mon 20/7/15	NA	93%	Mon 20/7/15	Fri 2/2/18								
1327	Inclement Weather Granted (EOT Claim No. 3.18, up to 31 July 2017)	0 days?	58 days	NA	NA	NA	NA	0%	Sat 3/2/18	Sun 1/4/18	1326							
1328	Granted under EOT Ordrer 11 (Delayed Possession of Site)	0 days?	40 days	NA	NA	NA	NA	0%	Mon 2/4/18	Fri 11/5/18	1327							
1329	Additional Time for Completion	0 days?	347 days	NA	NA	NA	NA	0%	Mon 11/6/18	Thu 23/5/19	1328,1456FF							
1330																		
1331	EOT claim - Change of Design at LCS SPS (Double roof slab)	0 days?	326 days	NA	NA	Mon 7/8/17	NA	0%	Mon 7/8/17	Thu 28/6/18								
1332	✓ Revised construction details from ER	0 days?	0 days	NA	NA	Mon 7/8/17	Mon 7/8/17	100%	Mon 7/8/17	Mon 7/8/17								
1333	Additional roof slab of transformer room	0 days?	45 days	NA	NA	NA	NA	0%	Tue 15/5/18	Thu 28/6/18	1332,1432							
1334																		
1335	EOT Claim - Additional Works in Transformer Room at Lok Chui Street SPS	0 days?	399 days	NA	NA	Thu 26/10/17	NA	22%	Thu 26/10/17	Wed 28/11/18								
1336	✓ Revised construction details from ER	0 days?	0 days	NA	NA	Thu 26/10/17	Thu 26/10/17	100%	Thu 26/10/17	Thu 26/10/17								
1337	Additional construction time due to revised details (ie. Box out, pump sump, additional wall opening)	0 days?	90 days	NA	NA	NA	NA	0%	Sat 20/1/18	Thu 19/4/18	1336,1431							
1338	Laying additional DN100 DI drain pipe	0 days?	5 days	NA	NA	NA	NA	0%	Fri 20/4/18	Tue 24/4/18	1337							
1339	Additional plastic chain storage box	0 days?	366 days	NA	NA	NA	NA	0%	Thu 26/10/17	Fri 26/10/18								
1340	Procurement	0 days?	90 days	NA	NA	NA	NA	0%	Thu 26/10/17	Tue 23/1/18	1336							
1341	Fabrication and delivery	0 days?	90 days	NA	NA	NA	NA	0%	Wed 24/1/18	Mon 23/4/18	1340							
1342	Installation on site	0 days?	5 days	NA	NA	NA	NA	0%	Mon 22/10/18	Fri 26/10/18	1341,1445							
1343	Additional CLP single door	0 days?	380 days	NA	NA	Thu 26/10/17	NA	22%	Thu 26/10/17	Fri 9/11/18								
1344	Procurement	0 days?	90 days	NA	NA	Thu 26/10/17	NA	67%	Thu 26/10/17	Tue 23/1/18	1336							
1345	Prepare and submission of shop drawing	0 days?	60 days	NA	NA	NA	NA	0%	Wed 24/1/18	Sat 24/3/18	1344							



Project: Rolling Programme (Nov 2017) Date: 28 Nov 2017 EOT Entitlement Programme based on Master Programme (Rev 0-A)	Task Task Progress Critical Task Critical Task Progress Critical		Task Critical Split Baseline Milestone Baseline Milestone Summary		Task Rolled Up Task Rolled Up Critical Task Rolled Up Milestone Baseline Summary Rolled Up Baseline		Task Rolled Up Baseline Milestone Rolled Up Progress Split Baseline Split External Tasks		Project Summary Group By Summary Inactive Task Inactive Milestone Deadline
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FUGRO TECHNICAL SERVICES LIMITED

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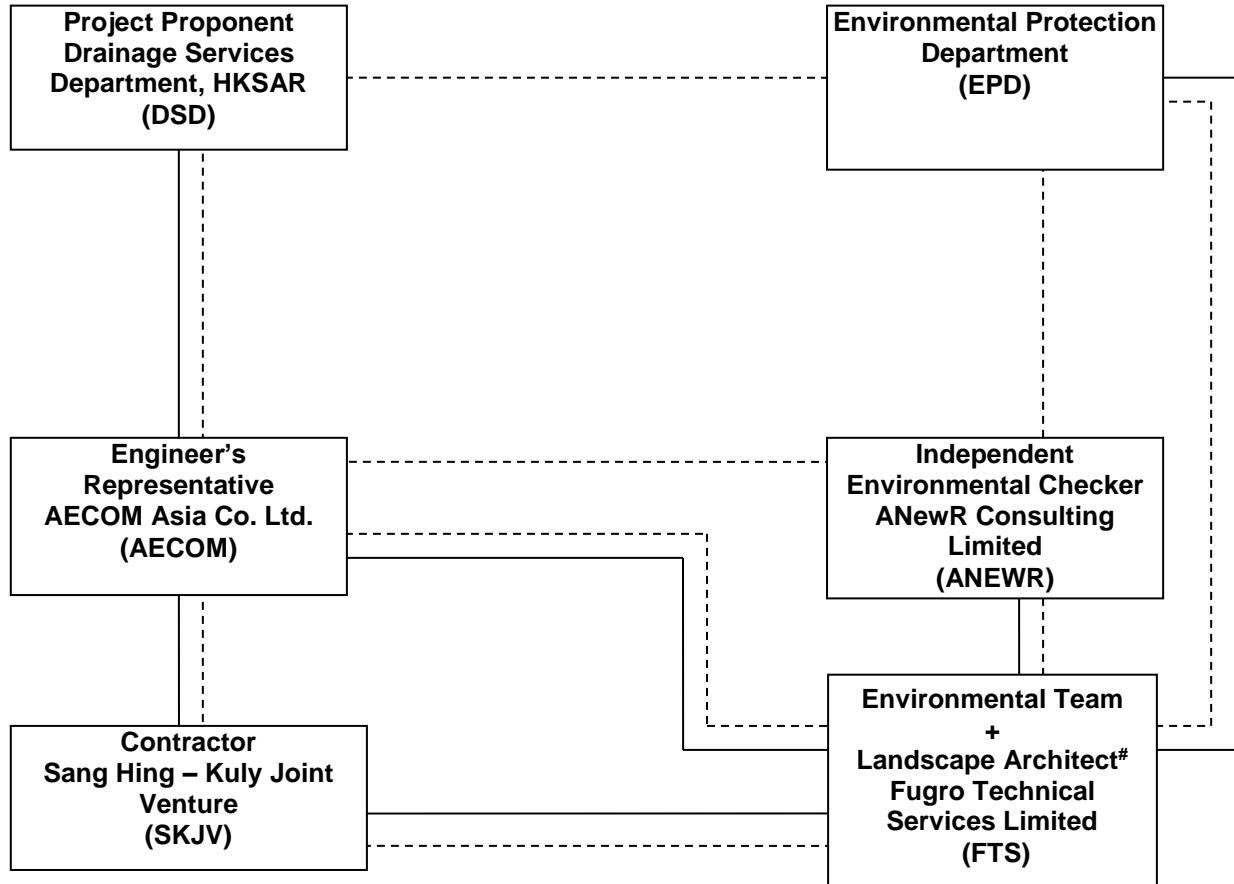
Appendix B

Project Organization Chart

FUGRO TECHNICAL SERVICES LIMITED

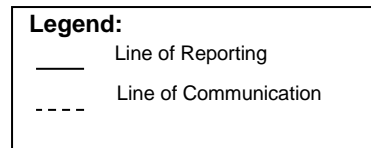
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Remark:

The Landscape Architect with a minimum of 1-2years on site experience as a member of the ET to monitor and audit the landscaping installation works and landscape protection measures.



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Appendix C

Action and Limit Levels for Air Quality and Noise

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Action and Limit Levels for Air Quality

Parameter	Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
1-hr TSP ($\mu\text{g}/\text{m}^3$)	LC6a	344	500
	LC9	335	

Action and Limit Levels for Construction Noise

Time Period	Location	Action	Limit
0700-1900 hrs on normal weekdays	LC6a LC9	When one documented complaint is received	75* dB(A)

* reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

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Appendix D

Air Quality Monitoring Data and Graphical Presentations

FUGRO TECHNICAL SERVICES LIMITED

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**LC6a The Castle Bay (1-hour TSP ($\mu\text{g}/\text{m}^3$))**

Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
02 Mar 2016	10:29	139	143	118	Fine	133
08 Mar 2016	13:40	83	66	66	Cloudy	71
14 Mar 2016	09:45	59	68	83	Cloudy	70
19 Mar 2016	09:15	57	60	62	Sunny	60
24 Mar 2016	10:04	54	95	63	Cloudy	71
30 Mar 2016	08:41	120	102	84	Fine	102
05 Apr 2016	09:21	50	47	51	Fine	49
11 Apr 2016	14:14	17	18	24	Cloudy	20
16 Apr 2016	08:36	56	53	48	Fine	52
22 Apr 2016	08:24	146	75	73	Cloudy	98
28 Apr 2016	10:55	88	97	81	Cloudy	89
04 May 2016	08:40	71	42	44	Fine	52
10 May 2016	08:52	63	72	74	Cloudy	70
16 May 2016	09:10	29	36	38	Sunny	34
21 May 2016	08:33	42	51	53	Cloudy	49
27 May 2016	08:30	28	29	27	Cloudy	28
02 Jun 2016	11:20	38	34	31	Fine	34
08 Jun 2016	08:32	28	36	36	Cloudy	34
14 Jun 2016	09:19	32	27	24	Cloudy	28
20 Jun 2016	08:45	29	27	35	Fine	30
25 Jun 2016	08:54	52	54	50	Fine	52
30 Jun 2016	09:30	26	29	31	Fine	29
06 Jul 2016	08:45	24	29	35	Cloudy	29
12 Jul 2016	08:35	63	68	57	Cloudy	63
18 Jul 2016	08:36	31	35	27	Sunny	31
23 Jul 2016	14:05	41	45	49	Sunny	45
29 Jul 2016	12:37	43	48	45	Fine	45
04 Aug 2016	15:30	48	53	34	Cloudy	45
10 Aug 2016	08:47	91	85	87	Cloudy	88
16 Aug 2016	13:50	24	21	20	Cloudy	21
22 Aug 2016	12:48	53	49	46	Sunny	49
27 Aug 2016	08:46	69	66	73	Fine	69
02 Sep 2016	08:36	63	57	57	Cloudy	59
08 Sep 2016	08:31	38	39	39	Sunny	39
14 Sep 2016	13:05	53	59	63	Sunny	58
20 Sep 2016	13:07	50	53	53	Sunny	52
26 Sep 2016	14:35	122	116	123	Fine	120
30 Sep 2016	15:05	78	76	84	Cloudy	79
06 Oct 2016	14:04	45	42	42	Cloudy	43
12 Oct 2016	13:03	43	48	48	Cloudy	46
18 Oct 2016	09:05	34	38	38	Cloudy	36
24 Oct 2016	14:12	29	32	34	Sunny	32
29 Oct 2016	09:30	64	62	55	Cloudy	60
04 Nov 2016	13:04	34	28	29	Fine	30
10 Nov 2016	14:33	38	39	39	Cloudy	39
16 Nov 2016	15:00	26	21	21	Fine	23
22 Nov 2016	08:42	53	48	55	Cloudy	52
28 Nov 2016	14:15	36	36	41	Sunny	38

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Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
03 Dec 2016	09:30	74	151	130	Cloudy	118
09 Dec 2016	09:30	45	57	42	Sunny	48
15 Dec 2016	13:52	66	71	62	Fine	66
20 Dec 2016	08:00	38	64	35	Sunny	46
24 Dec 2016	09:16	89	72	92	Cloudy	84
30 Dec 2016	09:00	88	90	90	Fine	89
05 Jan 2017	08:31	38	41	41	Fine	40
11 Jan 2017	13:03	161	162	165	Cloudy	163
17 Jan 2017	14:50	66	71	74	Cloudy	70
23 Jan 2017	08:41	45	56	47	Fine	49
27 Jan 2017	14:00	141	105	74	Fine	107
02 Feb 2017	08:41	66	69	58	Cloudy	64
08 Feb 2017	13:16	134	121	126	Fine	127
14 Feb 2017	13:20	101	97	98	Fine	99
20 Feb 2017	14:55	48	45	50	Cloudy	48
25 Feb 2017	09:03	70	76	76	Fine	74
03 Mar 2017	13:50	48	55	57	Fine	53
09 Mar 2017	14:12	51	54	51	Cloudy	52
15 Mar 2017	13:00	60	39	48	Cloudy	49
21 Mar 2017	13:35	85	78	83	Fine	82
27 Mar 2017	08:35	97	101	94	Fine	97
01 Apr 2017	09:16	122	116	114	Fine	117
07 Apr 2017	08:49	35	46	49	Fine	43
13 Apr 2017	14:05	78	77	73	Cloudy	76
19 Apr 2017	09:18	36	43	53	Cloudy	44
25 Apr 2017	14:00	67	66	60	Cloudy	64
29 Apr 2017	14:08	106	99	94	Sunny	100
05 May 2017	08:45	197	193	196	Fine	195
11 May 2017	09:02	104	94	101	Fine	100
17 May 2017	08:35	83	87	90	Fine	87
23 May 2017	09:00	59	64	57	Cloudy	60
29 May 2017	13:05	31	25	35	Fine	30
03 Jun 2017	09:32	50	49	50	Fine	50
09 Jun 2017	14:00	42	41	45	Fine	43
15 Jun 2017	08:52	39	45	49	Fine	44
21 Jun 2017	14:00	32	20	17	Sunny	23
27 Jun 2017	09:02	34	35	34	Fine	34
03 Jul 2017	13:37	78	83	80	Cloudy	80
08 Jul 2017	08:30	78	81	84	Sunny	81
14 Jul 2017	14:30	53	35	41	Sunny	43
20 Jul 2017	13:02	48	41	45	Fine	45
26 Jul 2017	11:20	22	25	27	Sunny	25
01 Aug 2017	09:00	53	52	43	Fine	49
07 Aug 2017	08:51	53	49	42	Fine	48
12 Aug 2017	08:45	39	39	31	Fine	36
18 Aug 2017	08:32	16	24	13	Sunny	18
24 Aug 2017	14:05	53	49	46	Fine	49
30 Aug 2017	09:00	42	41	28	Fine	37
05 Sep 2017	13:15	41	38	36	Fine	38
11 Sep 2017	13:44	13	13	14	Fine	13

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Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
16 Sep 2017	09:35	203	130	106	Fine	146
22 Sep 2017	08:30	22	39	21	Fine	27
28 Sep 2017	14:30	34	36	31	Fine	34
04 Oct 2017	08:30	29	22	25	Fine	25
10 Oct 2017	13:45	21	14	39	Fine	25
16 Oct 2017	09:13	36	34	32	Fine	34
21 Oct 2017	10:31	35	31	39	Fine	35
27 Oct 2017	08:55	38	46	46	Fine	43
02 Nov 2017	08:30	39	45	41	Fine	42
08 Nov 2017	14:00	32	41	29	Cloudy	34
14 Nov 2017	14:00	62	66	67	Cloudy	65
20 Nov 2017	13:04	46	41	52	Fine	46
25 Nov 2017	13:17	52	55	56	Fine	54
01 Dec 2017	14:00	41	35	31	Fine	36
07 Dec 2017	09:33	118	112	119	Fine	116
13 Dec 2017	08:37	45	31	29	Fine	35
19 Dec 2017	13:30	83	90	77	Fine	83
22 Dec 2017	08:51	70	76	62	Fine	69
28 Dec 2017	13:10	56	57	69	Fine	61
03 Jan 2018	14:00	29	34	31	Fine	31
09 Jan 2018	08:51	21	20	18	Cloudy	20
15 Jan 2018	14:43	45	85	92	Fine	74
20 Jan 2018	08:36	88	63	50	Fine	67
26 Jan 2018	08:38	67	60	59	Fine	62
01 Feb 2018	14:11	46	56	56	Fine	53
07 Feb 2018	13:04	60	62	67	Fine	63
13 Feb 2018	09:11	67	69	160	Sunny	99
15 Feb 2018	08:45	53	50	52	Cloudy	52
21 Feb 2018	09:39	49	48	56	Cloudy	51
27 Feb 2018	09:00	15	52	62	Sunny	43
05 Mar 2018	13:30	53	45	41	Cloudy	46
10 Mar 2018	08:57	48	49	55	Fine	51
16 Mar 2018	14:30	46	49	53	Fine	49
22 Mar 2018	09:00	76	70	57	Fine	68
28 Mar 2018	13:30	73	101	94	Sunny	89
03 Apr 2018	14:06	56	45	55	Fine	52
09 Apr 2018	13:00	42	59	53	Fine	51
14 Apr 2018	08:30	43	40	40	Fine	41
20 Apr 2018	09:27	69	64	62	Fine	65
26 Apr 2018	14:09	63	64	62	Cloudy	63
02 May 2018	08:42	62	69	71	Fine	67
08 May 2018	14:00	56	52	52	Cloudy	53
14 May 2018	13:50	44	40	48	Fine	44
19 May 2018	08:30	41	32	34	Fine	36
25 May 2018	08:40	13	11	14	Fine	13
31 May 2018	14:56	15	20	20	Fine	18
06 Jun 2018	13:18	54	45	49	Cloudy	49
12 Jun 2018	08:35	52	63	57	Cloudy	57
16 Jun 2018	13:35	54	48	42	Fine	48
22 Jun 2018	08:45	32	32	38	Fine	34

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Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
28 Jun 2018	08:45	31	34	36	Fine	34
04 Jul 2018	13:30	52	49	50	Fine	50
10 Jul 2018	13:15	43	39	47	Sunny	43
16 Jul 2018	13:01	26	28	20	Fine	25
21 Jul 2018	08:43	36	34	41	Fine	37
27 Jul 2018	08:30	21	24	26	Fine	24
02 Aug 2018	14:15	47	53	43	Fine	48
08 Aug 2018	13:35	24	22	26	Cloudy	24
14 Aug 2018	13:30	37	35	31	Cloudy	34
20 Aug 2018	13:48	29	34	21	Cloudy	28
25 Aug 2018	08:37	284	278	280	Sunny	281
31 Aug 2018	14:07	137	133	130	Cloudy	133
06 Sep 2018	13:30	32	32	35	Fine	33
12 Sep 2018	08:30	21	23	24	Cloudy	23
18 Sep 2018	14:22	53	45	42	Fine	47
24 Sep 2018	13:10	45	50	53	Fine	49
29 Sep 2018	08:32	35	37	37	Fine	36
05 Oct 2018	08:30	39	35	41	Fine	38
11 Oct 2018	13:37	27	32	26	Fine	28
16 Oct 2018	14:49	29	32	32	Fine	31
22 Oct 2018	13:00	55	56	48	Fine	53
27 Oct 2018	08:30	45	49	53	Fine	49
02 Nov 2018	13:05	41	44	47	Sunny	44
08 Nov 2018	13:00	105	105	95	Fine	102
14 Nov 2018	08:30	64	67	63	Fine	65
20 Nov 2018	14:03	25	27	27	Fine	26
26 Nov 2018	13:08	26	29	31	Fine	29
01 Dec 2018	13:54	32	35	35	Fine	34
07 Dec 2018	08:47	50	56	56	Cloudy	54
13 Dec 2018	09:30	80	76	72	Fine	76
19 Dec 2018	08:54	54	55	56	Fine	55
22 Dec 2018	08:51	72	75	80	Fine	76
28 Dec 2018	13:32	35	25	27	Fine	29
03 Jan 2019	13:58	120	109	105	Fine	111
09 Jan 2019	13:55	59	63	57	Fine	60
15 Jan 2019	13:30	48	48	46	Fine	47
21 Jan 2019	13:15	143	153	157	Fine	151
26 Jan 2019	09:12	83	91	77	Fine	84
01 Feb 2019	08:34	37	42	42	Fine	40
13 Feb 2019	14:57	148	145	140	Fine	144
19 Feb 2019	08:51	64	74	79	Cloudy	72
25 Feb 2019	13:30	40	46	45	Cloudy	44
02 Mar 2019	08:58	93	105	102	Fine	100
08 Mar 2019	13:00	41	36	39	Cloudy	39
14 Mar 2019	13:09	143	130	136	Fine	136
20 Mar 2019	13:30	53	63	66	Cloudy	61
26 Mar 2019	14:32	40	42	46	Fine	43
01 Apr 2019	14:32	42	46	42	Fine	43
06 Apr 2019	08:32	35	38	30	Fine	34
11 Apr 2019	14:00	39	34	31	Cloudy	35

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Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
17 Apr 2019	13:48	54	60	59	Fine	58
23 Apr 2019	13:32	62	71	74	Fine	69
29 Apr 2019	08:43	48	59	62	Fine	56
04 May 2019	08:33	54	67	61	Fine	61
10 May 2019	08:50	44	50	46	Fine	47
16 May 2019	13:30	107	118	111	Fine	112
22 May 2019	08:39	70	87	83	Fine	80
28 May 2019	13:39	64	78	74	Cloudy	72
03 Jun 2019	13:11	81	100	105	Fine	95
08 Jun 2019	08:31	39	53	47	Fine	46
13 Jun 2019	13:19	52	60	64	Fine	59
19 Jun 2019	08:35	36	37	36	Fine	36
24 Jun 2019	14:45	22	39	37	Cloudy	33
29 Jun 2019	08:46	60	71	66	Fine	66
05 Jul 2019	13:25	73	62	67	Fine	67
11 Jul 2019	14:00	25	29	26	Fine	27
17 Jul 2019	13:07	64	114	78	Fine	85
23 Jul 2019	13:15	70	77	68	Sunny	72
29 Jul 2019	08:30	54	42	40	Fine	45
03 Aug 2019	08:50	63	63	73	Cloudy	66
09 Aug 2019	09:20	39	43	48	Fine	43
15 Aug 2019	08:49	57	49	66	Fine	57
21 Aug 2019	14:02	54	56	42	Fine	51
27 Aug 2019	09:09	54	50	51	Fine	52
02 Sep 2019	13:00	48	55	44	Fine	49
07 Sep 2019	13:03	54	50	62	Fine	55
12 Sep 2019	08:40	61	53	68	Fine	61
18 Sep 2019	08:23	40	54	38	Fine	44
24 Sep 2019	08:50	59	71	63	Fine	64
30 Sep 2019	08:50	63	63	73	Fine	66
04 Oct 2019	08:31	63	68	55	Fine	62
10 Oct 2019	09:15	73	71	68	Fine	71
16 Oct 2019	08:50	43	34	39	Fine	39
22 Oct 2019	09:13	62	58	62	Fine	61
28 Oct 2019	09:05	113	116	182	Fine	137
02 Nov 2019	08:40	69	63	69	Fine	67
08 Nov 2019	08:30	60	64	57	Fine	60
14 Nov 2019	14:00	113	105	90	Cloudy	103
20 Nov 2019	14:00	73	71	39	Fine	61
26 Nov 2019	14:30	128	114	135	Fine	126
02 Dec 2019	14:20	39	45	26	Fine	37
07 Dec 2019	08:42	73	63	63	Fine	66
13 Dec 2019	14:30	62	68	98	Fine	76
19 Dec 2019	13:20	58	58	54	Fine	57
23 Dec 2019	14:20	74	88	76	Cloudy	79
28 Dec 2019	09:06	84	90	86	Fine	87
31 Dec 2019	14:30	148	131	128	Fine	136

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Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
02 Mar 2016	10:41	168	168	135	Fine	157
08 Mar 2016	13:30	99	80	81	Cloudy	87
14 Mar 2016	09:33	42	52	70	Cloudy	55
19 Mar 2016	09:00	59	54	54	Sunny	56
24 Mar 2016	09:50	35	24	20	Cloudy	26
30 Mar 2016	08:10	134	136	116	Fine	129
05 Apr 2016	09:47	63	71	73	Fine	69
11 Apr 2016	14:25	15	17	14	Cloudy	15
16 Apr 2016	08:53	59	59	50	Fine	56
22 Apr 2016	08:39	149	83	22	Cloudy	85
28 Apr 2016	11:05	116	109	106	Cloudy	111
04 May 2016	08:53	89	59	51	Fine	66
10 May 2016	09:03	45	57	69	Cloudy	57
16 May 2016	09:18	39	38	34	Sunny	37
21 May 2016	08:45	22	45	53	Cloudy	40
27 May 2016	09:15	29	25	28	Cloudy	27
02 Jun 2016	11:40	43	39	38	Fine	40
08 Jun 2016	08:36	17	21	22	Cloudy	20
14 Jun 2016	09:30	45	36	30	Cloudy	37
20 Jun 2016	08:52	48	41	44	Fine	44
25 Jun 2016	09:15	50	59	53	Fine	54
30 Jun 2016	09:15	15	22	24	Fine	21
06 Jul 2016	09:04	27	20	24	Cloudy	23
12 Jul 2016	08:45	56	62	67	Cloudy	62
18 Jul 2016	08:48	34	34	38	Sunny	35
23 Jul 2016	14:17	53	53	50	Sunny	52
29 Jul 2016	12:40	41	45	49	Fine	45
04 Aug 2016	15:34	55	59	48	Cloudy	54
10 Aug 2016	09:02	83	95	85	Cloudy	88
16 Aug 2016	14:10	27	29	29	Cloudy	28
22 Aug 2016	12:57	64	70	70	Sunny	68
27 Aug 2016	09:03	76	67	67	Fine	70
02 Sep 2016	08:51	52	55	50	Cloudy	52
08 Sep 2016	08:40	39	45	48	Sunny	44
14 Sep 2016	13:12	49	50	55	Sunny	51
20 Sep 2016	13:15	45	50	49	Sunny	48
26 Sep 2016	15:00	104	85	102	Fine	97
30 Sep 2016	15:15	80	71	73	Cloudy	75
06 Oct 2016	14:12	52	49	48	Cloudy	49
12 Oct 2016	13:21	53	55	59	Cloudy	56
18 Oct 2016	09:10	31	34	39	Cloudy	35
24 Oct 2016	14:23	42	49	52	Sunny	48
29 Oct 2016	10:15	52	43	43	Cloudy	46
04 Nov 2016	13:15	39	38	38	Fine	38
10 Nov 2016	14:40	50	53	55	Cloudy	53
16 Nov 2016	15:14	27	27	23	Fine	26
22 Nov 2016	09:00	41	43	38	Cloudy	41
28 Nov 2016	14:22	48	53	52	Sunny	51

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Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
03 Dec 2016	09:00	55	126	115	Cloudy	99
09 Dec 2016	09:00	69	92	59	Sunny	73
15 Dec 2016	13:38	55	60	57	Fine	57
20 Dec 2016	08:15	25	31	24	Sunny	27
24 Dec 2016	09:29	122	116	114	Cloudy	117
30 Dec 2016	09:15	80	77	76	Fine	78
05 Jan 2017	08:40	48	45	43	Fine	45
11 Jan 2017	13:13	153	154	151	Cloudy	153
17 Jan 2017	14:41	60	56	57	Cloudy	58
23 Jan 2017	09:00	42	45	45	Fine	44
27 Jan 2017	13:46	101	102	87	Fine	97
02 Feb 2017	14:11	65	67	56	Cloudy	63
08 Feb 2017	13:24	120	118	115	Fine	118
14 Feb 2017	13:30	98	95	97	Fine	97
20 Feb 2017	14:40	53	55	59	Cloudy	56
25 Feb 2017	09:10	67	73	71	Fine	70
03 Mar 2017	14:00	52	48	53	Fine	51
09 Mar 2017	14:19	56	59	48	Cloudy	54
15 Mar 2017	13:10	50	49	45	Cloudy	48
21 Mar 2017	13:48	76	80	73	Fine	76
27 Mar 2017	08:46	78	85	80	Fine	81
01 Apr 2017	09:29	89	72	92	Fine	84
07 Apr 2017	09:00	52	60	49	Fine	54
13 Apr 2017	14:21	80	71	77	Cloudy	76
19 Apr 2017	09:24	28	29	38	Cloudy	32
25 Apr 2017	14:10	55	64	57	Cloudy	59
29 Apr 2017	14:08	80	77	78	Sunny	78
05 May 2017	08:30	178	167	182	Fine	176
11 May 2017	08:55	92	87	95	Fine	91
17 May 2017	08:45	85	90	88	Fine	88
23 May 2017	13:30	62	55	60	Cloudy	59
29 May 2017	13:12	25	32	29	Fine	29
03 Jun 2017	09:43	45	46	46	Fine	46
09 Jun 2017	14:10	34	36	29	Fine	33
15 Jun 2017	09:01	38	42	41	Fine	40
21 Jun 2017	14:35	14	20	13	Sunny	16
27 Jun 2017	09:11	32	35	36	Fine	34
03 Jul 2017	13:46	85	83	83	Cloudy	84
08 Jul 2017	08:48	78	77	78	Sunny	78
14 Jul 2017	14:40	45	39	36	Sunny	40
20 Jul 2017	13:15	35	39	39	Fine	38
26 Jul 2017	13:00	32	39	49	Sunny	40
01 Aug 2017	09:15	41	36	36	Fine	38
07 Aug 2017	09:00	46	41	49	Fine	45
12 Aug 2017	09:30	48	36	34	Fine	39
18 Aug 2017	09:17	38	28	29	Sunny	32
24 Aug 2017	14:45	36	34	34	Fine	35
30 Aug 2017	08:45	39	39	31	Fine	36
05 Sep 2017	13:25	38	34	29	Fine	34
11 Sep 2017	13:50	17	15	18	Fine	17

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Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
16 Sep 2017	09:09	186	130	109	Fine	142
22 Sep 2017	08:45	34	28	22	Fine	28
28 Sep 2017	14:45	25	20	27	Fine	24
04 Oct 2017	08:48	21	28	22	Fine	24
10 Oct 2017	14:02	21	17	28	Fine	22
16 Oct 2017	09:24	41	31	36	Fine	36
21 Oct 2017	10:39	36	38	34	Fine	36
27 Oct 2017	08:35	29	32	28	Fine	30
02 Nov 2017	08:45	39	43	43	Fine	42
08 Nov 2017	14:25	28	38	35	Cloudy	34
14 Nov 2017	14:48	59	69	63	Cloudy	64
20 Nov 2017	13:54	32	38	35	Fine	35
25 Nov 2017	13:25	56	55	56	Fine	56
01 Dec 2017	14:15	28	32	28	Fine	29
07 Dec 2017	09:04	109	108	133	Fine	117
13 Dec 2017	08:48	31	39	36	Fine	35
19 Dec 2017	13:40	69	78	70	Fine	72
22 Dec 2017	09:02	98	64	52	Fine	71
28 Dec 2017	13:02	60	62	76	Fine	66
03 Jan 2018	14:15	25	22	22	Fine	23
09 Jan 2018	08:35	29	27	27	Cloudy	28
15 Jan 2018	14:04	41	85	78	Fine	68
20 Jan 2018	08:51	74	64	49	Fine	62
26 Jan 2018	08:55	66	59	59	Fine	61
01 Feb 2018	14:26	45	57	57	Fine	53
07 Feb 2018	13:20	63	66	64	Fine	64
13 Feb 2018	09:15	60	77	50	Sunny	62
15 Feb 2018	09:11	66	64	66	Cloudy	65
21 Feb 2018	09:50	50	59	60	Cloudy	56
27 Feb 2018	09:15	29	41	84	Sunny	51
05 Mar 2018	13:44	45	43	35	Cloudy	41
10 Mar 2018	08:45	44	40	37	Fine	40
16 Mar 2018	14:45	41	50	43	Fine	45
22 Mar 2018	09:15	76	69	56	Fine	67
28 Mar 2018	13:15	70	78	84	Sunny	77
03 Apr 2018	14:20	49	41	45	Fine	45
09 Apr 2018	13:15	34	53	36	Fine	41
14 Apr 2018	08:38	20	21	23	Fine	21
20 Apr 2018	09:52	89	109	113	Fine	104
26 Apr 2018	14:32	46	45	49	Cloudy	47
02 May 2018	08:51	57	62	65	Fine	61
08 May 2018	14:15	81	86	84	Cloudy	84
14 May 2018	14:05	40	49	42	Fine	44
19 May 2018	08:37	35	43	42	Fine	40
25 May 2018	09:01	38	44	42	Fine	41
31 May 2018	14:30	11	13	14	Fine	13
06 Jun 2018	13:12	52	53	53	Cloudy	53
12 Jun 2018	08:42	53	56	59	Cloudy	56
16 Jun 2018	13:39	62	56	58	Fine	59
22 Jun 2018	08:30	52	58	54	Fine	55

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Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
28 Jun 2018	08:30	56	52	56	Fine	55
04 Jul 2018	13:40	44	46	47	Fine	46
10 Jul 2018	14:00	22	27	25	Sunny	25
16 Jul 2018	13:12	26	28	22	Fine	25
21 Jul 2018	08:35	30	24	31	Fine	28
27 Jul 2018	09:00	53	50	48	Fine	50
02 Aug 2018	14:34	43	37	35	Fine	38
08 Aug 2018	13:30	39	37	37	Cloudy	38
14 Aug 2018	13:40	29	27	25	Cloudy	27
20 Aug 2018	13:57	30	24	26	Cloudy	27
25 Aug 2018	08:49	176	167	173	Sunny	172
31 Aug 2018	14:16	152	148	145	Cloudy	148
06 Sep 2018	13:34	19	21	15	Fine	18
12 Sep 2018	08:45	18	16	19	Cloudy	18
18 Sep 2018	14:59	55	48	43	Fine	49
24 Sep 2018	13:15	47	47	49	Fine	48
29 Sep 2018	08:47	31	35	32	Fine	33
05 Oct 2018	08:49	34	30	33	Fine	32
11 Oct 2018	13:48	24	31	27	Fine	27
16 Oct 2018	14:38	36	39	40	Fine	38
22 Oct 2018	12:50	29	32	32	Fine	31
27 Oct 2018	08:44	40	44	43	Fine	42
02 Nov 2018	13:10	46	42	43	Sunny	44
08 Nov 2018	13:45	88	82	83	Fine	84
14 Nov 2018	08:36	71	69	59	Fine	66
20 Nov 2018	14:17	21	20	22	Fine	21
26 Nov 2018	13:27	19	25	27	Fine	24
01 Dec 2018	14:01	41	36	38	Fine	38
07 Dec 2018	09:00	40	38	40	Cloudy	39
13 Dec 2018	09:40	61	63	59	Fine	61
19 Dec 2018	09:05	73	81	75	Fine	76
22 Dec 2018	09:00	71	79	59	Fine	70
28 Dec 2018	13:45	27	20	23	Fine	23
03 Jan 2019	13:49	67	66	62	Fine	65
09 Jan 2019	14:09	48	53	57	Fine	53
15 Jan 2019	13:48	38	38	41	Fine	39
21 Jan 2019	13:40	147	162	157	Fine	155
26 Jan 2019	09:37	70	79	79	Fine	76
01 Feb 2019	08:49	41	47	43	Fine	44
13 Feb 2019	15:47	159	176	180	Fine	172
19 Feb 2019	08:35	90	103	109	Cloudy	101
25 Feb 2019	13:40	39	36	36	Cloudy	37
02 Mar 2019	08:39	107	101	97	Fine	102
08 Mar 2019	13:15	32	34	34	Cloudy	33
14 Mar 2019	13:26	93	100	96	Fine	96
20 Mar 2019	13:50	43	50	46	Cloudy	46
26 Mar 2019	14:25	60	58	66	Fine	61
01 Apr 2019	14:27	44	40	43	Fine	42
06 Apr 2019	08:42	41	44	49	Fine	45
11 Apr 2019	14:19	32	32	28	Cloudy	31

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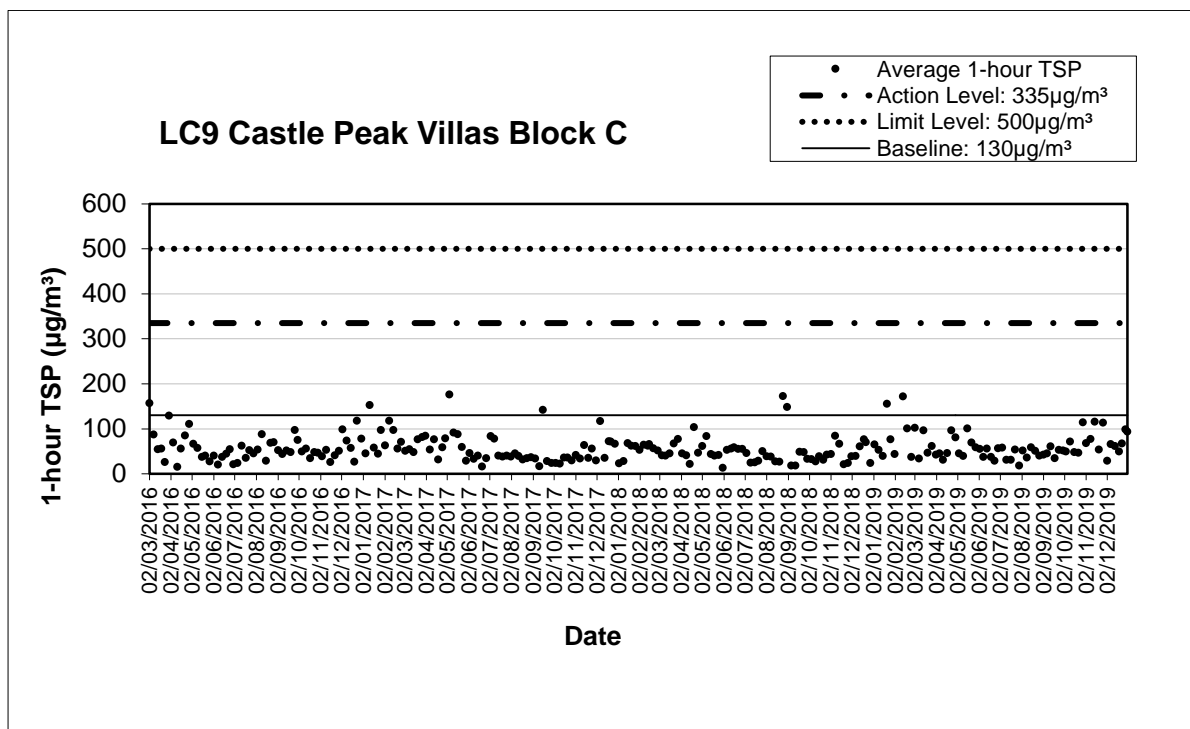
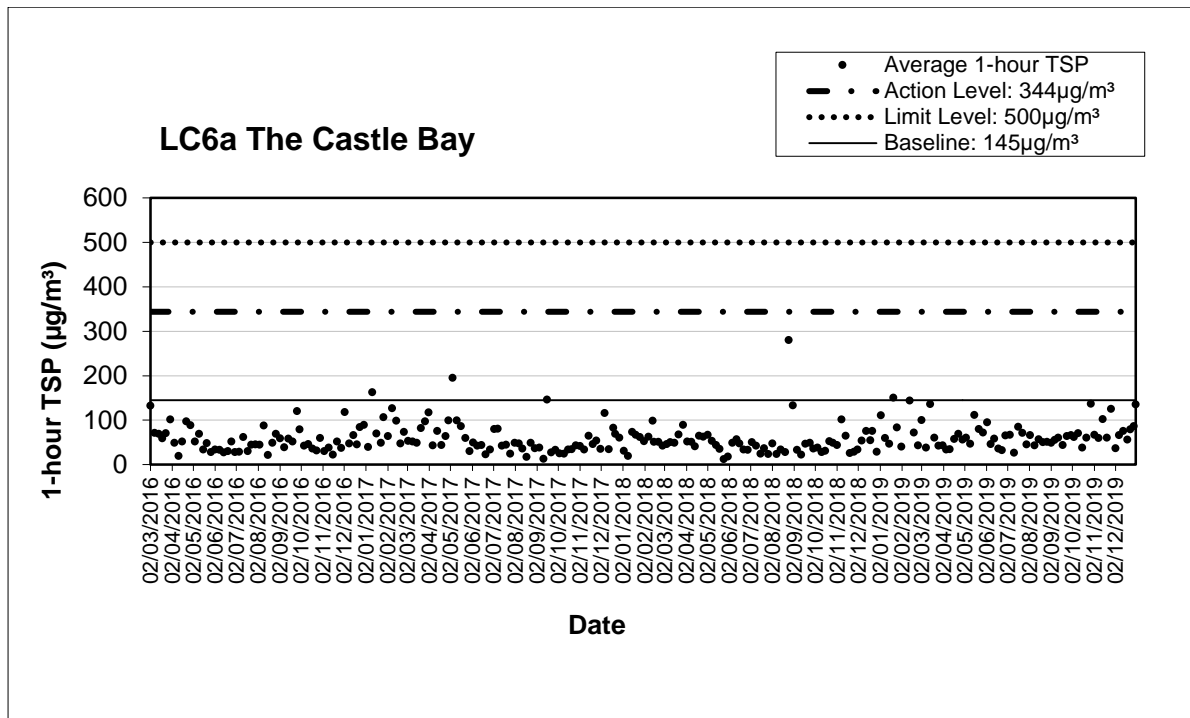


Date	Start Time	1st hr	2nd hr	3rd hr	Weather	Average 1-hour TSP
17 Apr 2019	14:00	52	42	43	Fine	46
23 Apr 2019	13:52	88	97	103	Fine	96
29 Apr 2019	08:59	76	78	88	Fine	81
04 May 2019	08:50	40	45	50	Fine	45
10 May 2019	09:00	39	42	37	Fine	39
16 May 2019	13:40	102	104	96	Fine	101
22 May 2019	08:58	60	76	71	Fine	69
28 May 2019	13:47	53	60	62	Cloudy	58
03 Jun 2019	13:26	50	59	56	Fine	55
08 Jun 2019	08:56	33	37	42	Fine	37
13 Jun 2019	13:36	50	57	60	Fine	56
19 Jun 2019	08:42	35	37	39	Fine	37
24 Jun 2019	14:52	19	36	30	Cloudy	28
29 Jun 2019	08:58	52	56	62	Fine	57
05 Jul 2019	13:05	55	59	59	Fine	58
11 Jul 2019	14:17	30	33	29	Fine	31
17 Jul 2019	13:45	39	22	31	Fine	31
23 Jul 2019	13:25	54	59	48	Sunny	54
29 Jul 2019	08:45	19	20	16	Fine	18
03 Aug 2019	08:35	50	46	58	Cloudy	51
09 Aug 2019	08:30	35	35	37	Fine	36
15 Aug 2019	08:35	49	55	72	Fine	59
21 Aug 2019	13:50	52	48	53	Fine	51
27 Aug 2019	09:40	41	40	40	Fine	40
02 Sep 2019	13:00	40	38	48	Fine	42
07 Sep 2019	13:16	40	49	45	Fine	45
12 Sep 2019	08:55	56	62	65	Fine	61
18 Sep 2019	08:34	29	34	39	Fine	34
24 Sep 2019	08:32	54	54	50	Fine	53
30 Sep 2019	08:35	50	46	58	Fine	51
04 Oct 2019	08:45	39	55	53	Fine	49
10 Oct 2019	09:30	84	70	59	Fine	71
16 Oct 2019	09:00	62	50	32	Fine	48
22 Oct 2019	09:20	46	34	59	Fine	46
28 Oct 2019	09:12	80	87	174	Fine	114
02 Nov 2019	08:30	58	71	75	Fine	68
08 Nov 2019	08:42	84	75	71	Fine	77
14 Nov 2019	14:30	128	118	100	Cloudy	115
20 Nov 2019	14:30	59	55	46	Fine	53
26 Nov 2019	15:00	116	103	121	Fine	113
02 Dec 2019	14:30	32	36	18	Fine	29
07 Dec 2019	08:31	64	64	69	Fine	66
13 Dec 2019	14:20	50	55	80	Fine	62
19 Dec 2019	13:00	50	46	52	Fine	49
23 Dec 2019	14:30	62	75	64	Cloudy	67
28 Dec 2019	09:00	102	98	96	Fine	99
31 Dec 2019	14:20	98	92	90	Fine	93

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Note:

- 1) The major activities during the reporting period refer to section 1.4.1.
- 2) The weather conditions during the monitoring period refer to section 2.4.5 and Appendix D.
- 3) There were no other factors identified which might have affected the monitoring results.

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Appendix E

Noise Monitoring Data and Graphical Presentations

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LC6a The Castle Bay

Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L ₉₀ dB(A)	L ₁₀ dB(A)	Weather
02 Mar 2016	14:00	66	61	59	67	Fine
08 Mar 2016	14:26	69	64	64	70	Cloudy
14 Mar 2016	14:20	71	66	67	74	Cloudy
19 Mar 2016	09:20	68	63	66	72	Sunny
24 Mar 2016	09:17	66	61	61	70	Cloudy
30 Mar 2016	08:50	66	61	61	71	Fine
05 Apr 2016	13:03	62	57	52	66	Fine
11 Apr 2016	14:50	71	66	68	72	Cloudy
16 Apr 2016	09:38	64	59	57	66	Fine
22 Apr 2016	12:15	63	58	58	64	Cloudy
28 Apr 2016	11:43	61	56	51	63	Cloudy
04 May 2016	11:33	64	59	51	65	Fine
10 May 2016	09:56	63	58	55	64	Cloudy
16 May 2016	10:04	71	66	62	73	Sunny
21 May 2016	09:46	64	59	59	66	Cloudy
27 May 2016	08:30	67	62	60	68	Fine
02 Jun 2016	11:25	64	59	59	66	Fine
08 Jun 2016	09:32	64	59	60	66	Cloudy
14 Jun 2016	08:54	63	58	58	65	Cloudy
20 Jun 2016	09:30	67	62	62	69	Sunny
25 Jun 2016	09:00	63	58	59	68	Fine
30 Jun 2016	09:35	67	62	64	69	Fine
06 Jul 2016	09:40	60	55	55	62	Cloudy
12 Jul 2016	09:36	66	61	57	67	Cloudy
18 Jul 2016	09:52	64	59	56	66	Sunny
23 Jul 2016	15:11	66	61	63	69	Sunny
29 Jul 2016	12:38	60	55	56	65	Fine
04 Aug 2016	16:49	65	60	61	67	Cloudy
10 Aug 2016	09:49	67	62	60	67	Cloudy
16 Aug 2016	14:51	70	65	60	72	Cloudy
22 Aug 2016	14:04	65	60	63	68	Sunny
27 Aug 2016	09:54	66	61	57	69	Fine
02 Sep 2016	09:42	63	58	59	64	Cloudy
08 Sep 2016	09:45	67	62	60	71	Sunny
14 Sep 2016	14:11	67	62	65	69	Sunny
20 Sep 2016	14:06	67	62	65	70	Sunny
26 Sep 2016	15:05	72	67	70	73	Fine
30 Sep 2016	16:00	67	62	66	69	Cloudy
06 Oct 2016	15:07	69	64	68	73	Cloudy
12 Oct 2016	14:12	69	64	66	70	Cloudy
18 Oct 2016	09:46	70	65	61	74	Cloudy
24 Oct 2016	15:12	68	63	66	70	Sunny
29 Oct 2016	09:24	73	68	70	74	Cloudy
04 Nov 2016	14:04	65	60	63	68	Fine
10 Nov 2016	15:22	67	62	65	70	Cloudy
16 Nov 2016	16:24	65	60	62	68	Fine
22 Nov 2016	08:45	74	69	71	75	Cloudy

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Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L90 dB(A)	L10 dB(A)	Weather
28 Nov 2016	15:11	68	63	66	71	Sunny
03 Dec 2016	09:35	65	60	61	68	Cloudy
09 Dec 2016	09:35	64	59	55	68	Sunny
15 Dec 2016	13:55	68	63	62	71	Fine
20 Dec 2016	08:30	68	63	61	69	Sunny
24 Dec 2016	10:11	70	65	63	77	Cloudy
30 Dec 2016	10:02	73	68	62	78	Fine
05 Jan 2017	09:32	69	64	67	72	Fine
11 Jan 2017	14:07	69	64	66	72	Cloudy
17 Jan 2017	14:45	72	67	57	75	Cloudy
23 Jan 2017	14:34	69	64	60	71	Fine
27 Jan 2017	14:00	66	61	61	68	Fine
02 Feb 2017	14:12	66	61	58	69	Cloudy
08 Feb 2017	14:06	67	62	61	69	Fine
14 Feb 2017	14:11	60	55	58	64	Fine
20 Feb 2017	15:30	64	59	61	66	Cloudy
25 Feb 2017	09:53	63	58	59	65	Fine
03 Mar 2017	15:00	71	66	67	72	Fine
09 Mar 2017	15:00	73	68	64	74	Cloudy
15 Mar 2017	13:30	65	60	57	66	Cloudy
21 Mar 2017	14:33	63	58	52	66	Fine
27 Mar 2017	09:36	64	59	57	63	Fine
01 Apr 2017	10:11	73	68	71	75	Fine
07 Apr 2017	09:40	67	62	63	70	Fine
13 Apr 2017	15:12	61	56	55	63	Cloudy
19 Apr 2017	10:05	60	55	56	64	Cloudy
25 Apr 2017	14:00	69	64	67	72	Cloudy
29 Apr 2017	14:08	57	52	49	57	Sunny
05 May 2017	09:00	59	54	51	59	Fine
11 May 2017	10:35	62	57	54	63	Fine
17 May 2017	09:37	62	57	53	62	Fine
23 May 2017	09:00	64	59	57	67	Cloudy
29 May 2017	13:46	59	54	55	62	Fine
03 Jun 2017	09:33	70	65	66	71	Fine
09 Jun 2017	14:00	68	63	67	69	Fine
15 Jun 2017	10:35	64	59	57	65	Fine
21 Jun 2017	14:00	68	63	65	72	Sunny
27 Jun 2017	09:05	70	65	65	73	Fine
03 Jul 2017	14:37	61	56	54	62	Cloudy
08 Jul 2017	09:05	56	51	52	58	Sunny
14 Jul 2017	14:35	63	58	58	65	Sunny
20 Jul 2017	14:20	64	59	58	66	Fine
26 Jul 2017	14:25	64	59	57	67	Sunny
01 Aug 2017	09:00	68	63	65	70	Fine
07 Aug 2017	10:28	64	59	59	67	Fine
12 Aug 2017	09:00	66	61	63	70	Fine
18 Aug 2017	08:34	61	56	57	66	Sunny
24 Aug 2017	14:00	63	58	52	67	Sunny
30 Aug 2017	09:05	66	61	58	71	Fine

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Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L90 dB(A)	L10 dB(A)	Weather
05 Sep 2017	14:10	65	60	55	69	Fine
11 Sep 2017	14:23	74	69	54	78	Fine
16 Sep 2017	10:26	69	64	66	71	Fine
22 Sep 2017	10:24	65	60	63	69	Fine
28 Sep 2017	14:30	61	56	55	62	Fine
04 Oct 2017	09:25	66	61	63	69	Fine
10 Oct 2017	14:01	71	66	67	73	Fine
16 Oct 2017	10:06	57	52	50	58	Fine
21 Oct 2017	11:16	55	50	50	58	Fine
27 Oct 2017	09:09	69	64	63	72	Fine
02 Nov 2017	09:37	72	67	64	76	Fine
08 Nov 2017	13:45	73	68	71	75	Cloudy
14 Nov 2017	14:00	68	63	56	71	Cloudy
20 Nov 2017	13:10	69	64	65	71	Fine
25 Nov 2017	13:34	73	68	69	74	Fine
01 Dec 2017	14:21	63	58	57	65	Fine
07 Dec 2017	09:28	65	60	55	69	Fine
13 Dec 2017	09:46	66	61	60	69	Fine
19 Dec 2017	13:31	64	59	56	66	Fine
22 Dec 2017	10:22	67	62	51	70	Fine
28 Dec 2017	11:12	65	60	56	67	Fine
03 Jan 2018	14:00	65	60	64	67	Fine
09 Jan 2018	09:15	71	66	63	74	Cloudy
15 Jan 2018	14:43	71	66	56	73	Fine
20 Jan 2018	09:48	65	60	56	67	Fine
26 Jan 2018	10:00	60	55	50	66	Fine
01 Feb 2018	15:14	65	60	56	69	Fine
07 Feb 2018	14:12	69	64	55	74	Fine
13 Feb 2018	09:11	65	60	49	69	Sunny
15 Feb 2018	09:47	60	55	51	61	Cloudy
21 Feb 2018	14:46	67	62	60	69	Cloudy
27 Feb 2018	10:20	73	68	60	76	Fine
05 Mar 2018	14:13	68	63	63	70	Cloudy
10 Mar 2018	10:05	65	60	58	67	Fine
16 Mar 2018	13:40	72	67	69	75	Fine
22 Mar 2018	10:00	63	58	56	66	Fine
28 Mar 2018	14:06	68	63	62	71	Sunny
03 Apr 2018	15:11	69	64	58	73	Fine
09 Apr 2018	14:05	65	60	63	67	Fine
14 Apr 2018	10:07	66	61	58	69	Fine
20 Apr 2018	09:52	68	63	63	70	Cloudy
26 Apr 2018	14:10	67	62	60	68	Cloudy
02 May 2018	09:38	70	65	65	72	Fine
08 May 2018	15:00	72	67	70	75	Cloudy
14 May 2018	15:05	65	60	61	68	Fine
19 May 2018	09:00	67	62	58	69	Fine
25 May 2018	09:42	69	64	66	71	Fine
31 May 2018	14:50	61	56	58	62	Fine
06 Jun 2018	13:46	57	52	53	58	Cloudy

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Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L90 dB(A)	L10 dB(A)	Weather
12 Jun 2018	13:14	58	53	53	59	Cloudy
16 Jun 2018	14:18	59	54	50	62	Fine
22 Jun 2018	09:00	67	62	64	69	Fine
28 Jun 2018	08:45	64	59	63	68	Fine
04 Jul 2018	14:30	69	64	65	71	Fine
10 Jul 2018	13:05	70	65	66	73	Fine
16 Jul 2018	13:42	63	58	56	64	Fine
21 Jul 2018	09:00	65	60	62	66	Fine
27 Jul 2018	08:50	73	68	58	75	Fine
02 Aug 2018	15:36	62	57	55	66	Fine
08 Aug 2018	13:40	67	62	64	69	Cloudy
14 Aug 2018	14:37	68	63	65	70	Cloudy
20 Aug 2018	14:38	63	58	61	66	Cloudy
25 Aug 2018	09:44	60	55	54	61	Sunny
31 Aug 2018	15:03	62	57	56	64	Cloudy
06 Sep 2018	13:32	69	64	63	72	Fine
12 Sep 2018	08:50	70	65	60	73	Cloudy
18 Sep 2018	14:25	62	57	57	64	Fine
24 Sep 2018	14:10	64	59	56	67	Fine
29 Sep 2018	09:39	71	66	64	74	Fine
05 Oct 2018	08:30	71	66	65	73	Fine
11 Oct 2018	14:39	72	67	68	73	Fine
16 Oct 2018	14:50	69	64	64	72	Fine
22 Oct 2018	14:02	66	61	62	69	Fine
27 Oct 2018	09:37	72	67	65	75	Fine
02 Nov 2018	13:10	66	61	56	68	Sunny
08 Nov 2018	13:05	65	60	57	66	Fine
14 Nov 2018	09:38	64	59	58	66	Fine
20 Nov 2018	15:09	68	63	64	73	Fine
26 Nov 2018	14:31	65	60	57	66	Fine
01 Dec 2018	14:38	71	66	64	74	Fine
07 Dec 2018	09:46	72	67	69	73	Cloudy
13 Dec 2018	09:30	71	66	68	73	Fine
19 Dec 2018	09:37	67	62	69	55	Fine
22 Dec 2018	10:07	70	65	64	74	Fine
28 Dec 2018	14:37	71	66	62	74	Fine
03 Jan 2019	14:45	69	64	61	72	Fine
09 Jan 2019	13:55	67	62	64	71	Fine
15 Jan 2019	13:00	71	66	67	73	Fine
21 Jan 2019	14:45	66	61	57	67	Fine
26 Jan 2019	10:39	72	67	63	75	Fine
01 Feb 2019	09:56	71	66	64	73	Fine
13 Feb 2019	14:45	66	61	57	67	Fine
19 Feb 2019	09:02	64	59	57	67	Cloudy
25 Feb 2019	14:30	69	64	65	71	Cloudy
02 Mar 2019	09:05	66	61	58	68	Fine
08 Mar 2019	13:00	67	62	58	70	Cloudy
14 Mar 2019	14:25	66	61	58	68	Fine
20 Mar 2019	14:38	72	67	63	74	Cloudy

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Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L90 dB(A)	L10 dB(A)	Weather
26 Mar 2019	15:12	69	64	64	73	Fine
01 Apr 2019	14:32	69	64	65	71	Fine
06 Apr 2019	09:33	68	63	62	72	Fine
11 Apr 2019	15:08	68	63	60	69	Cloudy
17 Apr 2019	14:49	72	67	66	73	Fine
23 Apr 2019	14:54	62	57	59	63	Fine
29 Apr 2019	09:58	63	58	59	64	Fine
04 May 2019	09:48	64	59	59	66	Fine
10 May 2019	11:25	63	58	53	65	Fine
16 May 2019	14:45	72	67	70	75	Fine
22 May 2019	09:57	65	60	60	67	Fine
28 May 2019	15:37	69	64	66	73	Cloudy
03 Jun 2019	14:19	65	60	61	67	Fine
08 Jun 2019	10:03	65	60	62	68	Fine
13 Jun 2019	10:03	62	57	62	66	Fine
19 Jun 2019	08:35	69	64	67	72	Fine
24 Jun 2019	14:45	62	57	57	64	Cloudy
29 Jun 2019	10:57	63	58	60	65	Fine
05 Jul 2019	13:30	69	64	65	71	Fine
11 Jul 2019	14:00	70	65	66	73	Fine
17 Jul 2019	13:08	73	68	71	79	Fine
23 Jul 2019	13:30	66	61	59	68	Sunny
29 Jul 2019	09:45	64	59	62	65	Fine
03 Aug 2019	08:55	70	65	67	73	Cloudy
09 Aug 2019	09:26	71	66	66	74	Fine
15 Aug 2019	09:28	67	62	63	72	Fine
21 Aug 2019	14:10	63	58	61	65	Fine
27 Aug 2019	09:05	73	68	69	75	Fine
02 Sep 2019	13:00	64	59	60	68	Fine
07 Sep 2019	14:01	64	59	60	67	Fine
12 Sep 2019	09:45	72	67	65	73	Fine
18 Sep 2019	08:49	69	64	69	73	Fine
24 Sep 2019	08:53	69	64	66	73	Fine
30 Sep 2019	08:55	70	65	67	73	Fine
04 Oct 2019	09:44	64	59	61	66	Fine
10 Oct 2019	09:13	69	64	66	71	Fine
16 Oct 2019	08:50	64	59	59	67	Fine
22 Oct 2019	09:11	64	59	58	65	Fine
28 Oct 2019	09:01	70	65	62	73	Fine
02 Nov 2019	08:45	67	62	63	70	Fine
08 Nov 2019	09:28	69	64	64	73	Fine
14 Nov 2019	14:00	69	64	58	70	Cloudy
20 Nov 2019	15:30	62	57	55	63	Fine
26 Nov 2019	14:30	61	56	51	61	Fine
02 Dec 2019	14:30	65	60	57	68	Fine
07 Dec 2019	08:47	67	62	64	69	Fine
13 Dec 2019	15:20	63	58	56	62	Fine
19 Dec 2019	13:25	65	60	64	69	Fine
23 Dec 2019	15:30	67	62	57	71	Cloudy

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Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L90 dB(A)	L10 dB(A)	Weather
28 Dec 2019	09:35	65	60	57	67	Fine
31 Dec 2019	15:20	61	56	53	62	Cloudy

LC9 Castle Peak Villas Block C

Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L90 dB(A)	L10 dB(A)	Weather
02 Mar 2016	13:24	67	N.A	59	68	Fine
08 Mar 2016	13:38	64	N.A	57	70	Cloudy
14 Mar 2016	13:45	65	N.A	62	67	Cloudy
19 Mar 2016	10:03	70	N.A	68	74	Sunny
24 Mar 2016	09:53	67	N.A	61	71	Cloudy
30 Mar 2016	08:02	65	N.A	55	67	Fine
05 Apr 2016	12:25	56	N.A	52	59	Fine
11 Apr 2016	14:18	69	N.A	68	70	Cloudy
16 Apr 2016	08:53	60	N.A	54	62	Fine
22 Apr 2016	12:56	64	N.A	58	69	Cloudy
28 Apr 2016	11:03	70	N.A	69	71	Cloudy
04 May 2016	12:10	58	N.A	57	59	Fine
10 May 2016	09:07	69	N.A	65	73	Cloudy
16 May 2016	09:25	72	N.A	58	74	Sunny
21 May 2016	08:58	67	N.A	59	70	Cloudy
27 May 2016	09:19	67	N.A	61	71	Cloudy
02 Jun 2016	12:05	59	N.A	56	61	Fine
08 Jun 2016	08:40	61	N.A	58	63	Cloudy
14 Jun 2016	09:31	58	N.A	56	61	Cloudy
20 Jun 2016	08:52	61	N.A	58	63	Fine
25 Jun 2016	09:36	66	N.A	62	68	Fine
30 Jun 2016	09:02	63	N.A	61	65	Fine
06 Jul 2016	09:06	59	N.A	55	61	Cloudy
12 Jul 2016	08:53	66	N.A	55	68	Cloudy
18 Jul 2016	09:05	64	N.A	58	67	Sunny
23 Jul 2016	14:28	66	N.A	64	69	Sunny
29 Jul 2016	13:14	63	N.A	57	68	Fine
04 Aug 2016	15:15	68	N.A	67	71	Cloudy
10 Aug 2016	09:07	65	N.A	62	66	Cloudy
16 Aug 2016	14:15	69	N.A	67	70	Cloudy
22 Aug 2016	13:18	69	N.A	66	72	Sunny
27 Aug 2016	09:05	69	N.A	61	72	Fine
02 Sep 2016	08:55	65	N.A	64	66	Cloudy
08 Sep 2016	08:58	69	N.A	65	72	Sunny
14 Sep 2016	13:33	68	N.A	66	72	Sunny
20 Sep 2016	13:22	69	N.A	65	72	Sunny
26 Sep 2016	14:25	70	N.A	69	71	Fine
30 Sep 2016	15:15	67	N.A	59	71	Cloudy
06 Oct 2016	14:24	71	N.A	69	75	Cloudy
12 Oct 2016	13:30	70	N.A	68	73	Cloudy
18 Oct 2016	09:11	68	N.A	61	71	Cloudy
24 Oct 2016	14:31	70	N.A	68	74	Sunny

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Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L ₉₀ dB(A)	L ₁₀ dB(A)	Weather
29 Oct 2016	10:11	69	N.A	64	72	Cloudy
04 Nov 2016	13:22	69	N.A	66	70	Fine
10 Nov 2016	14:45	68	N.A	65	71	Cloudy
16 Nov 2016	15:16	71	N.A	64	76	Fine
22 Nov 2016	09:25	70	N.A	67	72	Cloudy
28 Nov 2016	14:30	69	N.A	66	72	Sunny
03 Dec 2016	08:50	61	N.A	58	64	Cloudy
09 Dec 2016	08:52	67	N.A	57	68	Sunny
15 Dec 2016	14:45	70	N.A	61	74	Fine
20 Dec 2016	09:15	66	N.A	58	69	Sunny
24 Dec 2016	09:31	73	N.A	71	75	Cloudy
30 Dec 2016	09:20	72	N.A	64	76	Fine
05 Jan 2017	08:48	69	N.A	66	71	Fine
11 Jan 2017	13:20	66	N.A	63	68	Cloudy
17 Jan 2017	15:26	64	N.A	59	67	Cloudy
23 Jan 2017	15:15	69	N.A	61	72	Fine
27 Jan 2017	14:36	60	N.A	57	64	Fine
02 Feb 2017	14:58	65	N.A	56	67	Cloudy
08 Feb 2017	13:30	63	N.A	59	65	Fine
14 Feb 2017	13:35	56	N.A	52	58	Fine
20 Feb 2017	14:45	66	N.A	61	69	Cloudy
25 Feb 2017	09:13	56	N.A	53	58	Fine
03 Mar 2017	14:15	67	N.A	64	70	Cloudy
09 Mar 2017	14:21	70	N.A	65	72	Cloudy
15 Mar 2017	14:17	64	N.A	58	66	Cloudy
21 Mar 2017	13:50	62	N.A	57	65	Fine
27 Mar 2017	08:48	65	N.A	60	68	Fine
01 Apr 2017	09:31	70	N.A	63	77	Fine
07 Apr 2017	09:02	71	N.A	69	75	Fine
13 Apr 2017	14:25	61	N.A	58	62	Cloudy
19 Apr 2017	09:29	55	N.A	54	56	Cloudy
25 Apr 2017	14:35	65	N.A	63	70	Cloudy
29 Apr 2017	14:38	54	N.A	51	57	Sunny
05 May 2017	10:00	57	N.A	53	60	Fine
11 May 2017	11:20	63	N.A	55	65	Fine
17 May 2017	08:50	64	N.A	57	67	Fine
23 May 2017	09:40	64	N.A	56	65	Cloudy
29 May 2017	13:07	55	N.A	53	57	Fine
03 Jun 2017	10:18	69	N.A	65	70	Fine
09 Jun 2017	14:45	69	N.A	65	71	Fine
15 Jun 2017	09:43	64	N.A	60	66	Fine
21 Jun 2017	14:40	62	N.A	61	67	Sunny
27 Jun 2017	09:53	67	N.A	65	70	Fine
03 Jul 2017	13:50	60	N.A	56	62	Cloudy
08 Jul 2017	09:45	57	N.A	53	58	Sunny
14 Jul 2017	15:10	65	N.A	57	68	Sunny
20 Jul 2017	13:33	65	N.A	61	67	Fine
26 Jul 2017	13:46	66	N.A	65	68	Sunny
01 Aug 2017	09:40	60	N.A	59	62	Fine

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Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L ₉₀ dB(A)	L ₁₀ dB(A)	Weather
07 Aug 2017	09:32	65	N.A	59	67	Fine
12 Aug 2017	10:00	67	N.A	66	68	Fine
18 Aug 2017	09:19	68	N.A	67	70	Sunny
24 Aug 2017	15:00	55	N.A	53	57	Fine
30 Aug 2017	09:45	59	N.A	57	61	Fine
05 Sep 2017	13:30	65	N.A	58	66	Fine
11 Sep 2017	13:45	59	N.A	55	67	Fine
16 Sep 2017	11:13	58	N.A	55	60	Fine
22 Sep 2017	11:22	69	N.A	65	72	Fine
28 Sep 2017	15:10	62	N.A	58	63	Fine
04 Oct 2017	08:52	63	N.A	62	67	Fine
10 Oct 2017	14:43	67	N.A	62	70	Fine
16 Oct 2017	09:24	54	N.A	51	57	Fine
21 Oct 2017	10:39	56	N.A	52	58	Fine
27 Oct 2017	09:57	64	N.A	60	68	Fine
02 Nov 2017	09:00	70	N.A	61	73	Fine
08 Nov 2017	14:30	71	N.A	60	74	Cloudy
14 Nov 2017	14:55	66	N.A	61	69	Cloudy
20 Nov 2017	14:03	69	N.A	65	70	Fine
25 Nov 2017	14:17	70	N.A	65	72	Fine
01 Dec 2017	15:02	65	N.A	55	70	Fine
07 Dec 2017	13:38	71	N.A	65	73	Fine
13 Dec 2017	09:05	68	N.A	63	71	Fine
19 Dec 2017	14:06	71	N.A	65	74	Fine
22 Dec 2017	09:39	65	N.A	57	68	Fine
28 Dec 2017	13:29	67	N.A	57	70	Fine
03 Jan 2018	14:40	64	N.A	61	65	Fine
09 Jan 2018	10:27	64	N.A	61	66	Cloudy
15 Jan 2018	14:04	58	N.A	51	60	Fine
20 Jan 2018	09:07	59	N.A	55	62	Fine
26 Jan 2018	09:16	59	N.A	54	62	Fine
01 Feb 2018	14:31	63	N.A	54	66	Fine
07 Feb 2018	13:30	67	N.A	62	70	Fine
13 Feb 2018	09:47	68	N.A	53	70	Sunny
15 Feb 2018	10:23	63	N.A	52	67	Cloudy
21 Feb 2018	14:03	62	N.A	55	65	Cloudy
27 Feb 2018	11:00	72	N.A	57	75	Fine
05 Mar 2018	13:36	71	N.A	64	73	Cloudy
10 Mar 2018	11:00	61	N.A	57	64	Fine
16 Mar 2018	14:50	71	N.A	64	73	Fine
22 Mar 2018	09:20	68	N.A	63	72	Fine
28 Mar 2018	13:30	66	N.A	61	67	Sunny
03 Apr 2018	14:30	67	N.A	54	72	Fine
09 Apr 2018	13:20	65	N.A	55	69	Fine
14 Apr 2018	09:03	62	N.A	58	63	Fine
20 Apr 2018	10:37	64	N.A	61	66	Cloudy
26 Apr 2018	15:04	62	N.A	58	64	Cloudy
02 May 2018	08:57	58	N.A	54	60	Fine
08 May 2018	14:20	69	N.A	67	71	Cloudy

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Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L ₉₀ dB(A)	L ₁₀ dB(A)	Weather
14 May 2018	14:15	63	N.A	58	67	Fine
19 May 2018	09:41	63	N.A	59	66	Fine
25 May 2018	10:32	65	N.A	61	67	Fine
31 May 2018	15:40	66	N.A	65	66	Fine
06 Jun 2018	14:21	62	N.A	55	64	Cloudy
12 Jun 2018	13:52	64	N.A	55	66	Cloudy
16 Jun 2018	13:41	63	N.A	59	68	Fine
22 Jun 2018	09:45	65	N.A	61	68	Fine
28 Jun 2018	09:30	64	N.A	59	65	Fine
04 Jul 2018	13:45	66	N.A	66	69	Fine
10 Jul 2018	13:55	66	N.A	63	67	Fine
16 Jul 2018	14:27	65	N.A	61	67	Fine
21 Jul 2018	09:53	64	N.A	61	65	Fine
27 Jul 2018	09:50	63	N.A	57	65	Fine
02 Aug 2018	14:48	63	N.A	54	67	Fine
08 Aug 2018	14:20	63	N.A	61	66	Cloudy
14 Aug 2018	13:45	65	N.A	62	67	Cloudy
20 Aug 2018	14:00	62	N.A	59	66	Cloudy
25 Aug 2018	08:55	65	N.A	64	67	Sunny
31 Aug 2018	14:20	67	N.A	66	68	Cloudy
06 Sep 2018	13:36	66	N.A	62	70	Fine
12 Sep 2018	09:50	70	N.A	63	74	Cloudy
18 Sep 2018	15:09	66	N.A	59	68	Fine
24 Sep 2018	13:30	57	N.A	55	59	Fine
29 Sep 2018	08:49	69	N.A	62	71	Fine
05 Oct 2018	09:34	70	N.A	64	71	Fine
11 Oct 2018	13:47	70	N.A	63	72	Fine
16 Oct 2018	15:35	68	N.A	62	71	Fine
22 Oct 2018	14:38	69	N.A	66	72	Fine
27 Oct 2018	08:48	67	N.A	59	69	Fine
02 Nov 2018	13:55	60	N.A	55	65	Sunny
08 Nov 2018	13:45	62	N.A	57	64	Fine
14 Nov 2018	09:00	71	N.A	60	72	Fine
20 Nov 2018	14:22	65	N.A	61	68	Fine
26 Nov 2018	13:39	66	N.A	55	67	Fine
01 Dec 2018	14:02	73	N.A	69	75	Fine
07 Dec 2018	09:02	70	N.A	68	73	Cloudy
13 Dec 2018	10:12	69	N.A	68	73	Fine
19 Dec 2018	09:00	64	N.A	67	55	Fine
22 Dec 2018	09:08	69	N.A	63	72	Fine
28 Dec 2018	14:00	68	N.A	59	72	Fine
03 Jan 2019	13:49	60	N.A	56	63	Fine
09 Jan 2019	14:31	64	N.A	61	67	Fine
15 Jan 2019	13:50	68	N.A	64	71	Fine
21 Jan 2019	13:58	62	N.A	56	64	Fine
26 Jan 2019	09:41	67	N.A	58	71	Fine
01 Feb 2019	09:00	68	N.A	64	71	Fine
13 Feb 2019	13:58	62	N.A	56	64	Fine
19 Feb 2019	09:49	64	N.A	57	65	Cloudy

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Date	Start Time	Measured Leq 30min dB(A)	Corrected Leq 30min dB(A)	L ₉₀ dB(A)	L ₁₀ dB(A)	Weather
25 Feb 2019	13:37	66	N.A	62	69	Cloudy
02 Mar 2019	09:54	64	N.A	57	66	Fine
08 Mar 2019	13:45	61	N.A	55	63	Cloudy
14 Mar 2019	13:36	63	N.A	57	65	Fine
20 Mar 2019	13:59	71	N.A	60	73	Cloudy
26 Mar 2019	14:25	73	N.A	67	75	Fine
01 Apr 2019	15:21	68	N.A	66	71	Fine
06 Apr 2019	08:45	65	N.A	59	69	Fine
11 Apr 2019	14:25	63	N.A	60	68	Cloudy
17 Apr 2019	14:03	69	N.A	60	71	Fine
23 Apr 2019	14:06	63	N.A	58	65	Fine
29 Apr 2019	09:13	65	N.A	58	66	Fine
04 May 2019	09:02	65	N.A	59	66	Fine
10 May 2019	10:48	62	N.A	61	64	Fine
16 May 2019	14:00	71	N.A	69	73	Fine
22 May 2019	09:09	65	N.A	59	67	Fine
28 May 2019	14:00	68	N.A	59	69	Cloudy
03 Jun 2019	13:33	66	N.A	60	68	Fine
08 Jun 2019	09:07	66	N.A	61	68	Fine
13 Jun 2019	13:47	65	N.A	60	66	Fine
19 Jun 2019	09:50	67	N.A	67	73	Fine
24 Jun 2019	15:23	61	N.A	58	63	Cloudy
29 Jun 2019	09:09	63	N.A	61	66	Fine
05 Jul 2019	14:15	70	N.A	63	72	Fine
11 Jul 2019	15:07	68	N.A	64	71	Fine
17 Jul 2019	13:46	63	N.A	61	66	Fine
23 Jul 2019	14:10	58	N.A	57	61	Sunny
29 Jul 2019	09:00	63	N.A	63	64	Fine
03 Aug 2019	09:45	67	N.A	64	71	Cloudy
09 Aug 2019	08:32	68	N.A	63	69	Fine
15 Aug 2019	08:32	62	N.A	60	68	Fine
21 Aug 2019	14:52	59	N.A	57	61	Fine
27 Aug 2019	09:43	67	N.A	61	69	Fine
02 Sep 2019	13:40	58	N.A	54	61	Fine
07 Sep 2019	13:14	58	N.A	54	60	Fine
12 Sep 2019	09:00	72	N.A	64	75	Fine
18 Sep 2019	09:41	68	N.A	66	73	Fine
24 Sep 2019	09:50	67	N.A	64	69	Fine
30 Sep 2019	09:45	67	N.A	64	71	Fine
04 Oct 2019	08:51	58	N.A	56	61	Fine
10 Oct 2019	09:59	63	N.A	59	64	Fine
16 Oct 2019	09:34	65	N.A	61	68	Fine
22 Oct 2019	09:53	51	N.A	49	53	Fine
28 Oct 2019	09:42	52	N.A	50	54	Fine
02 Nov 2019	09:30	66	N.A	64	68	Fine
08 Nov 2019	08:45	66	N.A	61	70	Fine
14 Nov 2019	15:00	51	N.A	42	53	Cloudy
20 Nov 2019	16:10	60	N.A	56	63	Fine
26 Nov 2019	15:20	67	N.A	55	60	Fine

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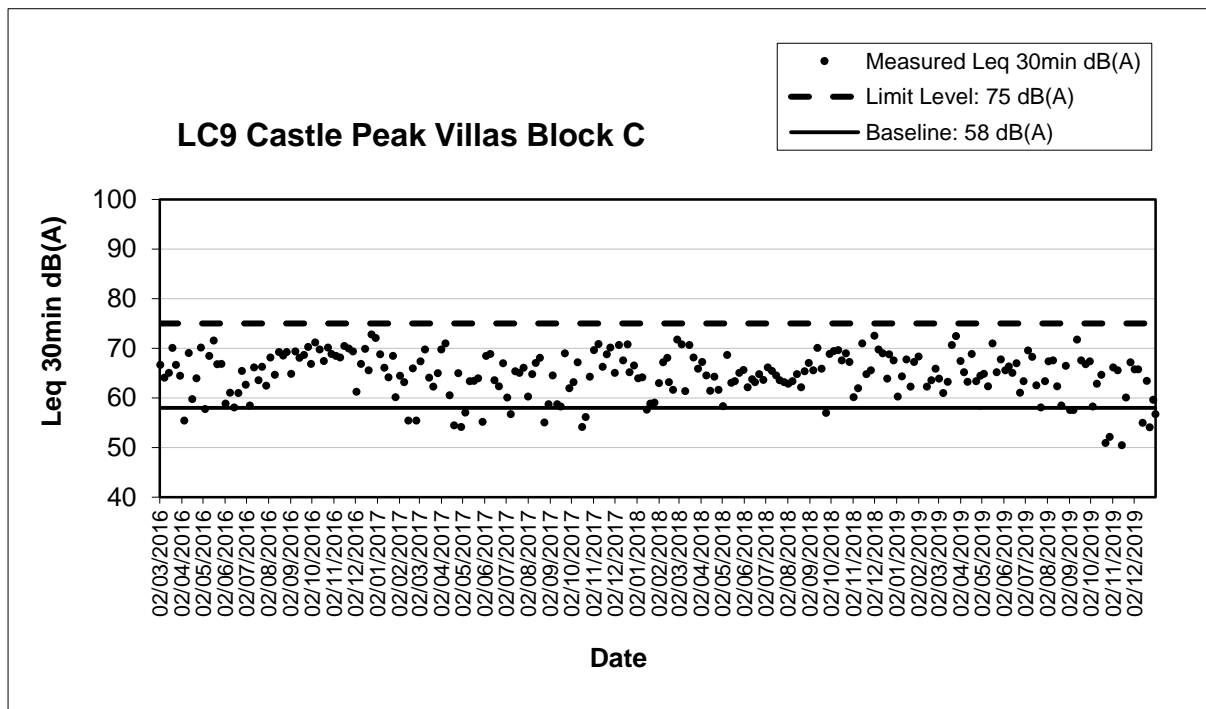
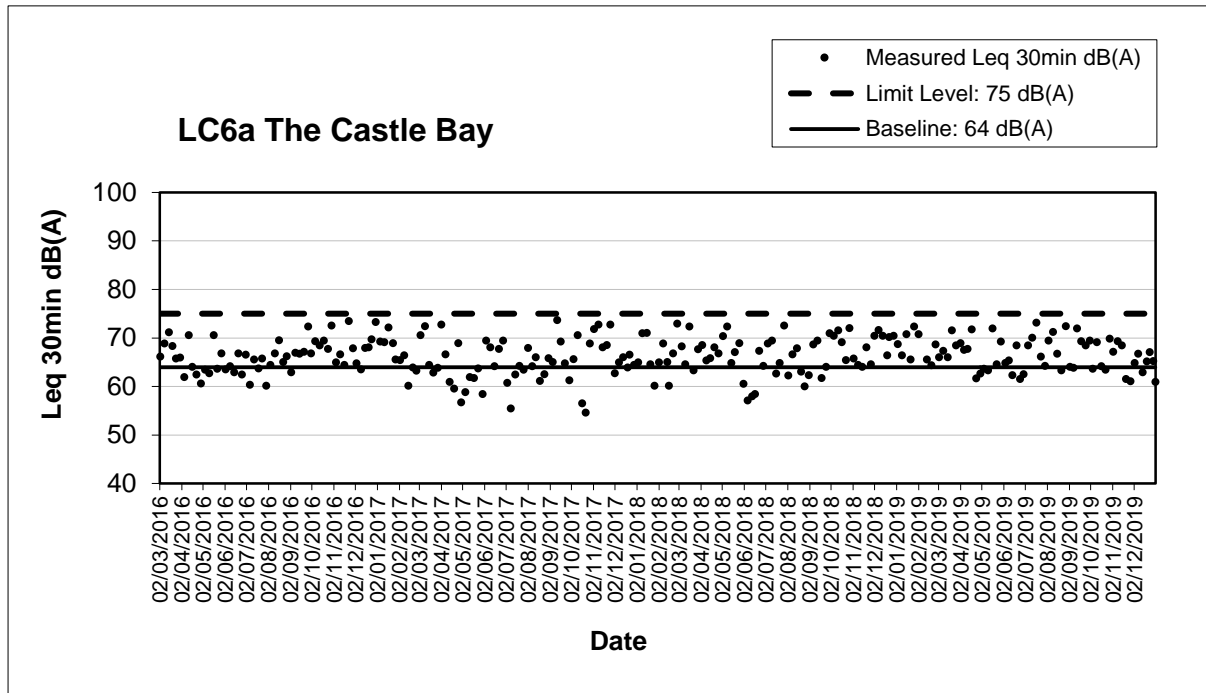
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Date	Start Time	Measured Leq _{30min} dB(A)	Corrected Leq _{30min} dB(A)	L ₉₀ dB(A)	L ₁₀ dB(A)	Weather
02 Dec 2019	15:30	66	N.A	56	64	Fine
07 Dec 2019	09:37	66	N.A	64	69	Fine
13 Dec 2019	14:30	55	N.A	47	58	Fine
19 Dec 2019	14:05	64	N.A	61	65	Fine
23 Dec 2019	14:51	54	N.A	53	55	Cloudy
28 Dec 2019	08:51	60	N.A	58	62	Fine
31 Dec 2019	14:30	57	N.A	55	59	Cloudy

Note:

- 1) A distance correction of -5dB(A) has been applied in monitoring data of LC6a according to baseline monitoring report (Appendix G).
- 2) Leq_(30min) was measured at day-time (0700-1900) on normal weekdays.



Note:

- 1) The major activities during the reporting period refer to section 1.4.1.
- 2) The weather conditions during the monitoring period refer to section 2.4.5 and Appendix E.
- 3) There were no other factors identified which might have affected the monitoring results.

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Appendix F

Events and Action Plans

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Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action Level				
Exceedance for one sample.	<ul style="list-style-type: none"> Identify the source. Inform the IEC and the ER. Repeat measurement to confirm finding. Increase monitoring frequency to daily. 	<ul style="list-style-type: none"> Check monitoring data submitted by the ET. Check Contractor's working method. 	<ul style="list-style-type: none"> Notify Contractor. 	<ul style="list-style-type: none"> Rectify any unacceptable practice. Amend working methods if appropriate.
Exceedance for two or more consecutive samples.	<ul style="list-style-type: none"> Identify the source. Inform the IEC and the ER. Repeat measurements to confirm findings. Increase monitoring frequency to daily. Discuss with the IEC and the Contractor on remedial actions required. If exceedance continues, arrange meeting with the IEC and the ER. If exceedance stops, cease additional monitoring. 	<ul style="list-style-type: none"> Check monitoring data submitted by the ET. Check the Contractor's working method. Discuss with the ET and the Contractor on possible remedial measures. Advise the ER on the effectiveness of the proposed remedial measures. Supervisor implementation of remedial measures. 	<ul style="list-style-type: none"> Confirm receipt of notification of failure in writing. Notify the Contractor. Ensure remedial measures properly implemented. 	<ul style="list-style-type: none"> Submit proposals for remedial actions to IEC within 3 working days of notification. Implement the agreed proposals. Amend proposal if appropriate.
Limit Level				
Exceedance for one sample.	<ul style="list-style-type: none"> Identify the source. Inform the ER and the DEP. Repeat measurement to confirm finding. Increase monitoring frequency to daily. Assess effectiveness of Contractor's remedial actions and keep the IEC, the DEP and the ER informed of the results. 	<ul style="list-style-type: none"> Check monitoring data submitted by the ET. Check Contractor's working method. Discuss with the ET and the Contractor on possible remedial measures. Advise the ER on the effectiveness of the proposed remedial measures. Supervisor implementation of remedial measures. 	<ul style="list-style-type: none"> Confirm receipt of notification of failure in writing. Notify the Contractor. Ensure remedial measures are properly implemented. 	<ul style="list-style-type: none"> Take immediate action to avoid further exceedance. Submit proposals for remedial actions to IEC within 3 working days of notification. Implement the agreed proposals. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	<ul style="list-style-type: none"> Notify the IEC, the ER, the DEP and the Contractor. Identify the source. Repeat measurements to confirm findings. Increase monitoring frequency to daily. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented. Arrange meeting with the IEC and the ER to discuss the remedial actions to be taken. Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the ER informed of the results. If exceedance stops, cease additional monitoring. 	<ul style="list-style-type: none"> Discuss amongst the ER, ET and the Contractor on the potential remedial actions. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. Supervise the implementation of remedial measures. 	<ul style="list-style-type: none"> Confirm receipt of notification of failure in writing. Notify the Contractor. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented. Ensure remedial measures are properly implemented. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ul style="list-style-type: none"> Take immediate action to avoid further exceedance. Submit proposals for remedial actions to IEC within 3 working days of notification. Implement the agreed proposals. Resubmit proposals if problem still not under control. Stop the relevant activity of works as determined by the ER until the exceedance is abated.

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Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action Level	<ul style="list-style-type: none"> Notify the IEC and the Contractor. Carry out investigation. Report the results of investigation to the IEC and the Contractor. Discuss with the Contractor and formulate remedial measures. Increase monitoring frequency to check mitigation effectiveness. 	<ul style="list-style-type: none"> Review the analysed results submitted by the ET. Review the proposed remedial measures by the Contractor and advise the ER accordingly. Supervise the implementation of remedial measures. 	<ul style="list-style-type: none"> Confirm receipt of notification of failure in writing. Notify the Contractor. Require the Contractor to propose remedial measures for the analysed noise problem. Ensure remedial measures are properly implemented. 	<ul style="list-style-type: none"> Submit noise mitigation proposals to IEC Implement noise mitigation proposals
Limit Level	<ul style="list-style-type: none"> Notify the IEC, the ER, the DEP and the Contractor. Identify the source. Repeat measurement to confirm findings. Increase monitoring frequency. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. Inform the IEC, the ER and the DEP the causes & actions taken for the exceedances. Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the ER informed of the results. If exceedance stops, cease additional monitoring. 	<ul style="list-style-type: none"> Discuss amongst the ER, the ET and the Contractor on the potential remedial actions. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. Supervise the implementation of remedial measures. 	<ul style="list-style-type: none"> Confirm receipt of notification of failure in writing. Notify the Contractor. Require the Contractor to propose remedial measures for the analysed noise problem. Ensure remedial measures are properly implemented. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ul style="list-style-type: none"> Take immediate action to avoid further exceedance. Submit proposals for remedial actions to IEC within 3 working days of notification. Implement the agreed proposals. Resubmit proposals if problem still not under control. Stop the relevant activity of works as determined by the ER until the exceedance is abated.

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Event / Action Plan for Landscape and Visual Impact

EVENT ACTION LEVEL	ACTION			
	ET	IEC	ER	Contractor
Design Check	<ul style="list-style-type: none"> Check final design conforms to the requirements of EP and prepare report. 	<ul style="list-style-type: none"> Check report. Recommend remedial design if necessary 	<ul style="list-style-type: none"> Undertake remedial design if necessary 	
Nonconformity on one occasion	<ul style="list-style-type: none"> Identify Source Inform IEC and ER Discuss remedial actions with IEC, ER and Contractor Monitor remedial actions until rectification has been completed 	<ul style="list-style-type: none"> Check report Check Contractor's working method Discuss with ET and Contractor on possible remedial measures Advise ER on effectiveness of proposed remedial measures. Check implementation of remedial measures 	<ul style="list-style-type: none"> Notify Contractor Ensure remedial measures are properly implemented 	<ul style="list-style-type: none"> Amend working methods Rectify damage and undertake any necessary replacement
Repeated Nonconformity	<ul style="list-style-type: none"> Identify Source Inform IEC and ER Increase monitoring frequency Discuss remedial actions with IEC, ER and Contractor Monitor remedial actions until rectification has been completed If nonconformity stops, cease additional monitoring 	<ul style="list-style-type: none"> Check monitoring report Check Contractor's working method Discuss with ET and Contractor on possible remedial measures Advise ER on effectiveness of proposed remedial measures Supervise implementation of remedial measures 	<ul style="list-style-type: none"> Notify Contractor Ensure remedial measures are properly implemented 	<ul style="list-style-type: none"> Amend working methods Rectify damage and undertake any necessary replacement

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Appendix G

Implementation Status of Environmental Mitigation Measures

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Air Quality

EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
4.5	Undertake all air pollution measures to prevent dust nuisance as a result of and during construction activities.	All unpaved haul roads, bulldozed material, exposed site areas / Throughout construction period	Contractor	TMEIA	^
4.5	No debris or other materials shall be burnt on the works areas.	All areas / Throughout construction period	Contractor	TMEIA. Avoid smoke impacts and disturbance	^
4.5	Dust suppression measures shall be provided and to be submitted to and approved by the Engineer.	All areas / Throughout construction period	Contractor	TMEIA	^
4.5	Stockpiles of imported material kept on site shall be contained within hoardings, dampened and/or covered during dry and windy weather.	All areas / Throughout construction period	Contractor	TMEIA Avoid dust generation	^
4.5	Material stockpiled along side trenches should be covered with tarpaulins whenever works are within village boundaries.	All areas / Throughout construction period	Contractor	TMEIA Avoid dust generation / visual impacts	^
4.5	Water sprays shall be used during the delivery and handling of cement, sands aggregates and the like.	All areas / Throughout construction period	Contractor	TMEIA Avoid dust generation	^
4.5	No batching of concrete should be carried out on site. Concrete should be used in ready mixed form and off loaded adjacent to designated works areas.	All areas / Throughout construction period	Contractor	TMEIA	^

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EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
4.5	Any vehicle used for moving cement, sands, aggregates and construction waste and the like shall have properly fitting side and tail boards. Materials shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards.	All areas / Throughout construction period	Contractor	TMEIA Avoid dust and spillage of material	^
4.5	No earth, mud, debris, dust and the like shall be deposited on public roads. Details of proposals for the wheel cleaning facilities shall be agreed with the Engineer. Such wheel washing facility shall be usable prior to any earthworks excavation activity on the Site.	All areas, particularly pumping station sites / Throughout construction period	Contractor	TMEIA Avoid spread/ deposition of mud	^
4.6.9	Pumping station vent shafts should be located away from sensitive receivers.	All pumping stations	DSD	TMEIA Avoid odour impacts	^
4.6.18	Use a covered container to store and transport the screenings from the pump house.	All pumping stations /operational phase	DSD	TMEIA Avoid odour impacts	N/A
4.6.18	Undertake the collection of the screenings and transfer to the covered container within the confines of the pump house.	All pumping stations / operational phase	DSD	TMEIA Avoid odour impacts	N/A
11.2.8	EM&A in the form of 1 hour total suspended particulates monitoring once per week	All sensitive representative receivers / Throughout construction period	Contractor	EM&A Manual	^

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Noise

EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
5.7.1 & 5.8.1	Ensure silencers are installed on the exhaust pipes of the trucks, excavators, compactors, concrete lorry mixer, and cranes for all activities.	All areas / Throughout construction period	Contractor	TMEIA	^
5.7.1 & 5.8.1	Use of mufflers on the breakers for all activities.	All areas / Throughout construction period	Contractor	TMEIA	^
5.7.1 & 5.8.1	Use of temporary noise barriers for all activities at the pumping station sites and during main sewer construction. During main sewer construction, barriers should be used to screen the activities of mobile equipment including the crane and excavator.	All pumping stations and main sewer construction locations / Throughout construction period	Contractor	TMEIA	^
5.5.10	Use of temporary noise barriers for all activities in the villages, where there is at least a 5m clearance	Village sewer alignment / Throughout construction period	Contractor	TMEIA	^
5.8.6 & 5.9.6	Manual breaking of concrete, where the concrete is less than 50mm thick.	Sewer alignment construction / concrete breaking activities	Contractor	TMEIA	^
5.8.6 & 5.9.6	Use of alternative pavement removal methods/equipment (kick ripper), where the concrete is less than 100mm thick	Sewer alignment construction / concrete breaking activities	Contractor	TMEIA	N/A

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EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
5.8.6 & 5.9.6	Use of acoustic enclosure in place of a barrier where there is a 6m clearance.	Sewer alignment construction / Throughout construction period	Contractor	TMEIA	^
5.8.6 & 5.9.6	Scheduling the numbers and operating times of equipment, when noise levels cannot be reduced to within the standards by other means	Sewer alignment construction / Throughout construction period	Contractor	TMEIA	^
5.8.11	The construction activities should be carried out in the daytime period (08.00- 18.00) only and shall exclude Sundays and public holidays.	All areas	Contractor	TMEIA	^
5.8.11	Powered mechanical equipment shall not be used within 5m of an NSR without the permission of the Engineer	All areas / Throughout construction period	Contractor	TMEIA	^
5.8.11	Carry out good site practice to limit noise emission at source.	All areas / Throughout construction period	Contractor	TMEIA	^
5.8.11	Avoid simultaneous noisy activities.	All areas / Throughout construction period	Contractor	TMEIA	^
11.2.8	EM&A in the form of noise monitoring.	All representative receivers / Throughout construction period	Contractor	EM&A Manual	^

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Water Quality

EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
6.4.3	Stockpiles of excavated material should be kept to a minimum and covered during times of heavy rainfall.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.4.10	Pass any trench dewatering through a portable sand/silt removal traps prior to discharge.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.2	When works are carried out during the rainy season exposed slopes, stockpiles should be covered with tarpaulin and temporary access roads protected with a layer of gravel or crushed stone.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.2	Surface run off should be discharged to storm drains via sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.2	Channels, bunds or sand bags should be used to direct any storm water to the traps and perimeter channels should be constructed before the main works begin to prevent external run off from crossing the site.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.2	Silt removal structures, channels and manholes should be maintained to remove accumulated material, specifically at the onset and end of rainy periods.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^

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EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
6.5.2	Trenches for the sewer main should be dug and backfilled in short sections to minimise the quantities of rain water which will need to be pumped from them and upslope bunding provided to prevent surface water from flowing into the trenches.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.2	Rainwater pumped from the trenches should be discharged to storm drains via sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.2	Discharges to natural water courses should only take place when the effluent can be shown to comply with the relevant specified standards.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94 & Technical Memorandum on Standards for Effluent Discharged in Drainage and Sewerage Systems, Inland and Coastal Waters	^
6.5.3	All plant should be in proper working order and maintained such that there is no leakage of fuel or oil. Any waste oils should be collected in designated tanks prior to disposal off site.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.3	All mechanical plant maintenance and refuelling areas shall be sited on paved areas. All storm water run-off from these areas should be discharged via oil separators/petrol separators and sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^

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EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
6.5.4	Groundwater pumped out of excavations for the construction of pump sumps should only be discharged following removal of silt by sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.5	Water from drilling of rock should be discharged following removal of silt by sand/silt removal traps.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.6	The wheels of all vehicles leaving the construction site should be washed before leaving the site to minimise the carry over of mud onto public roads. Wheel wash water should be recycled and only discharged following removal of silt by sand/silt removal traps.	All areas particularly pumping station sites / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.7	Run off from the roofs of site buildings should be conveyed in closed drains to the nearest surface water course to prevent the generation of excessive quantities of surface water run off carrying suspended solids.	Site Office areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.7	All spillages should be cleaned up immediately to prevent their downward migration into the groundwater.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^
6.5.7	Sewage from toilets and any kitchens in the site facilities should be treated via a septic tank system or if this is not practicable chemical toilets should be provided and the waste from these together with 'grey water' removed from the site on a daily basis for disposal at an appropriate receiving point.	All areas / throughout construction period	Contractor	WPCO, TMEIA & ProPECC PN 1/94	^

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EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
6.6.2	Overflow bypasses to be used in emergency situations only and no effluent should be discharged during regular maintenance.	All pumping stations / Operation	DSD	WPCO, TMEIA	N/A
6.6.3 & 6.6.4	Supply pumping stations with stand-by pumps, emergency power supplies and telemetry system.	All Pumping Stations	DSD	WPCO, TMEIA & ProPECC PN 1/94	N/A
11.2.8	EM&A in the form of site supervision to ensure water quality protection measures are implemented.	All areas/ Throughout construction period	Contractor	EM&A	^

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Waste Management

EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
7.12.1	The Contractor shall identify a coordinator for the management of waste. The coordinator shall prepare a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. The Waste Management Plan shall be prepared with reference to Works Branch Technical Circular (WBTC) No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material and issued to the DEP and CED to confirm the availability for C&D and public fill waste.	Plan to be prepared prior to the start of construction, Implementation throughout construction period / All areas	Contractor	TMEIA.Works Branch Technical Circular (WBTC) No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material	^
7.12.1	Stockpiled material should avoid vegetated areas where possible and covered by tarpaulins. Storage of material on site should be kept to a minimum.	All areas/ Throughout construction period	Contractor	TMEIA. Prevent windblown dust and/or surface run-off / avoid nuisance to local residents	^
7.12.1	Surplus material should be sorted on site into C&D waste and that suitable for public fill	All areas /throughout construction period	Contractor	TMEIA. Maximise reusable material	^
7.12.1	The contractor should provide a temporary storage area for general refuse during the construction phase which should be enclosed to avoid refuse being windblown and affected by rain. General refuse should be stored on site for a minimum period and disposed of at a licenced facility.	All areas / throughout construction period	Contractor	TMEIA	^

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EIA Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Status in Construction Phase
7.12.1	Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage.	All areas / throughout construction period	Contractor	TMEIA	^
7.12.1	Suitable chemical waste storage areas shall be formed on the site for temporary storage pending collection. All chemical wastes shall be handled, stored, transported and disposed of in accordance with the relevant practices.	All areas / throughout construction period	Contractor	TMEIA/ Code of Practice on the Package, Labelling and Storage of Chemical Wastes and A Guide to the Chemical Waste Control Scheme	^
7.12.1	Nightsoil arising from chemical toilets and on site chemical treatment facilities shall be transported by a licensed contractor to government Sewage Treatment Works for disposal.	All areas / throughout construction period	Contractor	TMEIA/ Sanitation and Conservancy (Regional Council) By-laws	^
7.12.1	Any screenings and grit that are removed during maintenance shall be disposed of at a landfill site. The material shall be suitably contained and covered.	All areas / operational phase	DSD	TMEIA	N/A
11.2.8	EM&A in the form of supervision of waste management practices	All areas / throughout construction period	Contractor	EM&A	^

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Landscape and Visual

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10.8.5, 10.9.15, 10.10.6, 10.10.11, 10.10.20, 10.11.6	Use of a suitable colour scheme to the pump station building to match the design of the adjacent properties.	All pumping stations	DSD & Contractor	Reduce visual intrusion of pumping stations	^
10.8.5, 10.9.15, 10.10.11, 10.10.20, 10.11.6	Construction of boundary wall similar to the adjacent housing instead of standard chain link and barbed wire fence.	All pumping stations except Tai Lam Correctional Institution	DSD & Contractor	Screen pumping stations	^
10.8.5, 10.9.15, 10.10.11, 10.10.20, 10.11.6	Planting of trees and shrubs to the boundary of the pumping station compound.	All pumping stations except Tai Lam Correctional Institution	DSD & Contractor	Screen pumping stations	^
10.8.6	Minimise damage to the rootball of the tree east of the pumping station site.	East of Castle Peak Villas pumping station/ During excavation	DSD and Contractor		^
11.2.8	EM&A in the form of site supervision of protection measures for trees and landscaping and compensatory planting establishment during the construction and operational phases respectively	All areas	Contractor	EM&A	^

Remarks: ^ Compliance of mitigation measure
* Not Compliance of mitigation measure
N/A Not Applicable at this stage