APPENDICES

APPENDIX A

List of All Plant Species Recorded

Species	Family	Origin	Status	Habit	Common name
Acacia auriculiformis	Fabaceae	Exotic	Naturalised	Tree	Acacia-Tree, Earleaf Acacia
Acacia cf. *mangium*	Fabaceae	Exotic	Naturalised	Tree	Silver Wattle, Sabah Salwood, Mangge Hutan
Acalypha indica	Euphorbiaceae	Cryptogenic	-	Herb	Indian Acalypha
Adenanthera pavonina	Fabaceae	Exotic	Naturalised	Tree	Saga, Coral Bean Tree, Red Sandalwood Tree
Adinandra dumosa	Pentaphylacaceae	Native	Common	Tree	Tiup Tiup
Alocasia macrorrhizos	Araceae	Exotic	Naturalised	Herb	Giant Taro, Birah Negeri, Elephant's Ear
Alocasia odora	Araceae	Exotic	Naturalised	Herb	-
Alpinia galanga	Zingiberaceae	Cryptogenic	-	Herb	Siamese Ginger, Galangal, Lengkuas
Alstonia angustiloba	Apocynaceae	Native	Common	Tree	Common Pulai
Alstonia scholaris	Apocynaceae	Exotic	Naturalised	Tree	Indian Pulai
Alysicarpus vaginalis	Fabaceae	Native	Common	Herb	White Moneywort
Amblovenatum opulentum	Thelypteridaceae	Native	Common	Herb	-
Andira inermis	Fabaceae	Exotic	Casual	Tree	Brown Heart, Cabbage Tree, Bastard Mahogany
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	-
Anodendron candolleanum	Apocynaceae	Native	Data Deficient	Climber	-
Ardisia elliptica	Primulaceae	Native	Common	Tree	Seashore Ardisia
Areca catechu	Arecaceae	Exotic	Casual	Tree	Areca, Betel-Nut Palm, Pinang, Betel Palm
Arthrophyllum jackianum	Araliaceae	Native	Common	Tree	Ivy Palm, Common Ivy Palm, Tumbuh Nyior
Artocarpus heterophyllus	Moraceae	Exotic	Casual	Tree	Jackfruit, Nangka
Artocarpus integer var. *integer*	Moraceae	Cryptogenic	-	Tree	Cempedak, Champedah, Chempedak
Asplenium nidus var. *musifolium*	Aspleniaceae	Native	Common	Epiphyte	Bird's Nest Fern, Rumah Langsuyar
Asystasia gangetica ssp. *gangetica*	Acanthaceae	Exotic	Naturalised	Herb	-
Axonopus compressus	Poaceae	Exotic	Naturalised	Herb	Tropical Carpet Grass, Cow Grass, Rumput Parit
Azadirachta indica	Meliaceae	Exotic	Casual	Tree	Neem Tree, Indian Lilac, Margosa Tree
Baccaurea motleyana	Phyllanthaceae	Native	Critically Endangered	Tree	Rambai, Jelintik, Buah Jentik, Asam Lambun
Baphia nitida	Fabaceae	Exotic	Casual	Shrub	Camwood, African Sandlewood, Barwood
Blechnopsis orientalis	Blechnaceae	Native	Common	Herb	Centipede Fern, Paku Lipan
Breynia androgyna	Phyllanthaceae	Native	Vulnerable	Shrub	Cekur Manis, Star Gooseberry, Sweet Leaf Bush, Katuk
Bridelia stipularis	Phyllanthaceae	Native	Common	Shrub	Kenidai, Kernam
Bridelia tomentosa	Phyllanthaceae	Native	Common	Tree	Kenidai, Kernong, Kernam
Bromheadia finlaysoniana	Orchidaceae	Native	Common	Herb	Finlayson's Bromheadia, Seramen
Caladium bicolor	Araceae	Exotic	Cultivated only	Herb	Heart Of Jesus, Angel Wings, Fancy Leaf Caladium
Callicarpa longifolia	Lamiaceae	Native	Vulnerable	Shrub	Long Leaved Beauty Berry, Nasi-Nasi, White-Berried Malayan Lilac
Calophyllum soulattri	Calophyllacaeae	Exotic	Not assessed	Tree	Bintangor Bunut, Malang-Malang, Mintak
Carallia suffruticosa	Rhizophoraceae	Exotic	Cultivated only	Tree	Tulang Daing, Sisik Puyuh
Caryota mitis	Arecaceae	Native	Common	Tree	Fishtail Palm, Rabok, Meridin, Dudok, Tukas
Cecropia pachystachya	Urticaceae	Exotic	Naturalised	Tree	Ambay pumpwood
Cenchrus purpureus	Poaceae	Exotic	Naturalised	Herb	Napier Grass, Elephant Grass, Uganda Grass
Centella asiatica	Araliaceae	Native	Common	Herb	Spadeleaf, Indian Pennywort, Gotu Kola
Centotheca lappacea	Poaceae	Native	Common	Herb	Rumput Lilit Kain, Rumput Darah
Centrosema molle	Fabaceae	Exotic	Naturalised	Climber	-
Champereia manillana	Opiliaceae	Native	Common	Tree	False Olive, Chemperai, Pokok Kucing-Kucing
Christella dentata	Thelypteridaceae	Native	Common	Herb	Binung
Cinnamomum iners	Lauraceae	Native	Common	Tree	Wild Cinnamon, Clove Cinnamon, Kayu Manis Hutan, Medang Teja

Species	Family	Origin	Status	Habit	Common name
Cissus hastata	Vitaceae	Native	Common	Climber	-
Claoxylon indicum	Euphorbiaceae	Native	Common	Tree	Laping Budak, Jarak Kayu, Lampin Budak
Clausena excavata	Rutaceae	Native	Common	Shrub	Pink Lime-Berry, Cama, Cerek Hitam, Kemantu Hitam, Secerek
Clerodendrum villosum	Lamiaceae	Native	Common	Shrub	-
Coccinia grandis	Cucurbitaceae	Exotic	Naturalised	Climber	Ivy Gourd, Scarlet-Fruited Gourd
Cocos nucifera	Arecaceae	Exotic	Naturalised	Tree	Coconut, Coconut Palm, Kelapa, Niyor
Commelina diffusa	Commelinaceae	Cryptogenic	-	Herb	Spreading Dayflower, Climbing Dayflower, Scurvy Weed
Cordyline fruticosa	Asparagaceae	Exotic	Casual	Shrub	Red Dracaena, Cabbage Tree
Curculigo latifolia	Hypoxidaceae	Native	Vulnerable	Herb	Lumbah Rimba, Kepala Puyuh, Weevil Lily, Hill Coconut, Lumbah
Cyperus iria	Cyperaceae	Native	Common	Herb	Rice Flat Sedge
Cyperus mindorensis	Cyperaceae	Native	Common	Herb	White Kyllinga, Whitehead Spikesedge, White Water Sedge
Cyperus sphacelatus	Cyperaceae	Exotic	Naturalised	Herb	Roadside Flatsedge
Cyrtophyllum fragrans	Gentianaceae	Native	Common	Tree	Tembusu, Semesu, Anan, Ironwood
Davallia denticulata	Davalliaceae	Native	Common	Epiphyte	Rabbit's Foot Fern, Paku Tertutup
Decalobanthus peltatus	Convolvulaceae	Exotic	Naturalised	Climber	-
Dendrobium crumenatum	Orchidaceae	Native	Common	Epiphyte	Pigeon Orchid, White Dove Orchid, Anggerek Merpati
Desmodium triflorum	Fabaceae	Native	Common	Herb	Creeping Tick Trefoil, Three-Flower Beggarweed
Dieffenbachia seguine var. *seguine*	Araceae	Exotic	Casual	Herb	-
Dillenia suffruticosa	Dilleniaceae	Native	Common	Shrub	Simpoh Air
Dimocarpus lichi	Sapindaceae	Native	Data Deficient	Tree	Mata Kuching
Dimocarpus longan subsp. *longan*	Sapindaceae	Exotic	Casual	Tree	Longan, Mata Kuching, Dragon's Eye
Dracaena braunii	Ruscaceae	Exotic	Cultivated only	Shrub	Ribbon Dracaena, Lucky Bamboo, Belgian Evergreen
Dracaena fragrans	Ruscaceae	Exotic	Casual	Shrub	Corn Palm, Palmillo, Fortune Plant, Dragon Plant, Iron Plant
Dracaena surculosa	Ruscaceae	Exotic	Cultivated only	Shrub	Gold Dust Dracaena, Spotted Dracaena, Japanese Bamboo
Drynaria quercifolia	Polypodiaceae	Native	Common	Epiphyte	Oak Leaf Fern, Daun Kepala Tupai, Sakat Laipang
Elaeis guineensis	Arecaceae	Exotic	Casual	Tree	African Oil Palm
Elaeocarpus ferrugineus	Elaeocarpaceae	Native	Vulnerable	Tree	Rusty Oil Fruit
Elaeocarpus petiolatus	Elaeocarpaceae	Native	Common	Tree	Broad-Leafed Oil Fruit, Derumun Babi Hitam, Hempedu Ular
Elephantopus scaber	Asteraceae	Exotic	Naturalised	Herb	Tutup Bumi, Elephant'S Foot, Bull'S Tongue, Ironweed
Embelia ribes	Primulaceae	Native	Common	Climber	False Black Pepper, White-Flowered Embelia
Emilia sonchifolia	Asteraceae	Native	Common	Herb	Cupid's Shaving Brush, Lilac Tasselflower, Purple Sow Thistle
Endospermum cf. *diadenum*	Euphorbiaceae	Native	Vulnerable	Tree	Sesendok
Epipremnum aureum	Araceae	Exotic	Casual	Climber	Golden Pothos, Money Plant, Devil's Ivy, Ivy Arum
Euphorbia hirta	Euphorbiaceae	Exotic	Naturalised	Herb	Hairy Spurge, Ara Tanah, Asthma Weed, Snake Weed
Falcataria falcata	Fabaceae	Exotic	Naturalised	Tree	Albizia, Kayu Machis, Batai, Peacocksplume
Fibraurea tinctoria	Menispermaceae	Native	Common	Climber	Akar Badi, Akar Kinching Kerbau, Akar Kuning, Sekunyit
Ficus aurata var. *aurata*	Moraceae	Native	Common	Tree	Yellow Hairy Fig
Ficus fistulosa	Moraceae	Native	Common	Tree	Common Yellow Stem-Fig, Ara Serapat, Kelampung Bukit
Ficus grossularioides var. *grossularioides*	Moraceae	Native	Common	Tree	Ara Putih, White-Leafed Fig
Ficus heteropleura	Moraceae	Native	Common	Climber	Sandy-Leafed Fig
Ficus microcarpa	Moraceae	Native	Common	Shrub	Malayan Banyan, Jejawi, Curtain Fig, Indian Laurel Fig
Ficus pumila	Moraceae	Exotic	Casual	Climber	Creeping Fig, Climbing Fig, Ara Jalar
Ficus punctata	Moraceae	Native	Common	Climber	Climbing Fig, Tangisong Burong
Ficus religiosa	Moraceae	Exotic	Naturalised	Tree	Sacred Fig Tree, Bodhi Tree, Pipul Tree

Species	Family	Origin	Status	Habit	Common name
Ficus variegata	Moraceae	Native	Common	Tree	Common Red-Stem Fig, Variegated Fig, Ara Kelumpang
Ficus vasculosa	Moraceae	Native	Vulnerable	Tree	*White Fig, Ara Nasi, Pulut-Pulut, Sepedih, Tampang Burung*
Fimbristylis littoralis	Cyperaceae	Native	Common	Herb	Lesser Fimbry
Garcinia mangostana	Clusiaceae	Exotic	Casual	Tree	Mangosteen, Manggis, Mesetor, Sementah, Semetah
Glochidion cf. *superbum*	Phyllanthaceae	Native	Common	Tree	-
Guioa pubescens	Sapindaceae	Native	Common	Tree	-
Gynochthodes coriacea	Rubiaceae	Native	Common	Climber	Akar Lampai Hitam
Gynotroches axillaris	Rhizophoraceae	Native	Common	Tree	Mata Keli, Fish Eyes, Bulu Bulu, Pianggu Jantan
Haplopteris ensiformis	Vittariaceae	Native	Common	Epiphyte	-
Hedyotis corymbosa	Rubiaceae	Native	Common	Herb	Two-Flowered Oldenlandia, Flat-Top Mille Graines, Old World Diamond-Flow
Heliconia psittacorum	Heliconiaceae	Exotic	Casual	Herb	Parakeet Flower
Hemigraphis repanda	Acanthaceae	Exotic	Cultivated only	Shrub	Dragon'S Tongue
Hoya diversifolia	Apocynaceae	Native	Vulnerable	Climber	Akar Kekapal, Akar Serapat, Akar Sesapat, Akar Sedudu Bukit, Caping Kera
Ilex cymosa	Aquifoliaceae	Native	Common	Tree	Marsh Holly, Mensirah, Mesirah, Timah-Timah
Imperata cylindrica	Poaceae	Native	Common	Herb	Lalang, Cogon Grass, Alang-Alang, Blady Grass, Speargrass
Ipomoea cairica	Convolvulaceae	Exotic	Naturalised	Climber	Messina Creeper, Mile A Minute Vine, Railway Creeper
Isachne globosa	Poaceae	Native	Common	Herb	-
Ischaemum ciliare	Poaceae	Native	Common	Herb	Smutgrass
Justicia procumbrens	Acanthaceae	Cryptogenic	-	Herb	-
Kyllinga polyphylla	Cyperaceae	Exotic	Naturalised	Herb	Navua Sedge
Lansium domesticum	Meliaceae	Exotic	Casual	Tree	Langsat, Duku, Langsat Hutan
Lantana camara	Verbenaceae	Exotic	Naturalised	Shrub	Big-Sage, Wild-Sage, Red-Sage, White-Sage, Tickberry, West Indian Lantan
Leea indica	Vitaceae	Native	Common	Tree	Common Tree-Vine, Jolok-Jolok, Merbati Padang
Legazpia polygonoides	Linderniaceae	Cryptogenic	-	Herb	Kerak Nasi, Malayan Eyebright
Limacia scandens	Menispermaceae	Native	Common	Climber	-
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	-
Lindernia crustacea	Linderniaceae	Cryptogenic	-	Herb	Malaysian False Pimpernel, Brittle False Pimpernel, Hard Slitwort
Litsea elliptica	Lauraceae	Native	Common	Tree	-
Litsea umbellata	Lauraceae	Native	Vulnerable	Shrub	-
Lotus berthelothii	Fabaceae	Exotic	Casual	Shrub	Lotus vine flower, Parrot's beak, Coral gem
Lygodium flexuosum	Schizaeaceae	Native	Common	Climber	Maidenhair Creeper
Lygodium sp.	Schizaeaceae	Native	Common	Climber	-
Macaranga bancana	Euphorbiaceae	Native	Common	Tree	-
Macaranga conifera	Euphorbiaceae	Native	Common	Tree	-
Macaranga gigantea	Euphorbiaceae	Native	Common	Tree	-
Macaranga griffithiana	Euphorbiaceae	Native	Vulnerable	Tree	Mahang Bulan, Mahang Tutup
Macaranga heynei	Euphorbiaceae	Native	Common	Tree	-
Macaranga hypoleuca	Euphorbiaceae	Native	Common	Tree	-
Mallotus paniculatus	Euphorbiaceae	Native	Common	Tree	-
Mangifera foetida	Anacardiaceae	Native	Critically Endangered	Tree	Horse Mango, Bachang
Mangifera indica	Anacardiaceae	Exotic	Casual	Tree	Mango, Mangga, Mempalam
Manihot carthagenensis ssp. *glaziovii*	Euphorbiaceae	Exotic	Naturalised	Tree	Tree Cassava, Ceara Rubber Tree
Manihot esculenta	Euphorbiaceae	Exotic	Naturalised	Shrub	Manihot, Tapioca, Bitter Cassava, Manioc, Mandioca, Ubi Kayu, Gari
Melastoma malabathricum	Melastomataceae	Native	Common	Tree	Common Sendudok, Singapore Rhododendron, Malabar Gooseberry

Species	Family	Origin	Status	Habit	Common name
Melothria pendula	Cucurbitaceae	Exotic	Naturalised	Climber	Guadeloupe Cucumber
Miconia crenata	Melastomataceae	Exotic	Naturalised	Shrub	Koster's Curse
Microlepia speluncae	Dennstaedtiaceae	Native	Vulnerable	Herb	-
Microsorum punctatum	Polypodiaceae	Native	Common	Epiphyte	-
Mikania micrantha	Asteraceae	Exotic	Naturalised	Climber	American Rope, Mile-A-Minute Weed, Bittervine
Mimosa pudica	Fabaceae	Exotic	Naturalised	Shrub	Sensitive Plant, Touch-Me-Not
Morella esculenta	Myricaceae	Native	Common	Tree	Malay Gale, Telur Cicak, Geliche
Muntingia calabura	Muntingiaceae	Exotic	Naturalised	Tree	Buah Cheri, Malayan Cherry, Kerukup-Siam, Capulin
Murdannia nudiflora	Commelinaceae	Cryptogenic	-	Herb	Doveweed
Musa culitvar	Musaceae	Exotic	Not assessed	Tree	Banana
Nephelium lappaceum	Sapindaceae	Cryptogenic	-	Tree	Rambutan, Hairy Lychee
Nephrolepis biserrata	Oleandraceae	Native	Common	Herb	Broad Sword Fern, Paku Larat, Giant Sword Fern, Sword Fern
Oncosperma tigillarium	Arecaceae	Native	Common	Tree	Nibung, Nibong, Nibung Palm
Oxalis barrelieri	Oxalidaceae	Exotic	Naturalised	Herb	Lavender Sorrel
Oxyceros longiflorus	Rubiaceae	Native	Common	Climber	Akar Berdara Laut
Paederia foetida	Rubiaceae	Native	Common	Climber	Lesser Malayan Stinkwort, Akar Sekentut, Daun Kentut-Kentut
Palaquium obovatum var. *obovatum*	Sapotaceae	Native	Vulnerable	Tree	Nyatoh Puteh, White Gutta, Nyatoh Putih, Taban Puteh, Taban Balam Kuning
Palhinhaea cernua	Lycopodiaceae	Native	Common	Herb	Scrambling Clubmoss, Rumput Kerangas, Paku Merak
Pandanus amaryllifolius	Pandanaceae	Exotic	Casual	Shrub	Fragrant Pandan, Screwpine
Passiflora laurifolia	Passifloraceae	Exotic	Naturalised	Climber	Water Lemon, Yellow Granadilla, Bell Apple, Passion Fruit, Buah Susu
Passiflora suberosa	Passifloraceae	Exotic	Naturalised	Climber	Corky Passionflower, Devil's Pumpkin, Indigo Berry
Peperomia pellucida	Piperaceae	Exotic	Naturalised	Herb	Shiny Bush, Pepper Elder
Pilea nummulariifolia	Urticaceae	Exotic	Cultivated only	Climber	Creeping Charlie
Piper betle	Piperaceae	Exotic	Casual	Climber	Betel, Betel Vine, Betel Pepper, Betle Pepper, Pan, Sireh
Piper crassipes	Piperaceae	Native	Common	Climber	Sireh Murai
Piper sarmentosum	Piperaceae	Native	Common	Climber	Wild Pepper, Wild Betel, Kadok
Pipturus argenteus	Urticaceae	Cryptogenic	-	Shrub	False Stinger, White Mulberry, White Nettle
Planchonella obovata	Sapotaceae	Native	Common	Tree	Sea Gutta, Menasi, Northern Yellow Boxwood, Yellow Teak, Black Ash
Pouzolzia zeylanica	Urticaceae	Cryptogenic	-	Herb	Graceful Pouzolzsbush
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	-
Pterocarpus indicus	Fabaceae	Exotic	Casual	Tree	Angsana, Sena, Burmese Rosewood, Philippine Mahogany, Red Sandalwood
Ptychosperma macarthurii	Arecaceae	Exotic	Naturalised	Tree	Macarthur Palm, Hurricane Palm, Cluster Palm
Pyrrosia longifolia	Polypodiaceae	Native	Common	Epiphyte	Suloi
Pyrrosia piloselloides	Polypodiaceae	Native	Common	Epiphyte	Sakat Ribu-Ribu, Sisek Naga, Pakis Duitan, Dragon's Scale Fern
Rhodamnia cinerea	Myrtaceae	Native	Common	Tree	Silver Back Tree, Mempoyan, Tempoyai
Ruellia repens	Acanthaceae	Cryptogenic	-	Herb	Creeping Ruellia
Ruellia tuberosa	Acanthaceae	Exotic	Cultivated only	Herb	Meadow Weed, Minnieroot, Cracker Plant
Samanea saman	Fabaceae	Exotic	Casual	Tree	Rain Tree, Pukul Lima, Monkey-Pod
Sieruela rutidosperma	Cleomaceae	Exotic	Naturalised	Herb	Fringed Spiderflower, Wild Cat's Whiskers
Solanum torvum	Solanaceae	Exotic	Naturalised	Shrub	Turkey Berry, Devil'S Fig, Terung Pipit
Spathodea campanulata	Bignoniaceae	Exotic	Naturalised	Tree	African Tulip Tree, Flame Of The Forest, Gabon Tulip Tree,Pancut-Pancut
Spermacoce latifolia	Rubiaceae	Exotic	Naturalised	Herb	Oval-Leaf False Buttonweed
Sphaerostephanos polycarpos	Thelypteridaceae	Native	Common	Herb	-
Sphagneticola trilobata	Asteraceae	Exotic	Naturalised	Herb	Yellow Creeping Daisy, Singapore Daisy

Species	Family	Origin	Status	Habit	Common name
Stenochlaena palustris	Blechnaceae	Native	Common	Climber	Climbing Fern, Akar Paku
Sterculia cordata	Malvaceae	Native	Critically Endangered	Tree	Kelumpang, Kembang
Sterculia parviflora	Malvaceae	Native	Critically Endangered	Tree	Common Sterculia, Kelumpang Burong
Striga asiatica	Orobanchaceae	Cryptogenic	-	Herb	Asiatic Witchweed
Syngonium angustatum	Araceae	Exotic	Naturalised	Climber	Arrowhead Vine
Syzygium borneense	Myrtaceae	Native	Common	Tree	Bullate Eugenia
Syzygium cerasiforme	Myrtaceae	Native	Common	Tree	Common Kelat, Gelam Tikus, Ubah, Benitan Putih
Syzygium grande	Myrtaceae	Native	Common	Tree	Sea Apple, Jambu Air Laut, Ubah
Syzygium myrtifolium	Myrtaceae	Native	Critically Endangered	Tree	Kelat Oil, Kelat Paya, Red Lip
Syzygium polyanthum	Myrtaceae	Native	Common	Tree	Indonesian Bayleaf, Buah Salam, Kelat Samak
Syzygium zeylanicum	Myrtaceae	Native	Common	Shrub	Spicate Eugenia, Kelat Nasi Nasi, Gelam Tikus
Tectaria semipinnata	Dryopteridaceae	Native	Endangered	Herb	-
Terminalia catappa	Combretaceae	Native	Common	Tree	Sea Almond, Ketapang, Singapore Almond, Indian Almond
Tetracera indica	Dilleniaceae	Native	Common	Climber	Fireweed, Hedge Row Tetracera, Puson Dumarun, Akar Pulas Duyio
Thaumatococcus daniellii	Marantaceae	Exotic	Naturalised	Shrub	Miracle Berry, Sweet Prayer Plant, African Serendipity Berry, Katempfe
Timonius wallichianus	Rubiaceae	Native	Common	Tree	Silver Timon, Triang, Berombong, Merombong, Tabah
Torenia diffusa	Linderniaceae	Exotic	Casual	Herb	-
Trema cannabina	Cannabaceae	Native	Common	Tree	-
Tridax procumbens	Asteraceae	Exotic	Naturalised	Herb	Coat Buttons, Kanching Baju
Uncaria gambir	Rubiaceae	Exotic	Naturalised	Climber	-
Vitex pinnata	Lamiaceae	Native	Common	Tree	Leban, Malayan Teak, Vitex, Halban, Leban Buas
Xanthosoma mafaffa	Araceae	Exotic	Naturalised	Herb	Arrowleaf elephant's ear, Malanga, American taro, Coco-yam
Zoysia japonica	Poaceae	Exotic	Cultivated only	Herb	Japanese Lawn Grass, Korean Lawn Grass, Korean Grass

APPENDIX B

List and Geospatial Coordinates of Conservation Significant Plant Species

Species	Family	Origin	Status	Habit
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree
Curculigo latifolia	Hypoxidaceae	Native	Vulnerable	Herb
Elaeocarpus ferrugineus	Elaeocarpaceae	Native	Vulnerable	Tree
Endospermum cf *diadenum*	Euphorbiaceae	Native	Vulnerable	Tree
Ficus vasculosa	Moraceae	Native	Vulnerable	Tree
Hoya diversifolia	Apocynaceae	Native	Vulnerable	Climber
Lindera lucida	Lauraceae	Native	Vulnerable	Tree
Litsea umbellata	Lauraceae	Native	Vulnerable	Tree
Macaranga griffithiana	Euphorbiaceae	Native	Vulnerable	Tree
Microlepia speluncae	Dennstaedtiaceae	Native	Vulnerable	Herb
Palaquium obovatum var. *obovatum*	Sapotaceae	Native	Vulnerable	Tree
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber
Tectaria semipinnata	Dryopteridaceae	Native	Endangered	Herb

Species	Family	Origin	Status	Habit	Latitude	Longitude	Girth	Height	Remarks	Transplanting or Salvaging
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.45129	103.78904	-	-	-	-
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.450142004	103.790119	0.05	2	-	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.449797004	103.790165	< 0.05	3	Cluster in proximity	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.449725004	103.790364	0.05	1-3	Cluster in proximity	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.449802034	103.79003	< 0.05	0.6	-	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.449329	103.790056	< 0.05	0.3	-	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.449581	103.790327	< 0.05	1.8	Cluster in proximity	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.449093	103.790684	0.1	5	-	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.450672997	103.789403	0.05	4	-	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.449130978	103.789418	0.05	3	Cluster in proximity	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.448863009	103.789636	0.1	5	Cluster in proximity	Possible
Angelesia splendens	Chrysobalanaceae	Native	Vulnerable	Tree	1.450297	103.789771	-	-	-	-
Curculigo latifolia	Hypoxidaceae	Native	Vulnerable	Herb	1.449142965	103.78937	-	-	-	Possible
Curculigo latifolia	Hypoxidaceae	Native	Vulnerable	Herb	1.449152017	103.78956	-	-	-	Possible
Elaeocarpus ferrugineus	Elaeocarpaceae	Native	Vulnerable	Tree	1.450037984	103.789489	0.4	8	Cluster in proximity	Not recommended
Elaeocarpus ferrugineus	Elaeocarpaceae	Native	Vulnerable	Tree	1.450524	103.78942	0.1	4	-	Possible
Endospermum cf diadenum	Euphorbiaceae	Native	Vulnerable	Tree	1.450463	103.787669	<0.05	0.5	-	Possible
Endospermum cf diadenum	Euphorbiaceae	Native	Vulnerable	Tree	1.449719975	103.789371	0.2	8	-	Possible
Ficus vasculosa	Moraceae	Native	Vulnerable	Tree	1.449719975	103.789587	0.05	1	-	Possible
Hoya diversifolia	Apocynaceae	Native	Vulnerable	Climber	1.448871978	103.790921	-	-	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.45058	103.788555	0.4	7	Cluster in proximity	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.450592	103.787679	0.4	8	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.450535	103.78758	<0.05	0.5	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.450778022	103.789848	-	-	-	-
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.450191038	103.790021	0.1	4	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.450117026	103.789632	< 0.05	1	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449732967	103.789933	0.05	2.5	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449593995	103.790039	< 0.05	1.3	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448756	103.789741	0.8	14	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448779	103.789772	0.5	2.5	Cluster in proximity	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448873	103.789808	0.1	4	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449053	103.789679	0.05	2	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449334	103.789711	0.05 to 0.1	6	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449321	103.789795	0.05	1.5	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449137	103.789881	0.2	6	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449215	103.790236	0.05 to 0.2	1.5 to 3	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449442	103.790013	0.05	2	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449333	103.789959	0.1	4	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449361	103.790134	< 0.05	1.8	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449436	103.790205	0.2	7	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449274	103.790291	0.5	9	Cluster in proximity	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.44932	103.789684	0.6	1.6	Flowering	Transplantation not recommended, fruit harvesting possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449297	103.789646	< 0.05	0		Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449329	103.790056	< 0.05	0.5	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449976964	103.789495	< 0.05	0.5	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.44977496	103.789346	0.6	14	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449719975	103.789371	0.3	14	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449689968	103.789334	0.4	10	Cluster in proximity	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449602041	103.789285	0.2	6	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449489975	103.789296	0.2	7	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448795032	103.789468	< 0.05	1.5	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448836019	103.789376	< 0.05	0.5	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448954958	103.789389	0.05	5	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.44909896	103.789478	0.6	12	Flowering. Cluster in proximity	Transplantation not recommended, fruit harvesting possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449130978	103.789418	0.1	5	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449215971	103.789413	0.5	10	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449142965	103.78937	0.5	10	Cluster in proximity	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449268023	103.789492	0.7	12	Cluster in proximity	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448863009	103.789636	0.05	2.5	-	Possible

Species	Family	Origin	Status	Habit	Latitude	Longitude	Girth	Height	Remarks	Transplanting or Salvaging
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449793987	103.789969	0.5	13	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.449448988	103.789439	0.7	13	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.44938604	103.789418	0.5 to 0.7	13	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448613983	103.790008	0.8	11	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448624963	103.78996	0.6	10	Flowering and fruiting	Transplantation Not recommended, fruit harvesting possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448577018	103.789861	0.05	2	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448608031	103.789528	0.3	7	Cluster in proximity	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448490014	103.789538	0.4	9	Cluster in proximity	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448308965	103.789409	0.5	9	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448159013	103.789492	0.3	3.5	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448076032	103.789484	0.2	3	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.44825004	103.789548	< 0.05	2	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448427988	103.789605	0.3	12	Cluster in proximity	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.448382977	103.78976	0.9	13	-	Not recommended
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.450513	103.787612	<0.05	0.5	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.450716	103.787475	0.1	1	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.45036	103.789773	0.05	1.5	-	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.450605	103.789365	0.2	5	Cluster in proximity	Possible
Lindera lucida	Lauraceae	Native	Vulnerable	Tree	1.44932	103.789684	0.05	4	Flowering and fruiting	Possible
Litsea umbellata	Lauraceae	Native	Vulnerable	Tree	1.450545	103.788561	-	-	-	-
Litsea umbellata	Lauraceae	Native	Vulnerable	Tree	1.449215971	103.789413	0.1	4	-	Possible
Litsea umbellata	Lauraceae	Native	Vulnerable	Tree	1.448469982	103.789436	< 0.05	1	-	Possible
Litsea umbellata	Lauraceae	Native	Vulnerable	Tree	1.448092042	103.789788	< 0.05	0.5	-	Possible
Macaranga griffithiana	Euphorbiaceae	Native	Vulnerable	Tree	1.450825	103.788075	0.5	>0.05	-	Not recommended
Macaranga griffithiana	Euphorbiaceae	Native	Vulnerable	Tree	1.450463	103.787669	<0.05	0.3	-	Possible
Macaranga griffithiana	Euphorbiaceae	Native	Vulnerable	Tree	1.450261	103.787919	<0.05	0.3	-	Possible
Macaranga griffithiana	Euphorbiaceae	Native	Vulnerable	Tree	1.449593995	103.790039	< 0.05	0.4	-	Possible
Macaranga griffithiana	Euphorbiaceae	Native	Vulnerable	Tree	1.449517	103.790086	0.4	12	-	Not recommended
Macaranga griffithiana	Euphorbiaceae	Native	Vulnerable	Tree	1.449218988	103.789336	0.05	1.8	Cluster in proximity	Possible
Macaranga griffithiana	Euphorbiaceae	Native	Vulnerable	Tree	1.450473	103.789672	<0.05	0.5	-	Possible
Palaquium obovatum var. *obovatum*	Sapotaceae	Native	Vulnerable	Tree	1.450575	103.788156	0.05	2.5	-	Possible
Palaquium obovatum var. *obovatum*	Sapotaceae	Native	Vulnerable	Tree	1.450953959	103.789674	-	-	Cluster in proximity	-
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	1.449647974	103.79	-	-	-	Possible
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	1.449958021	103.789494	-	-	Cluster in proximity	Possible
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	1.449776972	103.789381	-	-	Cluster in proximity	Possible
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	1.448785979	103.789437	-	-	-	Possible
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	1.448740968	103.789364	-	-	-	Possible
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	1.449113041	103.789337	-	-	Cluster in proximity	Possible
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	1.44848004	103.789424	-	-	Cluster in proximity	Possible
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	1.448326986	103.789564	-	-	Cluster in proximity	Possible
Psychotria polycarpa	Rubiaceae	Native	Critically Endangered	Climber	1.450408	103.789824	-	-	-	Possible
Tectaria semipinnata	Dryopteridaceae	Native	Endangered	Herb	1.450316	103.787882	-	-	-	Possible
Tectaria semipinnata	Dryopteridaceae	Native	Endangered	Herb	1.450353	103.788022	-	-	Cluster in proximity	Possible

APPENDIX C

List and Geospatial Coordinates of Other Plant Specimens of Value

Tag ID	Species	Family	Origin	Status	Habit	Northing	Easting	Girth / size of spread (m)	Height (m)	Remarks
BC1647	*Falcataria falcata*	Fabaceae	Exotic	Naturalised	Tree	48021.3	22967.415	2	25	Brahminy kite nest

APPENDIX D

List and Geospatial Coordinates of Large Plant Specimens

Tag ID	Species	Origin	Status	Girth/ spread (m)	Height (m)	SULE	TreeAZ	Retention value	Northing (DGPS)	Easting (DGPS)
BC1601	*Ficus religiosa*	Exotic	Exotic	6	20	2E	A2	high	47870.569	23042.253
BC1602	*Terminalia catappa*	Native	Common; cultivated	5.5	20	4D	Z4	high	47882.036	23058.523
BC1603	*Mangifera indica*	Exotic	Exotic	2.5	18	2A	A1	high	47881.402	23067.567
BC1604	*Mangifera indica*	Exotic	Exotic	2	18	2A	A2	high	47875.262	23074.034
BC1605	*Mangifera indica*	Exotic	Exotic	2	18	2E	A2	high	47912.111	23079.479
BC1606	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.4	18	2A	A1	high	47959.854	23086.768
BC1607	*Mangifera indica*	Exotic	Exotic	1.6	15	2A	A2	high	47965.472	23084.369
BC1608	*Acacia auriculiformis*	Exotic	Exotic	2	20	4B	Z3	low	47971.876	23084.92
BC1609	*Mangifera indica*	Exotic	Exotic	2.5	12	2A	A2	high	47968.026	23064.656
BC1610	*Nephelium lappaceum*	Cryptogenic	Cryptogenic	2.3	8	2A	A2	high	47966.941	23044.757
BC1611	*Nephelium lappaceum*	Cryptogenic	Cryptogenic	2.6	10	2A	A2	high	47967.787	23034.64
BC1612	*Artocarpus heterophyllus*	Exotic	Exotic	2	10	2A	A2	high	47971.418	23025.296
BC1613	*Mangifera indica*	Exotic	Exotic	2	10	2A	A1	high	47971.313	23015.327
BC1614	*Hevea brasiliensis*	Exotic	Exotic	1.4	10	2E	A2	high	47866.888	22994.961
BC1615	*Macaranga gigantea*	Native	Common; cultivated	1.2	18	3A	A1	moderate	48014.159	23073.524
BC1616	*Cinnamomum iners*	Native	Common; cultivated	1	16	2A	A2	high	48024.835	23071.121
BC1617	*Macaranga gigantea*	Native	Common; cultivated	1	12	3A	A1	moderate	37971.939	30682.532
BC1618	*Cecropia pachystachya*	Exotic	Exotic	1	12	4F	Z8	low	48008.499	23059.681
BC1619	*Macaranga gigantea*	Native	Common; cultivated	1	12	3A	A1	moderate	48001.211	23061.406
BC1620	*Cecropia pachystachya*	Exotic	Exotic	3	14	4F	Z8	low	47995.596	23053.715
BC1621	*Macaranga gigantea*	Native	Common; cultivated	1	14	3A	A1	moderate	47992.788	23056.577
BC1622	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	47994.299	23045.151
BC1623	*Cecropia pachystachya*	Exotic	Exotic	1	14	4F	Z8	low	47994.898	23044.211
BC1624	*Falcataria falcata*	Exotic	Exotic	2	20	4F	Z6	low	48005.472	23037.402
BC1625	*Macaranga gigantea*	Native	Common; cultivated	1	10	3A	A1	moderate	48006.288	23036.133
BC1626	*Lindera lucida*	Native	Vulnerable	0.3	10	2A	A1	high	48003.314	23037.62
BC1627	*Falcataria falcata*	Exotic	Exotic	1.8	30	4F	Z6	low	48010.689	23027.667
BC1628	*Falcataria falcata*	Exotic	Exotic	1.3	10	4F	Z6	low	47997.224	23025.672
BC1629	*Falcataria falcata*	Exotic	Exotic	1.8	30	4F	Z6	low	48011.027	23023.768
BC1630	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	48013.766	23022.977
BC1631	*Falcataria falcata*	Exotic	Exotic	1	18	4F	Z6	low	48015.808	23021.828
BC1632	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	48015.826	23011.006
BC1633	*Acacia auriculiformis*	Exotic	Exotic	1.8	16	4F	Z6	low	48010.282	23005.29
BC1634	*Hevea brasiliensis*	Exotic	Exotic	1.3	15	2A	A2	high	47996.906	23010.406
BC1635	*Macaranga gigantea*	Native	Common; cultivated	1	15	3A	A1	moderate	47998.45	23015.899
BC1636	*Falcataria falcata*	Exotic	Exotic	1.8	18	4B	Z3	low	48002.083	23003.74

BC1637	*Macaranga gigantea*	Native	Common; cultivated	1	15	3A	A2	moderate	47997.555	22999.617
BC1638	*Cecropia pachystachya*	Exotic	Exotic	1	16	4F	Z8	low	48003.042	22994.719
BC1639	*Falcataria falcata*	Exotic	Exotic	2.2	30	4F	Z6	low	48011.837	22997.494
BC1640	*Litsea elliptica*	Native	Common; cultivated	1	20	2A	A1	high	48004.978	22984.14
BC1641	*Falcataria falcata*	Exotic	Exotic	2	28	4F	Z6	low	48005.97	22981.469
BC1642	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	48010.725	22984.251
BC1643	*Falcataria falcata*	Exotic	Exotic	1.2	25	2A	A1	high	47999.01	22991.039
BC1644	*Falcataria falcata*	Exotic	Exotic	3	30	4F	Z6	low	48011.504	22971.342
BC1645	*Macaranga gigantea*	Native	Common; cultivated	1	15	3A	A1	moderate	48002.986	22963.552
BC1645A	*Cinnamomum iners*	Native	Common; cultivated	1.1	15	2A	A2	high	47992.578	22967.669
BC1646	*Litsea elliptica*	Native	Common; cultivated	1	20	2A	A1	high	47998.704	22951.933
BC1647	*Falcataria falcata*	Exotic	Exotic	2	25	4F	Z6	low	48021.297	22967.415
BC1648	*Falcataria falcata*	Exotic	Exotic	2	20	4F	Z6	low	48021.9	22977.701
BC1649	*Falcataria falcata*	Exotic	Exotic	3	30	4F	Z6	low	48025.125	22987.698
BC1650	*Falcataria falcata*	Exotic	Exotic	1.4	18	4F	Z6	low	48015.003	22992.309
BC1651	*Falcataria falcata*	Exotic	Exotic	3.5	30	4F	Z6	low	48013.772	22996.568
BC1652	*Lindera lucida*	Native	Vulnerable	0.3	10	2A	A1	high	48026.112	23014.161
BC1653	*Falcataria falcata*	Exotic	Exotic	2.2	30	4F	Z6	low	48024.67	23025.265
BC1654	*Acacia auriculiformis*	Exotic	Exotic	1.3	18	4F	Z6	low	48020.666	23025.839
BC1655	*Falcataria falcata*	Exotic	Exotic	1.2	25	4F	Z6	low	48024.703	23033.217
BC1656	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	48026.618	23031.294
BC1657	*Falcataria falcata*	Exotic	Exotic	1.4	30	4F	Z6	low	48023.489	23032.549
BC1658	*Falcataria falcata*	Exotic	Exotic	1.7	25	4F	Z6	low	48028.207	23039.639
BC1659	*Falcataria falcata*	Exotic	Exotic	2.4	30	4F	Z6	low	48022.247	23041.894
BC1660	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	48017.524	23037.682
BC1661	*Falcataria falcata*	Exotic	Exotic	1	18	4F	Z6	low	48016.248	23041.066
BC1662	*Lindera lucida*	Native	Vulnerable	1	10	4B	Z3	low	48015.22	23043.903
BC1663	*Falcataria falcata*	Exotic	Exotic	1.8	25	4F	Z6	low	48044.767	23067.471
BC1664	*Macaranga gigantea*	Native	Common; cultivated	1	18	3A	A1	moderate	48051.829	23070.788
BC1665	*Falcataria falcata*	Exotic	Exotic	1.1	30	4F	Z6	low	48054.282	23068.439
BC1666	*Falcataria falcata*	Exotic	Exotic	2.5	30	4F	Z6	low	48057.319	23063.103
BC1667	*Cinnamomum iners*	Native	Common; cultivated	1	18	2A	A1	high	48051.303	23066.562
BC1668	*Macaranga gigantea*	Native	Common; cultivated	1.2	11	3A	A1	moderate	48053.583	23043.294
BC1669	*Macaranga gigantea*	Native	Common; cultivated	1.2	11	3A	A1	moderate	48061.218	23041.75
BC1670	*Cinnamomum iners*	Native	Common; cultivated	1	18	2A	A1	high	48063.157	23032.432
BC1671	*Falcataria falcata*	Exotic	Exotic	1.8	30	4F	Z6	low	48052.376	23029.047
BC1672	*Lindera lucida*	Native	Vulnerable	0.35	15	2E	A2	high	48048.108	23036.584
BC1673	*Lindera lucida*	Native	Vulnerable	0.6	10	2A	A1	high	48042.816	23030.617

BC1674	*Falcataria falcata*	Exotic	Exotic	2.2	30	4F	Z6	low	48038.487	23042.36
BC1675	*Falcataria falcata*	Exotic	Exotic	1.8	25	4D	Z4	low	48041.122	23025.289
BC1676	*Macaranga gigantea*	Native	Common; cultivated	1	18	3A	A1	moderate	48050.964	23022.069
BC1677	*Falcataria falcata*	Exotic	Exotic	2.7	30	4F	Z6	low	48056.91	23010.506
BC1678	*Falcataria falcata*	Exotic	Exotic	1.2	15	4F	Z6	low	48054.415	23009.491
BC1679	*Falcataria falcata*	Exotic	Exotic	2.8	30	4F	Z6	low	48050.576	23008.895
BC1680	*Cecropia pachystachya*	Exotic	Exotic	1	10	4F	Z8	low	48038.794	23007.647
BC1681	*Cecropia pachystachya*	Exotic	Exotic	1.1	10	4F	Z8	low	48038.878	23008.802
BC1682	*Falcataria falcata*	Exotic	Exotic	3	25	4F	Z6	low	48035.683	23011.266
BC1683	*Lindera lucida*	Native	Vulnerable	0.6	15	2A	A1	high	48033.358	22968.851
BC1684	*Hevea brasiliensis*	Exotic	Exotic	1	15	2A	A1	high	48027.48	22963.9
BC1685	*Litsea elliptica*	Native	Common; cultivated	1	18	2E	A2	high	48032.496	22961.839
BC1686	*Lindera lucida*	Native	Vulnerable	0.6	13	2A	A1	high	48032.574	22952.114
BC1687	*Litsea elliptica*	Native	Common; cultivated	1	18	2A	A1	high	48028.803	22949.262
BC1688	*Falcataria falcata*	Exotic	Exotic	1.8	30	4F	Z6	low	48035.672	22947.007
BC1689	*Cecropia pachystachya*	Exotic	Exotic	1.2	20	4F	Z8	low	48042.678	22945.032
BC1690	*Acacia auriculiformis*	Exotic	Exotic	1	15	4F	Z6	low	48047.104	22943.693
BC1691	*Falcataria falcata*	Exotic	Exotic	3	30	4F	Z6	low	48063.649	22940.248
BC1692	*Falcataria falcata*	Exotic	Exotic	2.3	30	4D	Z4	low	48066.529	22949.454
BC1693	*Litsea elliptica*	Native	Common; cultivated	1	20	2E	A2	high	48064.066	22951.366
BC1694	*Falcataria falcata*	Exotic	Exotic	4.5	30	4F	Z6	low	48062.815	22967.816
BC1695	*Cinnamomum iners*	Native	Common; cultivated	1	16	2A	A1	high	48058.103	22973.302
BC1696	*Nephelium lappaceum*	Cryptogenic	Cryptogenic	1.2	13	2E	A2	high	48036.698	22992.206
BC1697	*Falcataria falcata*	Exotic	Exotic	2.8	25	4F	Z6	low	48036.352	22995.715
BC1698	*Cinnamomum iners*	Native	Common; cultivated	1	12	2A	A1	high	48031.784	23047.101
BC1699	*Falcataria falcata*	Exotic	Exotic	3.2	30	4F	Z6	low	48034.489	23047.49
BC1700	*Cecropia pachystachya*	Exotic	Exotic	1.6	11	4F	Z8	low	48039.699	23084.25
BC1701	*Spathodea campanulata*	Exotic	Exotic	2	15	4F	Z6	low	48078.565	23015.871
BC1702	*Cecropia pachystachya*	Exotic	Exotic	1.4	12	4F	Z8	low	48093.475	23006.354
BC1703	*Pterocarpus indicus*	Exotic	Exotic	4	25	2A	A2	high	48084.211	22985.618
BC1704	*Cinnamomum iners*	Native	Common; cultivated	1	10	2E	A2	high	48096.691	22973.593
BC1705	*Falcataria falcata*	Exotic	Exotic	4	25	4F	Z6	low	48079.75	22972.856
BC1706	*Falcataria falcata*	Exotic	Exotic	4.5	25	4F	Z6	low	48065.272	22965.679
BC1707	*Acacia auriculiformis*	Exotic	Exotic	1	20	4F	Z6	low	48048.809	22963.823
BC1708	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	48060.669	23055.74
BC1709	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	48063.648	23058.134
BC1710	*Falcataria falcata*	Exotic	Exotic	1.8	27	4F	Z6	low	48068.651	23053.501
BC1711	*Falcataria falcata*	Exotic	Exotic	1.5	30	4F	Z6	low	48076.357	23052.263

BC1712	*Macaranga gigantea*	Native	Common; cultivated	1	15	3A	A1	moderate	48090.491	23048.031
BC1713	*Syzygium grande*	Native	Common; cultivated	1	18	2A	A1	high	48097.223	23044.198
BC1714	*Macaranga gigantea*	Native	Common; cultivated	1	15	3A	A1	moderate	48105.992	23045.22
BC1715	*Spathodea campanulata*	Exotic	Exotic	1.5	20	4B	Z3	low	48106.157	23037.724
BC1716	*Spathodea campanulata*	Exotic	Exotic	3	22	4D	Z4	low	48109.187	23037.53
BC1717	*Ficus microcarpa*	Native	Common; cultivated	1.8	18	2A	A1	high	48103.385	23066.447
BC1718	*Spathodea campanulata*	Exotic	Exotic	1	15	4F	Z6	low	48099.284	23071.135
BC1719	*Spathodea campanulata*	Exotic	Exotic	1	15	4F	Z6	low	48079.239	23074.465
BC1720	*Spathodea campanulata*	Exotic	Exotic	1	15	4F	Z6	low	48079.017	23071.32
BC1721	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	48020.036	23052.813
BC1722	*Cecropia pachystachya*	Exotic	Exotic	2.5	18	4F	Z8	low	48114.216	23182.714
BC1723	*Cecropia pachystachya*	Exotic	Exotic	1.8	18	4F	Z8	low	48111.692	23186.429
BC1724	*Cecropia pachystachya*	Exotic	Exotic	2	18	4F	Z8	low	48113.166	23188.22
BC1725	*Cecropia pachystachya*	Exotic	Exotic	2	15	4F	Z8	low	48114.307	23193.227
BC1726	*Falcataria falcata*	Exotic	Exotic	1	15	4F	Z6	low	48116.777	23195.261
BC1727	*Falcataria falcata*	Exotic	Exotic	1	12	4F	Z6	low	48110.497	23195.548
BC1728	*Falcataria falcata*	Exotic	Exotic	1	18	4F	Z6	low	48100.883	23191.294
BC1729	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	48099.536	23190.754
BC1730	*Falcataria falcata*	Exotic	Exotic	1.4	18	4F	Z6	low	48093.877	23195.943
BC1731	*Falcataria falcata*	Exotic	Exotic	1.2	15	4F	Z6	low	48082.433	23192.021
BC1732	*Falcataria falcata*	Exotic	Exotic	1.2	15	4B	Z3	low	48075.589	23194.048
BC1733	*Terminalia catappa*	Native	Common; cultivated	1	15	4B	Z3	low	48066.94	23190.107
BC1734	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	48068.072	23182.061
BC1735	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	48071.228	23173.448
BC1736	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	48061.955	23171.354
BC1737	*Falcataria falcata*	Exotic	Exotic	2.2	30	4F	Z6	low	48061.945	23163.419
BC1738	*Macaranga gigantea*	Native	Common; cultivated	1.3	18	3A	A1	moderate	48061.316	23159.314
BC1739	*Falcataria falcata*	Exotic	Exotic	1.8	30	4F	Z6	low	48071.272	23145.335
BC1740	*Falcataria falcata*	Exotic	Exotic	2.6	30	4F	Z6	low	48066.034	23138.31
BC1741	*Falcataria falcata*	Exotic	Exotic	1	12	4F	Z6	low	47871.222	23288.858
BC1742	*Falcataria falcata*	Exotic	Exotic	1	12	4F	Z6	low	47866.231	23284.658
BC1743	*Falcataria falcata*	Exotic	Exotic	1	14	4F	Z6	low	47869.585	23281.369
BC1744	*Spathodea campanulata*	Exotic	Exotic	1	12	4F	Z6	low	47863.229	23276.525
BC1745	*Spathodea campanulata*	Exotic	Exotic	2.2	14	4F	Z6	low	47853.914	23278.538
BC1746	*Falcataria falcata*	Exotic	Exotic	1	14	4F	Z6	low	47861.218	23288.197
BC1747	*Falcataria falcata*	Exotic	Exotic	1	14	4F	Z6	low	47853.835	23288.943
BC1748	*Falcataria falcata*	Exotic	Exotic	1	14	4F	Z6	low	47854.418	23289.94
BC1749	*Falcataria falcata*	Exotic	Exotic	1.1	14	4F	Z6	low	47849.749	23294.627

BC1750	*Falcataria falcata*	Exotic	Exotic	1	10	4F	Z6	low	47845.201	23293.42
BC1751	*Falcataria falcata*	Exotic	Exotic	1	12	4F	Z6	low	47835.207	23289.425
BC1752	*Falcataria falcata*	Exotic	Exotic	1	14	4F	Z6	low	47828.722	23301.182
BC1753	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	47826.167	23298.767
BC1754	*Falcataria falcata*	Exotic	Exotic	1	17	4F	Z6	low	47821.45	23296.565
BC1755	*Falcataria falcata*	Exotic	Exotic	1	15	4F	Z6	low	47813.466	23299.628
BC1756	*Falcataria falcata*	Exotic	Exotic	1	15	4F	Z6	low	47815.084	23304.923
BC1757	*Falcataria falcata*	Exotic	Exotic	1	14	4F	Z6	low	47801.437	23306.895
BC1758	*Falcataria falcata*	Exotic	Exotic	1	14	4F	Z6	low	47801.982	23313.205
BC1759	*Falcataria falcata*	Exotic	Exotic	1	16	4F	Z6	low	47793.454	23310.755
BC1760	*Falcataria falcata*	Exotic	Exotic	1.2	16	4F	Z6	low	47790.134	23318.358
BC1761	*Falcataria falcata*	Exotic	Exotic	1	16	4F	Z6	low	47788.69	23312.316
BC1762	*Falcataria falcata*	Exotic	Exotic	1	16	4F	Z6	low	47787.609	23312.068
BC1763	*Falcataria falcata*	Exotic	Exotic	1	16	4F	Z6	low	47785.796	23307.152
BC1764	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	47782.817	23306.777
BC1765	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	47785.512	23301.287
BC1766	*Falcataria falcata*	Exotic	Exotic	1.8	25	4F	Z6	low	47788.176	23285.054
BC1767	*Falcataria falcata*	Exotic	Exotic	1.8	25	4F	Z6	low	47791.903	23282.331
BC1768	*Falcataria falcata*	Exotic	Exotic	2	25	4F	Z6	low	47786.797	23273.993
BC1769	*Falcataria falcata*	Exotic	Exotic	2	25	4F	Z6	low	47787.563	23271.944
BC1770	*Cecropia pachystachya*	Exotic	Exotic	1	14	4F	Z8	low	47778.932	23256.716
BC1771	*Cecropia pachystachya*	Exotic	Exotic	1.1	15	4F	Z8	low	47780.677	23253.436
BC1772	*Cecropia pachystachya*	Exotic	Exotic	2	15	4F	Z8	low	47780.497	23252.069
BC1773	*Cecropia pachystachya*	Exotic	Exotic	1	18	4F	Z8	low	47772.64	23231.365
BC1774	*Falcataria falcata*	Exotic	Exotic	1	20	4F	Z6	low	47757.72	23238.434
BC1775	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47769.538	23222.273
BC1776	*Cecropia pachystachya*	Exotic	Exotic	1	15	4F	Z8	low	47760.007	23219.493
BC1777	*Spathodea campanulata*	Exotic	Exotic	1.2	16	4F	Z6	low	47769.127	23203.337
BC1778	*Falcataria falcata*	Exotic	Exotic	2	25	4F	Z6	low	47775.973	23194.652
BC1779	*Falcataria falcata*	Exotic	Exotic	3	30	4F	Z6	low	47773.409	23192.304
BC1780	*Spathodea campanulata*	Exotic	Exotic	1	15	4F	Z6	low	47785.684	23206.102
BC1781	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47779.836	23203.941
BC1782	*Spathodea campanulata*	Exotic	Exotic	1.2	15	4F	Z6	low	47773.91	23204.981
BC1783	*Falcataria falcata*	Exotic	Exotic	1.5	18	4F	Z6	low	47776.49	23207.154
BC1784	*Spathodea campanulata*	Exotic	Exotic	2.3	16	4F	Z6	low	47855.021	23275.466
BC1785	*Falcataria falcata*	Exotic	Exotic	2.2	25	4F	Z6	low	47848.172	23274.273
BC1786	*Falcataria falcata*	Exotic	Exotic	2.2	25	4F	Z6	low	47848.481	23273.539
BC1787	*Falcataria falcata*	Exotic	Exotic	2	25	4F	Z6	low	47846.173	23273.266

BC1788	*Falcataria falcata*	Exotic	Exotic	2.1	25	4F	Z6	low	47843.947	23272.063
BC1789	*Cecropia pachystachya*	Exotic	Exotic	1	15	4F	Z8	low	47844.213	23258.781
BC1790	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	47843.604	23258.652
BC1791	*Falcataria falcata*	Exotic	Exotic	1.2	15	4F	Z6	low	47843.923	23257.458
BC1792	*Falcataria falcata*	Exotic	Exotic	2.3	30	4F	Z6	low	47834.943	23261.553
BC1793	*Spathodea campanulata*	Exotic	Exotic	2	20	4F	Z6	low	47817.5	23264.188
BC1794	*Cecropia pachystachya*	Exotic	Exotic	1.8	15	4F	Z8	low	47805.052	23271.877
BC1795	*Spathodea campanulata*	Exotic	Exotic	2.2	18	4F	Z6	low	47811.28	23272.889
BC1796	*Spathodea campanulata*	Exotic	Exotic	1.6	16	4F	Z6	low	47813.535	23268.643
BC1797	*Cecropia pachystachya*	Exotic	Exotic	2	15	4F	Z8	low	47801.095	23276.802
BC1798	*Spathodea campanulata*	Exotic	Exotic	2.2	18	4F	Z6	low	47801.152	23279.844
BC1799	*Spathodea campanulata*	Exotic	Exotic	1	18	4F	Z6	low	47808.004	23279.824
BC1800	*Spathodea campanulata*	Exotic	Exotic	1	11	4F	Z6	low	47823.972	23281.169
BC1994	*Falcataria falcata*	Exotic	Exotic	3.7	30	4F	Z6	low	47855.629	23252.583
BC1995	*Falcataria falcata*	Exotic	Exotic	3.5	30	4F	Z6	low	47830.813	23245.038
BC1996	*Macaranga gigantea*	Native	Common; cultivated	1	16	3A	A2	moderate	47820.582	23224.964
BC1997	*Cecropia pachystachya*	Exotic	Exotic	1	14	4F	Z8	low	47820.786	23211.8
BC1998	*Cecropia pachystachya*	Exotic	Exotic	1	15	4F	Z8	low	47822.835	23207.383
BC1999	*Falcataria falcata*	Exotic	Exotic	2.5	30	4F	Z6	low	47831.749	23206.417
BC2000	*Falcataria falcata*	Exotic	Exotic	1.5	20	4F	Z6	low	47833.757	23204.138
BC2001	*Falcataria falcata*	Exotic	Exotic	1.8	25	4F	Z6	low	47836.672	23201.566
BC2002	*Falcataria falcata*	Exotic	Exotic	1.7	25	4F	Z6	low	47832.876	23200.88
BC2003	*Falcataria falcata*	Exotic	Exotic	3.5	30	4F	Z6	low	47810.073	23199.193
BC2004	*Cecropia pachystachya*	Exotic	Exotic	2	16	4F	Z8	low	47796.353	23217.341
BC2005	*Spathodea campanulata*	Exotic	Exotic	1.8	16	4F	Z6	low	47796.842	23221.112
BC2006	*Falcataria falcata*	Exotic	Exotic	4	35	4F	Z6	low	47801.066	23224.467
BC2007	*Falcataria falcata*	Exotic	Exotic	2.5	35	4F	Z6	low	47802.274	23234.24
BC2008	*Falcataria falcata*	Exotic	Exotic	3	30	4F	Z6	low	47803.762	23239.355
BC2009	*Falcataria falcata*	Exotic	Exotic	3	35	4F	Z6	low	47802.557	23241.629
BC2010	*Falcataria falcata*	Exotic	Exotic	1.8	35	4F	Z6	low	47796.277	23237.294
BC2011	*Falcataria falcata*	Exotic	Exotic	1	30	4F	Z6	low	47731.087	23176.853
BC2012	*Falcataria falcata*	Exotic	Exotic	1.3	20	4F	Z6	low	47727.917	23180.567
BC2013	*Falcataria falcata*	Exotic	Exotic	1.2	22	4F	Z6	low	47719.809	23176.637
BC2014	*Falcataria falcata*	Exotic	Exotic	1.2	22	4F	Z6	low	47713.224	23172.907
BC2015	*Falcataria falcata*	Exotic	Exotic	1.5	22	4F	Z6	low	47708.776	23167.142
BC2016	*Falcataria falcata*	Exotic	Exotic	1	25	4F	Z6	low	47703.817	23167.832
BC2017	*Falcataria falcata*	Exotic	Exotic	1	20	4F	Z6	low	47691.738	23162.834
BC2018	*Falcataria falcata*	Exotic	Exotic	1	22	4F	Z6	low	47683.426	23170.04

BC2019	*Falcataria falcata*	Exotic	Exotic	1.3	22	4F	Z6	low	47677.144	23164.124
BC2020	*Falcataria falcata*	Exotic	Exotic	1.6	22	4F	Z6	low	47659.355	23163.755
BC2021	*Falcataria falcata*	Exotic	Exotic	1.5	20	4F	Z6	low	47619.801	23163.007
BC2022	*Falcataria falcata*	Exotic	Exotic	1.5	20	4F	Z6	low	47606.985	23161.173
BC2023	*Falcataria falcata*	Exotic	Exotic	1.3	20	4F	Z6	low	47608.577	23169.449
BC2024	*Falcataria falcata*	Exotic	Exotic	1.3	25	4F	Z6	low	47602.127	23170.89
BC2025	*Falcataria falcata*	Exotic	Exotic	1	22	4F	Z6	low	47602.404	23161.612
BC2026	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	47678.204	23131.849
BC2027	*Falcataria falcata*	Exotic	Exotic	2.2	20	4F	Z6	low	47686.05	23137.629
BC2028	*Falcataria falcata*	Exotic	Exotic	1.3	20	4F	Z6	low	47679.882	23144.801
BC2029	*Falcataria falcata*	Exotic	Exotic	2.2	20	4F	Z6	low	47704.349	23144.165
BC2030	*Falcataria falcata*	Exotic	Exotic	1.5	20	4F	Z6	low	47713.409	23149.808
BC2031	*Cecropia pachystachya*	Exotic	Exotic	1.5	15	4F	Z8	low	47708.036	23153.886
BC2032	*Falcataria falcata*	Exotic	Exotic	1.2	22	4F	Z6	low	47718.707	23141.261
BC2033	*Falcataria falcata*	Exotic	Exotic	1.3	22	4F	Z6	low	47726.739	23135.546
BC2034	*Mallotus paniculatus*	Native	Common	1	18	2A	A2	high	47730.587	23138.89
BC2035	*Falcataria falcata*	Exotic	Exotic	1.5	20	4F	Z6	low	47714.44	23150.106
BC2036	*Falcataria falcata*	Exotic	Exotic	1.2	22	4F	Z6	low	47717.657	23146.575
BC2037	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	47931.991	23262.985
BC2038	*Falcataria falcata*	Exotic	Exotic	1	18	4F	Z6	low	47931.087	23259.051
BC2039	*Falcataria falcata*	Exotic	Exotic	1	18	4F	Z6	low	47927.498	23262.716
BC2040	*Falcataria falcata*	Exotic	Exotic	1.3	18	4F	Z6	low	47921.297	23260.613
BC2041	*Falcataria falcata*	Exotic	Exotic	1.1	18	4F	Z6	low	47916.971	23260.753
BC2042	*Falcataria falcata*	Exotic	Exotic	1.1	18	4F	Z6	low	47915.951	23262.31
BC2043	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	47913.318	23265.513
BC2044	*Falcataria falcata*	Exotic	Exotic	1	18	4F	Z6	low	47913.296	23263.48
BC2045	*Falcataria falcata*	Exotic	Exotic	1.3	20	4F	Z6	low	47904.683	23266.49
BC2046	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47900.043	23269.944
BC2047	*Falcataria falcata*	Exotic	Exotic	1.8	25	4F	Z6	low	47885.802	23265.489
BC2048	*Falcataria falcata*	Exotic	Exotic	1.8	30	4F	Z6	low	47885.454	23257.392
BC2049	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	47887.884	23256.271
BC2050	*Falcataria falcata*	Exotic	Exotic	1.8	30	4F	Z6	low	47882.987	23273.363
BC2051	*Falcataria falcata*	Exotic	Exotic	1.8	30	4F	Z6	low	47875.546	23271.273
BC2052	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	47868.059	23265.788
BC2053	*Falcataria falcata*	Exotic	Exotic	2.2	30	4F	Z6	low	47860.778	23269.388
BC2054	*Falcataria falcata*	Exotic	Exotic	1.7	30	4F	Z6	low	47857.49	23259.997
BC2055	*Falcataria falcata*	Exotic	Exotic	1	15	4F	Z6	low	47859.75	23246.391
BC2056	*Falcataria falcata*	Exotic	Exotic	1	20	4F	Z6	low	47855.364	23246.658

BC2057	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	47851.14	23242.107
BC2058	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	47848.498	23243.402
BC2059	*Ficus variegata*	Native	Common; cultivated	1.3	16	2A	A1	high	47843.875	23234.942
BC2060	*Macaranga gigantea*	Native	Common; cultivated	1	18	3A	A1	moderate	47852.578	23206.477
BC2061	*Cecropia pachystachya*	Exotic	Exotic	1	12	4F	Z8	low	47849.812	23208.469
BC2062	*Macaranga gigantea*	Native	Common; cultivated	1.2	20	3A	A1	moderate	47841.626	23187.24
BC2063	*Syzygium polyanthum*	Native	Common	1	20	2A	A1	high	47840.644	23175.523
BC2064	*Macaranga gigantea*	Native	Common; cultivated	2	20	3A	A1	moderate	47865.516	23176.905
BC2065	*Macaranga gigantea*	Native	Common; cultivated	1.6	20	3A	A1	moderate	47855.917	23174.361
BC2066	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.1	20	2A	A1	high	47858.386	23170.297
BC2067	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.7	20	2A	A2	high	47862.397	23164.545
BC2068	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.1	20	2A	A1	high	47870.079	23168.394
BC2069	*Falcataria falcata*	Exotic	Exotic	2.7	30	4F	Z6	low	47874.565	23237.324
BC2070	*Falcataria falcata*	Exotic	Exotic	1.8	22	4F	Z6	low	47879.113	23236.974
BC2071	*Falcataria falcata*	Exotic	Exotic	1	22	4B	Z3	low	47871.988	23243.966
BC2072	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	47883.528	23228.408
BC2073	*Falcataria falcata*	Exotic	Exotic	2.2	30	4F	Z6	low	47902.278	23241.959
BC2074	*Falcataria falcata*	Exotic	Exotic	1	25	4B	Z3	low	47909.331	23249.829
BC2075	*Falcataria falcata*	Exotic	Exotic	1	25	4F	Z6	low	47912.94	23253.772
BC2076	*Falcataria falcata*	Exotic	Exotic	1.6	18	4F	Z6	low	47942.915	23245.697
BC2077	*Falcataria falcata*	Exotic	Exotic	1	15	4F	Z6	low	47939.866	23234.264
BC2078	*Spathodea campanulata*	Exotic	Exotic	2.6	28	4F	Z6	low	47919.295	23214.801
BC2079	*Spathodea campanulata*	Exotic	Exotic	2.5	25	4F	Z6	low	47914.818	23224.404
BC2080	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	47906.87	23227.616
BC2081	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	47900.777	23216.548
BC2082	*Falcataria falcata*	Exotic	Exotic	1.3	26	4F	Z6	low	47899.719	23219.033
BC2083	*Falcataria falcata*	Exotic	Exotic	2.9	35	4F	Z6	low	47885.742	23220.56
BC2084	*Falcataria falcata*	Exotic	Exotic	1.7	25	4F	Z6	low	47886.131	23218.371
BC2085	*Falcataria falcata*	Exotic	Exotic	2.8	30	4F	Z6	low	47885.202	23228.432
BC2086	*Falcataria falcata*	Exotic	Exotic	1.9	30	4F	Z6	low	47882.762	23213.126
BC2087	*Falcataria falcata*	Exotic	Exotic	2.4	30	4F	Z6	low	47881.008	23208.746
BC2088	*Lindera lucida*	Native	Vulnerable	0.4	12	2A	A2	high	47877.841	23208.624
BC2089	*Falcataria falcata*	Exotic	Exotic	2	25	4F	Z6	low	47875.604	23209.58
BC2090	*Lindera lucida*	Native	Vulnerable	0.3	17	2E	A2	high	47876.233	23212.276
BC2091	*Macaranga gigantea*	Native	Common; cultivated	1	18	3A	A1	moderate	47852.364	23206.732
BC2092	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.2	20	2E	A2	high	47872.5	23177.786
BC2093	*Falcataria falcata*	Exotic	Exotic	3	35	4F	Z6	low	47881.029	23174.181
BC2094	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.2	30	2E	A2	high	47891.585	23173.471

BC2095	*Lindera lucida*	Native	Vulnerable	0.3	15	2E	A2	high	47894.499	23171.281
BC2096	*Lindera lucida*	Native	Vulnerable	0.5	12	2A	A1	high	47898.074	23164.745
BC2097	*Cecropia pachystachya*	Exotic	Exotic	1.2	14	4F	Z7	low	47902.398	23183.855
BC2098	*Macaranga gigantea*	Native	Common; cultivated	1.1	15	4B	Z3	low	47897.203	23187.369
BC2099	*Falcataria falcata*	Exotic	Exotic	3.2	35	4F	Z6	low	47888.452	23199.923
BC2100	*Falcataria falcata*	Exotic	Exotic	2.8	35	4F	Z6	low	47889.717	23203.08
BC2101	*Cecropia pachystachya*	Exotic	Exotic	1.5	15	4F	Z8	low	48079.444	22940.475
BC2102	*Cecropia pachystachya*	Exotic	Exotic	1	16	4F	Z8	low	48067.466	22922.831
BC2103	*Cecropia pachystachya*	Exotic	Exotic	1	12	4F	Z8	low	48073.967	22909.321
BC2104	*Cecropia pachystachya*	Exotic	Exotic	1	15	4F	Z8	low	48071.501	22901.323
BC2105	*Cecropia pachystachya*	Exotic	Exotic	1	12	4F	Z8	low	48078.639	22906.781
BC2106	*Cecropia pachystachya*	Exotic	Exotic	1.1	16	4F	Z8	low	48064.353	22908.124
BC2107	*Cecropia pachystachya*	Exotic	Exotic	1.1	10	4F	Z8	low	48071.564	22894.313
BC2108	*Cecropia pachystachya*	Exotic	Exotic	1	12	4F	Z8	low	48068.627	22900.662
BC2109	*Cecropia pachystachya*	Exotic	Exotic	1.3	20	4F	Z8	low	48062.663	22900.608
BC2110	*Falcataria falcata*	Exotic	Exotic	2.2	26	4F	Z6	low	48056.085	22897.346
BC2111	*Falcataria falcata*	Exotic	Exotic	1.8	25	4F	Z6	low	48054.655	22895.784
BC2112	*Cecropia pachystachya*	Exotic	Exotic	2	18	4F	Z8	low	48043.395	22884.532
BC2113	*Cecropia pachystachya*	Exotic	Exotic	1.6	18	4F	Z8	low	48042.114	22883.685
BC2114	*Cecropia pachystachya*	Exotic	Exotic	1	15	4F	Z8	low	48043.415	22871.416
BC2115	*Cecropia pachystachya*	Exotic	Exotic	1.1	15	4F	Z8	low	48025.464	22873.638
BC2116	*Cecropia pachystachya*	Exotic	Exotic	1	18	4F	Z8	low	48024.77	22875.081
BC2117	*Acacia auriculiformis*	Exotic	Exotic	1	10	4F	Z6	low	48029.05	22885.063
BC2118	*Falcataria falcata*	Exotic	Exotic	3	30	4F	Z6	low	48043.053	22901.229
BC2119	*Falcataria falcata*	Exotic	Exotic	3.5	35	4F	Z6	low	48045.758	22902.207
BC2120	*Lindera lucida*	Native	Vulnerable	0.3	10	2A	A1	high	48024.98	22917.227
BC2121	*Acacia auriculiformis*	Exotic	Exotic	1	20	4F	Z6	low	48015.823	22914.031
BC2122	*Cecropia pachystachya*	Exotic	Exotic	1	15	4F	Z8	low	48017.587	22911.002
BC2123	*Falcataria falcata*	Exotic	Exotic	3.2	35	4F	Z6	low	48014.696	22904.22
BC2124	*Cecropia pachystachya*	Exotic	Exotic	1.2	20	4F	Z8	low	48008.802	22910.71
BC2125	*Cecropia pachystachya*	Exotic	Exotic	1.2	20	4F	Z8	low	48006.903	22913.066
BC2126	*Cecropia pachystachya*	Exotic	Exotic	1	20	4F	Z8	low	48006.685	22915.471
BC2127	*Falcataria falcata*	Exotic	Exotic	5.2	35	4F	Z6	low	48012.624	22935.507
BC2128	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	48011.485	22933.785
BC2129	*Lindera lucida*	Native	Vulnerable	0.5	18	2E	A2	high	48017.117	22940.945
BC2130	*Lindera lucida*	Native	Vulnerable	0.5	18	2A	A2	high	48017.709	22943.554
BC2131	*Acacia auriculiformis*	Exotic	Exotic	1.2	18	4F	Z6	low	48024.492	22942.269
BC2132	*Falcataria falcata*	Exotic	Exotic	3	35	4F	Z6	low	48026.357	22944.11

BC2133	*Lindera lucida*	Native	Vulnerable	0.5	20	2A	A1	high	48020.83	22947.453
BC2134	*Falcataria falcata*	Exotic	Exotic	3.3	35	4F	Z6	low	48010.341	22972.777
BC2135	*Cinnamomum iners*	Native	Common; cultivated	1	15	2A	A1	high	47993.243	22968.407
BC2136	*Falcataria falcata*	Exotic	Exotic	3	26	4B	Z3	low	47997.473	22942.659
BC2137	*Falcataria falcata*	Exotic	Exotic	1.7	20	4F	Z6	low	47999.068	22936.337
BC2138	*Cecropia pachystachya*	Exotic	Exotic	1.8	20	4F	Z8	low	47984.458	22925.955
BC2139	*Cecropia pachystachya*	Exotic	Exotic	1.8	20	4F	Z8	low	47981.402	22915.174
BC2140	*Cecropia pachystachya*	Exotic	Exotic	1.4	18	4F	Z8	low	47979.156	22912.273
BC2141	*Pterocarpus indicus*	Exotic	Exotic	3	25	2A	A2	high	47967.488	22916.185
BC2142	*Pterocarpus indicus*	Exotic	Exotic	2.3	28	2A	A1	high	47967.049	22925.884
BC2143	*Pterocarpus indicus*	Exotic	Exotic	2.3	28	2A	A1	high	47967.54	22928.345
BC2144	*Pterocarpus indicus*	Exotic	Exotic	1.4	18	2A	A1	high	47967.902	22928.452
BC2145	*Pterocarpus indicus*	Exotic	Exotic	3.5	30	2A	A1	high	47967.443	22931.012
BC2146	*Averrhoa bilimbi*	Exotic	Exotic	1.2	12	2A	A2	high	47975.792	22939.86
BC2147	*Nephelium lappaceum*	Cryptogenic	Cryptogenic	2.5	25	2E	A2	high	47980.924	22946.985
BC2148	*Nephelium lappaceum*	Cryptogenic	Cryptogenic	2	25	2A	A1	high	47980.268	22954.237
BC2149	*Spathodea campanulata*	Exotic	Exotic	3	25	4F	Z6	low	47975.915	22960.647
BC2150	*Spathodea campanulata*	Exotic	Exotic	1.5	15	4F	Z6	low	47961.756	22963.515
BC2151	*Falcataria falcata*	Exotic	Exotic	2.8	10	4B	Z3	low	47950.164	22960.752
BC2152	*Falcataria falcata*	Exotic	Exotic	2.2	18	4F	Z6	low	47948.09	22960.228
BC2153	*Falcataria falcata*	Exotic	Exotic	3	20	4F	Z6	low	47947.34	22961.522
BC2154	*Nephelium lappaceum*	Cryptogenic	Cryptogenic	2.2	18	2A	A2	high	47941.051	22951.056
BC2155	*Ficus variegata*	Native	Common; cultivated	1	18	2A	A1	high	47949.908	22950.418
BC2156	*Cecropia pachystachya*	Exotic	Exotic	1	18	4F	Z8	low	48008.93	22906.241
BC2157	*Cecropia pachystachya*	Exotic	Exotic	1.2	18	4F	Z8	low	48007.434	22908.691
BC2158	*Falcataria falcata*	Exotic	Exotic	2	35	4F	Z6	low	47886.828	23209.749
BC2159	*Falcataria falcata*	Exotic	Exotic	3	35	4F	Z6	low	47877.425	23199.446
BC2160	*Falcataria falcata*	Exotic	Exotic	2	25	4F	Z6	low	47872.119	23202.861
BC2161	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	47873.365	23208.496
BC2162	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.5	20	2E	A2	high	47858.422	23160.365
BC2163	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.5	20	2A	A1	high	47865.337	23155.214
BC2164	*Macaranga gigantea*	Native	Common; cultivated	1.3	20	3A	A1	moderate	47884.55	23127.868
BC2165	*Macaranga gigantea*	Native	Common; cultivated	1.3	20	3A	A1	moderate	47883.843	23126.492
BC2166	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.5	25	2A	A1	high	47881.55	23115.222
BC2167	*Cyrtophyllum fragrans*	Native	Common; cultivated	2.2	25	2A	A1	high	47876.501	23113.03
BC2168	*Lindera lucida*	Native	Vulnerable	0.5	12	2A	A1	high	47872.381	23111.544
BC2169	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.8	25	2A	A1	high	47873.125	23105.795
BC2170	*Lindera lucida*	Native	Vulnerable	0.5	10	2A	A2	high	47870.352	23107.336

BC2171	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.7	25	2E	A2	high	47874.418	23100.417
BC2172	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.7	25	2E	A2	high	47873.751	23097.497
BC2173	*Artocarpus heterophyllus*	Exotic	Exotic	1.8	18	2E	A2	high	47865.415	23100.36
BC2174	*Macaranga gigantea*	Native	Common; cultivated	1.9	18	3A	A1	moderate	47857.11	23064.299
BC2175	*Falcataria falcata*	Exotic	Exotic	2.9	35	4B	Z3	low	47859.199	23096.618
BC2176	*Lindera lucida*	Native	Vulnerable	0.6	10	2A	A2	high	47857.134	23117.432
BC2177	*Macaranga gigantea*	Native	Common; cultivated	2.1	25	3A	A1	moderate	47859.222	23125.046
BC2178	*Cyrtophyllum fragrans*	Native	Common; cultivated	4	30	2E	A2	high	47836.147	23117.638
BC2179	*Cyrtophyllum fragrans*	Native	Common; cultivated	1	20	4B	Z3	low	47838.131	23117.422
BC2180	*Acacia auriculiformis*	Exotic	Exotic	2.3	30	4F	Z6	low	47820.924	23105.967
BC2181	*Acacia auriculiformis*	Exotic	Exotic	2.2	30	4B	Z3	low	47818.591	23107.172
BC2182	*Artocarpus heterophyllus*	Exotic	Exotic	1.8	18	2E	A2	high	47829.303	23111.964
BC2183	*Cyrtophyllum fragrans*	Native	Common; cultivated	2	22	2A	A1	high	47824.175	23124.233
BC2184	*Falcataria falcata*	Exotic	Exotic	2.2	20	4D	Z4	low	47832.388	23143.649
BC2185	*Falcataria falcata*	Exotic	Exotic	2.6	35	4F	Z6	low	47844.529	23147.088
BC2186	*Syzygium polyanthum*	Native	Common	2.2	30	2A	A1	high	47851.924	23144.63
BC2187	*Hevea brasiliensis*	Exotic	Exotic	1.7	26	2A	A1	high	47856.401	23148.995
BC2188	*Lindera lucida*	Native	Vulnerable	0.6	17	2A	A1	high	47867.493	23161.068
BC2189	*Falcataria falcata*	Exotic	Exotic	1	12	4F	Z6	low	47954.7	23226.433
BC2190	*Falcataria falcata*	Exotic	Exotic	1.3	12	4F	Z6	low	47961.615	23223.134
BC2191	*Falcataria falcata*	Exotic	Exotic	1.8	15	4F	Z6	low	47975.59	23215.413
BC2192	*Falcataria falcata*	Exotic	Exotic	1.6	12	4F	Z6	low	47993.233	23197.751
BC2193	*Falcataria falcata*	Exotic	Exotic	1.4	12	4F	Z6	low	48003.118	23200.302
BC2194	*Falcataria falcata*	Exotic	Exotic	1.3	12	4F	Z6	low	48020.253	23201.143
BC2195	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.5	22	2A	A1	high	48014.889	23161.894
BC2196	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.2	22	4B	Z3	low	48009.266	23160.898
BC2197	*Pterocarpus indicus*	Exotic	Exotic	3.7	22	2A	A1	high	47974.257	23135.041
BC2198	*Pterocarpus indicus*	Exotic	Exotic	3.5	22	2A	A2	high	47968.379	23136.766
BC2199	*Falcataria falcata*	Exotic	Exotic	1	20	4F	Z6	low	47957.517	23149.431
BC2200	*Falcataria falcata*	Exotic	Exotic	1	22	4B	Z3	low	47952.722	23144.72
BC2201	*Falcataria falcata*	Exotic	Exotic	1.4	25	4B	Z3	low	47950.114	23143.109
BC2202	*Macaranga gigantea*	Native	Common; cultivated	1	22	3A	A1	moderate	47945.528	23116.076
BC2203	*Falcataria falcata*	Exotic	Exotic	2	25	4D	Z4	low	47951.405	23116.591
BC2204	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.2	20	2E	A2	high	47950.101	23114.035
BC2205	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.4	25	2A	A2	high	47948.997	23110.681
BC2206	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.5	25	2E	A2	high	47957.902	23112.138
BC2207	*Cyrtophyllum fragrans*	Native	Common; cultivated	2	25	2A	A2	high	47957.437	23103.037
BC2208	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.6	22	3A	Z7	moderate	47940.906	23109.334

BC2209	*Lindera lucida*	Native	Vulnerable	0.3	10	2A	A2	high	47933.114	23104.974
BC2210	*Macaranga conifera*	Native	Common	0.8	10	2A	A2	moderate	47928.938	23103.556
BC2211	*Lindera lucida*	Native	Vulnerable	0.3	10	2A	A1	high	47927.919	23101.621
BC2212	*Syzygium polyanthum*	Native	Common	1.2	25	4B	Z3	low	47922.861	23108.672
BC2213	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.3	25	2E	A2	high	47919.851	23112.484
BC2214	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.5	25	4B	Z3	low	47923.36	23115.175
BC2215	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.2	25	4B	Z3	low	47913.001	23107.69
BC2216	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.5	25	4B	Z3	low	47913.179	23102.376
BC2217	*Syzygium polyanthum*	Native	Common	1.3	18	4B	Z3	low	47906.547	23097.571
BC2218	*Macaranga gigantea*	Native	Common; cultivated	1	15	3A	A1	moderate	47884.5	23094.015
BC2219	*Lindera lucida*	Native	Vulnerable	0.6	8	4B	Z3	low	47882.366	23107.313
BC2220	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	47913.863	23141.748
BC2221	*Ficus variegata*	Native	Common; cultivated	1.5	20	2A	A2	high	47903.711	23151.577
BC2222	*Falcataria falcata*	Exotic	Exotic	2.2	35	4F	Z6	low	47899.664	23153.27
BC2223	*Macaranga griffithiana*	Native	Vulnerable	0.3	8	2E	A2	high	47908.615	23183.492
BC2224	*Falcataria falcata*	Exotic	Exotic	1.8	28	4F	Z6	low	47958.019	23163.883
BC2225	*Falcataria falcata*	Exotic	Exotic	1	25	4B	Z3	low	47952.323	23152.876
BC2226	*Falcataria falcata*	Exotic	Exotic	3	30	4F	Z6	low	47793.971	23169.208
BC2227	*Macaranga gigantea*	Native	Common; cultivated	1.2	17	4D	Z4	low	47796.161	23170.56
BC2228	*Macaranga gigantea*	Native	Common; cultivated	1.5	17	3A	A1	moderate	47812.806	23166.278
BC2229	*Lindera lucida*	Native	Vulnerable	0.3	6	4A	Z7	low	47811.016	23169.344
BC2230	*Litsea elliptica*	Native	Common; cultivated	1.1	22	2A	A2	high	47823.57	23160.584
BC2231	*Lindera lucida*	Native	Vulnerable	1	15	4B	Z3	low	47824.771	23160.538
BC2233	*Lindera lucida*	Native	Vulnerable	0.5	17	2A	A2	high	47826.594	23153.715
BC2234	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.9	28	2A	A1	high	47814.241	23150.542
BC2235	*Cyrtophyllum fragrans*	Native	Common; cultivated	2.1	30	2A	A1	high	47813.823	23150.531
BC2236	*Macaranga gigantea*	Native	Common; cultivated	1.3	18	3A	A1	moderate	47810.657	23133.248
BC2237	*Macaranga gigantea*	Native	Common; cultivated	1.3	18	4B	Z3	low	47807.441	23128.079
BC2238	*Macaranga gigantea*	Native	Common; cultivated	1	15	3A	A1	moderate	47808.003	23130.462
BC2242	*Macaranga gigantea*	Native	Common; cultivated	1	16	3A	A1	moderate	47803.814	23120.193
BC2243	*Macaranga gigantea*	Native	Common; cultivated	1.1	18	3A	A1	moderate	47796.528	23125.221
BC2244	*Macaranga gigantea*	Native	Common; cultivated	1.1	18	3A	A1	moderate	47793.554	23117.527
BC2245	*Macaranga gigantea*	Native	Common; cultivated	1	18	3A	A1	moderate	47791.703	23116.259
BC2246	*Lindera lucida*	Native	Vulnerable	0.4	12	4B	Z3	low	47794.588	23115.086
BC2247	*Macaranga gigantea*	Native	Common; cultivated	1	16	3A	A1	moderate	47791.895	23123.366
BC2248	*Lindera lucida*	Native	Vulnerable	0.8	15	2A	A1	high	47792.562	23124.599
BC2249	*Lindera lucida*	Native	Vulnerable	0.3	15	2E	A2	high	47789.867	23123.827
BC2250	*Lindera lucida*	Native	Vulnerable	0.4	16	2E	A2	high	47780.201	23125.853

BC2252	*Cyrtophyllum fragrans*	Native	Common; cultivated	2	22	2E	A2	high	47765.607	23132.905
BC2253	*Macaranga gigantea*	Native	Common; cultivated	1.8	16	3A	A1	moderate	47776.023	23104.296
BC2254	*Lindera lucida*	Native	Vulnerable	0.4	10	2E	A2	high	47770.655	23108.428
BC2255	*Macaranga gigantea*	Native	Common; cultivated	1.7	17	3A	A1	moderate	47768.918	23104.371
BC2256	*Litsea elliptica*	Native	Common; cultivated	1.8	20	2E	A2	high	47760.384	23111.08
BC2257	*Macaranga gigantea*	Native	Common; cultivated	1.4	17	3A	A1	moderate	47750.616	23105.674
BC2258	*Macaranga gigantea*	Native	Common; cultivated	1.6	20	3A	A2	moderate	47734.923	23083.432
BC2259	*Macaranga gigantea*	Native	Common; cultivated	1.4	18	3A	A2	moderate	47729.214	23083.371
BC2260	*Lindera lucida*	Native	Vulnerable	0.4	11	2E	A2	high	47736.098	23103.652
BC2261	*Macaranga gigantea*	Native	Common; cultivated	1	12	3A	A1	moderate	47739.847	23106.294
BC2262	*Macaranga gigantea*	Native	Common; cultivated	1	16	3A	A1	moderate	47748.514	23116.823
BC2263	*Macaranga gigantea*	Native	Common; cultivated	1	20	3A	A1	moderate	47758.031	23118.42
BC2265	*Litsea elliptica*	Native	Common; cultivated	1.2	18	2A	A1	high	47748.82	23125.546
BC2266	*Syzygium polyanthum*	Native	Common	1.2	18	2E	A2	high	47759.796	23126.133
BC2267	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.2	20	2A	A1	high	47762.011	23134.814
BC2268	*Macaranga conifera*	Native	Common; cultivated	1.3	18	2E	A2	high	47762.045	23136.655
BC2269	*Macaranga gigantea*	Native	Common; cultivated	1	20	3A	A1	moderate	47757.125	23139.564
BC2270	*Macaranga gigantea*	Native	Common; cultivated	1.2	18	4A	Z7	low	47746.81	23139.645
BC2271	*Cinnamomum iners*	Native	Common; cultivated	1.1	15	2E	A2	high	47747.828	23146.417
BC2272	*Falcataria falcata*	Exotic	Exotic	1.7	14	4D	Z4	low	47749.045	23151.279
BC2273	*Lindera lucida*	Native	Vulnerable	0.3	15	2A	A1	high	47744.43	23150.749
BC2274	*Spathodea campanulata*	Exotic	Exotic	1	18	4F	Z6	low	47745.439	23157.362
BC2275	*Falcataria falcata*	Exotic	Exotic	1.5	30	4F	Z6	low	47755.832	23165.608
BC2276	*Falcataria falcata*	Exotic	Exotic	2.5	35	4F	Z6	low	47756.955	23167.567
BC2277	*Spathodea campanulata*	Exotic	Exotic	1.6	18	4F	Z6	low	47750.976	23166.961
BC2278	*Falcataria falcata*	Exotic	Exotic	1.3	20	4F	Z6	low	47750.873	23161.654
BC2279	*Falcataria falcata*	Exotic	Exotic	3.6	35	4F	Z6	low	47762.122	23157.007
BC2280	*Macaranga gigantea*	Native	Common; cultivated	1	15	3A	A1	moderate	47775.563	23151.087
BC2281	*Lindera lucida*	Native	Vulnerable	1.3	18	2E	A2	high	47782.967	23149.585
BC2282	*Lindera lucida*	Native	Vulnerable	0.3	10	2E	A2	high	47787.445	23147.065
BC2283	*Falcataria falcata*	Exotic	Exotic	2.5	30	4D	Z4	low	47798.075	23143.92
BC2284	*Cyrtophyllum fragrans*	Native	Common; cultivated	1.2	20	4B	Z3	low	47802.825	23148.688
BC2285	*Macaranga gigantea*	Native	Common; cultivated	1	18	3A	A1	moderate	47806.691	23166.638
BC2286	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	47787.949	23170.289
BC2287	*Spathodea campanulata*	Exotic	Exotic	1.5	15	4F	Z6	low	47775.245	23188.254
BC2288	*Falcataria falcata*	Exotic	Exotic	3.3	35	4F	Z6	low	47776.386	23192.26
BC2289	*Falcataria falcata*	Exotic	Exotic	2.8	35	4F	Z6	low	47777.248	23189.711
BC2290	*Falcataria falcata*	Exotic	Exotic	2.7	25	4B	Z3	low	47714.768	23102.196

BC2291	*Spathodea campanulata*	Exotic	Exotic	1	17	4F	Z6	low	47711.589	23088.6
BC2292	*Macaranga gigantea*	Native	Common; cultivated	1.3	17	3A	A1	moderate	47706.454	23085.597
BC2293	*Macaranga gigantea*	Native	Common; cultivated	1.2	17	3A	A1	moderate	47707.094	23080.693
BC2295	*Falcataria falcata*	Exotic	Exotic	2.8	22	4F	Z6	low	47682.626	23083.443
BC2296	*Falcataria falcata*	Exotic	Exotic	1.2	22	4B	Z3	low	47663.649	23081.663
BC2297	*Falcataria falcata*	Exotic	Exotic	1.3	22	4F	Z6	low	47667.337	23080.711
BC2298	*Falcataria falcata*	Exotic	Exotic	1.3	22	4F	Z6	low	47665.933	23079.866
BC2299	*Falcataria falcata*	Exotic	Exotic	1.3	22	4F	Z6	low	47667.394	23077.025
BC2300	*Falcataria falcata*	Exotic	Exotic	2	22	4F	Z6	low	47664.563	23072.381
BC2301	*Falcataria falcata*	Exotic	Exotic	1.8	22	4F	Z6	low	47663.896	23071.129
BC2302	*Falcataria falcata*	Exotic	Exotic	2.2	22	4F	Z6	low	47661.37	23064.475
BC2303	*Falcataria falcata*	Exotic	Exotic	2	22	4F	Z6	low	47657.977	23055.714
BC2304	*Falcataria falcata*	Exotic	Exotic	2	22	4B	Z3	low	47656.442	23053.802
BC2305	*Falcataria falcata*	Exotic	Exotic	2.2	22	4F	Z6	low	47651.136	23041.938
BC2306	*Falcataria falcata*	Exotic	Exotic	2.4	25	4F	Z6	low	47643.285	23023.058
BC2307	*Falcataria falcata*	Exotic	Exotic	4	18	4F	Z6	low	47639.559	23011.831
BC2308	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	47622.639	23018.71
BC2309	*Falcataria falcata*	Exotic	Exotic	1.6	18	4F	Z6	low	47619.25	23018.928
BC2310	*Falcataria falcata*	Exotic	Exotic	1	17	4B	Z3	low	47613.807	23025.718
BC2311	*Falcataria falcata*	Exotic	Exotic	2.2	23	4F	Z6	low	47637.498	23027.012
BC2312	*Falcataria falcata*	Exotic	Exotic	2.3	17	4F	Z6	low	47607.31	23008.439
BC2313	*Falcataria falcata*	Exotic	Exotic	1.8	17	4F	Z6	low	47599.989	23012.365
BC2314	*Falcataria falcata*	Exotic	Exotic	1.5	17	4F	Z6	low	47593.836	23017.454
BC2315	*Falcataria falcata*	Exotic	Exotic	1.3	17	4F	Z6	low	47591.755	23025.065
BC2316	*Falcataria falcata*	Exotic	Exotic	1.1	17	4F	Z6	low	47587.062	23015.885
BC2317	*Falcataria falcata*	Exotic	Exotic	1.2	17	4F	Z6	low	47584.106	23019.853
BC2318	*Falcataria falcata*	Exotic	Exotic	1.1	18	4F	Z6	low	47577.049	23028.843
BC2319	*Falcataria falcata*	Exotic	Exotic	1.2	17	4B	Z3	low	47579.749	23032.519
BC2320	*Falcataria falcata*	Exotic	Exotic	1.6	15	4F	Z6	low	47574.264	23026.739
BC2321	*Cecropia pachystachya*	Exotic	Exotic	1.1	16	4F	Z8	low	47568.563	23028.921
BC2322	*Spathodea campanulata*	Exotic	Exotic	2.3	16	4F	Z6	low	47553.504	23042.848
BC2323	*Hevea brasiliensis*	Exotic	Exotic	1.4	16	4D	Z4	low	47556.46	23043.519
BC2324	*Falcataria falcata*	Exotic	Exotic	1.5	20	4F	Z6	low	47564.846	23051.896
BC2325	*Falcataria falcata*	Exotic	Exotic	1.8	25	4F	Z6	low	47589.438	23102.187
BC2326	*Falcataria falcata*	Exotic	Exotic	1.4	25	4F	Z6	low	47587.241	23102.654
BC2327	*Falcataria falcata*	Exotic	Exotic	1.4	25	4F	Z6	low	47586.24	23102.344
BC2328	*Falcataria falcata*	Exotic	Exotic	2.2	25	4F	Z6	low	47582.405	23096.34
BC2329	*Falcataria falcata*	Exotic	Exotic	1.2	18	4B	Z3	low	47591.634	23106.632

BC2330	*Falcataria falcata*	Exotic	Exotic	1.8	20	4F	Z6	low	47591.163	23111.135
BC2331	*Falcataria falcata*	Exotic	Exotic	1.5	25	4F	Z6	low	47598.729	23120.748
BC2332	*Falcataria falcata*	Exotic	Exotic	1.4	25	4F	Z6	low	47610.259	23130.401
BC2333	*Falcataria falcata*	Exotic	Exotic	1.3	25	4F	Z6	low	47606.882	23134.417
BC2334	*Falcataria falcata*	Exotic	Exotic	1.5	25	4F	Z6	low	47605.734	23137.891
BC2335	*Falcataria falcata*	Exotic	Exotic	1.3	20	4F	Z6	low	47614.98	23138.698
BC2336	*Falcataria falcata*	Exotic	Exotic	2.4	20	4F	Z6	low	47628.514	23130.076
BC2337	*Falcataria falcata*	Exotic	Exotic	2.3	25	4F	Z6	low	47619.921	23124.594
BC2338	*Falcataria falcata*	Exotic	Exotic	2.4	25	4F	Z6	low	47623.833	23119.423
BC2339	*Falcataria falcata*	Exotic	Exotic	1.5	25	4F	Z6	low	47623.411	23113.392
BC2340	*Falcataria falcata*	Exotic	Exotic	1.2	25	4F	Z6	low	47622.182	23110.161
BC2341	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47613.912	23122.218
BC2342	*Falcataria falcata*	Exotic	Exotic	2	22	4F	Z6	low	47638.557	23115.353
BC2343	*Falcataria falcata*	Exotic	Exotic	1.6	22	4F	Z6	low	47625.175	23102.71
BC2344	*Falcataria falcata*	Exotic	Exotic	1.6	22	4D	Z4	low	47630.896	23098.779
BC2345	*Falcataria falcata*	Exotic	Exotic	1.6	25	4F	Z6	low	47650.408	23048.151
BC2346	*Falcataria falcata*	Exotic	Exotic	1.3	20	4F	Z6	low	47651.611	23089.213
BC2347	*Falcataria falcata*	Exotic	Exotic	1.4	20	4F	Z6	low	47654.548	23088.314
BC2348	*Falcataria falcata*	Exotic	Exotic	1.4	20	4B	Z3	low	47632.8	23098.426
BC2349	*Falcataria falcata*	Exotic	Exotic	2.2	20	4F	Z6	low	47645.181	23119.388
BC2350	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47652.746	23114.847
BC2351	*Falcataria falcata*	Exotic	Exotic	2	25	4F	Z6	low	47656.909	23111.867
BC2352, BC2	*Cecropia pachystachya*	Exotic	Exotic	20	16	4F	Z8	low	47674.3	23099.782
BC2352A	*Cecropia pachystachya*	Exotic	Exotic	-	-	-	-	-	47669.929	23099.742
BC2352B	*Cecropia pachystachya*	Exotic	Exotic	-	-	-	-	-	47675.607	23098.681
BC2353	*Falcataria falcata*	Exotic	Exotic	1.7	18	4D	Z4	low	47686.311	23100.515
BC2354	*Falcataria falcata*	Exotic	Exotic	1.5	18	4F	Z6	low	47696.439	23113.12
BC2355	*Falcataria falcata*	Exotic	Exotic	1.2	18	4F	Z6	low	47689.9	23108.223
BC2356	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47678.269	23116.427
BC2357	*Falcataria falcata*	Exotic	Exotic	1.4	18	4F	Z6	low	47673.302	23118.52
BC2358	*Falcataria falcata*	Exotic	Exotic	1	18	4F	Z6	low	47667.379	23119.758
BC2359	*Falcataria falcata*	Exotic	Exotic	1.6	20	4F	Z6	low	47661.218	23122.074
BC2360	*Lindera lucida*	Native	Vulnerable	0.7	17	2E	A2	high	47937.882	23174.958
BC2361	*Lindera lucida*	Native	Vulnerable	0.3	14	2A	A2	high	47945.296	23167.897
BC2362	*Cyrtophyllum fragrans*	Native	Common	1.3	20	2A	A2	high	48008.209	23140.179
BC2363	*Cyrtophyllum fragrans*	Native	Common	1	20	2A	A1	high	48008.434	23138.577
BC2364	*Cyrtophyllum fragrans*	Native	Common	1.2	20	2A	A1	high	48007.916	23140.91
BC2365	*Cyrtophyllum fragrans*	Native	Common	1.3	20	2A	A1	high	48007.066	23135.552

BC2366	*Cyrtophyllum fragrans*	Native	Common	2	22	2A	A1	high	48011.559	23131.055
BC2367	*Cyrtophyllum fragrans*	Native	Common	1.6	20	2A	A2	high	48011.006	23127.048
BC2368	*Hevea brasiliensis*	Exotic	Exotic	1.2	20	2A	A1	high	48008.595	23124.225
BC2369	*Falcataria falcata*	Exotic	Exotic	2.2	23	4F	Z6	low	48005.516	23124.446
BC2370	*Cyrtophyllum fragrans*	Native	Common	1.4	18	2A	A2	high	48005.857	23122.8
BC2371	*Cyrtophyllum fragrans*	Native	Common	2.4	22	2E	A2	high	47992.794	23120.296
BC2372	*Cyrtophyllum fragrans*	Native	Common	2.4	22	2A	A2	high	47988.906	23117.171
BC2373	*Cyrtophyllum fragrans*	Native	Common	1	22	2A	A1	high	47985.577	23123.445
BC2374	*Falcataria falcata*	Exotic	Exotic	1.4	22	4F	Z6	low	47987.708	23128.473
BC2375	*Lindera lucida*	Native	Vulnerable	1.5	20	2A	A1	high	47987.68	23104.935
BC2376	*Cyrtophyllum fragrans*	Native	Common	1.5	15	2E	A2	high	47996.17	23101.3
BC2377	*Macaranga bancana*	Native	Common	1.2	18	2E	A2	high	48002.063	23102.902
BC2378	*Hevea brasiliensis*	Exotic	Exotic	1.3	15	2E	A2	high	48009.709	23100.458
BC2379	*Hevea brasiliensis*	Exotic	Exotic	1.1	16	2E	A2	high	48012.938	23097.662
BC2380	*Hevea brasiliensis*	Exotic	Exotic	1	16	2A	A1	high	48011.843	23097.279
BC2381	*Hevea brasiliensis*	Exotic	Exotic	1.2	16	2A	A1	high	48012.073	23102.126
BC2382	*Macaranga gigantea*	Native	Common	1.3	16	3A	A1	moderate	48017.524	23105.721
BC2383	*Syzygium polyanthum*	Native	Common	1.4	20	2E	A2	high	48016.4	23103.799
BC2384	*Hevea brasiliensis*	Exotic	Exotic	1.2	20	2E	A2	high	48025.937	23108.064
BC2385	*Hevea brasiliensis*	Exotic	Exotic	1.2	20	2A	A1	high	48028.438	23113.523
BC2386	*Hevea brasiliensis*	Exotic	Exotic	1.7	20	2E	A2	high	48038.671	23107.517
BC2387	*Macaranga gigantea*	Native	Common	1	16	3A	A1	moderate	48041.588	23102.195
BC2388	*Hevea brasiliensis*	Exotic	Exotic	1.4	20	2A	A1	high	48034.132	23117.345
BC2389	*Hevea brasiliensis*	Exotic	Exotic	1.3	20	2A	A1	high	48035.539	23117.607
BC2390	*Hevea brasiliensis*	Exotic	Exotic	1.5	20	2A	A1	high	48033.965	23119.565
BC2391	*Hevea brasiliensis*	Exotic	Exotic	1.3	16	2E	A2	high	48033.738	23122.771
BC2392	*Hevea brasiliensis*	Exotic	Exotic	1.3	15	2A	A1	high	48037.859	23120.196
BC2393	*Cyrtophyllum fragrans*	Native	Common	1.6	25	2E	A2	high	48034.134	23132.96
BC2394	*Cyrtophyllum fragrans*	Native	Common	1.4	22	2A	A1	high	48027.723	23135.897
BC2395	*Cyrtophyllum fragrans*	Native	Common	1.4	22	2A	A1	high	48026.848	23132.42
BC2396	*Cyrtophyllum fragrans*	Native	Common	1.7	22	4B	Z3	low	48025.659	23137.692
BC2397	*Cyrtophyllum fragrans*	Native	Common	1.5	22	2E	A2	high	48018.057	23141.425
BC2398	*Cyrtophyllum fragrans*	Native	Common	1.6	25	2E	A2	high	48018.024	23137.092
BC2399	*Cyrtophyllum fragrans*	Native	Common	2.6	25	2E	A2	high	48023.794	23131.062
BC2400	*Cyrtophyllum fragrans*	Native	Common	1.7	22	2A	A1	high	48026.209	23152.58
BC2401	*Cyrtophyllum fragrans*	Native	Common	1.8	22	2E	A2	high	48027.48	23152.305
BC2402	*Falcataria falcata*	Exotic	Exotic	2.2	30	4F	Z6	low	48054.359	23181.054
BC2403	*Acacia auriculiformis*	Exotic	Exotic	1.2	20	4F	Z6	low	48057.333	23185.794

BC2404	*Falcataria falcata*	Exotic	Exotic	1.6	30	4F	Z6	low	48064.125	23189.51
BC2405	*Falcataria falcata*	Exotic	Exotic	1.7	20	4F	Z6	low	47597.147	23172.929
BC2406	*Falcataria falcata*	Exotic	Exotic	1.5	25	4F	Z6	low	47595.197	23166.071
BC2407	*Falcataria falcata*	Exotic	Exotic	1.3	22	4F	Z6	low	47589.062	23173.156
BC2408	*Falcataria falcata*	Exotic	Exotic	1	22	4F	Z6	low	47585.941	23170.051
BC2409	*Falcataria falcata*	Exotic	Exotic	1	22	4F	Z6	low	47583.249	23167.964
BC2410	*Falcataria falcata*	Exotic	Exotic	1.3	23	4F	Z6	low	47582.366	23171.194
BC2411	*Falcataria falcata*	Exotic	Exotic	1.5	20	4F	Z6	low	47587.589	23177.941
BC2412	*Falcataria falcata*	Exotic	Exotic	1.3	20	4F	Z6	low	47575.831	23182.586
BC2413	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47572.01	23178.482
BC2414	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47571.294	23174.367
BC2415	*Falcataria falcata*	Exotic	Exotic	1.2	22	4F	Z6	low	47568.161	23172.146
BC2416	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47566.466	23176.426
BC2417	*Falcataria falcata*	Exotic	Exotic	1	22	4F	Z6	low	47564.041	23175.014
BC2418	*Falcataria falcata*	Exotic	Exotic	1.3	22	4F	Z6	low	47561.393	23178.618
BC2419	*Falcataria falcata*	Exotic	Exotic	1.5	22	4F	Z6	low	47562.8	23185.009
BC2420	*Falcataria falcata*	Exotic	Exotic	1.3	22	4F	Z6	low	47557.969	23178.752
BC2421	*Falcataria falcata*	Exotic	Exotic	1.6	15	4F	Z6	low	47538.595	23186.874
BC2422	*Elaeis guineensis*	Exotic	Exotic	1.6	6	4F	A1	moderate	47506.274	23178.581
BC2423	*Falcataria falcata*	Exotic	Exotic	1.5	16	4F	Z6	low	47544.569	23155.242
BC2424	*Falcataria falcata*	Exotic	Exotic	1.6	20	4F	Z6	low	47556.279	23163.358
BC2425	*Falcataria falcata*	Exotic	Exotic	1.1	20	4F	Z6	low	47558.708	23173.042
BC2426	*Falcataria falcata*	Exotic	Exotic	1.2	20	4F	Z6	low	47561.657	23170.43
BC2427	*Falcataria falcata*	Exotic	Exotic	1.1	20	4F	Z6	low	47563.839	23167.644
BC2428	*Falcataria falcata*	Exotic	Exotic	2	23	4F	Z6	low	47552.496	23144.881
BC2429	*Hevea brasiliensis*	Exotic	Exotic	1.5	17	4B	Z3	low	47570.62	23151.839
BC2430	*Acacia auriculiformis*	Exotic	Exotic	1.8	20	4F	Z6	low	47573.429	23153.859
BC2431	*Falcataria falcata*	Exotic	Exotic	2.2	30	4F	Z6	low	47580.766	23143.596
BC2432	*Falcataria falcata*	Exotic	Exotic	3	30	4F	Z6	low	47571.974	23131.927
BC2433	*Falcataria falcata*	Exotic	Exotic	1	25	4F	Z6	low	47563.982	23138.599
BC2434	*Falcataria falcata*	Exotic	Exotic	1.1	25	4F	Z6	low	47558.429	23138.172
BC2435	*Falcataria falcata*	Exotic	Exotic	1.5	25	4F	Z6	low	47547.091	23128.264
BC2436	*Falcataria falcata*	Exotic	Exotic	1.2	25	4F	Z6	low	47544.175	23124.687
BC2437	*Falcataria falcata*	Exotic	Exotic	1.7	25	4F	Z6	low	47544.969	23121.493
BC2438	*Falcataria falcata*	Exotic	Exotic	1.9	27	4F	Z6	low	47549.805	23120.57
BC2439	*Falcataria falcata*	Exotic	Exotic	2	27	4F	Z6	low	47551.267	23125.286
BC2440	*Falcataria falcata*	Exotic	Exotic	2	30	4F	Z6	low	47558.501	23122.005
BC2441	*Hevea brasiliensis*	Exotic	Exotic	1.1	22	2E	A2	high	47562.354	23108.302

BC2442	*Spathodea campanulata*	Exotic	Exotic	1.8	22	4F	Z6	low	47566.036	23111.696
BC2443	*Spathodea campanulata*	Exotic	Exotic	1.8	22	4F	Z6	low	47565.548	23105.114
BC2444	*Falcataria falcata*	Exotic	Exotic	1.3	22	4F	Z6	low	47571.423	23104.889
BC2445	*Falcataria falcata*	Exotic	Exotic	1.4	25	4F	Z6	low	47578.493	23104.45
BC2446	*Falcataria falcata*	Exotic	Exotic	1.6	25	4F	Z6	low	47583.339	23111.001
BC2447	*Falcataria falcata*	Exotic	Exotic	1.6	25	4F	Z6	low	47580.599	23111.612
BC2448	*Falcataria falcata*	Exotic	Exotic	1.5	25	4F	Z6	low	47601.159	23126.123
BC2449	*Falcataria falcata*	Exotic	Exotic	1.6	25	4F	Z6	low	47601.523	23126.634
BC2450	*Falcataria falcata*	Exotic	Exotic	1.2	25	4F	Z6	low	47599.002	23129.168
BC2451	*Falcataria falcata*	Exotic	Exotic	1.2	25	4F	Z6	low	47597.507	23142.548
BC2452	*Falcataria falcata*	Exotic	Exotic	1	20	4F	Z6	low	47600.811	23139.336
BC2453	*Falcataria falcata*	Exotic	Exotic	1.7	20	4F	Z6	low	47586.581	23132.082
BC2454	*Falcataria falcata*	Exotic	Exotic	1.7	20	4F	Z6	low	47589.884	23155.794
BC2455	*Falcataria falcata*	Exotic	Exotic	1.7	20	4F	Z6	low	47584.666	23158.018

APPENDIX E

List of All Fauna Species Recorded

Faunal group	Total no. of probable threatened species	Total no. of recorded species	
	CS species	All species	CS species
Odonates	0	7	0
Dragonflies	0	6	0
Damselflies	0	1	0
Butterflies	28	25	0
Aculeata	2	10	0
Bees	2	7	0
Wasps	0	3	0
Spiders	NA	82	0
Herpetofauna	0	13	0
Amphibians	0	6	0
Reptiles	0	7	0
Birds	34	54	8
Mammals	4	13	2
Non-volant Mammals	3	8	2
Bats	1	5	0
Total	**68**	**204**	**10**

Faunal Species List

No.	Type	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (Soh & Ngiam, 2019)	Species of Conservation Significance	Distribution/Rarity (Soh et al. 2019)	Recorded Species	Ecological Value
1	Damselfly	Coenagrionidae	*Ceriagrion cerinorubellum*	Ornate coraltail	Least Concern	Least Concern	No	Widespread and Common	Yes	Medium
2	Dragonfly	Aeshnidae	*Gynacantha subinterrupta*	Dingy duskhawker	Least Concern	Least Concern	No	Widespread but Uncommon	Yes	Medium
3	Dragonfly	Libellulidae	*Agrionoptera insignis*	Grenadier	Least Concern	Least Concern	No	Widespread and Common	Yes	Medium
4	Dragonfly	Libellulidae	*Lathrecista asiatica*	Scarlet grenadier	Least Concern	Least Concern	No	Widespread and Common	Yes	Medium
5	Dragonfly	Libellulidae	*Neurothemis fluctuans*	Common parasol	Least Concern	Least Concern	No	Widespread and Common	Yes	Medium
6	Dragonfly	Libellulidae	*Orthetrum chrysis*	Spine-tufted skimmer	Least Concern	Least Concern	No	Widespread and Common	Yes	Medium
7	Dragonfly	Libellulidae	*Orthetrum glaucum*	Common blue skimmer	Least Concern	Least Concern	No	Widespread and Common	Yes	Medium

No.	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (NParks, 2023)	Species of Conservation Significance	Distribution/ Abundance /Rarity (Nparks, 2023)	Recorded S	Recorded in 2017	Ecological Value
1	Hesperiidae	*Astictopterus jama jama*	Forest Hopper	Not Listed	Endangered	Yes	Resident	No	No	High
2	Hesperiidae	*Bibasis harisa consobrina*	Orange Awlet	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
3	Hesperiidae	*Caltoris cormasa*	Full Stop Swift	Not Listed	Least Concern	No	Resident	Yes	No	Medium
4	Hesperiidae	*Caltoris philippina philippina*	Philippine Swift	Not Listed	Vulnerable	Yes	Resident	No	No	High
5	Hesperiidae	*Cephrenes acalle niasicus*	Plain Palm Dart	Not Listed	Vulnerable	Yes	Resident	No	No	High
6	Hesperiidae	*Erionota thrax thrax*	Banana Skipper	Not Listed	Least Concern	No	Resident	No	Yes	Medium
7	Hesperiidae	*Gangara lebadea lebadea*	Banded Redeye	Not Listed	Endangered	Yes	Resident	No	No	High
8	Hesperiidae	*Halpe ormenes vilasina*	Dark Banded Ace	Not Listed	Vulnerable	Yes	Resident	No	No	High
9	Hesperiidae	*Iambrix salsala salsala*	Chestnut Bob	Not Listed	Least Concern	No	Resident	No	Yes	Medium
10	Hesperiidae	*Pelopidas assamensis*	Great Swift	Not Listed	Endangered	Yes	Resident	No	No	High
11	Hesperiidae	*Pelopidas conjunctus conjunctus*	Conjoined Swift	Not Listed	Endangered	Yes	Resident	No	No	High
12	Hesperiidae	*Pelopidas mathias mathias*	Small Branded Swift	Not Listed	Least Concern	No	Resident	No	Yes	Medium
13	Hesperiidae	*Pemara pugnans*	Pugnacious Lancer	Not Listed	Vulnerable	Yes	Resident	No	No	High
14	Hesperiidae	*Plastingia naga*	Chequered Lancer	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
15	Hesperiidae	*Potanthus omaha omaha*	Lesser Dart	Not Listed	Least Concern	No	Resident	No	Yes	Medium
16	Hesperiidae	*Pseudocoladenia dan dhyana*	Fulvous Pied Flat	Not Listed	Vulnerable	Yes	Resident	No	No	High
17	Hesperiidae	*Suastus gremius gremius*	Palm Bob	Not Listed	Least Concern	No	Resident	No	Yes	Medium
18	Hesperiidae	*Tapena thwaitesi bornea*	Dark Angle	Not Listed	Vulnerable	Yes	Resident	No	No	High
19	Hesperiidae	*Taractrocera archias quinta*	Yellow Grass Dart	Not Listed	Least Concern	No	Resident	Yes	No	Medium
20	Hesperiidae	*Taractrocera ardonia lamia*	Spotted Grass Dart	Not Listed	Vulnerable	Yes	Resident	No	No	High
21	Hesperiidae	*Telicota augias augias*	Palm Dart	Not Listed	Vulnerable	Yes	Resident	No	No	High
22	Hesperiidae	*Telicota linna*	Linna Palm Dart	Not Listed	Vulnerable	Yes	Resident	No	No	High
23	Hesperiidae	*Zographetus ogygia ogygia*	Purple Spotted Flitter	Not Listed	Vulnerable	Yes	Resident	No	No	High
24	Lycaenidae	*Ancema blanka blanka*	Silver Royal	Not Listed	Vulnerable	Yes	Resident	No	No	High
25	Lycaenidae	*Anthene emolus goberus*	Ciliate Blue	Not Listed	Least Concern	No	Resident	No	Yes	Medium
26	Lycaenidae	*Anthene lycaenina miya*	Pointed Ciliate Blue	Not Listed	Least Concern	No	Resident	No	Yes	Medium
27	Lycaenidae	*Arhopala major major*	Major Yellow Oakblue	Not Listed	Least Concern	No	Resident	Yes	No	Medium
28	Lycaenidae	*Catochrysops strabo strabo*	Forget-Me-Not	Not Listed	Vulnerable	Yes	Resident	No	No	High
29	Lycaenidae	*Catopyrops ancyra aberrans*	Ancyra Blue	Not Listed	Least Concern	No	Resident	Yes	No	Medium
30	Lycaenidae	*Euchrysops cnejus cnejus*	Gram Blue	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
31	Lycaenidae	*Everes lacturnus rileyi*	Indian Cupid	Not Listed	Endangered	Yes	Resident	No	No	High
32	Lycaenidae	*Horaga syrinx maenala*	Ambon Onyx	Not Listed	Vulnerable	Yes	Resident	No	No	High
33	Lycaenidae	*Jamides celeno aelianus*	Common Caerulean	Not Listed	Least Concern	No	Resident	Yes	No	Medium
34	Lycaenidae	*Logania marmorata damis*	Common Mottle	Not Listed	Least Concern	No	Resident	Yes	No	Medium

No.	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (NParks, 2023)	Species of Conservation Significance	Distribution/ Abundance /Rarity (Nparks, 2023)	Recorded S	Recorded in 2017	Ecological Value
35	Lycaenidae	*Megisba malaya sikkima*	The Malayan	Not Listed	Least Concern	No	Resident	No	Yes	Medium
36	Lycaenidae	*Pratapa deva relata*	White Royal	Not Listed	Endangered	Yes	Resident	No	No	High
37	Lycaenidae	*Prosotas dubiosa lumpura*	Tailless Line Blue	Not Listed	Least Concern	No	Resident	No	Yes	Medium
38	Lycaenidae	*Pseudotajuria donatana donatana*	Golden Royal	Not Listed	Vulnerable	Yes	Resident	No	No	High
39	Lycaenidae	*Rachana jalindra burbona*	Banded Royal	Not Listed	Vulnerable	Yes	Resident	No	No	High
40	Lycaenidae	*Rapala iarbus iarbus*	Common Red Flash	Not Listed	Least Concern	No	Resident	No	Yes	Medium
41	Lycaenidae	*Spalgis epius epius*	The Apefly	Not Listed	Least Concern	No	Resident	No	Yes	Medium
42	Lycaenidae	*Surendra vivarna amisena*	Acacia Blue	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
43	Lycaenidae	*Zizina otis lampa*	Lesser Grass Blue	Not Listed	Least Concern	No	Resident	No	Yes	Medium
44	Nymphalidae	*Acraea terpsicore*	Tawny Coster	Not Listed	Least Concern	No	Resident	No	Yes	Medium
45	Nymphalidae	*Danaus chrysippus chrysippus*	Plain Tiger	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
46	Nymphalidae	*Discophora sondaica despoliata*	Common Duffer	Not Listed	Endangered	Yes	Resident	No	No	High
47	Nymphalidae	*Doleschallia bisaltide ?bisaltide var.*	Autumn Leaf	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
48	Nymphalidae	*Elymnias hypermnestra agina*	Common Palmfly	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
49	Nymphalidae	*Euthalia monina monina*	Malay Baron	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
50	Nymphalidae	*Hypolimnas anomala anomala*	Malayan Eggfly	Not Listed	Least Concern	No	Resident	Yes	No	Medium
51	Nymphalidae	*Hypolimnas bolina bolina*	Great Eggfly	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
52	Nymphalidae	*Junonia almana javana*	Peacock Pansy	Least Concern	Least Concern	No	Resident	No	Yes	Medium
53	Nymphalidae	*Junonia hedonia ida*	Chocolate Pansy	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
54	Nymphalidae	*Mycalesis mineus macromalayana*	Dark Brand Bush Brown	Not Listed	Least Concern	No	Resident	No	Yes	Medium
55	Nymphalidae	*Mycalesis orseis nautilus*	Purple Bush Brown	Not Listed	Vulnerable	Yes	Resident	No	No	High
56	Nymphalidae	*Mycalesis perseoides*	Burmese Bush Brown	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
57	Nymphalidae	*Mycalesis perseus cepheus*	Dingy Bush Brown	Not Listed	Least Concern	No	Resident	No	Yes	Medium
58	Nymphalidae	*Mycalesis visala phamis*	Long Brand Bush Brown	Not Listed	Near Threatened	No	Resident	No	Yes	Medium
59	Nymphalidae	*Neptis hylas papaja*	Common Sailor	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
60	Nymphalidae	*Orsotriaena medus cinerea*	Dark Grass Brown	Not Listed	Least Concern	No	Resident	No	Yes	Medium
61	Nymphalidae	*Phalanta phalantha phalantha*	Leopard	Not Listed	Least Concern	No	Resident	No	Yes	Medium
62	Nymphalidae	*Tanaecia pelea pelea*	Malay Viscount	Not Listed	Least Concern	No	Resident	Yes	No	Medium
63	Nymphalidae	*Ypthima pandocus corticaria*	Common Three Ring	Not Listed	Vulnerable	Yes	Resident	No	No	High
64	Papilionidae	*Graphium sarpedon luctatius*	Common Bluebottle	Not Listed	Least Concern	No	Resident	Yes	No	Medium
65	Papilionidae	*Papilio demoleus malayanus*	Lime Butterfly	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
66	Papilionidae	*Papilio demolion demolion*	Banded Swallowtail	Not Listed	Endangered	Yes	Resident	No	No	High
67	Papilionidae	*Papilio memnon agenor*	Great Mormon	Not Listed	Vulnerable	Yes	Resident	No	No	High
68	Papilionidae	*Troides helena cerberus*	Common Birdwing	Not Listed	Vulnerable	Yes	Resident	No	No	High

No.	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (NParks, 2023)	Species of Conservation Significance	Distribution/ Abundance /Rarity (Nparks, 2023)	Recorded S	Recorded in 2017	Ecological Value
69	Pieridae	*Appias libythea olferna*	Striped Albatross	Not Listed	Least Concern	No	Resident	No	Yes	Medium
70	Pieridae	*Catopsilia pomona pomona*	Lemon Emigrant	Not Listed	Least Concern	No	Resident	No	Yes	Medium
71	Pieridae	*Delias hyparete metarete*	Painted Jezebel	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
72	Pieridae	*Eurema blanda snelleni*	Three Spot Grass Yellow	Not Listed	Least Concern	No	Resident	Yes	No	Medium
73	Pieridae	*Eurema hecabe contubernalis*	Common Grass Yellow	Not Listed	Least Concern	No	Resident	Yes	Yes	Medium
74	Riodinidae	*Taxila haquinus haquinus*	The Harlequin	Not Listed	Critically Endangered	Yes	Resident	No	No	High

Faunal Species List

No.	Type	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (Ascher & Pickering, 2022)	Species of Conservation Significance	Distribution/Rarity	Recorded Species	Ecological Value
1	Bee	Apidae	*Amegilla andrewsi*	Andrew's blue-banded digger	Not Listed	Least Concern	No	NA	Yes	Medium
2	Bee	Apidae	*Apis cerana*	Eastern honey bee	Not Listed	Least Concern	No	NA	Yes	Medium
3	Bee	Apidae	*Apis dorsata*	NA	Not Listed	Least Concern	No	NA	Yes	Medium
4	Bee	Apidae	*Ceratina perforatrix*	NA	Not Listed	Least Concern	No	NA	Yes	Medium
5	Bee	Apidae	*Xylocopa latipes*	Broad-handed carpenter bee	Not Listed	Least Concern	No	NA	Yes	Medium
6	Bee	Halictidae	*Lipotriches takauensis*	NA	Not Listed	Vulnerable	Yes	NA	No	High
7	Bee	Halictidae	*Nomia sp. aff. Apicalis*	NA	Not Listed	Near Threatened	No	NA	Yes	Medium
8	Bee	Megachilidae	*Anthidiellum smithii*	NA	Not Listed	Vulnerable	Yes	NA	No	High
9	Wasp	Pompilidae	*Auplopus sp.*	NA	NA	Least Concern	No	NA	Yes	Medium
10	Wasp	Vespidae	*Liostenogaster varipicta*	NA	Not Listed	Near Threatened	No	NA	Yes	Medium
11	Wasp	Vespidae	*Parischnogaster mellyi*	NA	Not Listed	Least Concern	No	NA	Yes	Medium
12	Wasp	Vespidae	*Ropalidia stigma*	NA	Not Listed	Least Concern	No	NA	Yes	Medium

Faunal Species List

No.	Survey type	Family	Scientific Name	Global Status (IUCN/CITES)	National Status	Species of Conservation Significance	Ecological Value
1	Visual search & umbrella beating	Araneidae	*Arachnura melanura*	NA	NA	NA	Medium
2	Visual search & umbrella beating	Araneidae	*Argiope versicolor*	NA	NA	NA	Medium
3	Umbrella beating	Araneidae	*Chorizopesoides wulingensis*	NA	NA	NA	Medium
4	Visual search & umbrella beating	Araneidae	*Cyclosa bifida*	NA	NA	NA	Medium
5	Visual search	Araneidae	*Cyclosa insulana*	NA	NA	NA	Medium
6	Visual search & umbrella beating	Araneidae	*Eriovixia laglaizei*	NA	NA	NA	Medium
7	Visual search	Araneidae	*Neoscona vigilans*	NA	NA	NA	Medium
8	Visual search & umbrella beating	Araneidae	*Nephila pilipes*	NA	NA	NA	Medium
9	Umbrella beating	Cheiracanthiidae	*Cheiracanthium KS*	NA	NA	NA	Medium
10	Visual search & umbrella beating	Clubionidae	*Nusatidia camouflata*	NA	NA	NA	Medium
11	Visual search & umbrella beating	Corinnidae	*Apochinomma nitidum*	NA	NA	NA	Medium
12	Umbrella beating	Corinnidae	*Corinnomma severum*	NA	NA	NA	Medium
13	Umbrella beating	Corinnidae	*Medmassa insignis*	NA	NA	NA	Medium
14	Umbrella beating	Deinopidae	*Asianopis cf. liukuensis*	NA	NA	NA	Medium
15	Umbrella beating	Dictynidae	*Sudesna WL*	NA	NA	NA	Medium
16	Leaf litter sifting	Euagridae	*aff. Malayathele SC*	NA	NA	NA	Medium
17	Umbrella beating	Hahniidae	*Alistra BC*	NA	NA	NA	Medium
18	Visual search & umbrella beating	Hersilidae	*Hersilia sundaica*	NA	NA	NA	Medium
19	Leaf litter sifting	Linyphiidae	*Nasoona crucifera*	NA	NA	NA	Medium
20	Leaf litter sifting	Liocranidae	*Oedignatha scrobiculata*	NA	NA	NA	Medium
21	Leaf litter sifting	Liocranidae	*Sphingius vivax*	NA	NA	NA	Medium
22	Visual search	Lycosidae	*Pardosa pusiola*	NA	NA	NA	Medium
23	Visual search	Lycosidae	*Trochosa ruricoloides*	NA	NA	NA	Medium
24	Leaf litter sifting	Oonopidae	*Ischnothyreus brunneus*	NA	NA	NA	Medium
25	Umbrella beating	Oonopidae	*Orchestina SL*	NA	NA	NA	Medium
26	Leaf litter sifting	Oonopidae	*Prethopalus schwendingeri*	NA	NA	NA	Medium
27	Umbrella beating	Oonopidae	*Xyphinus karschi*	NA	NA	NA	Medium
28	Visual search	Oxyopidae	*Hamataliwa BS*	NA	NA	NA	Medium
29	Visual search	Oxyopidae	*Hamataliwa incompta*	NA	NA	NA	Medium
30	Leaf litter sifting	Pholcidae	*Belisana CS*	NA	NA	NA	Medium
31	Leaf litter sifting	Pholcidae	*Belisana PH*	NA	NA	NA	Medium
32	Leaf litter sifting & visual search	Pholcidae	*Uthina luzonica*	NA	NA	NA	Medium
33	Leaf litter sifting	Psilodercidae	*Leclecera PV*	NA	NA	NA	Medium
34	Umbrella beating	Salticidae	*Bavia sexpunctata*	NA	NA	NA	Medium
35	Visual search	Salticidae	*Cocalus murinus*	NA	NA	NA	Medium
36	Umbrella beating	Salticidae	*Cosmophasis thalassina*	NA	NA	NA	Medium
37	Umbrella beating	Salticidae	*Cytaea oreophila*	NA	NA	NA	Medium
38	Visual search	Salticidae	*Epeus JL*	NA	NA	NA	Medium
39	Visual search & umbrella beating	Salticidae	*Evarcha besar*	NA	NA	NA	Medium
40	Visual search	Salticidae	*Evarcha CH*	NA	NA	NA	Medium
41	Visual search	Salticidae	*Hasarius adansoni*	NA	NA	NA	Medium
42	Visual search	Salticidae	*Hyllus semicupreus*	NA	NA	NA	Medium
43	Visual search & umbrella beating	Salticidae	*Myrmarachne cornuta*	NA	NA	NA	Medium
44	Visual search & umbrella beating	Salticidae	*Myrmarachne melanocephala*	NA	NA	NA	Medium
45	Visual search & umbrella beating	Salticidae	*Portia labiata*	NA	NA	NA	Medium

Spiders

46	Umbrella beating	Salticidae	*Pseudicius decemnotatus*	NA	NA	NA	Medium
47	Visual search	Salticidae	*Telamonia dimidiata*	NA	NA	NA	Medium
48	Umbrella beating	Salticidae	*Thiania bhamoensis*	NA	NA	NA	Medium
49	Umbrella beating	Salticidae	*Thorelliola ensifera*	NA	NA	NA	Medium
50	Visual search	Salticidae	*Viciria pavesii*	NA	NA	NA	Medium
51	Visual search & umbrella beating	Scytodidae	*Scytodes BP*	NA	NA	NA	Medium
52	Visual search	Sparassidae	*Heteropoda venatoria*	NA	NA	NA	Medium
53	Visual search	Sparassidae	*Pandercetes CL*	NA	NA	NA	Medium
54	Leaf litter sifting	Tetrablemmidae	*Brignoliella michaeli*	NA	NA	NA	Medium
55	Visual search & umbrella beating	Tetragnathidae	*Dolichognatha cf. deelemanae*	NA	NA	NA	Medium
56	Umbrella beating	Tetragnathidae	*Leucauge argentina*	NA	NA	NA	Medium
57	Visual search & umbrella beating	Tetragnathidae	*Leucauge fastigata*	NA	NA	NA	Medium
58	Leaf litter sifting, visual search & umbrella beating	Tetragnathidae	*Tylorida ventralis*	NA	NA	NA	Medium
59	Umbrella beating	Theridiidae	*Aryrodes flavescens*	NA	NA	NA	Medium
60	Umbrella beating	Theridiidae	*Chrysso PT*	NA	NA	NA	Medium
61	Umbrella beating	Theridiidae	*Janula batman*	NA	NA	NA	Medium
62	Umbrella beating	Theridiidae	*Janula MF*	NA	NA	NA	Medium
63	Umbrella beating	Theridiidae	*Phoroncidia PA*	NA	NA	NA	Medium
64	Leaf litter sifting & visual search	Theridiidae	*Phycosoma hana*	NA	NA	NA	Medium
65	Umbrella beating	Theridiidae	*Platnickina mneon*	NA	NA	NA	Medium
66	Leaf litter sifting, visual search & umbrella beating	Theridiidae	*Rhomphaea labiata*	NA	NA	NA	Medium
67	Visual search & umbrella beating	Theridiidae	*Theridion PP*	NA	NA	NA	Medium
68	Leaf litter sifting, visual search & umbrella beating	Theridiidae	*Theridion t-notatum*	NA	NA	NA	Medium
69	Visual search	Theridiidae	*Thwaitsea AM*	NA	NA	NA	Medium
70	Umbrella beating	Thomisidae	*Amyciaea forticeps*	NA	NA	NA	Medium
71	Leaf litter sifting	Thomisidae	*Camaricus maugei*	NA	NA	NA	Medium
72	Umbrella beating	Thomisidae	*Pycnaxis krakatauensis*	NA	NA	NA	Medium
73	Visual search & umbrella beating	Thomisidae	*Spilosynmea DD*	NA	NA	NA	Medium
74	Umbrella beating	Thomisidae	*Tmarus SH*	NA	NA	NA	Medium
75	Visual search & umbrella beating	Uloboridae	*Miagrammopes BS*	NA	NA	NA	Medium
76	Umbrella beating	Uloboridae	*Miagrammopes oblongus*	NA	NA	NA	Medium
77	Visual search	Uloboridae	*Uloborus plumipes*	NA	NA	NA	Medium
78	Visual search	Uloboridae	*Uloborus SW*	NA	NA	NA	Medium
79	Visual search	Uloboridae	*Uloborus YH*	NA	NA	NA	Medium
80	Visual search	Zodariidae	*Asceua VB*	NA	NA	NA	Medium
81	Leaf litter sifting	Zodariidae	*Cryptothele sundaica*	NA	NA	NA	Medium
82	Leaf litter sifting	Zodariidae	*Mallinella annulipes*	NA	NA	NA	Medium

No.	Type	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (NParks, 2022)	Species of Conservation Signficance	Distribution/ Abundance/ Rarity (NParks, 2022)	Native Status (NParks, 2022)	Recorded Species	Recorded in 2017	Ecological Value
1	Frog	Dicroglossidae	*Fejervarya cancrivora*	Crab-eating frog	Least Concern	Least Concern	No	Widespread and Common	Native	No	Yes	Medium
2	Frog	Eleutherodactylidae	*Eleutherodactylus planirostris*	Greenhouse frog	Least Concern	Not Evaluated	No	Widespread and Common	Non-native	Yes	No	Low
3	Frog	Microhylidae	*Kaloula pulchra*	Banded bull frog	Least Concern	Not Evaluated	No	Widespread and Common	Non-native	Yes	Yes	Low
4	Frog	Microhylidae	*Microhyla butleri*	Painted chorus frog	Least Concern	Least Concern	No	Widespread and Common	Native	No	Yes	Medium
5	Frog	Microhylidae	*Microhyla heymonsi*	Dark-sided chorus frog	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes	Medium
6	Frog	Microhylidae	*Microhyla mukhlesuri*	East Asian ornate chorus frog	Least Concern	Not Evaluated	No	Restricted and Rare	Non-native	Yes	No	Low
7	Frog	Rhacophoridae	*Polypedates leucomystax*	Four-lined tree frog	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes	Medium
8	Toad	Bufonidae	*Duttaphrynus bengalensis*	Indian toad	Least Concern	NA	No	Widespread and Common	Non-native	Yes	Yes	Low

No.	Type	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (NParks, 2022)	Species of Conservation Signficance	Distribution/ Abundance/ Rarity (NParks, 2022)	Native Status (NParks, 2022)	Recorded Species	Recorded in 2017	Ecological Value
1	Non-marine lizard	Agamidae	*Bronchocela cristatella*	Green crested lizard	Not Listed	Least Concern	No	Widespread but Uncommon	Native	Yes	No	Medium
2	Non-marine lizard	Agamidae	*Calotes versicolor*	Changeable lizard	Not Listed	Not Evaluated	No	Widespread and Common	Non-native	Yes	Yes	Low
3	Non-marine lizard	Gekkonidae	*Gekko monarchus*	Spotted house gecko	Not Listed	Least Concern	No	Widespread and Common	Native	No	Yes	Medium
4	Non-marine lizard	Gekkonidae	*Hemidactylus frenatus*	Spiny-tailed house gecko	Least Concern	Least Concern	No	Widespread and Common	Native	No	Yes	Medium
5	Non-marine lizard	Gekkonidae	*Hemiphyllodactylus typus*	Lowland dwarf gecko	Least Concern	Near Threatened	No	Restricted and Rare	Native	Yes	No	Medium
6	Non-marine lizard	Scincidae	*Eutropis multifasciata*	Many-lined sun skink	Least Concern	Least Concern	No	Widespread and Common	Native	No	Yes	Medium
7	Non-marine snake	Colubridae (Ahaetulliinae)	*Ahaetulla prasina*	Oriental whip snake	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes	Medium
8	Non-marine snake	Colubridae (Ahaetulliinae)	*Dendrelaphis caudolineatus*	Striped bronzeback	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	No	Medium
9	Non-marine snake	Colubridae (Ahaetulliinae)	*Dendrelaphis pictus*	Painted bronzeback	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	No	Medium
10	Non-marine snake	Colubridae (Ahaetulliinae)	*Naja sumatrana*	Equitorial spitting cobra	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	No	Medium

No.	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (Nparks, 2022)	Species of Conservation Significance	Distribution/ Abundance/ Rarity (NParks, 2022)	Primary Native Status (NParks, 2022)	Recorded Species	Recorded in 2017	Ecological Value
1	Accipitridae	*Accipiter gularis*	Japanese sparrowhawk	Least Concern	Least Concern	No	Common	Passage migrant	No	Yes	Medium
2	Accipitridae	*Elanus caeruleus*	Black-winged kite	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
3	Accipitridae	*Haliaeetus ichthyaetus*	Grey-headed fish eagle	Near Threatened	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
4	Accipitridae	*Haliaeetus leucogaster*	White-bellied sea eagle	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
5	Accipitridae	*Haliastur indus*	Brahminy kite	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
6	Accipitridae	*Milvus migrans*	Black kite	Least Concern	Endangered	Yes	Rare	Winter visitor	No	No	High
7	Accipitridae	*Nisaetus cirrhatus*	Changeable hawk-eagle	Least Concern	Vulnerable	Yes	Common	Resident breeder	Yes	Yes	High
8	Accipitridae	*Spilornis cheela*	Crested serpent eagle	Least Concern	Critically Endangered	Yes	Rare	Resident, breeding not proven	Yes	No	High
9	Acrocephalidae	*Acrocephalus orientalis*	Oriental reed warbler	Least Concern	Vulnerable	Yes	Common	Winter visitor	No	No	High
10	Aegithinidae	*Aegithina tiphia*	Common iora	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
11	Alcedinidae	*Alcedo atthis*	Common kingfisher	Least Concern	Vulnerable	Yes	Common	Winter visitor	Yes	No	High
12	Alcedinidae	*Halcyon coromanda*	Ruddy kingfisher	Least Concern	Critically Endangered	Yes	Uncommon	Resident breeder	No	No	High
13	Alcedinidae	*Halcyon smyrnensis*	White-throated kingfisher	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
14	Alcedinidae	*Todiramphus chloris*	Collared kingfisher	Least Concern	Least Concern	No	Abundant	Resident breeder	Yes	Yes	Medium
15	Apodidae	*Aerodramus sp.*	NA	NA	NA	NA	NA	NA	Yes	Yes	
16	Apodidae	*Apus nipalensis*	House swift	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
17	Apodidae	*Collocalia affinis*	Plume-toed swiftlet	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
18	Ardeidae	*Ardea purpurea*	Purple heron	Least Concern	Endangered	Yes	Uncommon	Resident breeder	No	No	High
19	Ardeidae	*Gorsachius melanolophus*	Malayan night heron	Least Concern	Near Threatened	No	Uncommon	Winter visitor	Yes	No	Medium
20	Ardeidae	*Nycticorax nycticorax*	Black-crowned night heron	Least Concern	Endangered	Yes	Uncommon	Resident breeder	Yes	No	High
21	Campephagidae	*Lalage nigra*	Pied triller	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
22	Campephagidae	*Pericrocotus divaricatus*	Ashy minivet	Least Concern	Least Concern	No	Common	Winter visitor	Yes	No	Medium
23	Caprimulgidae	*Caprimulgus affinis*	Savanna nightjar	Least Concern	Least Concern	No	Common	Resident breeder	Yes	No	Medium
24	Caprimulgidae	*Caprimulgus macrurus*	Large-tailed nightjar	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
25	Cisticolidae	*Cisticola juncidis*	Zitting cisticola	Least Concern	Vulnerable	Yes	Common	Resident breeder	No	No	High
26	Cisticolidae	*Orthotomus atrogularis*	Dark-necked tailorbird	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
27	Cisticolidae	*Orthotomus ruficeps*	Ashy tailorbird	Least Concern	Least Concern	No	Common	Resident breeder	Yes	No	Medium
28	Cisticolidae	*Orthotomus sutorius*	Common tailorbird	Least Concern	Least Concern	No	Common	Resident breeder	No	Yes	Medium
29	Columbidae	*Chalcophaps indica*	Common emerald dove	Least Concern	Least Concern	No	Uncommon	Resident breeder	Yes	Yes	Medium
30	Columbidae	*Geopelia striata*	Zebra dove	Least Concern	Least Concern	No	Common	Resident breeder	No	Yes	Medium
31	Columbidae	*Ptilinopus jambu*	Jambu fruit dove	Near Threatened	Vulnerable	Yes	Uncommon	Resident, breeding not proven	No	No	High
32	Columbidae	*Spilopelia chinensis*	Spotted dove	Least Concern	Least Concern	No	Abundant	Resident breeder	Yes	Yes	Medium
33	Columbidae	*Treron curvirostra*	Thick-billed green pigeon	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
34	Columbidae	*Treron vernans*	Pink-necked green pigeon	Least Concern	Least Concern	No	Abundant	Resident breeder	Yes	Yes	Medium
35	Coraciidae	*Eurystomus orientalis*	Oriental dollarbird	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
36	Corvidae	*Corvus macrorhynchos*	Large-billed crow	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	Yes	Yes	High
37	Corvidae	*Corvus splendens*	House crow	Least Concern	NA	No	Common	Introduced resident breeder	Yes	Yes	Low
38	Cuculidae	*Centropus bengalensis*	Lesser coucal	Least Concern	Least Concern	No	Common	Resident breeder	No	Yes	Medium
39	Cuculidae	*Chrysococcyx xanthorhynchus*	Violet cuckoo	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
40	Cuculidae	*Eudynamys scolopaceus*	Asian koel	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
41	Cuculidae	*Surniculus lugubris*	Square-tailed drongo-cuckoo	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
42	Dicaeidae	*Dicaeum cruentatum*	Scarlet-backed flowerpecker	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
43	Dicruridae	*Dicrurus macrocercus*	Black drongo	Least Concern	Vulnerable	Yes	Rare	Winter visitor	No	No	High
44	Dicruridae	*Dicrurus paradiseus*	Greater racket-tailed drongo	Least Concern	Least Concern	No	Common	Resident breeder	No	Yes	Medium
45	Estrildidae	*Lonchura atricapilla*	Chestnut munia	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
46	Estrildidae	*Lonchura striata*	White-rumped munia	Least Concern	Critically Endangered	Yes	Rare	Resident breeder	No	No	High
47	Glareolidae	*Glareola maldivarum*	Oriental pratincole	Least Concern	Endangered	Yes	Uncommon	Passage migrant	No	No	High
48	Hirundinidae	*Cecropis daurica*	Red-rumped swallow	Least Concern	Least Concern	No	Uncommon	Passage migrant	No	Yes	Medium
49	Hirundinidae	*Hirundo rustica*	Barn swallow	Least Concern	Near Threatened	No	Abundant	Winter visitor	No	Yes	Medium
50	Laniidae	*Lanius cristatus*	Brown shrike	Least Concern	Vulnerable	Yes	Common	Winter visitor	Yes	Yes	High
51	Laniidae	*Lanius schach*	Long-tailed shrike	Least Concern	Least Concern	No	Uncommon	Resident breeder	Yes	No	Medium
52	Leiothrichidae	*Garrulax leucolophus*	White-crested laughingthrush	Least Concern	NA	No	Common	Introduced resident breeder	Yes	No	Low
53	Megalaimidae	*Psilopogon haemacephalus*	Coppersmith barbet	Least Concern	Least Concern	No	Common	Resident breeder	No	Yes	Medium

No.	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (Nparks, 2022)	Species of Conservation Significance	Distribution/ Abundance/ Rarity (NParks, 2022)	Primary Native Status (NParks, 2022)	Recorded Species	Recorded in 2017	Ecological Value
54	Megalaimidae	*Psilopogon lineatus*	Lineated barbet	Least Concern	NA	No	Common	Introduced resident breeder	Yes	No	Low
55	Meropidae	*Merops philippinus*	Blue-tailed bee-eater	Least Concern	Least Concern	No	Common	Winter visitor	No	Yes	Medium
56	Meropidae	*Merops viridis*	Blue-throated bee-eater	Least Concern	Least Concern	No	Common	Migrant breeder	Yes	Yes	Medium
57	Monarchidae	*Terpsiphone incei*	Amur paradise flycatcher	Least Concern	Least Concern	No	Uncommon	Passage migrant	No	Yes	Medium
58	Motacillidae	*Motacilla tschutschensis*	Eastern yellow wagtail	Least Concern	Vulnerable	Yes	Common	Winter visitor	No	No	High
59	Muscicapidae	*Copsychus malabaricus*	White-rumped shama	Least Concern	Endangered	Yes	Uncommon	Resident breeder	No	No	High
60	Muscicapidae	*Copsychus saularis*	Oriental magpie-robin	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	Yes	High
61	Muscicapidae	*Cyornis brunneatus*	Brown-chested jungle	Vulnerable	Vulnerable	Yes	Uncommon	Winter visitor	No	No	High
62	Muscicapidae	*Ficedula mugimaki*	Mugimaki flycatcher	Least Concern	Least Concern	No	Uncommon	Passage migrant	Yes	No	Medium
63	Muscicapidae	*Ficedula zanthopygia*	Yellow-rumped flycatcher	Least Concern	Least Concern	No	Uncommon	Passage migrant	Yes	No	Medium
64	Muscicapidae	*Muscicapa dauurica*	Asian brown flycatcher	Least Concern	Least Concern	No	Common	Winter visitor	Yes	Yes	Medium
65	Muscicapidae	*Muscicapa sibirica*	Dark-sided flycatcher	Least Concern	Near Threatened	No	Uncommon	Winter visitor	No	Yes	Medium
66	Nectariniidae	*Aethopyga siparaja*	Crimson sunbird	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
67	Nectariniidae	*Cinnyris jugularis*	Olive-backed sunbird	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
68	Oriolidae	*Oriolus chinensis*	Black-naped oriole	Least Concern	Least Concern	No	Abundant	Resident breeder	Yes	Yes	Medium
69	Pachycephalidae	*Pachycephala cinerea*	Mangrove whistler	Least Concern	Endangered	Yes	Rare	Resident breeder	No	No	High
70	Pandionidae	*Pandion haliaetus*	Osprey	Least Concern	Least Concern	No	Common	Non-breeding visitor	No	Yes	Medium
71	Passeridae	*Passer montanus*	Eurasian tree sparrow	Least Concern	Least Concern	No	Common	Resident breeder	No	Yes	Medium
72	Phylloscopidae	*Phylloscopus borealis*	Arctic warbler	Least Concern	Least Concern	No	Common	Winter visitor	Yes	Yes	Medium
73	Picidae	*Chrysophlegma miniaceum*	Banded woodpecker	Least Concern	Least Concern	No	Common	Resident breeder	No	Yes	Medium
74	Picidae	*Dinopium javanense*	Common flameback	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
75	Picidae	*Micropternus brachyurus*	Rufous woodpecker	Least Concern	Least Concern	No	Uncommon	Resident breeder	Yes	No	Medium
76	Picidae	*Picus vittatus*	Laced woodpecker	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
77	Picidae	*Yungipicus moluccensis*	Sunda pygmy woodpecker	Least Concern	Least Concern	No	Common	Resident breeder	No	Yes	Medium
78	Ploceidae	*Ploceus philippinus*	Baya weaver	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
79	Psittaculidae	*Loriculus galgulus*	Blue-crowned hanging-parrot	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
80	Psittaculidae	*Psittacula alexandri*	Red-breasted parakeet	Near Threatened	NA	No	Common	Introduced resident breeder	Yes	Yes	Low
81	Psittaculidae	*Psittacula krameri*	Rose-ringed parakeet	Least Concern	NA	No	Common	Introduced resident breeder	Yes	Yes	Low
82	Psittaculidae	*Psittacula longicauda*	Long-tailed parakeet	Vulnerable	Near Threatened	Yes	Common	Resident breeder	Yes	Yes	High
83	Pycnonotidae	*Pycnonotus goiavier*	Yellow-vented bulbul	Least Concern	Least Concern	No	Abundant	Resident breeder	Yes	Yes	Medium
84	Pycnonotidae	*Pycnonotus plumosus*	Olive-winged bulbul	Least Concern	Least Concern	No	Common	Resident breeder	No	Yes	Medium
85	Pycnonotidae	*Pycnonotus zeylanicus*	Straw-headed bulbul	Critically	Endangered	Yes	Uncommon	Resident breeder	No	No	High
86	Rallidae	*Amaurornis phoenicurus*	White-breasted waterhen	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
87	Rallidae	*Lewinia striata*	Slaty-breasted rail	Least Concern	Least Concern	No	Uncommon	Resident breeder	Yes	No	Medium
88	Rallidae	*Rallina fasciata*	Red-legged crake	Least Concern	Near Threatened	No	Uncommon	Resident breeder	Yes	Yes	Medium
89	Scolopacidae	*Actitis hypoleucos*	Common sandpiper	Least Concern	Vulnerable	Yes	Common	Winter visitor	No	No	High
90	Strigidae	*Otus lempiji*	Sunda scops owl	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
91	Strigidae	*Strix seloputo*	Spotted wood owl	Least Concern	Vulnerable	Yes	Uncommon	Resident breeder	No	No	High
92	Sturnidae	*Acridotheres javanicus*	Javan myna	Vulnerable	NA	No	Abundant	Introduced resident breeder	Yes	Yes	Low
93	Sturnidae	*Agropsar sturninus*	Daurian starling	Least Concern	Least Concern	No	Common	Winter visitor	No	Yes	Medium
94	Sturnidae	*Aplonis panayensis*	Asian glossy starling	Least Concern	Least Concern	No	Abundant	Resident breeder	Yes	Yes	Medium
95	Sturnidae	*Gracula religiosa*	Common hill myna	Least Concern	Near Threatened	No	Uncommon	Resident breeder	Yes	Yes	Medium
96	Timaliidae	*Mixornis gularis*	Pin-striped tit-babbler	Least Concern	Least Concern	No	Common	Resident breeder	Yes	Yes	Medium
97	Zosteropidae	*Zosterops simplex*	Swinhoe's white-eye	Least Concern	Vulnerable	Yes	Common	Introduced resident breeder	Yes	Yes	High

No.	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (NParks, 2021)	Species of Conservation Significance	Distribution/Abundance/Rarity (NParks, 2022)	Native Status (NParks, 2022)	Recorded Species	Recorded in 2017	Ecological Value
1	Canidae	Canis lupus familiaris	Feral dog	Not Listed	Not Evaluated	No	NA	Non-native	Yes	No	Low
2	Cercopithecidae	*Macaca fascicularis*	Long-tailed macaque	Endangered	Least Concern	Yes	Widespread and Common	Native	Yes	Yes	High
3	Felidae	*Felis catus*	Feral cat	Not Listed	Not Evaluated	No	NA	Non-native	Yes	No	Low
4	Manidae	*Manis javanica*	Sunda pangolin	Critically Endangered	Critically Endangered	Yes	Widespread but Rare	Native	No	No	High
5	Muridae	Rattus tanezumi	Asian house rat	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	No	Medium
6	Muridae	Rattus tiomanicus	Malaysian wood rat	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	No	Medium
7	*Mutstelidae	Lutrogale perspicillata	Smooth otter	Vulnerable	Endangered	Yes	Widespread but Rare	Native	Yes	No	Medium
8	Sciuridae	*Callosciurus notatus*	Plantain squirrel	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes	Medium
9	Tupaiidae	*Tupaia glis*	Common treeshrew	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes	Medium

*Mustelidae sp. sighted on camera trap, likely to be smooth otter

No.	Family	Scientific Name	Common Name	Global Status (IUCN/CITES)	National Status (NParks, 2022)	Species of Conservation Significance	Distribution/Abundance/Rarity (NParks, 2022)	Native Status (NParks, 2022)	Recorded Species	Recorded in 2017	Ecological Value
1	Emballonuridae	*Saccolaimus saccolaimus*	Pouch tomb bat	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	No	Medium
2	Emballonuridae	*Taphozous melanopogon*	Black-bearded tomb bat	Least Concern	Least Concern	No	Widespread but Rare	Native	Yes	No	Medium
3	Pteropodidae	*Cynopterus brachyotis*	Lesser short-nosed fruit bat	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	Yes	Medium
4	Pteropodidae	*Eonycteris spelaea*	Cave nectar bat	Least Concern	Vulnerable	Yes	Widespread but Uncommon	Native	No	No	High
5	Vespertilionidae	*Myotis muricola*	Asian whiskered myotis	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	No	Medium
6	Vespertilionidae	*Scotophilus kuhlii*	Lesser Asian house bat	Least Concern	Least Concern	No	Widespread and Common	Native	Yes	No	Medium

APPENDIX F

Air Quality Baseline Measurement Report

TEST REPORT

(This Report is issued subject to the terms & conditions set out below)

SETSCO
Setsco Services Pte Ltd
531 Bukit Batok Street 23
Singapore 659547
Tel : (65) 6566 7777
Fax: (65) 6566 7718
www.setsco.com
Business Reg. No. 196900269D

Our Reference : **EA8500246565**

Report Date : **20/03/2023**

Subject: Ambient Air Quality Monitoring at Woodlands site (5 locations) from 20 January 2023 to 10 February 2023

Tested For: **DHI Water & Environment (S) Pte Ltd**

2 Venture Drive

#18-18 Vision Exchange

Singapore 608526

Attention: Mr. Bryan Wong

Su Man Huan
(Assistant Engineer)

Wong Sze Beng
(Principal Engineer)

Biological and Chemical Technology Division

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1.0 EXECUTIVE SUMMARY

Setsco Services Ptd Ltd was engaged by DHI Water & Environment (S) Pte Ltd to conduct an ambient air quality monitoring at Woodlands various sites (5 locations) from 20 January 2023 to 10 February 2023.

This report presents the data collected during the period of study. The phase of the study included real-time monitoring of Particulate Matter (PM_{10} and $PM_{2.5}$), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO).

The result was found in Page 7.

2.0 OBJECTIVES

- To determine the level of compliance by comparing the data collected with the World Health Organization Air Quality Guidelines (WHO-AQG), United States Environment Protection Agency National Ambient Air Quality Standard (USEPA-NAAQS) or European Commission: Air Quality Standard.

3.0 SCOPE OF WORK

The locations selected for ambient air monitoring and type of parameter monitored in this study is listed in the table below:

Table 3.1: Test location, parameters and monitoring period

Location	Test Parameters	Date of Monitoring
A1 (Admiralty Road West and Keramat Road)	Particulate Matter (PM_{10}) Particulate Matter ($PM_{2.5}$) Nitrogen Dioxide (NO_2) Carbon Monoxide (CO)	20 January 2023 to 27 January 2023
A2 (19 Woodlands Ave 9, Republic Poly Xperiential Hub)		27 January 2023 to 03 February 2023
A3 (Blk 877 Woodlands Ave 9)		20 January 2023 to 27 January 2023
A4 (Outside Micron)		27 January 2023 to 03 February 2023
A5 (Woodlands Ind Park E2)		03 February 2023 to 10 February 2023

4.0 AMBIENT AIR MONITORING EQUIPMENT AND ANALYSIS METHOD

Real-time analysers were deployed to monitor the levels of the respective pollutants.

Table 4.1: Equipment and Analysis Method

Parameters	Equipment / Analysis Method	Units
Particulate Matter (PM_{10})	MT-2005 Customised Outdoor Air Quality Monitoring Station (Non-USEPA)	$\mu g/m^3$
Particulate Matter ($PM_{2.5}$)		$\mu g/m^3$
Nitrogen Dioxide (NO_2)		$\mu g/m^3$
Carbon Monoxide (CO)		mg/m^3

Note:
1) "mg/m^3" denotes "milligrams per cubic meter"
2) "$\mu g/m^3$" denotes "micrograms per cubic meter"
3) Detection Limit for PM_{10} and $PM_{2.5}$ is 1ug/m3, and 0.01ppm for CO and NO_2, corresponding to 1.15$mg/m^3$and 18.8ug/m3 respectively.

5.0 AMBIENT AIR QUALITY STANDARDS

The following table summarizes the Singapore Ambient Air Quality Targets for Particulate Matter as adopted by the National Environment Agency (NEA). The standard was based mainly on WHO Interim Targets and Long Term Targets (Final) and aligned with Sustainable Singapore Blueprint Target [2009] (SSBT) following the recommendation of the Advisory Committee on Ambient Air Quality formed on 2010.

Table 5.1: Singapore Ambient Air Quality Targets

Pollutants	Singapore Targets by 2020	Long Term Targets
Particulate Matter PM_{10}	**24-hour mean: 50 µg/m^3** Annual mean: 20 µg/m^3 *(WHO Final)*	
Particulate Matter $PM_{2.5}$	**24-hour mean: 37.5 µg/m^3** *(WHO Interim Target)*	**24-hour mean: 25 µg/m^3** *(WHO Final)*
	Annual mean: 12 µg/m^3 *(SSBT)*	Annual mean: 10 µg/m^3 *(SSBT)*
Nitrogen Dioxide, NO_2	**1-hour mean: 200 µg/m^3** Annual mean: 40 µg/m^3 *(WHO Final)*	
Carbon Monoxide, CO	**8-hour mean: 10 mg/m^3** 1-hour mean: 30 mg/m^3 *(WHO Final)*	

(Source: https://www.nea.gov.sg/our-services/pollution-control/air-pollution/air-quality)

6.0 AIR QUALITY DATA

Location	Results (µg/m³)			Results (mg/m³)	
	PM_{10} (24-hr mean)	**$PM_{2.5}$ (24-hr mean)**	**NO_2 (1-hr mean)**	**CO (8-hr mean)**	**CO (1-hr mean)**
A1 (Admiralty Road West and Keramat Road)	9.95	8.90	166.21	0.11	0.11
A2 (19 Woodlands Ave 9, Republic Poly Xperiential Hub)	11.47	10.24	169.39	0.05	0.05
A3 (Blk 877 Woodlands Ave 9)	9.92	8.86	190.45	0.11	0.11
A4 (Outside Micron)	32.79	27.87	**214.19**	0.05	0.05
A5 (Woodlands Ind Park E2)	16.78	15.46	196.08	0.01	0.01
Singapore targets by 2020	*50*	*37.5*	*200*	*10*	*30*
Long Term Targets	*50*	*25*	*200*	*10*	*30*

TEST REPORT

Our Reference No.	:	**R230733**	Date of Monitoring	:	31/01/23 to 01/02/23
Project Code / Ref.	:	-	Date Reported	:	22/02/23

Customer Ref. No.	:	6159726
Customer Name	:	DHI Water & Environment (S) Pte Ltd
Customer Address	:	2 Venture Drive #18-18 Vision Exchange Singapore 608526
Attention To	:	Ms Klaine Wong
Subject	:	**Ambient Air Monitoring at North Coast Avenue outside Micron**
Description	:	Air Quality Monitoring for 1 Day from 31/01/23 and 01/02/23

Toh Teck Yeow

Snr Manager, Env Services

Terms & Conditions:

1) This report shall not be reproduced except in full, unless approval in writing has been given by MLS.
2) The results in this report only apply to the sample received/analysed.
3) MLS agrees to use reasonable diligence in the performance of the service.

Marchwood Laboratory Services Pte Ltd: Co. Reg No.: 201422686C
Main (Office and Laboratory): 116 Tuas South Ave 2, West Point Bizhub Singapore 637163 ☎ : +65 6790 0118 🖷 : +65 6790 0091
Branch (Site and Laboratory): 216 Tuas South Ave 2, West Point Bizhub Singapore 637213 ☎ : +65 6262 3736 (Lab) ☎ : +65 6262 3726 / 3776 (Site)
Website: www.mls.sg

SCOPE OF WORK

Ambient Air Monitoring was carried out along North Coast Avenue outside Micron. The sampling manifold is housed within a weatherproof enclosure as described in below scope of work. Refer to Appendix B for site photos.

Table 1: Scope of work carried out

S/N	Parameter	Detection Limit	Monitoring period	GPS Coordinates
1	Hydrogen Fluoride	0.01 ppb	31/01/23, 1225hrs To 01/02/23, 1225hrs	1°27'11.0"N 103°47'24.5"E
2	Hydrogen Chloride	0.01 ppb		
3	Nitric Acid	0.01 ppb		
4	Ammonia	0.03 ppb		

SAMPLING METHODOLOGY AND EQUIPMENT

The respective test methods and instruments used are summarised in the table below, with a brief description of the sampling methods. Refer to Appendix A for calibration certificate for flowrate.

Table 2: Method

S/N	Parameter	Sampling & Analysis Method / Instrument	Description
1	Hydrogen Fluoride	Impinger Solution; Ion Chromatography, Flow Injection Analyser	Air sample is drawn from a common intake manifold through the respective sampling media (ultrapure impinger solution) via a calibrated sampling pump. The media will be sent for laboratory test according to the stated analysis techniques (IC / FIA)
2	Hydrogen Chloride		
3	Nitric Acid		
4	Ammonia		

DATA AND RESULT SUMMARY

Table 3: Result summary

Test Parameter	Total Air Volume Sampled (L)	Results (ppb)
Hydrogen Fluoride	4081	< 0.01
Hydrogen Chloride	4081	< 0.01
Nitric Acid	4081	< 0.01
Ammonia	4081	< 0.03

Note: Total air volume sampled is calculated based on the average flowrate throughout the monitoring period as indicated in Table 1.

Flow Calibrator Calibration Certificate

CALTEK PTE LTD
23 Tagore Lane, #04-08/09/10/11 Tagore 23 Warehouse, Singapore 787601
Tel: (65) 6452 0300 | Fax: (65) 6452 0500
www.caltekgroup.com | info@caltekgroup.com

CALIBRATION CERTIFICATE

CERTIFICATE NUMBER	: CMS 1311M-22	**JOB NUMBER**	: CTJ 22-1726
DATE RECEIVED	: 14-Feb-22	**ISSUE DATE**	: 25-Feb-22

Instrument	: **FLOW METER**	**Ambient Temperature**	: (23 ± 5) °C
Manufacturer	: MESA LABS	**Relative Humidity**	: (55 ± 10) % r.h.
Model No.	: DEFENDER 510-M	**Date Calibrated**	: 25-Feb-22
Part No.	: ---	**Recommended Due Date**	: 25-Feb-23
Serial No.	: 144662		
Customer	: **MARCHWOOD LABORATORY SERVICES PTE LTD** 116 Tuas South Ave 2 West Point Bizhub Singapore 637163	**Range** **Medium** *(Tag No.)* **Page** **Status**	: --- : Air : MLS SE-0019 : 1 of 2 : As Found

The described instrument has been calibrated at **Caltek Laboratory** under the ambient conditions stated above.

This certificate provides traceability of measurement to the International System of Units **(SI)** and/or to units of measurement realised at the National Metrology Centre **(NMC)** , Singapore or other recognized national metrology institutes.

METHOD : The calibration method was carried out according to In-house Technical Calibration Procedure CTTM - M21:2007 as a guide.

REFERENCE INSTRUMENT(S)	**SERIAL NO**
1. Mass Flow Calibrator	1140
2. Primary Gas Flow Calibrator	151263/148771

RESULTS OF CALIBRATION

1. The results of calibration are given on the attached calibration data sheet(s).
2. The expanded uncertainty of measurement associated with the calibration is estimated at a level of confidence of approximately 95 % with a coverage factor of k=2.00.
3. The user should determine the suitability of the instrument for its intended use.

Calibrated by :
PRAKASH RAMACHANDRA
EMP ID : 1178

Approved by :
AYYAPPAN M
EMP ID: 1011

*The results reported herein have been performed in accordance with the terms of accreditation under the Singapore Accreditation Council".

CALIBRATION CERTIFICATE

CERTIFICATE NUMBER : CMS 1311M-22
ISSUE DATE : 25-Feb-22

JOB NUMBER : CTJ 22-1726
PAGE NO. : 2 of 2

MEAN REFERENCE READING (ml/min) (Air)	MEAN INSTRUMENT READING (ml/min) (Air)			EXPANDED UNCERTAINTY (ml/min)
	Before adjustment	After adjustment	Correction	
49.73	49.62	---	0.11	2.5
500.23	498.15	---	2.08	8.0
996.41	992.34	---	4.07	10
1995.8	1984.7	---	11.1	75
2993.3	2977.0	---	16.3	75
3991.4	3969.4	---	22.0	75
4990.1	4961.7	---	28.4	75

Remarks:The calibration results are referred to the condition of Temperature 21.11 °C and Pressure 101.3 kPa.

Photos: Ambient Air Monitoring Station at outside Micron (31/01/2023 to 01/02/2023)

MARCHWOOD LABORATORY SERVICES PTE LTD

CHAIN OF CUSTODY DOCUMENT / ANALYSIS REQUEST

02 FEB 2023

Priority Queue / Urgent / Report Needed by: _____

CLIENT	: DHI Water & Environment (S) Pte Ltd
CONTACT (Name / Tel / email)	: Klaine Wong
ADDRESS / COUNTRY	:
PROJECT Code / Ref.	:
SITE	: North Coast Avenue, outside Micron Semiconductor
QUOTATION / JOB REQUEST / PO No.	:
SEND REPORT TO	: ENV Site (TTY / CJQ)
COMMENT / SPECIAL INSTRUCTION	:
STORAGE / DISPOSAL	:

MLS LAB USE ONLY

Job No.: R230733

PRESERVATION DONE:

☐ On Site

☐ By Lab

Cold Box temp. at receipt: ____°C (if applicable)

☒ Sampling done by MLS

S/N	SAMPLE ID / LOCATION	SAMPLING DEPTH (m)	MATRIX* (Water/Soil/Sand/Sed/Sludge/Air)	DATE (DD/MM/YY)	TIME (HRS)	TOTAL NOs OF CONTAINERS# / SAMPLING MEDIA$	STORAGE CONDITION**	Tick if all sealed ☐ / Sample Seal (Y / N)	ANALYSIS PARAMETER (Enter "x" below to indicate Request): IC / Impinger Method Test for: HF, HCl, HNO3 and NH3 (ppb)										REMARKS / OBSERVATION / SAMPLE CONDITION
1	Turf between pedestrian walkway and road	-	Air	31-Jan-23	1225	50ml Ultrapure	C	N	X										
2	Blank	-	Air	31-Jan-23	-	Ultrapure	C	N	X										
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

RELINQUISHED BY:	DATE / TIME	RECEIVED BY:	DATE / TIME	RELINQUISHED BY:	DATE / TIME	RECEIVED BY:	DATE / TIME	SHIPMENT BY COURIER:
Name: Cai Junqin	02-Feb-2023	Name:	2/2/23	Name:		Name:		Courier Co. / Carrier Name:
Sign:		Sign:		Sign:		Sign:		
Company: MLS	1030 hrs	Company:	1032 hrs	Company:	hrs	Company:	hrs	Consignment Note/Airway Bill:

* = **For Water sample:** Please Indicate FW (Fresh Water), SW (Seawater), BW (Ballast Water), DW (Drinking Water), GW (Ground water), WW (Wastewater), OW (Other type of water e.g. canal/storm water)

Type of Sampling Containers/Bottles: G = Glass; P = Plastic; T = Tube; V = VOC vial; S = Steriled bottle/bag; B = Bag.

$ **Type of Sampling Media:** ST = Sorbent Tube; IM = Impinger solution; F = Filter; RT = Resin Trap; AP = Agar Plate; W = Wipe Sample; Others (PUF, etc. - please specify).

** **Storage Condition:** C = Refrigerate at 4 °C; R = Room Temperature; P = Preserved as per Lab's instruction.

APPENDIX G

Noise Baseline Measurement Report

ARUP

DHI Water & Environment (S) Pte Ltd

Environmental Impact Studies at Woodlands North Coast – Stage 1

Preliminary Environmental Noise Impact Assessment

Reference: AAC-V01

Rev1 | 13 February 2023

Job number 288996

Arup Singapore Pte Ltd
Reg No 200100731M

Arup Singapore Private Limited
182 Cecil Street
#06-01 Frasers Tower
Singapore 069547
arup.com

Contents

Tables

Figures

Appendices

1. Introduction

Arup has been engaged by DHI to conduct environmental noise and vibration impact assessment for the proposed Woodlands North Coast (WNC) Stage 1 development. This report presents the findings of the baseline noise measurements surrounding the project site. The noise and vibration impact assessment will be provided in subsequent stage.

1.1 Project Description

The proposed development for Woodlands North Coast (WNC) Stage 1 includes land preparation works to construct new industrial buildings and estates with basements and ancillary services such as roads, drain and sewers and utilities.

Following the completion of 1 and 7 North Coast, WNC will continue to develop progressively in different phasing bringing mixed use development comprising of industrial developments, infrastructure and transport facilities and commercial development. The master planning for WNC Stage 1 is shown in Figure 1.

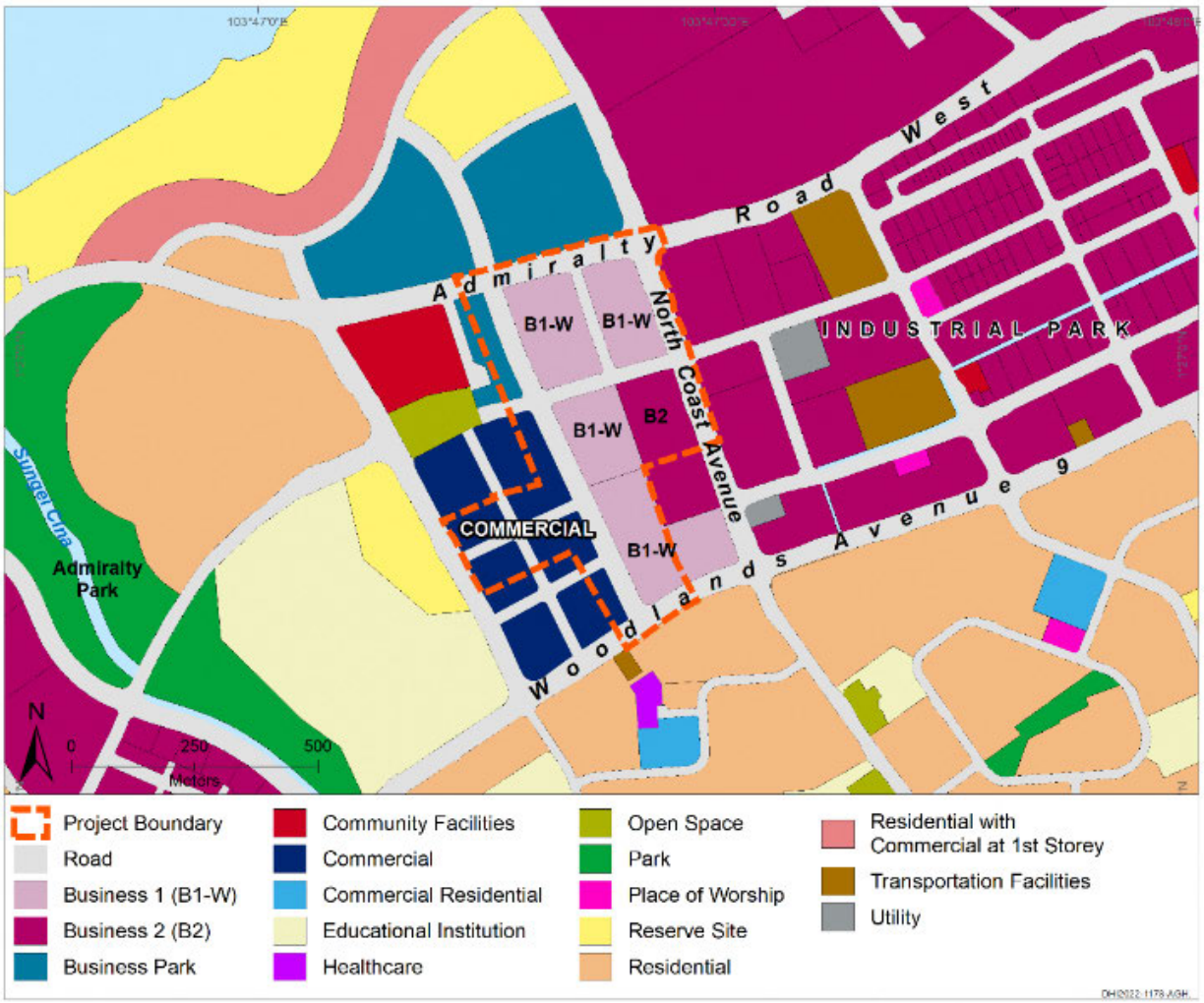


Figure 1 Master planning for WNC Stage 1 area

1.2 Project Site

WNC precinct is located in the northern region of Singapore within the northern tip of Woodlands Planning Area. The project site (WNC Stage 1) is bounded by Woodlands Avenue 9, North Coast Avenue and Admiralty Road West. It is also illustrated in Figure 2.

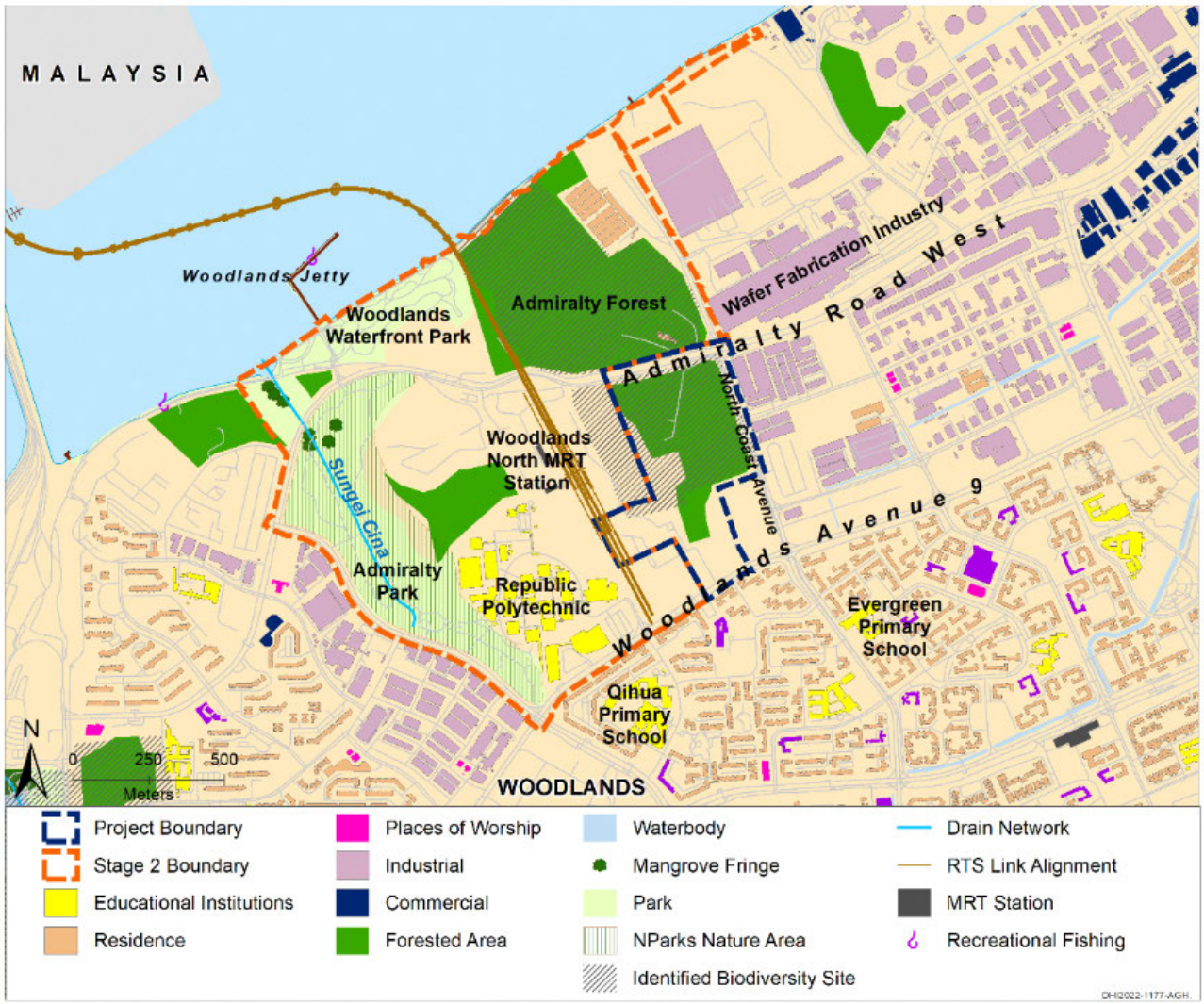


Figure 2 Project location and land uses in vicinity

1.3 Noise Sensitive Receivers

The project site is surrounded by the following noise sensitive receivers. It is also illustrated in Figure 3.

- Residential (to the south of the project site)
- Republic Polytechnic (to the west of the project site)
- Industrial Park (to the east of the project site)
- Admiralty forest, boarding house and residents (to the north of the project site)

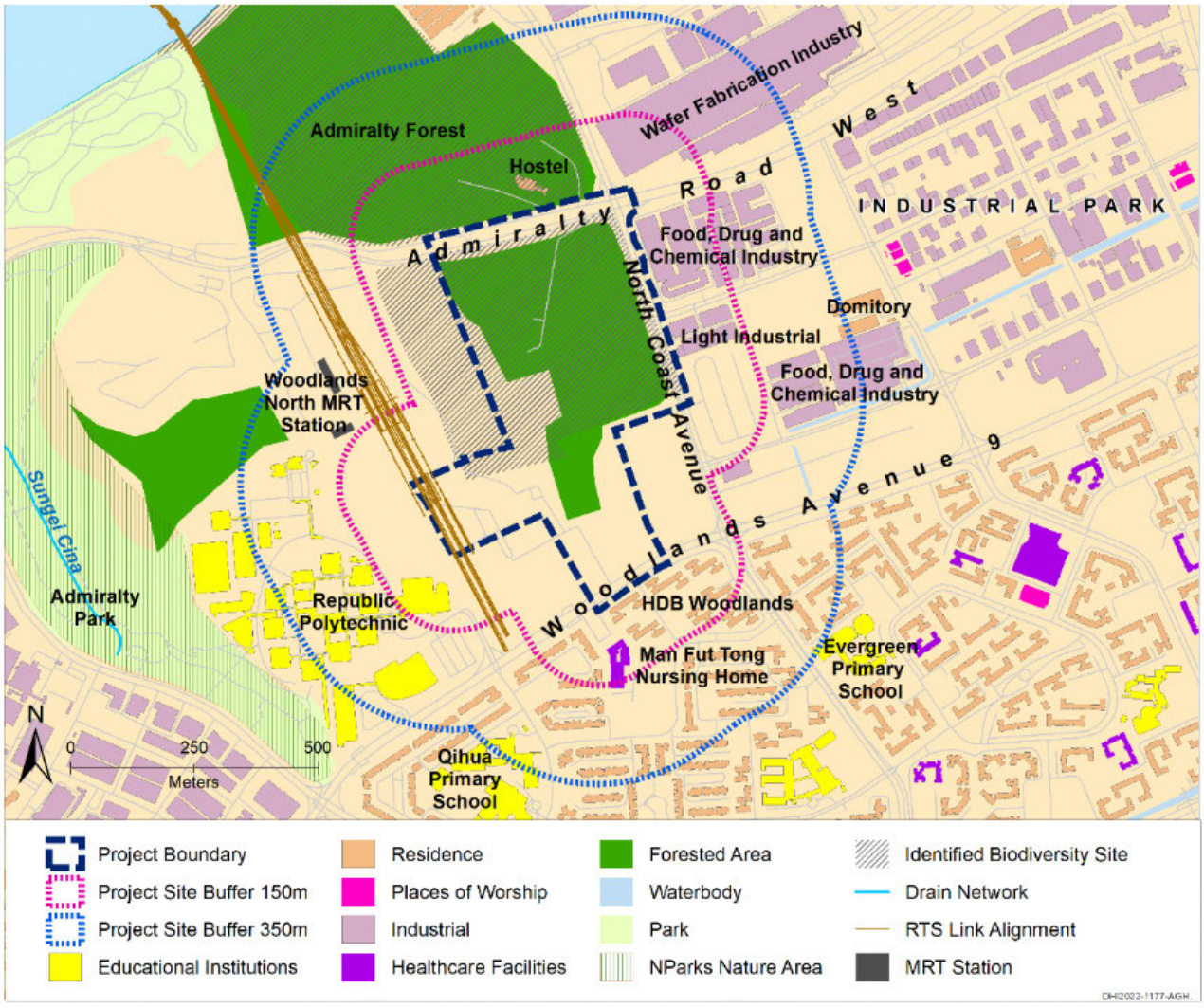


Figure 3 Overview of sensitive receivers

2. Construction Noise Limits

The noise assessment criteria are based on the Singapore Construction Noise Regulations. The permissible construction noise limits for worksites from Monday to Saturday is shown in Table 1 below.

Types of affected buildings	Worksite Operational Period			Parameter
	Day (7 am – 7 pm)	Evening (7 pm – 10 pm)	Night (10 pm – 7 am)	
(a) Hospitals, schools, institutions of higher learning, homes for the aged sick etc.	60	50		$L_{eq\text{-}12hr}$, dB(A)
	75	55	55	$L_{eq\text{-}5\ min}$, dB(A)
(b) Residential buildings located less than 150 m from the construction site where the noise is being emitted	75	-	-	$L_{eq\text{-}12hr}$, dB(A)
	-	65	55	$L_{eq\text{-}1hr}$, dB(A)
	90	70	55	$L_{eq\text{-}5\ min}$, dB(A)[(1)]
	75	55	55	$L_{eq\text{-}5\ min}$, dB(A)[(2)]
(c) Building (other than those in paragraphs (a) and (b))	75	65		$L_{eq\text{-}12hr}$, dB(A)
	90	70	70	$L_{eq\text{-}5\ min}$, dB(A)
Notes: (1) Applicable maximum permissible noise levels where noise is being emitted on Mondays to Saturdays. (2) Applicable maximum permissible noise levels where noise is being emitted on Sundays and public holidays.				

Table 1 Permissible construction noise limits for worksites - *Source: Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, 2011*

According to NEA's directive, the maximum permissible noise levels for construction sites shall be adjusted by the addition of a correction factor to the higher of either the permissible noise level or the measured background noise level, to account for the existing background noise levels in the area. The correction factors correspond to the difference between the applicable permissible level, and the background noise level, and are presented in Table 2.

It should be noted that the correction factor is not to be used during the design and prediction phase. Instead, the intent of the correction factor is for use during assessment to account for background ambient noise levels.

Difference between Permissible and Background Noise Levels dB(A)	Correction Factor dB(A)
Below 2	3
2 to less than 4	2
4 to less than 10	1
10 and above	0

Table 2 Correction factor - *Source: Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, 2011*

3. Baseline Noise Measurements

Arup conducted baseline noise monitoring between 17th and 27th January 2023 to determine the existing noise environment. The baseline noise monitoring locations surrounding the project site is shown in Figure 4. These locations were selected to represent receptors located in close proximity to the anticipated worksites.

A 15-minutes attended noise measurements were carried out at the noise monitoring locations shown in Figure 4 to understand the noise environment around the noise sensitive receivers identified in Section 1.3.

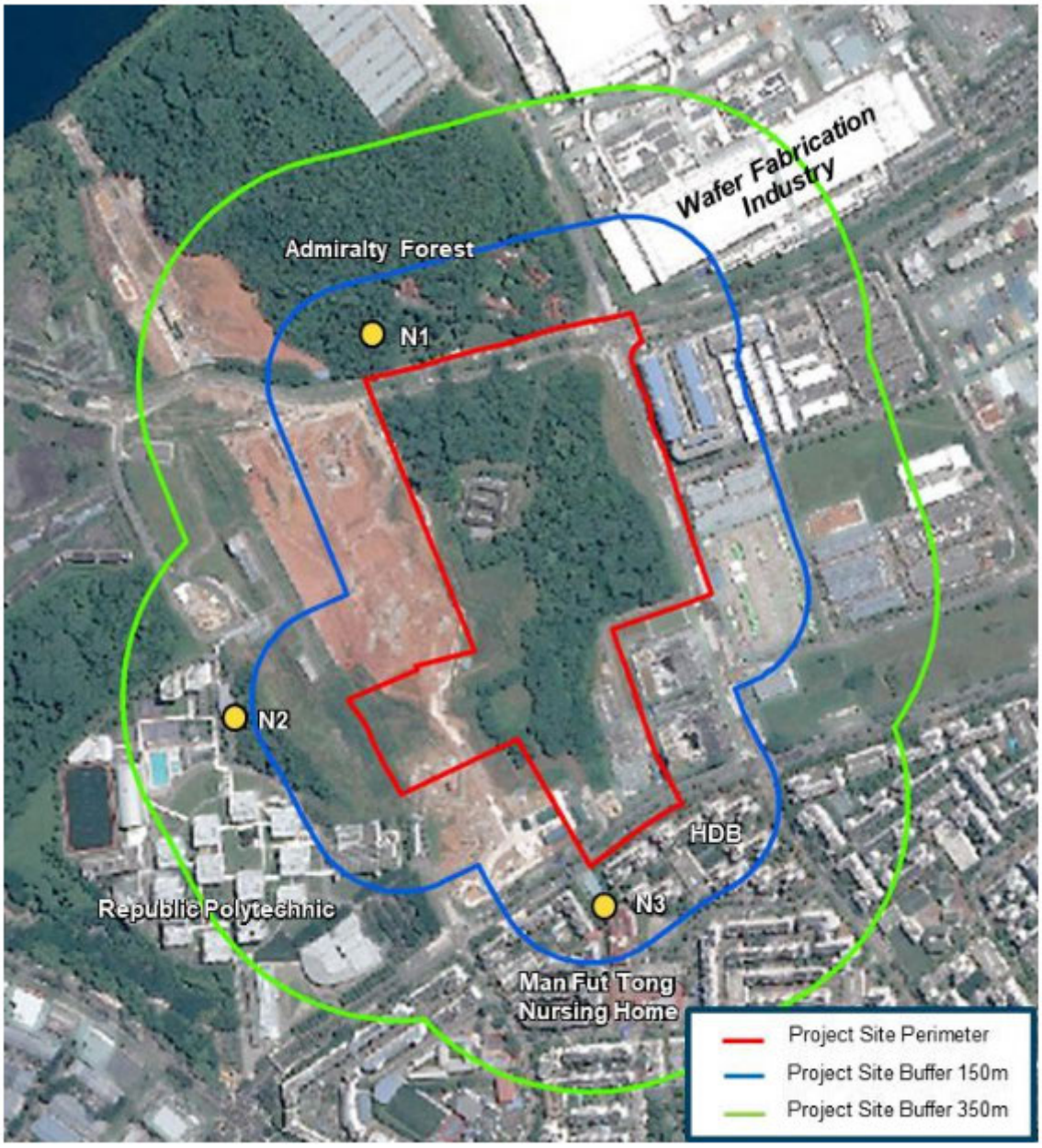


Figure 4 Noise Monitoring Locations

3.1 Instruments

The following equipment is used to the noise measurements:

- NTi XL2 Noise Analyzer: A2A-14737-E0
- NTi XL2 Noise Analyzer: A2A-14223-E0
- NTi XL2 Noise Analyzer: A2A-14763-E0
- Bruel & Kjaer Type 2270: 3011356

Calibration certificates for the above equipment can be located at Appendix A below.

The instruments were calibrated using a calibrator immediately before and after each monitoring location and showed minor drift of less than 0.5dB.

3.2 Baseline Noise Monitoring

The noise loggers were set up at 1.5m above the ground and away from a façade or any reflective surface. The baseline noise monitoring locations were also selected away from local noise sources such as mechanical plant, pumps or regular community activity.

The noise measurements were carried using NEA approved Type 1 sound level meters. Data recorded during periods of rain can increase the measured noise levels and therefore not representative of the noise sources of interest. As such, extraneous noise from the rain has been excluded from our assessment.

The parameter used in the noise monitoring were the following:

- $L_{Aeq,5min}$ is the equivalent continuous sound pressure level over a 5-minute measurement period
- $L_{Aeq,1hr}$ is the equivalent continuous sound pressure level over a 1-hour measurement period
- $L_{Aeq,12hr}$ is the equivalent continuous sound pressure level over a 12-hour measurement period;

A summary of the measurement results is presented in Table 3. The detailed noise results for the monitoring period are presented in Appendix B.

Location	Worksite Operational Hours		
	Day (07:00 – 19:00)	Evening (19:00 – 22:00)	Night (22:00 – 07:00)
N1 (Admiralty Forest)	$L_{Aeq12hr}$ 62 dB $L_{Aeq5min}$ 61 dB	$L_{Aeq12hr}$ 60 dB	
		$L_{Aeq,1hr}$ 60 dB $L_{Aeq5min}$ 60 dB	$L_{Aeq,1hr}$ 59 dB $L_{Aeq5min}$ 59 dB
N2 (Republic Polytechnic)	$L_{Aeq12hr}$ 55 dB $L_{Aeq5min}$ 54 dB	$L_{Aeq12hr}$ 53 dB	
		$L_{Aeq,1hr}$ 54 dB $L_{Aeq5min}$ 53 dB	$L_{Aeq,1hr}$ 52 dB $L_{Aeq5min}$ 52 dB
N3 (877 Woodlands Avenue 9)	$L_{Aeq12hr}$ 65 dB $L_{Aeq5min}$ 64 dB	$L_{Aeq12hr}$ 62 dB	
		$L_{Aeq,1hr}$ 64 dB $L_{Aeq5min}$ 63 dB	$L_{Aeq,1hr}$ 60 dB $L_{Aeq5min}$ 60 dB

Table 3 Summary of baseline noise measurements

Note: Noise results taken on 23 and 24 January 2023 were not used as it is not representative to typical noise environment (i.e. public holidays)

A 15-minutes attended noise measurements were carried out on 27th January 2023 at the noise monitoring locations to understand the noise environment at the sensitive receivers. The noise results and the description of the noise environment during the measurement are shown in Table 4.

Rec ID	$L_{Aeq,15mins}$	Time	Description
N1	59	10:23	The overall noise environment at this monitoring location during the attended measurement period was dominated by frequent traffic from Admiralty Road West and insects. Construction noise from the TE1 was audible at this location but not dominating the noise environment.
N2	60	11:24	The overall noise environment at this monitoring location during the attended measurement period was dominated by local activities such as people talking, vehicles movement to carpark
N3	63	12:06	The overall noise environment at this monitoring location during the attended measurement period was dominated by frequent traffic noise from Woodlands Avenue 9. On some occasions, kids noise were audible.

Table 4 Attended noise measurements

4. Conclusion

Arup has undertaken baseline noise monitoring surrounding the project site. Further assessment of the noise and vibration impact assessment will be provided under Environmental Study Report.

Appendix A

Calibration Certificate

Appendix B

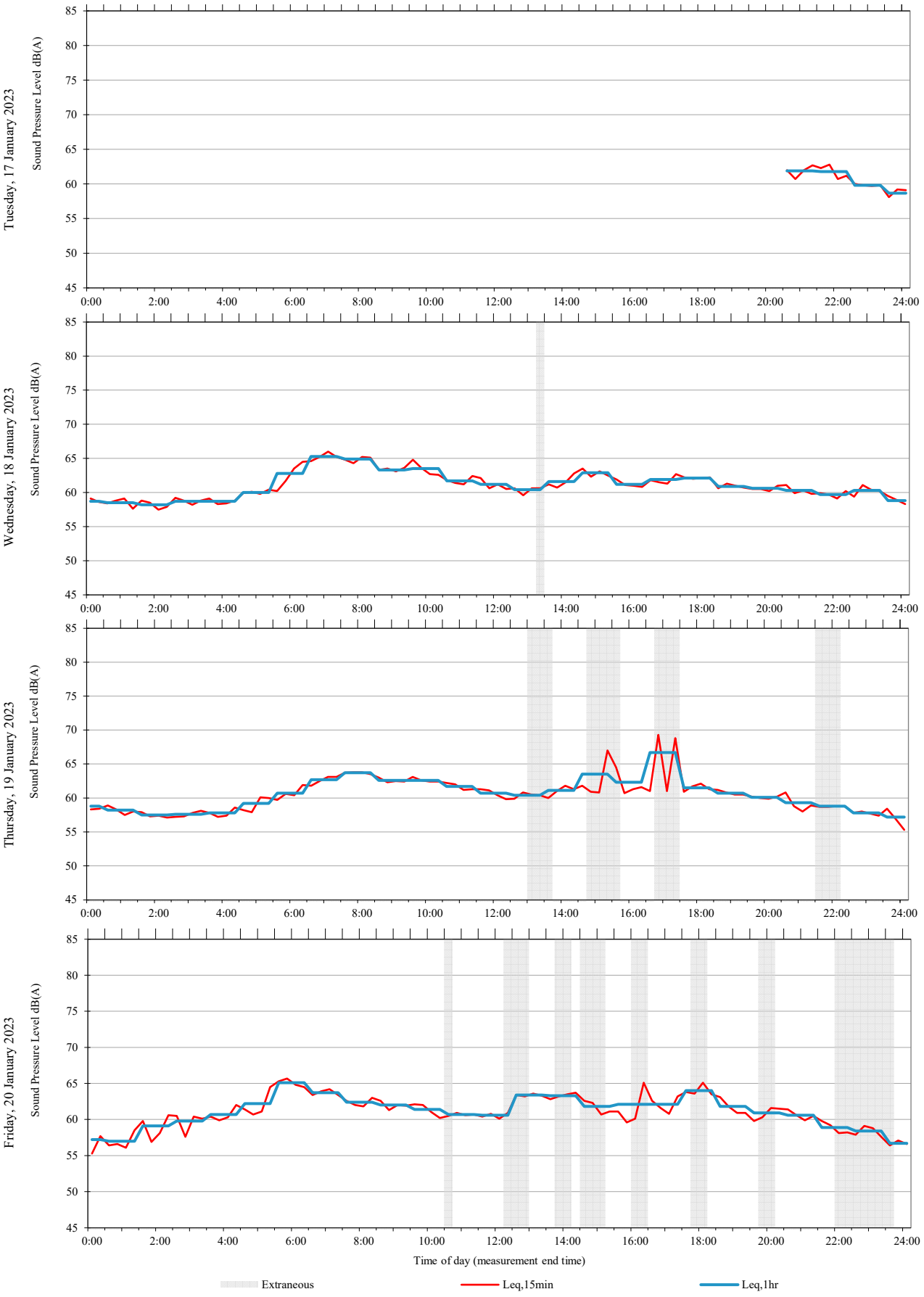
Baseline Noise Monitoring Results

B.1 N1 – Admiralty Forest

Monitoring Location at N1

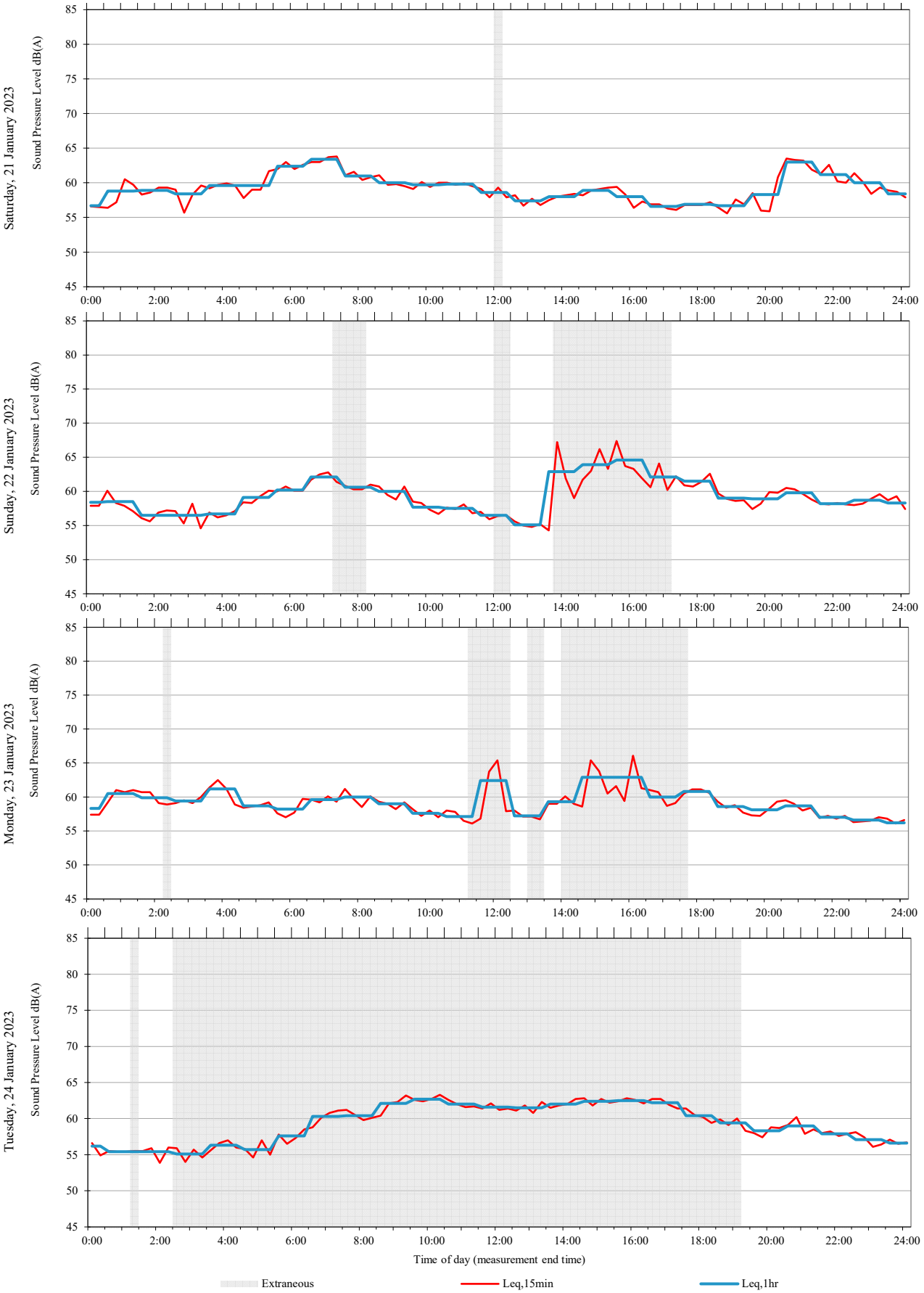
Unattended monitoring: N1 - Admiralty Forest ()

ARUP



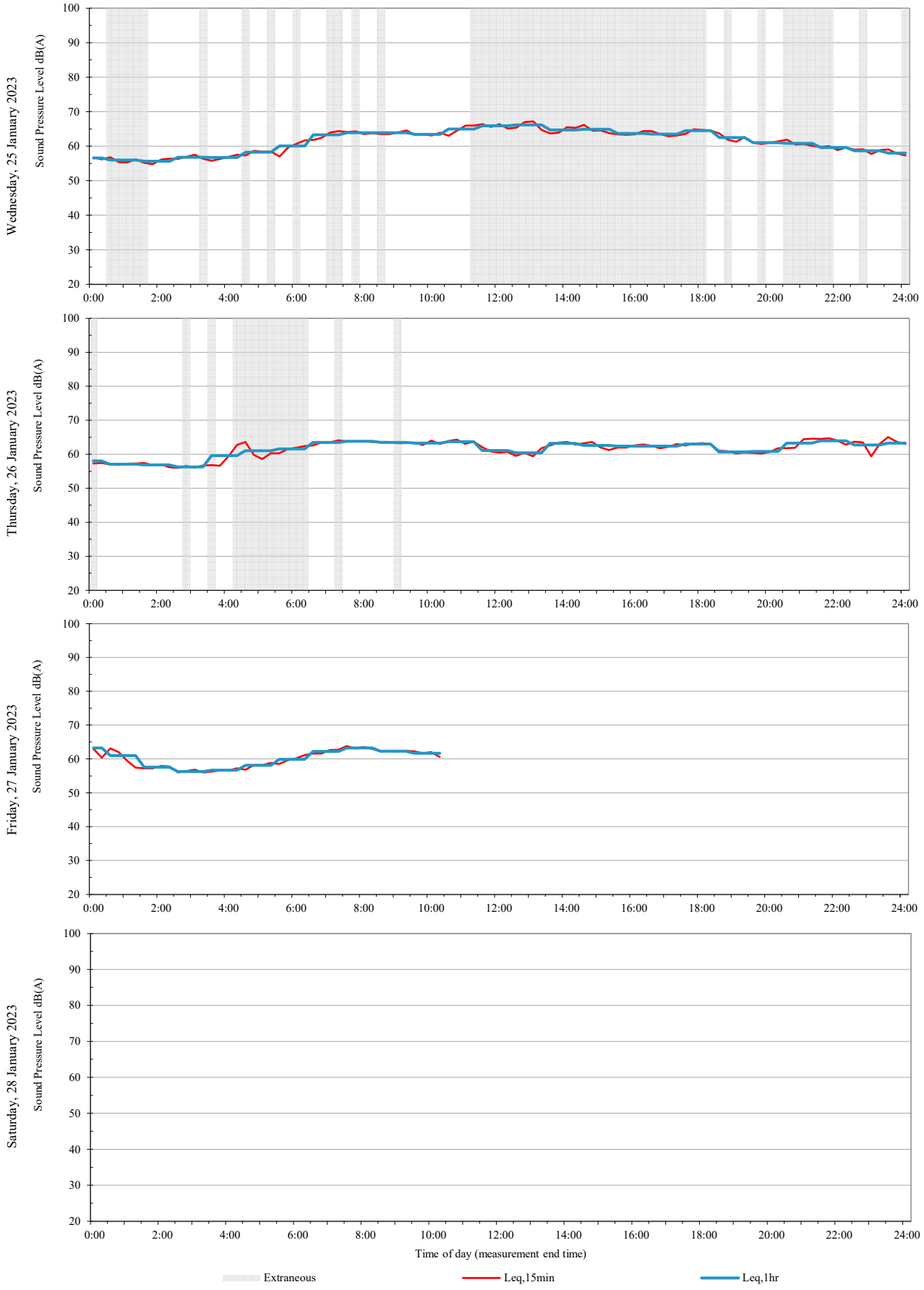
Unattended monitoring: N1 - Admiralty Forest ()

ARUP



Unattended monitoring: N1 - Admiralty Forest ()

ARUP



Date		Tuesday, 17 January 2023																Wednesday, 18 January 2023						
	Starting Minute	Starting Hour																						
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00														62	62	61	60	59	60	57	58	58	61	63
	05														63	62	61	60	59	58	58	58	58	59	64
	10														64	62	62	61	59	58	58	59	59	61	65
	15														62	62	61	60	58	58	57	58	59	60	64
	20														62	64	60	59	59	57	59	59	59	61	64
	25														62	63	60	58	59	59	59	59	60	60	64
	30														62	61	59	59	58	59	60	60	59	60	65
	35														63	63	61	57	59	59	58	58	60	60	65
	40														61	62	60	59	58	59	59	58	60	60	66
	45													63	61	64	60	58	59	58	57	58	60	62	65
	50													63	59	61	60	60	59	58	60	58	60	63	65
	55													63	62	61	59	59	59	58	58	59	59	63	66
LAeq, 12 hr, dB														61											
LAeq, 1 hr, dB														63	62	62	60	59	59	58	58	59	59	61	65
LAeq, 5 min, dB														62			60								

Date		Wednesday, 18 January 2023																	Thursday, 19 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	66	65	63	62	61	60	61	61	63	62	61	62	61	60	62	60	60	58	57	58	59	58	61	60
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	45	63	64	63	62	61	59	61	62	60	61	61	61	61	61	60	62	59	59	58	57	57	58	59	63
	50	64	64	64	60	60	61	61	62	61	62	62	61	61	60	60	62	59	58	57	58	58	59	61	62
	55	65	62	63	62	62	59	61	63	60	62	62	60	61	60	59	61	58	58	56	58	57	59	60	63
LAeq, 12 hr, dB								63									60								
LAeq, 1 hr, dB		65	64	64	62	62	60	61	63	62	61	62	61	61	61	60	60	60	58	58	57	58	58	60	62
LAeq, 5 min, dB								62							60						59				

Date		Thursday, 19 January 2023																	Friday, 20 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	63	65	63	63	60	59		62	61	60	61	63	60	60	58		58	55	56	58	61	61	61	65
	05	63	63	62	62	62	60		61		62	60	62	60	60	59	60	56	56	57	59	58	61	62	65
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	30	65	63	62	62	60	60		61	61	61	60	61	60	62		57	58	57	60	61	61	61	66	63
	35	63	63	63	63	61	60	60	61	62	62	61	61	60	59		58	59	56	59	60	58	62	66	64
	40	63	62	62	62	62	59	61		60		62	60	59	59		58	58	56	57	56	60	61	66	65
	45	65	62	63	63	60	61	61		61		61	60	61	59		58	56	57	57	57	60	61	66	64
	50	63	63	62	62	61	62	62	61	61		62	62	60	59	59	58	56	57	57	59	60	60	65	63
	55	62	62	63	62	62	61	63	61	61	61	62	61	60	58	59	58	55	56	58	61	59	60	65	63
LAeq, 12 hr, dB								62														61			
LAeq, 1 hr, dB		63	63	63	62	61	60	61	61	61	61	61	61	60	60	59	58	57	57	58	60	60	61	65	64
LAeq, 5 min, dB								62							60							60			

Note: Greyed out areas are due to rain

Date		Friday, 20 January 2023																	Saturday, 21 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	65	60	63	60	59	60	63			59	60		60	62	59	58		56	61	59	59	61	59	62
	05	65	62	62	61	61	61	63	62			61	67	61	61	61			57	61	60	59	58	57	62
	10	64	64	62	59	61		63	65	61	67	61	64	61	61	61		59	57	60	60	60	58	61	62
	15	63	62	62	61	61	60	64	63	62	65	61	64	61	62	60		58	56	59	59	59	60	62	62
	20	63	63	62	60	60	62	64	63	61	63	66	63	60	61	60		57	57	60	59	60	60	63	63
	25	63	62	63	60	59	63	63	63	62	63	64	64	60	61	59		56	56	59	59	58	59	62	63
	30	62	63	62		61		63		62	63	64	63	60	62	60		57	56	58	59	60	57	62	63
	35	63	63	61		61		62		60	62	64	63	60	61	61			57	57	59	59	57	62	63
	40	62	62	63	61	60				60	62		63	59	61	59		58	57	58	56	60	58	63	63
	45	62	60	61	61	62				60	62		62		60	60		57	57	59	55	60	59	63	63
	50	62	61	62	61	61				59	62		61		61	59		56	58	58	56	60	60	64	63
	55	63	62	62	61	60				60	61		62		60	59	59	56	60	59	57	60	60	62	64
LAeq, 12 hr, dB		62												60											
LAeq, 1 hr, dB		63	62	62	61	61	61	63	63	61	63	63	63	60	61	60	58	57	57	59	58	60	59	62	63
LAeq, 5 min, dB		62												60					59						

Date		Saturday, 21 January 2023																	Sunday, 22 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	64	61	60	60	60	60	58	58	58	56	56	57	58	55	63	60	58	58	58	57	61	57	59	60
	05	64	60	60	59	60	59	58	58	59	57	57	57	57	56	63	60	59	57	58	57	56	56	60	61
	10	64	61	59	60	60	58	58	58	60	57	56	57	57	59	63	59	60	58	57	58	55	58	61	62
	15	65	62	60	60	59	59	56	60	60	57	56	58	56	60	62	60	59	58	56	57	54	57	60	60
	20	62	60	60	60	59	57	57	57	58	57	56	57	58	63	61	61	59	58	58	57	55	56	59	58
	25	61	61	60	59	59	59	56	58	60	58	58	57	56	64	61	61	59	63	56	58	57	58	60	60
	30	61	62	58	61	60	58	58	59	59	57	57	56	61	64	62	61	59	58	57	57	56	58	61	62
	35	61	60	59	60	59	57	58	58	59	56	56	57	57	63	61	62	59	57	56	57	58	59	60	63
	40	61	59	60	58	58	57	58	58	58	57	56	56	56	64	62	61	59	60	55	57	55	58	61	63
	45	61	60	60	60	58	57	58	59	59	57	58	56	55	63	64	60	59	57	55	56	56	58	60	63
	50	63	60	60	61	58	57	58	60	59	57	57	55	56	63	61	58	59	58	56	53	58	58	61	62
	55	60	59	59	60		58	59	60	56	56	57	58	57	63	60	58	59	58	57	55	57	59	59	63
LAeq, 12 hr, dB		59												60											
LAeq, 1 hr, dB		62	60	60	60	59	58	58	59	59	57	57	57	57	62	62	60	59	59	57	57	57	58	60	62
LAeq, 5 min, dB		59												60					58						

Date		Sunday, 22 January 2023																	Monday, 23 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00			59	58	58		54					60	58	60	60	59	59	57	60	60	60	60	59	59
	05			59	57	58		56					59	58	60	59	58	59	57	61	57	55	60	59	58
	10			63	57	57		56					62	59	60	59	59	61	57	61		59	58	59	59
	15		61	59	56	58		54					63	58	60	59	58	59	57	61	59	60	60	61	59
	20	61	60	60	57	56	56	55					63	59	60	58	57	59	59	61	59	61	59	57	61
	25	61	59	58	57	57	55	54					60	57	60	58	58	58	58	61	60	61	59	58	60
	30	62	61	59	59	58	55	55					60	57	61	58	58	58	59	61	58	60	58	58	60
	35	60	61	59	57	56	57	53					59	58	60	58	58	60	61	60	59	62	58	57	59
	40	61	59	59	58	56	56						60	58	61	58	58	59	61	61	59	63	59	57	59
	45	61	60	58	58	56	54						58	59	60	58	58	59	61	61	59	62	59	57	59
	50		60	58	57	55	54						58	58	60	58	59	60	61	61	60	63	59	57	59
	55		59	57	59	57	54						59	60	60	59	59	58	61	60	60	63	59	56	61
LAeq, 12 hr, dB		59												59											
LAeq, 1 hr, dB		61	60	59	57	57	55	55					60	58	60	59	58	59	59	61	59	61	59	58	59
LAeq, 5 min, dB		58												59					59						

Note: Greyed out areas are due to rain

Date		Monday, 23 January 2023																	Tuesday, 24 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	60	59	59	57		63	57					61	58	58	58	57	56	56	55	54		57	57	
	05	60	58	59	58		61						60	59	59	58	56	56	57	56	54		56	57	
	10	60	60	59	56		60						61	59	59	59	57	56	55	56	55		56		
	15	60	60	60	57		56	57					61	58	60	59	57	58	55		56		55		
	20	58	60	58	57		57	56					61	57	59	57	57	57	55	56	57		57		
	25	63	59	58	59		58	61					59	58	59	57	57	57	55	56	55				
	30	59	59	59	58		59	57					60	57	60	57	56	57	54	55			57		
	35	61	59	59	57		57	58					59	57	59	57	56	57	57	55			55		
	40	60	59	57	58		58	59				61	59	58	59	57	57	56	56	58			56		
	45	59	60	56	58		56	59				61	58	58	59	57	56	56	55	55			54	57	
	50	60	57	59	57		57	59				61	58	57	59	58	57	57	55	55				57	
	55	59	58	58	56		58	59				62	59	57	59	57	57	57	55	54			58	57	
LAeq, 12 hr, dB		59												57											
LAeq, 1 hr, dB		60	59	58	58		59	58				61	60	58	59	58	57	57	56	56	55		56	57	
LAeq, 5 min, dB		59												58					56						

Date		Tuesday, 24 January 2023																	Wednesday, 25 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00													60	58	57	58	56	55	56	56	59	57	58	
	05													60	59	58	57	57	57	54	57	57	57	59	62
	10														58	59	57	57	56		56	56	57	57	61
	15													59	59	59	58	56	55	57	57	56	57	60	62
	20												60	58	59	57	59	56	57	56	56		58		62
	25												59	58	58	58	58	57	57	56	56	57	57	56	61
	30												60	58	60	59	59	57			55	54	58	57	62
	35												60	59	59	58	58	57	57	55	57	55		58	62
	40												59	57	59	59	57	58	55	55	57	57	60	58	62
	45											60	60	59	63	58	58	56	55	55	57	56	58	60	62
	50											60	59	56	58	58	57	56	56	55	57	57	58	60	63
	55											61	60	60	59	58	55	58	55	56	57	56	58		
LAeq, 12 hr, dB		60												58											
LAeq, 1 hr, dB												61	60	58	59	58	58	57	56	56	57	56	58	59	62
LAeq, 5 min, dB Average		60												58					57						

Date		Wednesday, 25 January 2023																	Thursday, 26 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00		64	64	63									62	61		59	57	58	58	57	56	59		62
	05	64	63	65	64								65	61	61		58	58		57	56	57	60		63
	10	64	64	65	64								64	63	62		60	59	57	57	57	57	62		61
	15		64	64	65								65	63	61		60	58	58	58	56	56	64		62
	20	64	64	65	62								65	62	61	60	60	60	57	57	55	57			63
	25	64	64	63	63								64	62	62	59	59	59	57	57	56	56			
	30	64	64	64	63								63	61		60	60	59	57	57	55			61	63
	35	64		63	63								64	61	61	61	58	59	57	58	57	58		61	63
	40	65	64	65	64								62	61	60	60	59	58	57	56	56	56		63	64
	45	64	63	64	64								63		61	60	59	58	56	56		57		61	64
	50		64	61	66								61	60				58	58	58	56	57		61	63
	55	64	62	62	67									61			58	57	57	58	56	59			63
LAeq, 12 hr, dB		64												60											
LAeq, 1 hr, dB		64	63	64	64								64	62	61	60	59	58	57	57	56	57	62	61	63
LAeq, 5 min, dB Average		64												61					58						

Note: Greyed out areas are due to rain

Date		Thursday, 26 January 2023																	Friday, 27 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	64	64		64	63	62	59	64	62	63	62	64	60	60	65	64	58	64	60	58	57	56	59	61
	05	63	63	63	64	64	60	61	63	62	62	62	62	60	59	65	64	58	61	59	58	56	57	57	61
	10	64	64	64	63	64	61	61	63	62	63	63	63	60	61	65	64	62	61	59	59	56	58	60	60
	15	65	64	63	63	64	61	62	62	62	63	63	63	61	62	65	61	64	61	58	57	56	57	58	62
	20	63	64	63	63	64	61	62	63	61	63	63	63	61	62	64	63	64	60	55	57	56	57	58	62
	25		63	63	64	63	59	62	64	62	64	63	62	61	62	64	64	64	62	57	56	57	57	58	62
	30	64	64	63	63	63	60	62	63	62	62	62	62	60	62	64	64	64	63	57	56	56	57	60	61
	35	63	63	63	64	61	59	64	63	63	61	63	59	61	62	65	64	67	64	58	56	57	57	58	62
	40	65	65	63	64	61	61	64	64	63	62	64	61	61	61	65	64	64	63	57	56	57	57	60	61
	45	63	63	63	65	61	60	63	63	62	61	62	61	59	61	65	64	64	63	57	56	57	59	60	62
	50	64	63	62	64	61	61	64	63	62	63	63	61	60	63	64	64	64	58	58	57	57	58	59	62
	55	64	64	64	63	60	58	64	62	62	63	64	61	63	64	64	61	64	60	58	57	56	58	59	62
LAeq, 12 hr, dB		63												61											
LAeq, 1 hr, dB		64	64	63	64	62	60	62	63	62	62	63	62	61	62	65	63	63	62	58	57	56	57	59	61
LAeq, 5 min, dB Average		63												62					60						

Date		Friday, 27 January 2023																	Saturday, 28 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	63	64	62	62																				
	05	63	63	62	61																				
	10	63	63	63	60																				
	15	63	63	62	62																				
	20	62	63	63	61																				
	25	64	61	62	60																				
	30	63	63	62	61																				
	35	64	62	63	60																				
	40	63	63	62	62																				
	45	64	63	61	65																				
	50	63	62	62																					
	55	63	63	63																					
LAeq, 12 hr, dB		62																							
LAeq, 1 hr, dB		63	63	62	62																				
LAeq, 5 min, dB Average		62																							

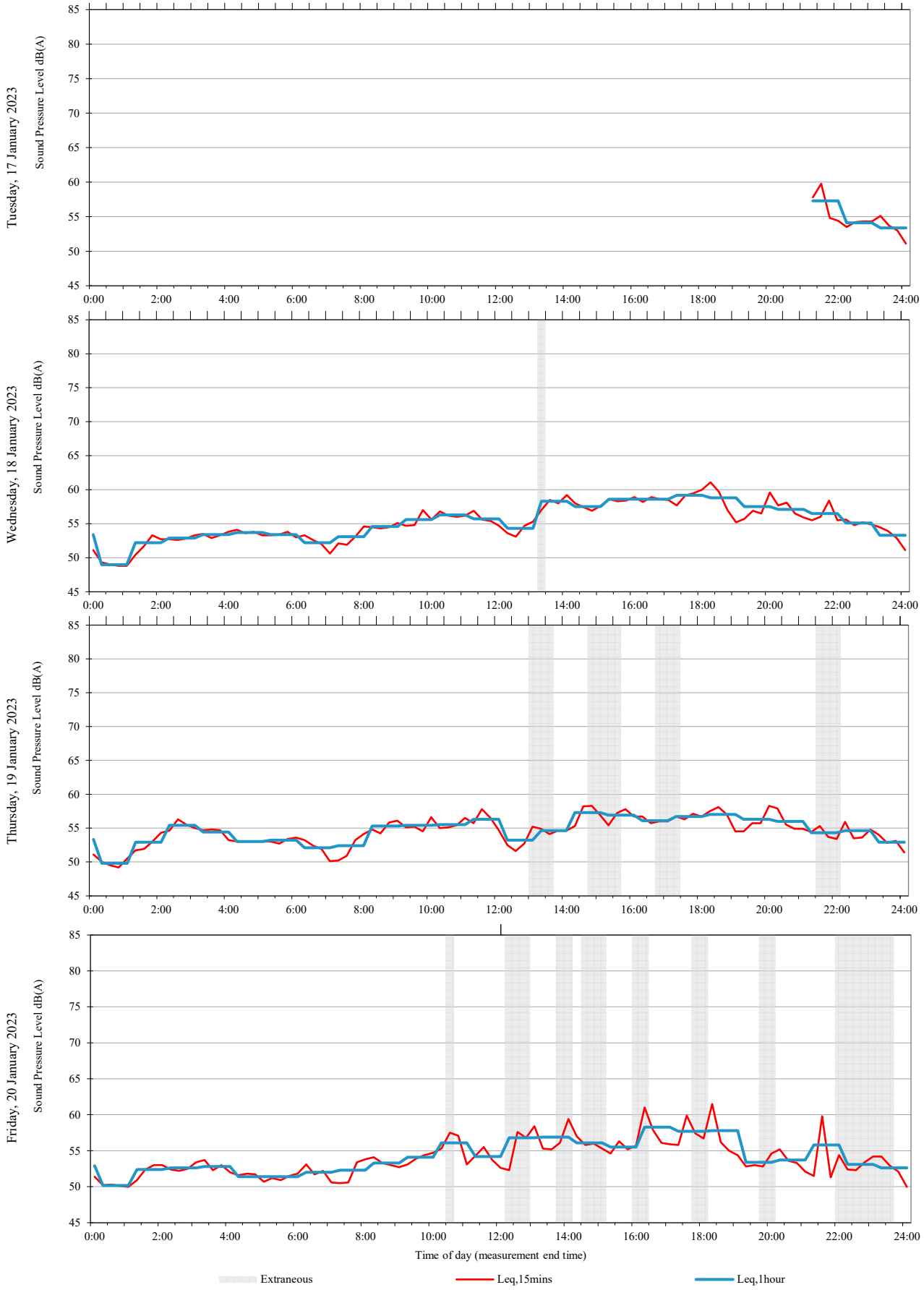
Note: Greyed out areas are due to rain

B.2 N2 – Republic Polytechnic

Monitoring Location at N2

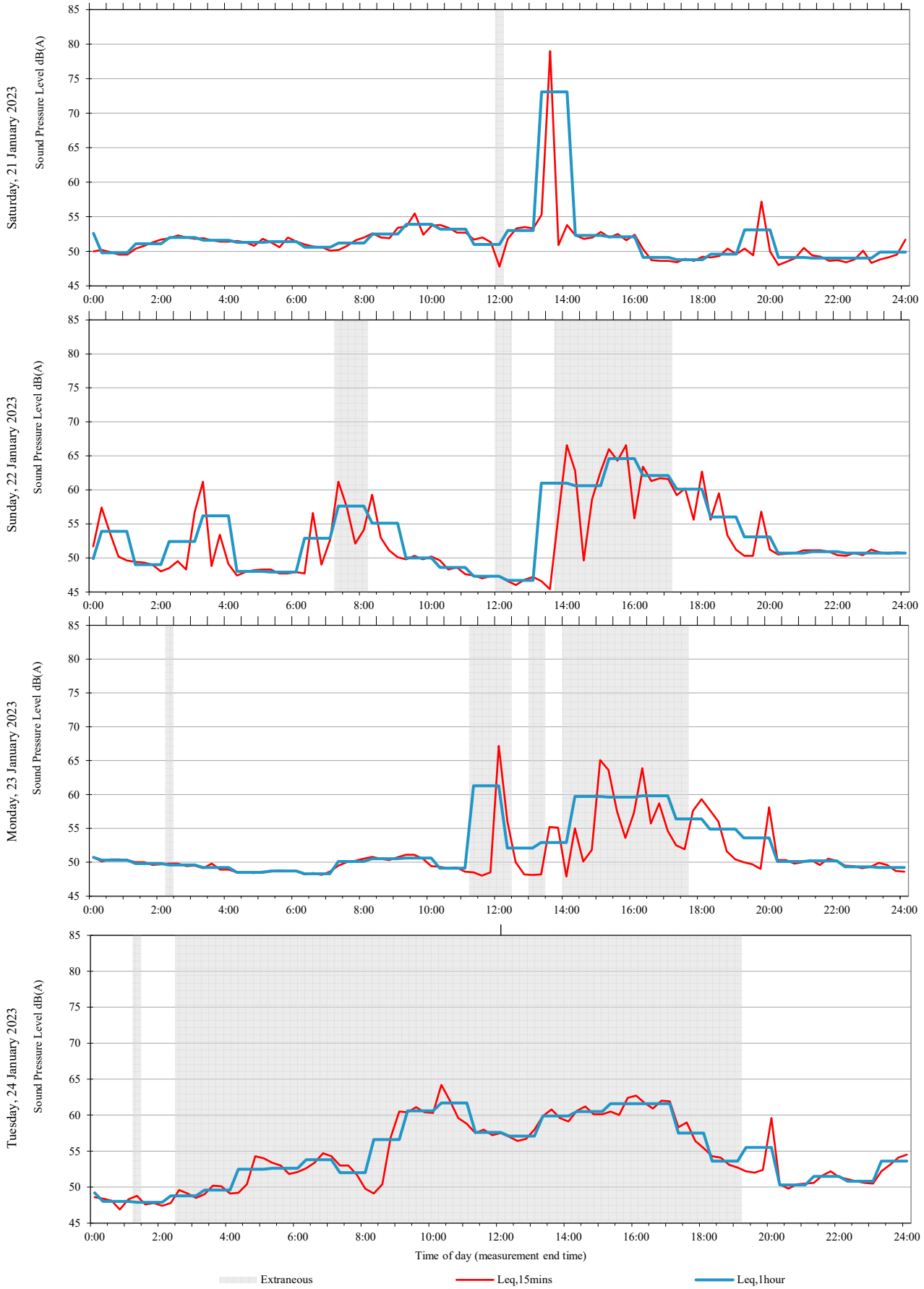
Unattended monitoring: N2-Republic Polytechnic ()

ARUP



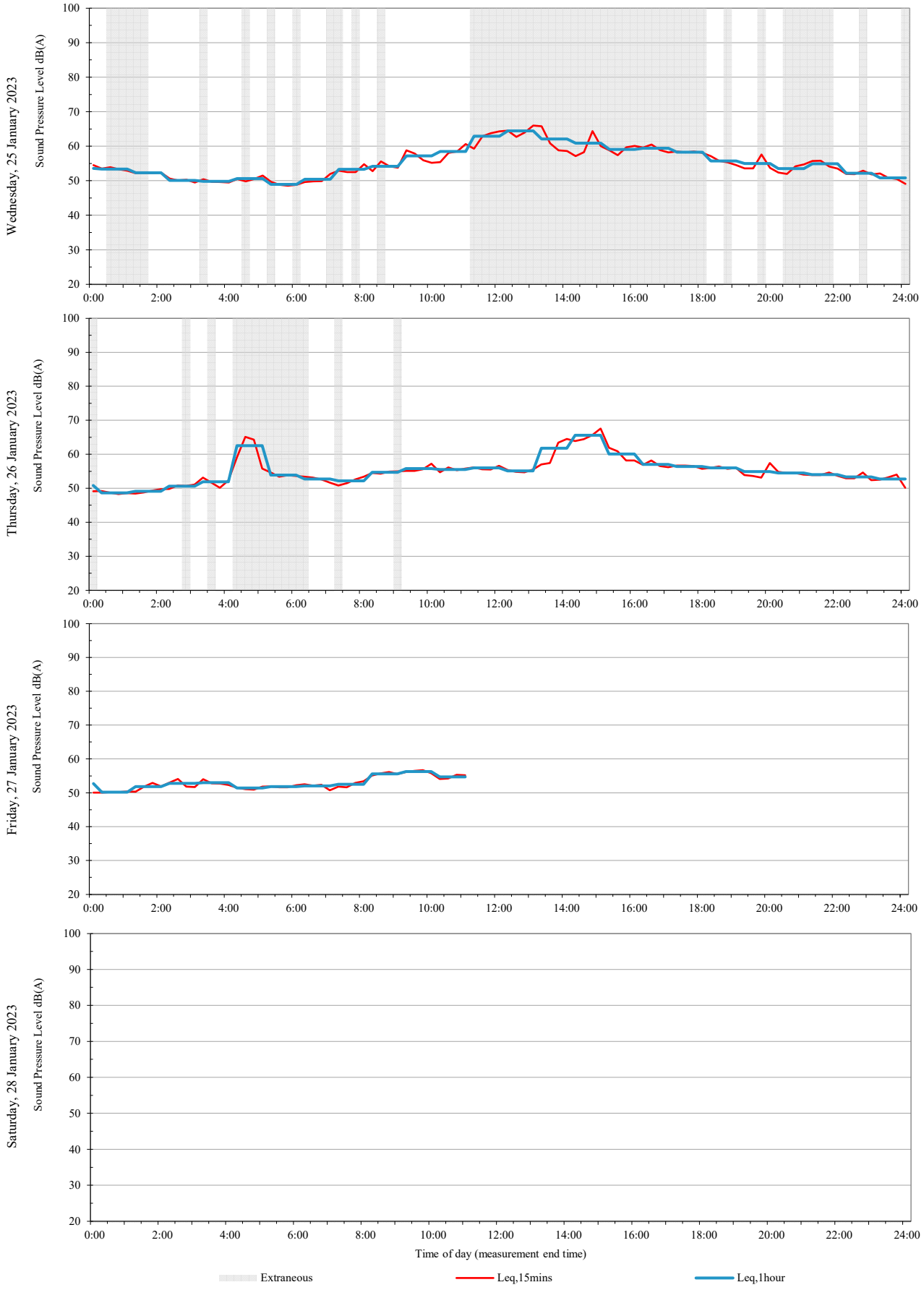
Unattended monitoring: N2-Republic Polytechnic ()

ARUP



Unattended monitoring: N2-Republic Polytechnic ()

ARUP



Date		Tuesday, 17 January 2023																	Wednesday, 18 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00															58	54	55	50	50	53	54	54	53	53
	05															58	53	56	49	50	53	53	54	54	54
	10															57	54	54	49	51	53	54	54	54	53
	15															62	54	55	49	51	53	53	54	53	53
	20														59	59	54	53	49	51	53	53	54	54	52
	25														57	58	55	53	49	53	53	53	53	53	53
	30														58	55	55	53	49	53	53	53	53	54	52
	35														55	55	55	53	49	53	53	54	55	54	52
	40														56	55	54	52	49	54	53	54	54	54	52
	45														55	55	53	51	49	53	53	54	54	54	50
	50														56	55	55	51	49	52	54	54	54	52	51
	55														56	54	55	51	49	53	53	54	53	53	51
LAeq, 12 hr, dB														54											
LAeq, 1 hr, dB															57	57	54	53	49	52	53	53	54	53	52
LAeq, 5 min, dB Average														57					53						

Date		Wednesday, 18 January 2023																	Thursday, 19 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	51	54	55	57	56	54	56	58	58	58	57	60	54	58	56	55	55	51	52	55	54	53	54	54
	05	53	55	55	57	57	53	57	58	58	59	58	62	57	58	55	56	54	49	51	54	55	53	53	53
	10	52	54	55	57	58	54	58	58	59	58	58	61	56	57	56	55	55	50	52	55	55	53	53	53
	15	52	55	55	55	56	53	59	58	59	60	60	60	58	58	57	55	54	50	52	57	54	53	53	53
	20	52	54	55	57	55	54		57	57	58	59	60	57	58	55	55	54	49	52	57	55	53	53	52
	25	52	54	55	56	55	53	59	58	59	58	58	60	55	58	55	55	53	50	52	55	56	53	53	52
	30	53	54	58	56	56	56	59	58	58	59	60	58	57	57	61	54	53	50	53	55	55	53	53	52
	35	53	54	56	56	56	53	58	57	58	59	59	57	57	56	56	56	53	49	53	56	54	53	54	52
	40	53	55	57	56	54	54	57	55	59	59	60	57	56	56	57	56	53	49	54	55	55	53	54	51
	45	54	55	56	56	56	55	59	57	58	57	60	57	56	55	56	55	51	49	54	56	53	53	53	50
	50	54	55	56	57	54	56	61	58	60	59	61	55	61	56	56	55	51	52	55	56	53	53	54	50
	55	56	55	54	56	54	55	58	58	59	60	59	54	61	56	55	55	50	50	54	54	53	53	54	51
LAeq, 12 hr, dB		57												55											
LAeq, 1 hr, dB		53	55	56	56	56	54	58	58	59	59	59	59	57	57	57	55	53	50	53	55	54	53	53	52
LAeq, 5 min, dB Average		57												57					53						

Date		Thursday, 19 January 2023																	Friday, 20 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	50	55	56	56	56	53		54	56	57	57	58	55	61	54		54	51	50	53	54	52	52	53
	05	50	55	55	55	56	53		54		56	57	57	55	55	55	56	54	50	51	53	54	52	51	53
	10	51	55	55	54	56	51		58		56	57	57	53	55	55	57	54	50	52	52	53	52	51	53
	15	51	54	55	55	57	51		59		55	56	57	53	56	55	54	53	51	52	51	52	52	51	51
	20	51	54	55	55	58	52		58		57	56	58	56	56	56	54	53	50	53	52	52	52	51	52
	25	51	54	55	55	59	53		58	57	56	57	59	57	55		53	53	50	52	53	53	52	51	52
	30	54	57	55	56	57	52		60	58	56	57	57	57	55		53	53	50	53	53	53	52	51	50
	35	53	55	55	55	56	53	55	58	57	55	57	57	55	55		54	54	50	53	53	53	51	51	52
	40	53	55	54	55	56	53	54		58	56	57	57	55	54		53	52	50	53	52	53	52	52	54
	45	54	55	58	56	56	54	55		56	57	56	55	56	54		55	52	50	53	53	53	51	52	51
	50	54	56	57	57	54	55	54	56	57	55	57	54	54	55	53	55	51	51	54	53	52	51	52	50
	55	54	57	54	57	53	56	55	57	57	56	57	55	61	56	54	54	51	50	53	54	51	50	52	50
LAeq, 12 hr, dB		56												53											
LAeq, 1 hr, dB		52	55	55	56	56	53	55	57	57	56	57	57	56	56	55	55	53	50	52	53	53	51	51	52
LAeq, 5 min, dB Average		55												55					52						

Note: Greyed out areas are due to rain

Date		Friday, 20 January 2023																	Saturday, 21 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	51	55	53	54	55		56			54	56		52	56	51	53		50	51	52	52	52	52	51
	05	51	54	52	53	53		55	57			57	64	54	56	52			51	50	52	51	52	51	51
	10	50	54	54	58	55		55	57	55	65	55	61	53	53	52		56	50	50	52	53	51	51	51
	15	50	53	54	59	55		56	56	56	60	55	56	53	53	60		53	50	51	53	52	51	50	51
	20	51	54	54	54	56		56	55	56	57	63	56	53	53	63		53	50	51	52	52	51	51	51
	25	51	53	54	58	55		55	56	57	57	57	57	53	54	52		52	51	51	52	52	51	51	50
	30	53	53	53		54		55		56	56	56	56	53	54	51		53	50	51	52	51	51	53	52
	35	53	53	55		54		56		54	57	58	55	53	54	52			49	51	52	51	51	51	50
	40	54	53	55	55	54				55	56		54	53	52	52		51	49	52	52	52	51	52	50
	45	53	53	54	53	53				56	54		54		52	55		50	49	51	52	51	51	52	50
	50	54	52	55	53	53				55	57		56		52	56		50	49	52	52	52	53	52	50
	55	55	53	55	53	51				56	57		53		52	52	55	49	50	51	52	51	52	51	50
LAeq, 12 hr, dB		56												52											
LAeq, 1 hr, dB		52	53	54	56	54		55	56	56	58	58	58	53	54	56	54	52	50	51	52	52	51	51	51
LAeq, 5 min, dB Average		55												53					51						

Date		Saturday, 21 January 2023																	Sunday, 22 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	51	53	53	53	52	48	54	51	51	50	49	49	51	48	50	48	48	55	49	48	63	47	49	48
	05	50	52	53	54	51	52	52	53	52	50	49	50	49	48	50	48	49	59	50	49	62	48	48	48
	10	50	52	54	54	52	53		53	52	50	48	48	51	48	49	49	49	57	49	49	53	47	48	48
	15	50	52	58	53	52	53		52	55	49	49	49	49	49	49	49	49	55	49	50	50	48	48	60
	20	51	52	54	54	52	53		52	50	48	48	49	50	48	49	49	50	53	50	49	49	48	47	53
	25	52	52	53	53	52	54		52	51	50	49	50	49	49	49	49	49	53	49	49	48	48	48	51
	30	52	52	52	53	52	53		53	52	49	49	51	59	48	49	51	49	51	50	49	48	48	47	49
	35	52	52	53	53	52	53	51	52	51	49	47	51	58	49	48	49	50	50	49	48	52	48	48	49
	40	51	52	53	52	49	54	51	51	52	48	50	49	52	49	49	50	50	49	48	48	56	48	48	49
	45	52	53	53	52	48	53	53	52	55	49	50	49	52	49	49	48	48	49	48	47	51	48	48	49
	50	52	53	54	53	49	53	55	54	52	49	49	49	50	50	48	48	52	50	48	51	48	49	48	48
	55	52	54	53	54		53	53	53	49	49	48	51	48	52	49	49	53	50	48	61	47	48	49	56
LAeq, 12 hr, dB		52												52											
LAeq, 1 hr, dB		51	52	54	53	51	53	53	52	52	49	49	50	53	49	49	49	50	54	49	52	56	48	48	53
LAeq, 5 min, dB Average		51												50					50						

Date		Sunday, 22 January 2023																	Monday, 23 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00			50	50	47		47						50	51	51	50	51	50	50	49	49	49	49	48
	05			50	50	48		47						51	49	51	50	51	50	50	50	49	49	49	48
	10			50	50	47		46						50	51	51	50	51	50	50		49	48	48	48
	15		54	50	48	47		45						51	50	51	51	50	50	50	50	50	49	49	49
	20	56	53	50	49	48	46	45						49	50	50	51	51	50	50	50	50	49	49	48
	25	54	52	51	49	46	47	46						51	51	52	50	51	51	50	50	49	49	49	48
	30	53	51	50	49	48	47	46						49	51	52	51	51	51	50	50	49	48	49	48
	35	52	51	50	50	47	47	46						59	51	50	51	51	50	50	49	49	49	49	48
	40	52	52	50	46	47	47							58	51	51	50	51	50	49	50	49	49	49	48
	45	54	50	49	49	48	48							50	50	50	50	51	50	50	50	49	49	49	49
	50		50	51	47	47	47							52	52	50	51	51	50	50	49	49	49	49	48
	55		50	50	47	48	46							51	51	51	52	50	51	50	49	49	49	49	49
LAeq, 12 hr, dB		50												50											
LAeq, 1 hr, dB		53	52	50	49	47	47	46						53	51	51	51	51	50	50	50	49	49	49	48
LAeq, 5 min, dB Average		49												51					50						

Note: Greyed out areas are due to rain

Date		Monday, 23 January 2023																	Tuesday, 24 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	49	51	51	50	49	58	48						51	51	50	50	50	48	50	47		49	53	
	05	50	51	51	49	48	56							49	49	51	49	50	49	48	48		50	53	
	10	49	51	51	49	48	53							50	50	51	50	50	48	48	49		48		
	15	50	51	51	49		51	49						50	51	50	50	50	48		50		49		
	20	50	50	52	50		49	48						49	50	49	48	49	48	48	50		50		
	25	50	50	51	48		50	59						49	50	50	49	50	48	48	50				
	30	50	50	52	49		49	59						49	49	49	49	49	47	47					
	35	50	51	50	49		48	52						49	50	50	50	49	47	48					
	40	51	50	50	50		48	50						49	50	52	49	49	47	49					
	45	51	51	49	49		48	48						48	49	51	50	49	48	47				52	
	50	51	51	50	49		48	48							51	50	49	48	49	47				52	
	55	50	50	49	48		48	47							50	50	50	49	48	47				53	
LAeq, 12 hr, dB		51												49											
LAeq, 1 hr, dB		50	51	51	49	48	52	53						49	50	50	49	49	48	48	49		49	53	
LAeq, 5 min, dB Average		50												50					49						

Date		Tuesday, 24 January 2023																	Wednesday, 25 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00													53	51	51	51	51	53	52	51	50	50	50	50
	05														50	50	52	52	53		50	50	52	50	50
	10													52	51	52	51	53	54	52	50	51	50	49	50
	15												54	51	49	51	51	53	54	52	50		50		50
	20												54	52	50	52	52	54	54	52	50	50	49	49	50
	25												54	53	51	52	50	53			50	50	50	49	49
	30												53	52	49	52	51	53	53	53	50	49		49	49
	35												53	52	52	52	51	55	54	52	51	50	50	48	50
	40											56	53	53	50	53	50	54	53	52	50	50	51	49	50
	45											56	53		50	51	50	55	53	52	50	50	52	49	52
	50											56	53		51	51	51	54	53	53	49	49	52	48	52
	55											55	53	51	51	52	50	54	53	52	49	49	51		
LAeq, 12 hr, dB		54												51											
LAeq, 1 hr, dB												55	53	52	50	51	51	54	53	52	50	50	51	49	50
LAeq, 5 min, dB Average		54												51					51						

Date		Wednesday, 25 January 2023																	Thursday, 26 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	53	53	55	56								58	54	53		52	52		49	50	52			53
	05	54	53	62	56								57	53	52		52	52	49	48	50	53			54
	10		53	56	55								56	54	53		52	53	50	48	50	54			53
	15	53	53	55	60								56	53	52		52	51	49	49	51	52			54
	20	52	53	60	59								55	54	53	54	52	51	48	49	51	51			
	25	52	58	56	55								56	54		58	52	51	49	49	51			53	53
	30	53		56	57								56	58	55	55	52	51	48	49	51	50		53	53
	35	52	54	56	59								56	60	54	54	53	51	48	49	51	50		54	53
	40	53	54	56	59								55		54	53	53	50	49	50		50		54	52
	45		54	55	62								54	54		53		49	49	50	51	51		54	52
	50	53	53	55	59									54			52	50	48	50	51	52			52
	55	57	54	55	61								55	54		53	51	49	48	49	52	54		54	51
LAeq, 12 hr, dB		56												52											
LAeq, 1 hr, dB		53	54	57	59								56	55	53	55	52	51	49	49	51	52		54	53
LAeq, 5 min, dB Average		56												54					51						

Note: Greyed out areas are due to rain

Date		Thursday, 26 January 2023																	Friday, 27 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	51	54	55	55	56	56	57		63	58	57	56	54	54	54	53	53	50	50	53	54	52	51	53
	05	51	55	55	54	57	56	56		60	57	57	56	54	55	54	53	52	50	50	54	54	52	52	52
	10	51	55	55	55	56	55	58		62	56	57	56	54	55	54	53	53	50	51	52	54	51	52	52
	15	52	54	56	56	55	55	58		63	58	57	57	53	55	53	53	53	50	52	54	54	51	52	52
	20		55	55	56	55	55	57		60	58	57	56	53	55	54	53	54	50	51	54	52	51	51	52
	25	51	54	55	56	56	54	58		58	59	56	56	55	54	54	53	53	50	52	54	52	51	51	52
	30	52	55	55	56	56	53			59	57	57	56	54	54	54	56	55	50	54	52	53	51	52	52
	35	53	55	55	55	55	56			58	57	57	56	53	55	55	54	55	50	52	52	53	51	51	52
	40	53	55	57	55	56	55			58	56	56	56	53	55	55	54	51	50	53	52	51	51	52	53
	45	54	55	60	55	57	55			59	55	56	56	53	54	55	53	50	50	51	52	52	52	52	51
	50	54	55	54	56	57	55			59	56	55	56	59	54	54	53	51	50	51	52	52	52	52	50
	55	53		55	56	56	56			57	57	56	56	58	53	52	52	50	50	53	52	53	52	52	52
LAeq, 12 hr, dB		56												53											
LAeq, 1 hr, dB		52	55	56	55	56	55	57		60	57	56	56	55	54	54	53	53	50	52	53	53	51	52	52
LAeq, 5 min, dB Average		56												54					52						

Date		Friday, 27 January 2023																	Saturday, 28 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	53	53	56	54	54																			
	05	51	57	57	54	54																			
	10	52	54	55	54	55																			
	15	50	54	56	54																				
	20	52	58	55	54																				
	25	52	55	58	54																				
	30	53	55	59	55																				
	35	53	58	55	55																				
	40	53	55	56	56																				
	45	53	55	56	56																				
	50	53	56	57	55																				
	55	54	56	54	54																				
LAeq, 12 hr, dB		55																							
LAeq, 1 hr, dB		52	56	56	55	55																			
LAeq, 5 min, dB Average		55																							

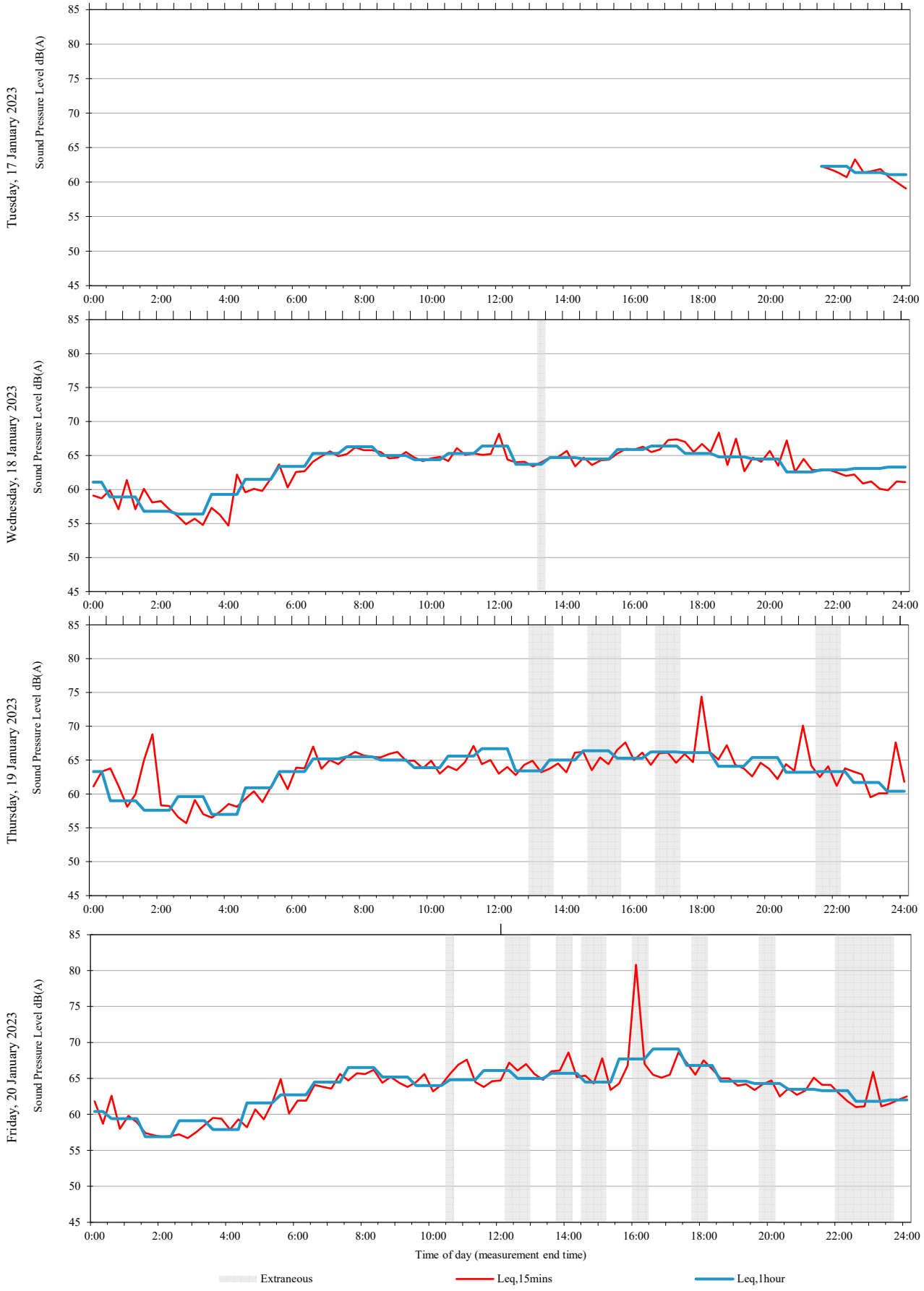
Note: Greyed out areas are due to rain

B.3 N3 – 877 Woodlands Avenue 9

Monitoring Location at N3

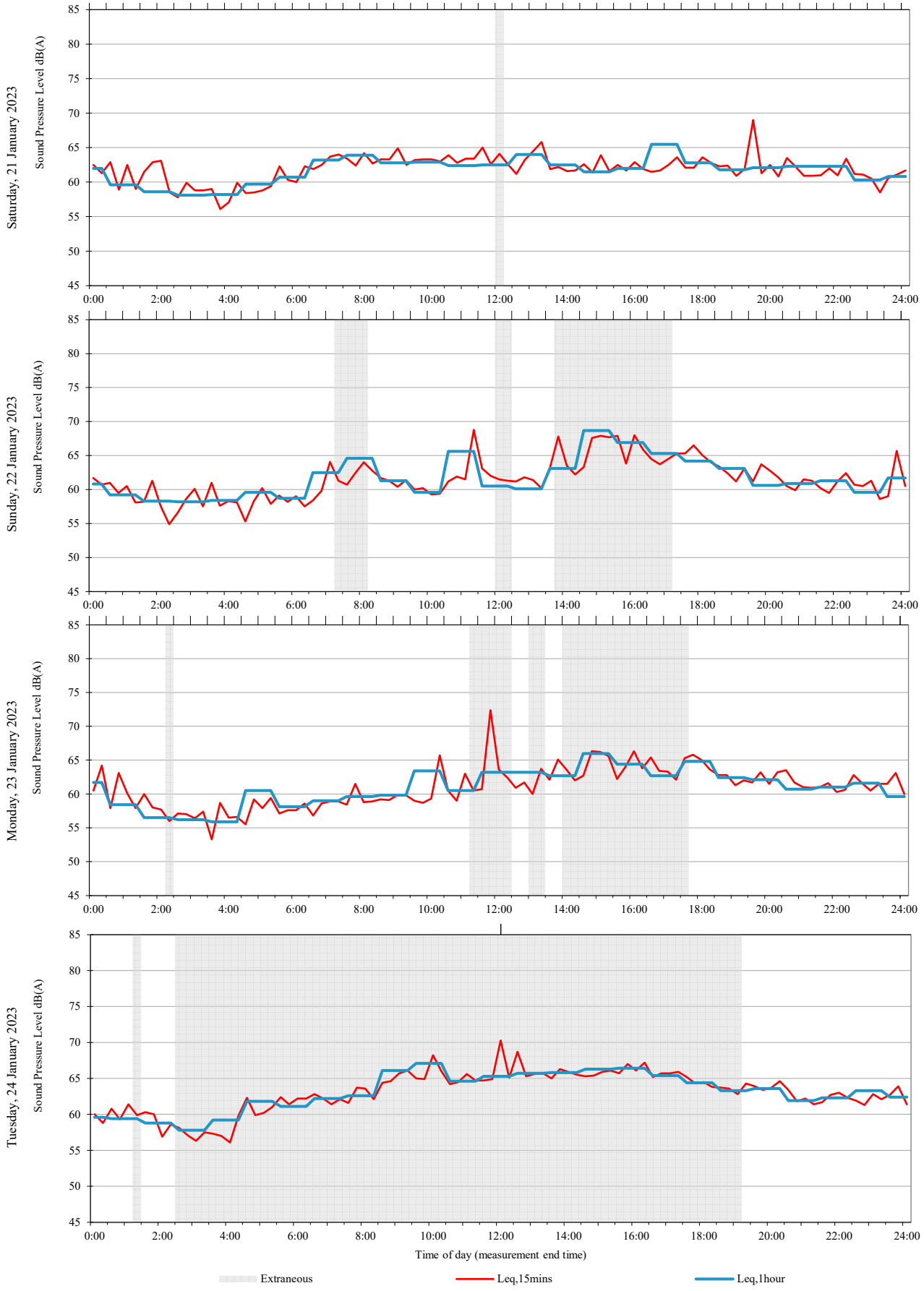
Unattended monitoring: N3- 877 Woodlands Avenue 9 ()

ARUP



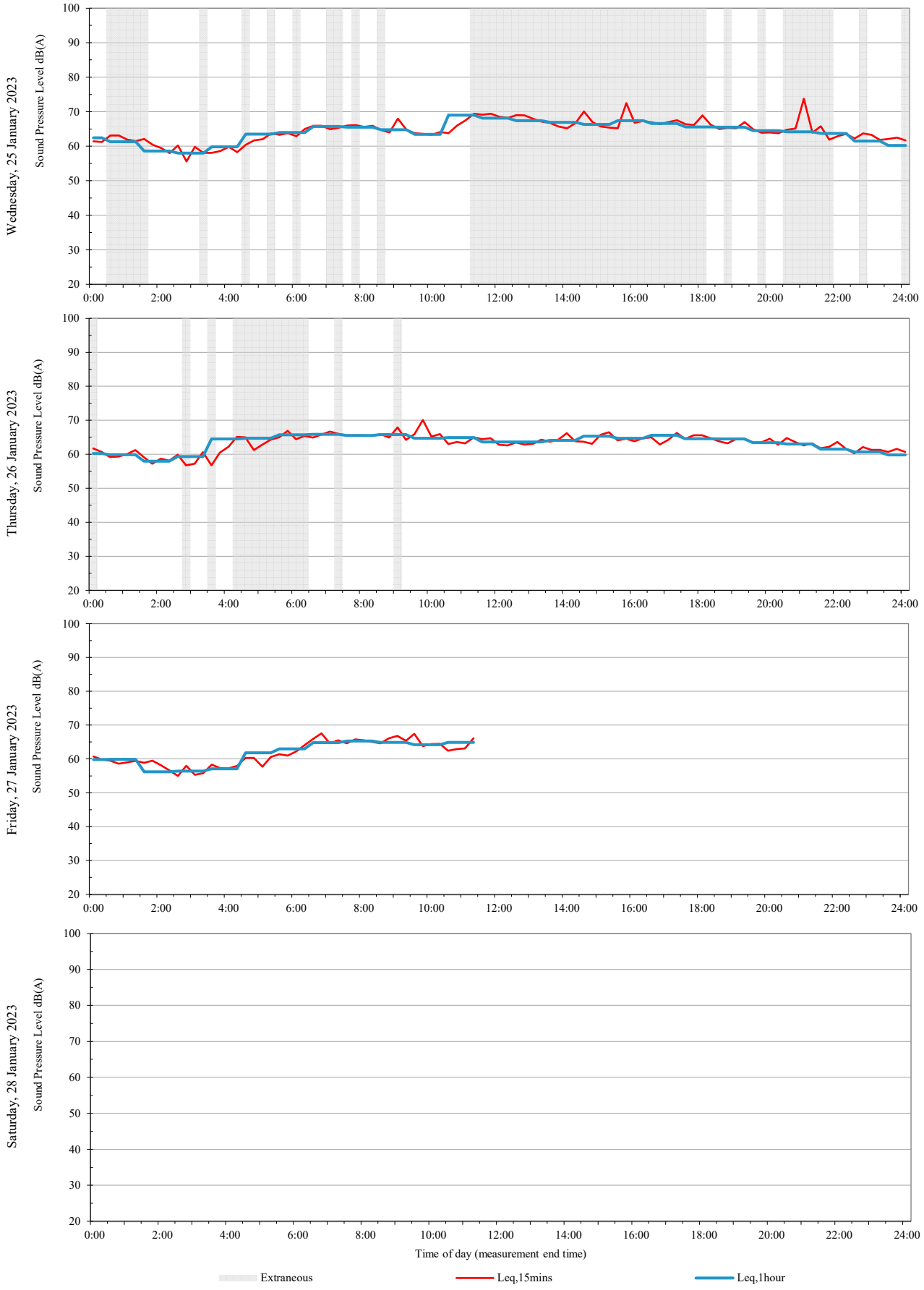
Unattended monitoring: N3- 877 Woodlands Avenue 9 ()

ARUP



Unattended monitoring: N3- 877 Woodlands Avenue 9 ()

ARUP



Date		Tuesday, 17 January 2023																	Wednesday, 18 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00															68	64	64	60	58	67	58	59	58	61
	05															63	63	62	61	60	57	56	59	59	61
	10															68	61	62	59	61	58	56	55	60	63
	15															65	64	61	64	60	56	55	55	60	64
	20															64	62	62	60	59	57	59	57	63	63
	25															63	61	62	59	57	57	55	62	62	63
	30															63	61	64	59	60	57	57	60	61	63
	35															63	62	61	58	58	56	55	60	65	63
	40															62	63	61	60	60	56	57	60	64	64
	45															63	63	58	61	57	58	57	61	63	64
	50															62	61	63	58	56	56	60	59	61	64
	55															62	61	60	57	58	55	56	60	60	65
LAeq, 12 hr, dB														61											
LAeq, 1 hr, dB																64	62	62	60	59	59	57	59	62	63
LAeq, 5 min, dB														64					60						

Date		Wednesday, 18 January 2023																	Thursday, 19 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	71	66	66	64	65	64	65	64	64	64	68	66	64	64	63	62	63	61	61	58	57	58	60	60
	05	66	65	66	64	64	66	63	64	65	65	66	66	64	64	64	62	62	61	60	59	56	55	60	61
	10	66	66	65	65	65	68	63	66	64	66	67	67	68	66	65	63	61	61	58	58	59	59	59	64
	15	66	67	65	64	66	69	64	65	64	67	65	65	66	65	63	63	65	64	58	57	62	55	60	63
	20	65	66	64	64	65	64		65	65	65	66	65	66	65	62	63	63	63	59	57	58	58	61	63
	25	65	66	66	65	65	64	64	63	64	66	67	66	63	64	63	62	60	63	60	58	57	58	61	64
	30	66	66	66	64	65	64	67	63	65	66	65	66	65	65	62	62	61	62	57	56	55	58	61	63
	35	67	64	66	64	65	63	64	65	64	66	66	67	63	63	62	62	61	61	59	57	59	60	62	63
	40	65	66	65	64	65	64	65	65	65	66	67	68	65	67	63	62	60	64	65	57	57	59	63	67
	45	64	65	65	64	66	65	64	64	65	66	66	64	66	64	63	61	62	61	59	58	58	59	64	65
	50	65	67	65	65	65	63	64	65	65	66	66	65	65	62	61	61	61	61	62	56	59	60	64	65
	55	66	65	64	66	65	64	65	64	66	66	66	64	64	63	63	61	61	61	68	56	58	60	61	64
LAeq, 12 hr, dB							65									62									
LAeq, 1 hr, dB		66	66	65	65	65	65	64	65	65	66	66	66	65	64	63	62	62	62	62	57	58	58	61	64
LAeq, 5 min, dB							65								64					60					

Date		Thursday, 19 January 2023																	Friday, 20 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	67	65	66	64	64	64		64	64	65	65	65	64	65	63		62	61	60	56	54	56	62	60
	05	65	66	65	77	65	64		64		65	65	66	63	64	62	64	61	60	58	69	57	55	60	63
	10	65	66	66	65	65	63		63		65	66	74	64	64	70	61	60	62	60	57	58	58	59	62
	15	66	66	66	64	65	67		63		65	68	65	64	68	63	63	61	60	58	58	61	59	61	64
	20	66	65	65	64	64	68		65		65	65	67	65	63	63	63	63	62	61	55	58	54	62	63
	25	64	66	65	63	67	64		66	65	66	65	66	64	62		64	60	59	59	57	59	59	62	62
	30	66	67	66	65	66	64		67	64	67	65	66	67	63		62	60	58	62	60	58	59	63	62
	35	65	66	66	64	65	63	62	64	65	64	66	65	64	63		62	62	59	57	56	57	58	61	62
	40	66	65	65	64	64	63	64		67	64	66	65	63	65		63	60	63	57	57	60	58	65	64
	45	66	65	65	64	65	63	64		65	65	66	64	64	64		62	59	60	60	57	57	62	62	63
	50	65	64	65	64	63	64	64	65	65	66	66	64	67	64	61	62	60	59	58	56	57	58	65	62
	55	66	66	64	64	65	64	65	64	68	66	65	67	65	63	64	63	68	58	57	57	59	61	60	64
LAeq, 12 hr, dB							66									62									
LAeq, 1 hr, dB		66	66	65	68	65	65	64	65	65	65	66	67	65	64	65	63	62	60	59	60	58	59	62	63
LAeq, 5 min, dB							65								64					60					

Note: Greyed out areas are due to rain

Date		Friday, 20 January 2023																	Saturday, 21 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	63	66	65	65	63		66			66	70		64	63	64	62		61	62	66	57	56	59	60
	05	67	64	64	67	64		67				66	68	66	64	63			63	60	59	58	57	58	62
	10	64	66	64	63	68		66		68		66	68	64	65	63		66	63	62	63	59	57	59	60
	15	63	68	66	63	64		65		65	69	67	68	65	65	63		63	61	59	59	57	55	58	59
	20	64	65	65	65	66		66		65	67	71	67	65	65	62		61	63	60	58	58	58	61	60
	25	66	66	64	64	65		65		63	67	69	66	64	62	65		61	61	59	59	59	60	59	62
	30	64	65	63		65		66		64	67	67	65	66	63	65		61	62	60	57	58	59	60	61
	35	64	63	64		66		65		64	66	67	67	65	63	62			64	61	56	60	60	59	61
	40	65	64	65	66	64				64	66		65	64	64	64		62	63	62	58	59	58	62	62
	45	65	65	64	64	65				64	65		64		65	62		61	60	60	57	60	60	61	62
	50	65	63	65	67	64				65	68		64	64	63	62		61	63	59	59	58	58	61	62
	55	66	65	66	67	65				67	65		65		63	64	61	62	59	63	60	56	59	60	63
LAeq, 12 hr, dB		66												62											
LAeq, 1 hr, dB		65	65	65	65	65		66		65	67	68	66	65	64	63	62	62	62	61	60	58	58	60	61
LAeq, 5 min, dB		65												64					60						

Date		Saturday, 21 January 2023																	Sunday, 22 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	62	62	62	64	61	63	63	63	62	64	62	61	62	62	61	62	65	62	59	59	64	56	58	58
	05	62	63	62	63	63	63	62	62	62	63	62	63	62	60	62	62	61	63	59	57	60	58	59	55
	10	64	64	65	63	64	64	65	62	64	63	63	64	61	62	61	61	61	62	61	57	60	58	60	59
	15	63	65	63	63	61	62	61	62	61	61	68	62	61	64	62	63	61	62	60	58	59	57	60	59
	20	63	64	63	63	62	63	64	63	62	63	64	63	62	62	63	60	61	59	59	61	58	60	61	60
	25	64	63	63	63	63	63	66	62	62	62	64	63	62	61	61	63	59	61	58	55	58	58	58	57
	30	64	62	63	62	63	62	61	60	62	64	63	63	61	62	61	64	62	65	57	54	58	56	60	60
	35	63	63	64	62	61	63	63	63	62	64	62	63		61	61	63	61	59	58	59	61	59	58	60
	40	63	63	63	64	65	61	62	63	63	61	62	62		64	61	61	61	61	58	57	61	55	59	58
	45	65	62	63	63	63	62	62	62	61	61	62	61		61	62	61	62	60	57	59	58	58	60	64
	50	65	64	63	63	63	62	63	62	62	61	62	61	62	63	62	63	60	62	59	61	57	59	60	60
	55	62	63	63	63		63	62	61	62	62	62	62	61	62	62	61	61	60	61	59	58	58	58	60
LAeq, 12 hr, dB		63												61											
LAeq, 1 hr, dB		63	63	63	63	63	63	63	62	62	63	63	62	62	62	62	62	61	61	59	58	60	58	59	60
LAeq, 5 min, dB		63												62					60						

Date		Sunday, 22 January 2023																	Monday, 23 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00			59	60	61		62					64	61	62	60	61	61	61	59	54	56	56	58	58
	05			61	61	61		61					64	63	62	59	60	65	60	59	57	57	55	57	58
	10		64	60	59	62		61					65	61	63	62	61	61	61	60		56	57	58	58
	15		64	59	60	60		60					64	63	60	61	61	59	59	59	58	55	55	62	58
	20	63	67	63	59	64	60	60					64	64	59	60	60	61	60	59	56	56	56	60	58
	25	61	63	62	60		61	60					64	63	62	61	62	59	64	58	56	58	57	59	59
	30	60	63	62	60	61	64	61					64	62	63	62	60	60	62	57	56	56	57	59	56
	35	59	61	59	62	61	62	61					63	61	61	61	60	59	60	59	57	57	56	57	58
	40	61	62	60	61	63	61						63	61	61	60	61	59	58	60	57	53	56	57	57
	45	61	60	63	62	62	59						63	64	60	61	60	60	60	58	55	56	56	60	59
	50		60	60	63	61	61						63	61	61	61	60	60	60	57	58	56	58	58	58
	55		61	60	62	62	62						62	64	60	59	61	66	63	58	57	59	59	58	59
LAeq, 12 hr, dB		62												60											
LAeq, 1 hr, dB		61	63	61	61	62	61	61					64	62	61	61	61	61	61	59	57	56	56	59	58
LAeq, 5 min, dB		62												61					58						

Note: Greyed out areas are due to rain

Date		Monday, 23 January 2023																	Tuesday, 24 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	58	59	61	60	61	66	63					66	62	62	63	61	64	61	60	58		56	61	
	05	62	59	60	59	60	65						64	62	61	62	61	62	61	59	59		58	61	
	10	59	59	60	59	63	64						65	61	61	61	60	61	60	61	57		56		
	15	58	60	60	61		64	63					64	62	62	60	62	62	61		58		58		
	20	60	60	60	62		64	63					66	63	61	61	61	61	59	58	60		60		
	25	59	59	60	66	61	62	64					64	62	63	61	61	62	59	60	59				
	30	60	59	59	61		63	63					65	62	62	60	61	60	64	61					
	35	57	60	60	59	61	62	62					63	61	62	60	61	59	60	59					
	40	59	59	59	61	61	61	62					63	62	64	61	63	62	61	60					
	45	60	60	58	61		62	63					62	61	61	61	62	60	59	58				62	
	50	61	60	58	61	61	61	62					63	62	60	61	62	60	60	57				63	
	55	62	59	59	59		62	65					63	63	62	62	62	63	59	60				61	
LAeq, 12 hr, dB		62												61											
LAeq, 1 hr, dB		60	59	60	61	61	63	63					64	62	62	61	61	61	60	60	58		58	62	
LAeq, 5 min, dB		61												62					60						

Date		Tuesday, 24 January 2023																	Wednesday, 25 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00													64	63	63	61	62	63	60	58	58	58	61	62
	05														63	63	62	61	64		58	57	56	62	61
	10													63	64	62	63	63	61	62	59	60	60	62	63
	15												64	62	63	62	63	65	64	60	59		58		64
	20												65	63	63	62	62	62	62	62	59	58	62	64	63
	25												64	64	65	61	62	62			58	58	58	64	65
	30												63	63	63	63	62	62	63	61	57	58		63	64
	35												64	64	63	64	62	62	62	60	58	58	61	63	65
	40											65	64	64	63	62	62	63	63	62	60	58	60	63	66
	45											64	63	63	61	65	64	62	62	61	58	59	59	61	64
	50											66	64	63	63	65	62	63	61	60	58	58	61	66	65
	55											64	64	63	62	63	61	64	63	60	56	59	62		
LAeq, 12 hr, dB		64												62											
LAeq, 1 hr, dB												65	64	63	63	63	62	63	63	61	58	58	60	63	64
LAeq, 5 min, dB		64												63					61						

Date		Wednesday, 25 January 2023																	Thursday, 26 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	64	66	65	63								68	64	64		63	62		58	57	59			64
	05	65	67	66	63								66	65	65		63	64	62	59	57	56			64
	10		66	68	63								69	65	64		63	63	62	60	59	57			64
	15	66	65	65	61								66	65	64	65	63	62	60	60	57	59			66
	20	66	65	65	64								65	64	65	64	65	61	60	59	59	58			
	25	66	66	65	64								66	67		64	64	62	61	61	58			64	65
	30	66		63	65								66	65	65	63	62	62	60	58	57	58		65	64
	35	66	65	64	67								65	64	64	64	62	60	60	60	57	58		64	66
	40	66	65	64	64								65		65	66	62	62	59	59		57		65	65
	45		66	64	64								65	65		64		62	62	60	58	57		65	66
	50	65	65	64	65									63			63	63	61	60	59	59			66
	55	66	64	64	66								65	64		62	64	63	59	57	57	60		67	66
LAeq, 12 hr, dB		65												63											
LAeq, 1 hr, dB		66	65	65	64								66	65	65	64	63	62	61	59	58	58		65	65
LAeq, 5 min, dB		65												64					61						

Note: Greyed out areas are due to rain

Date		Thursday, 26 January 2023																	Friday, 27 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	65	66	66	72	65	67	63	65	63	64	63	65	64	64	61	63	60	60	61	55	65	57	60	60
	05	66	66	66	68	65	64	64	64	64	64	65	67	67	67	62	60	60	61	58	58	56	55	61	61
	10	67	65	68	65	63	63	63	66	66	64	64	66	64	65	63	64	61	61	59	58	55	57	58	62
	15	65	65	68	63	65	64	64	64	65	64	65	64	65	64	64	62	60	60	61	57	57	58	62	62
	20		66	65	65	65	64	63	64	64	65	65	65	64	64	62	61	61	59	59	55	56	56	63	62
	25	66	65	64	66	65	63	64	64	67	65	66	65	65	63	63	62	61	60	59	57	56	58	61	64
	30	66	67	64	64	64	64	64	65	67	63	64	64	65	65	61	63	60	60	57	55	57	57	62	63
	35	67	66	64	64	64	63	63	64	64	64	65	65	65	63	64	61	62	61	58	63	56	59	61	63
	40	66	66	66	63	64	64	64	64	64	65	64	64	63	65	62	60	61	60	59	55	58	60	61	66
	45	66	66	66	64	66	68	64	65	65	67	66	65	65	63	63	60	60	60	58	56	59	61	62	63
	50	66	66	65	63	66	69	64	63	66	64	64	64	64	64	62	62	61	60	65	56	56	60	62	63
	55	66		70	64	65	63	64	63	65	63	66	63	64	64	62	62	62	59	59	58	58	60	61	68
LAeq, 12 hr, dB		65												62											
LAeq, 1 hr, dB		66	66	66	66	65	65	64	64	65	64	65	65	65	64	63	62	61	60	60	58	58	58	61	64
LAeq, 5 min, dB		65												64					60						

Date		Friday, 27 January 2023																	Saturday, 28 January 2023						
	Starting Minute	Starting Hour																							
		07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00	02:00	03:00	04:00	05:00	06:00
LAeq, 5 min, dB	00	64	65	65	64	65	64																		
	05	64	65	66	64	65	64																		
	10	65	66	67	65	63	63																		
	15	64	65	64	63	65	67																		
	20	65	66	65	65	63	70																		
	25	66	65	65	64	66																			
	30	65	65	64	64	64																			
	35	66	65	65	63	64																			
	40	65	65	67	62	64																			
	45	65	64	65	64	65																			
	50	66	66	65	65	66																			
	55	66	66	64	63	65																			
LAeq, 12 hr, dB		65																							
LAeq, 1 hr, dB		65	65	65	64	65	66																		
LAeq, 5 min, dB		65																							

Note: Greyed out areas are due to rain

APPENDIX H

Ground Vibration Baseline Measurement

TEST REPORT

(This Report is issued subject to the terms & conditions set out below)

ON
GROUND VIBRATION MONITORING

SETSCO
Setsco Services Pte Ltd
531 Bukit Batok Street 23
Singapore 659547
Tel : (65) 6566 7777
Fax: (65) 6566 7718
www.setsco.com
Business Reg. No. 196900269D

Our Reference	:	**MA-8500258548/SAH/1**
Your Reference	:	**6159687**
Report Date	:	**07/02/2023** **Page 1 of 44**
Measured for	:	**DHI WATER & ENVIRONMENT (S) PTE LTD** 2 Venture Drive #18-18 Vision Exchange Singapore 608526 **Attn**: Mr. Aloysius Teo
Date of Measurement	:	6th January 2023 to 8th January 2023
Place of Inspection	:	HDB Block 877, Woodlands Avenue 9, Singapore 730877

Sahlan Bin Ismail
Testing Officer

Almond Soon
Senior Engineer
Maintenance Testing Department
Mechanical Technology Division

TABLE OF CONTENTS

Introduction

SETSCO SERVICES PTE LTD was appointed by DHI WATER & ENVIRONMENT (S) PTE LTD to carry out Ground Vibration Monitoring at **HDB Block 877, Woodlands Avenue 9, Singapore 730877**.

Project

Environmental Baseline Survey

Scope of Measurement

In this monitoring the evaluation of ground vibration is based on the maximum values of the three components of the vibration velocity that is Vertical, Longitudinal and Transverse direction {V (z-axis), L (x-axis) and T (y-axis)}.

The measurement in this three directions would be monitored at location specified in the 'Date of Measurement and Test Locations' section.

The measurement would be in frequency range of 1Hz to 100Hz, velocity-time domain with a minimum trigger level set at **0.3 mm/s**. The monitoring of vibration was conducted based on client's request. The dominant frequency with the corresponding peak particle velocity would be tabulated. The vibration meter was set on continuous and histogram monitoring with readings taken every 5 seconds interval.

Objective of Measurement

The objective of this monitoring at **HDB Block 877, Woodlands Avenue 9, Singapore 730877** was to determine the level of the vibration for the purpose of environmental baseline survey.

Measurement Equipment Specification

The measurement equipment for the vibration test measurements are as follows:

- INSTANTEL INC Ground Vibration Monitoring Equipment (Vibration Sensor Tri-axial)

Calibration Certification of the equipment/s is provided in 'Appendix 1- Calibration Certificates' section.

Date of Measurement and Test Locations

The measurements were conducted from 6th January 2023 to 8th January 2023 at the grass patch in front of **HDB Block 877, Woodlands Avenue 9, Singapore 730877**.

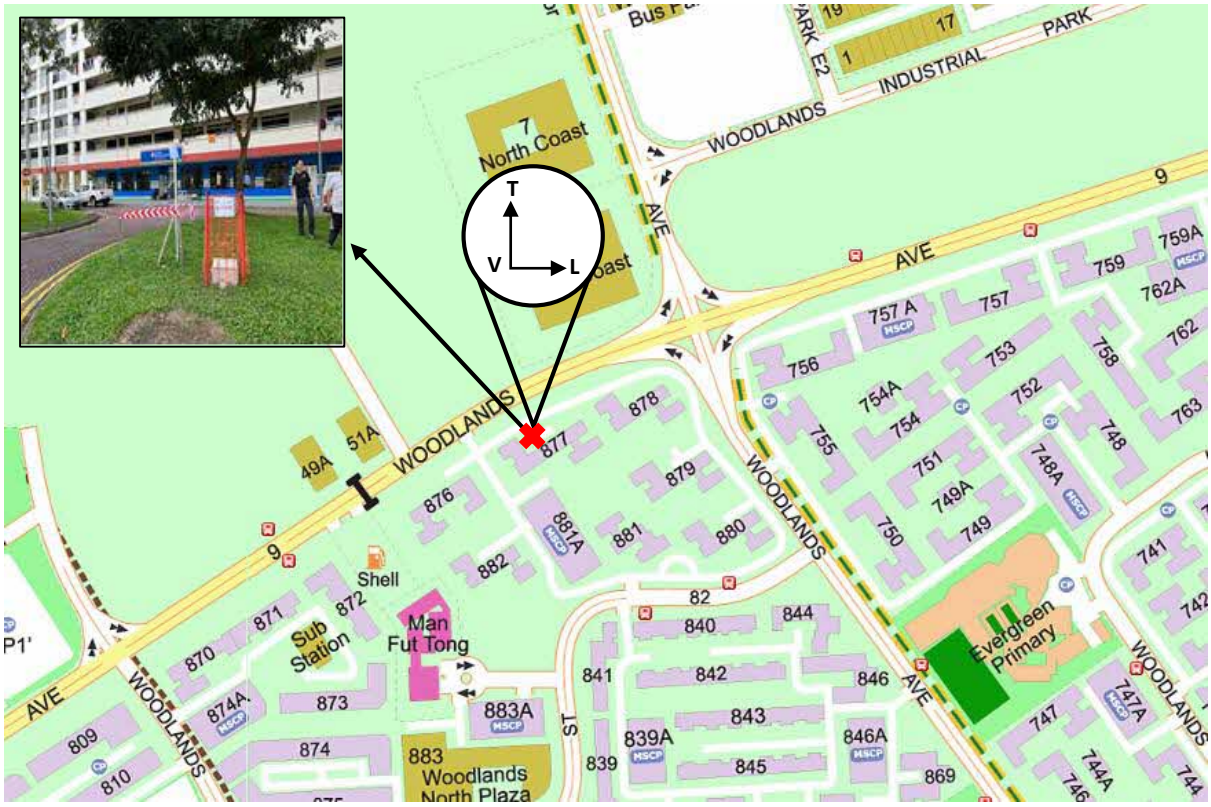


Figure 1: Test Location & Direction of Measurement

Results & Conclusion

For the results of the measurement, refer to the 'Vibration Measurement Data' section.

The details of the measurement show the frequency with the corresponding peak particle velocity in Vertical, Longitudinal and Transverse direction.

Vibration Measurement Data

Instantel

Event Report

Setsco Services Pte Ltd

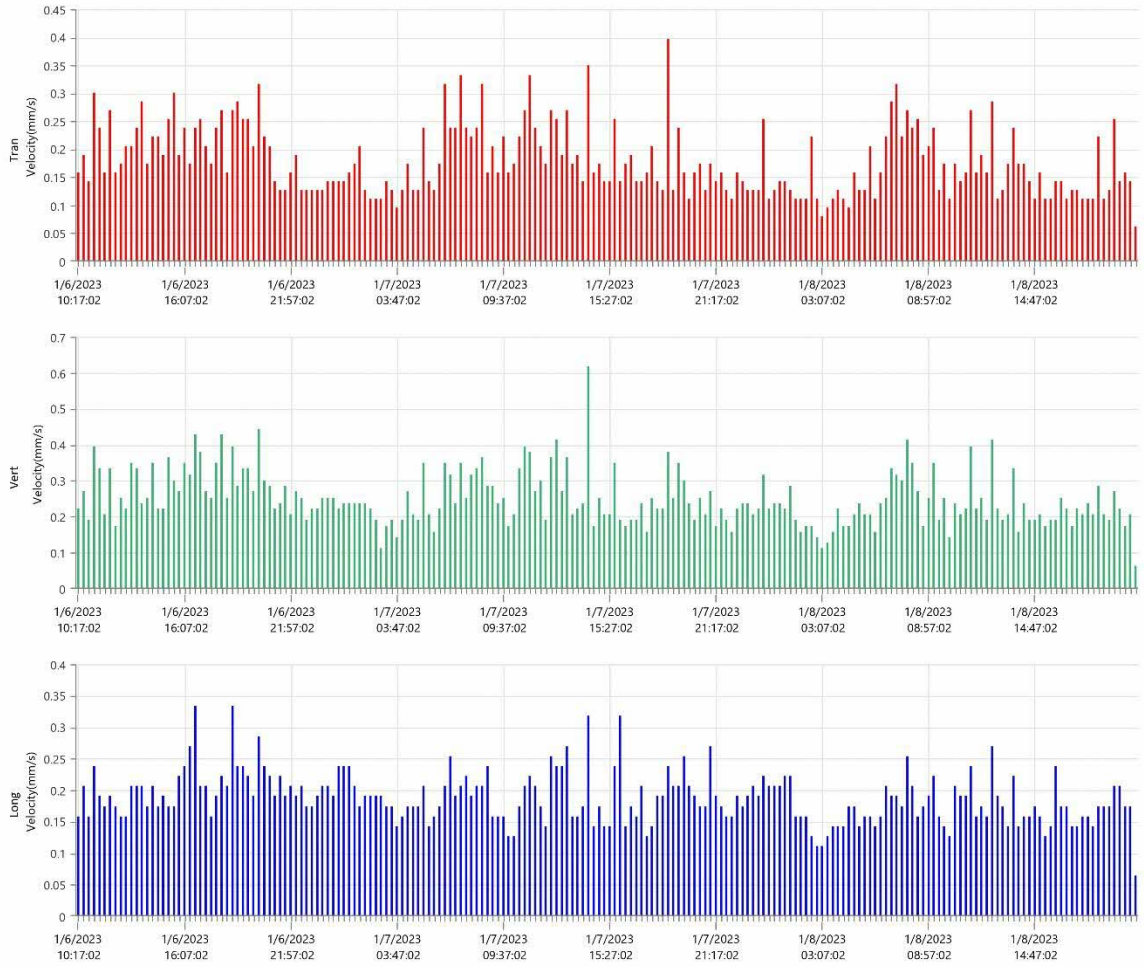
Start	January 6, 2023 10:16:57	**Serial Number**	BE13706
Finish	January 8, 2023 20:32:57	**Model Number**	MiniMate Plus 10.72.8.17
Number of Intervals/Interval	41952.00/5 sec	**Battery Level**	5.7 volts
Sample Rate	1024 sps	**Battery Error**	(Battery very low)
Setup File Name	N/A	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Operator	-		
Job Number	1	**Event File Name**	O706JU7W.K90

Notes
Location:
Client:
User Name:
General:

Extended Notes No text to be displayed.
Post Event Notes 877 Woodlands

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.397 mm/s	0.619 mm/s	0.333 mm/s
Zero Crossing Frequency	15.1 Hz	10.9 Hz	10.9 Hz
Date	Jan 7, 2023	Jan 7, 2023	Jan 6, 2023
Time	18:56:17	14:19:27	16:56:02
Sensor Check	✓ Passed	✓ Passed	✓ Passed
Frequency	7.5 Hz	7.5 Hz	7.7 Hz
Overswing Ratio	3.7	3.4	3.8

Peak Vector Sum 0.655 mm/s at January 7, 2023 14:19:27



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Instantel

Event Report

Setsco Services Pte Ltd

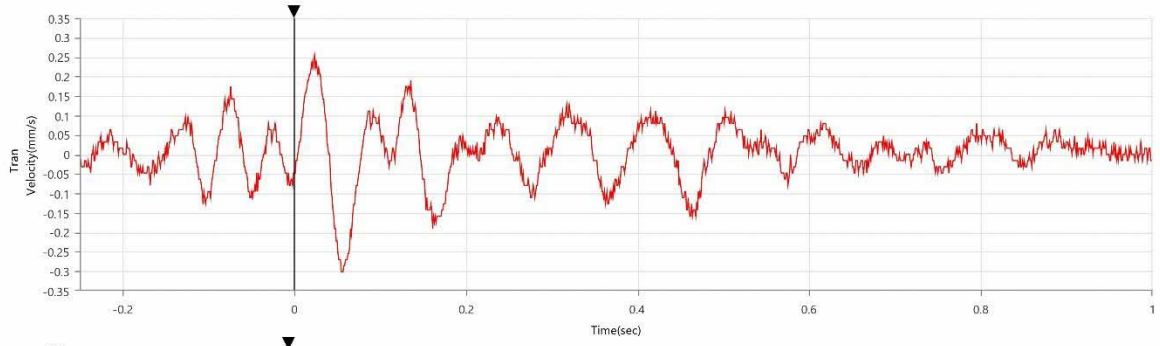
Waveform Trigger Source	Vert at January 6, 2023 11:21:52	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU7Z.KG0
Job Number	1		

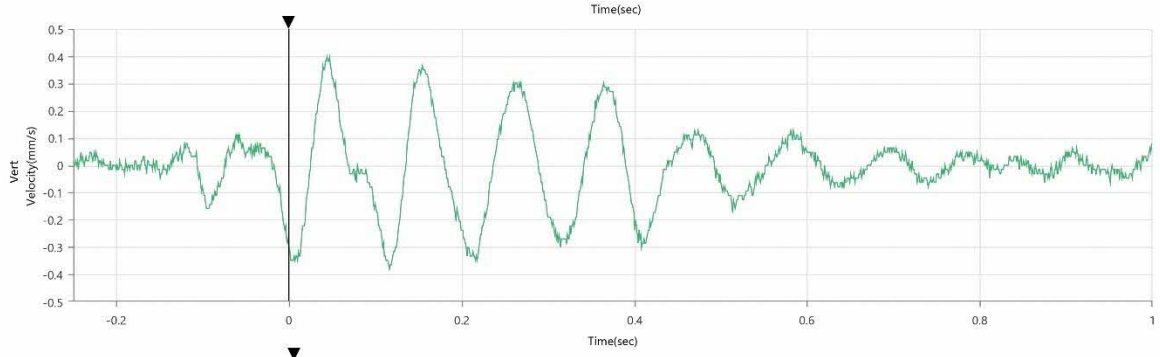
Notes
Location:
Client:
User Name:
General:

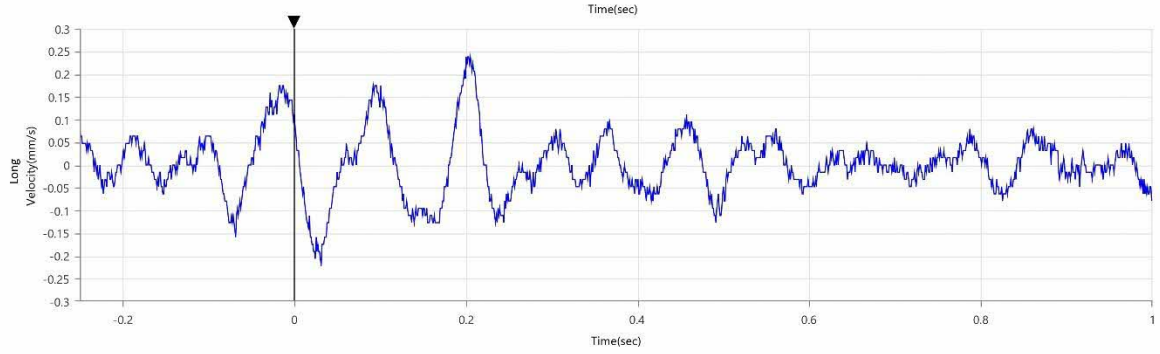
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.302 mm/s	0.397 mm/s	0.238 mm/s
Zero Crossing Frequency	14.2 Hz	11.9 Hz	13.5 Hz
Time (Relative to Trigger)	0.055 sec	0.044 sec	0.200 sec
Peak Acceleration	0.007 g	0.008 g	0.005 g
Peak Displacement	0.003 mm	0.006 mm	0.003 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.443 mm/s at 0.047 sec







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FFT Report

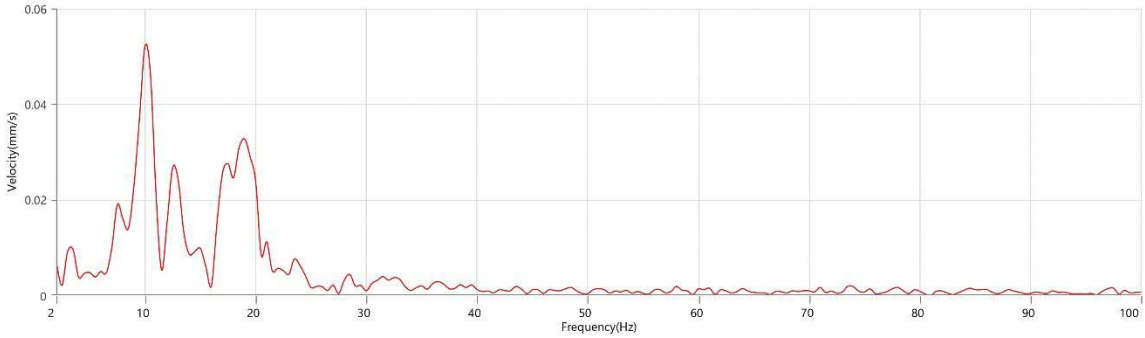
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 11:21:52	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU7Z.KG0
Job Number	1		

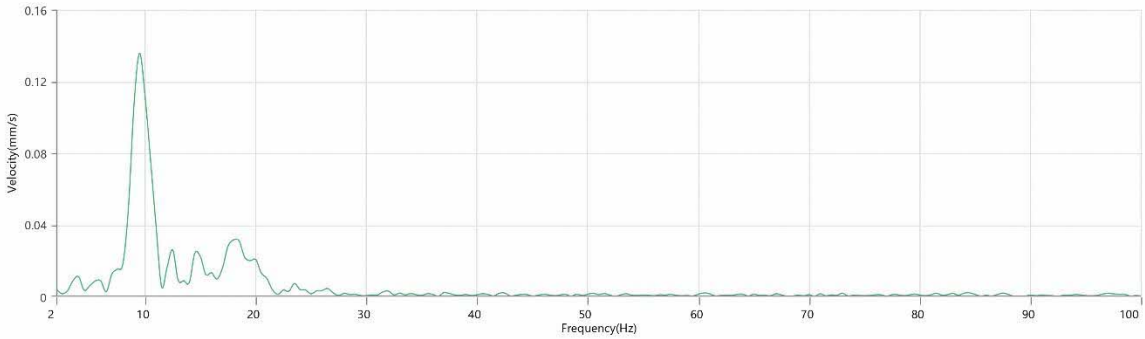
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

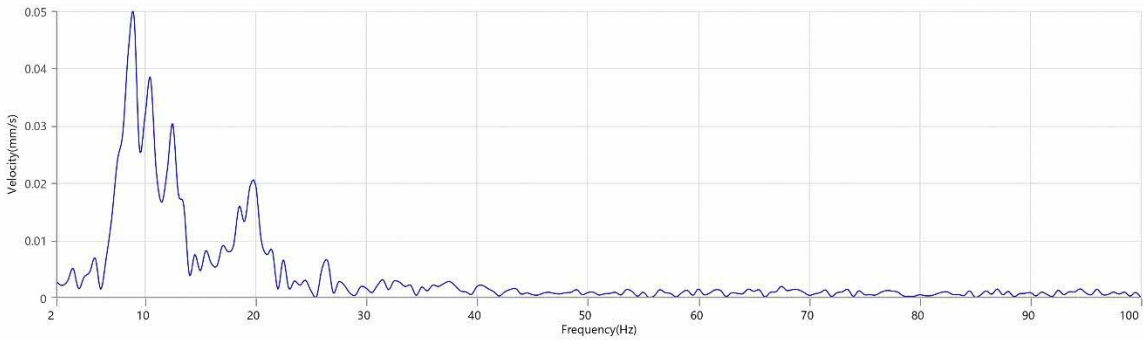
Tran - Dominant Frequency 10.0 Hz, Amplitude 0.052 mm/s (Peak Particle Velocity: 0.302 mm/s)



Vert - Dominant Frequency 9.5 Hz, Amplitude 0.136 mm/s (Peak Particle Velocity: 0.397 mm/s)



Long - Dominant Frequency 9.0 Hz, Amplitude 0.049 mm/s (Peak Particle Velocity: 0.238 mm/s)



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Event Report

Setsco Services Pte Ltd

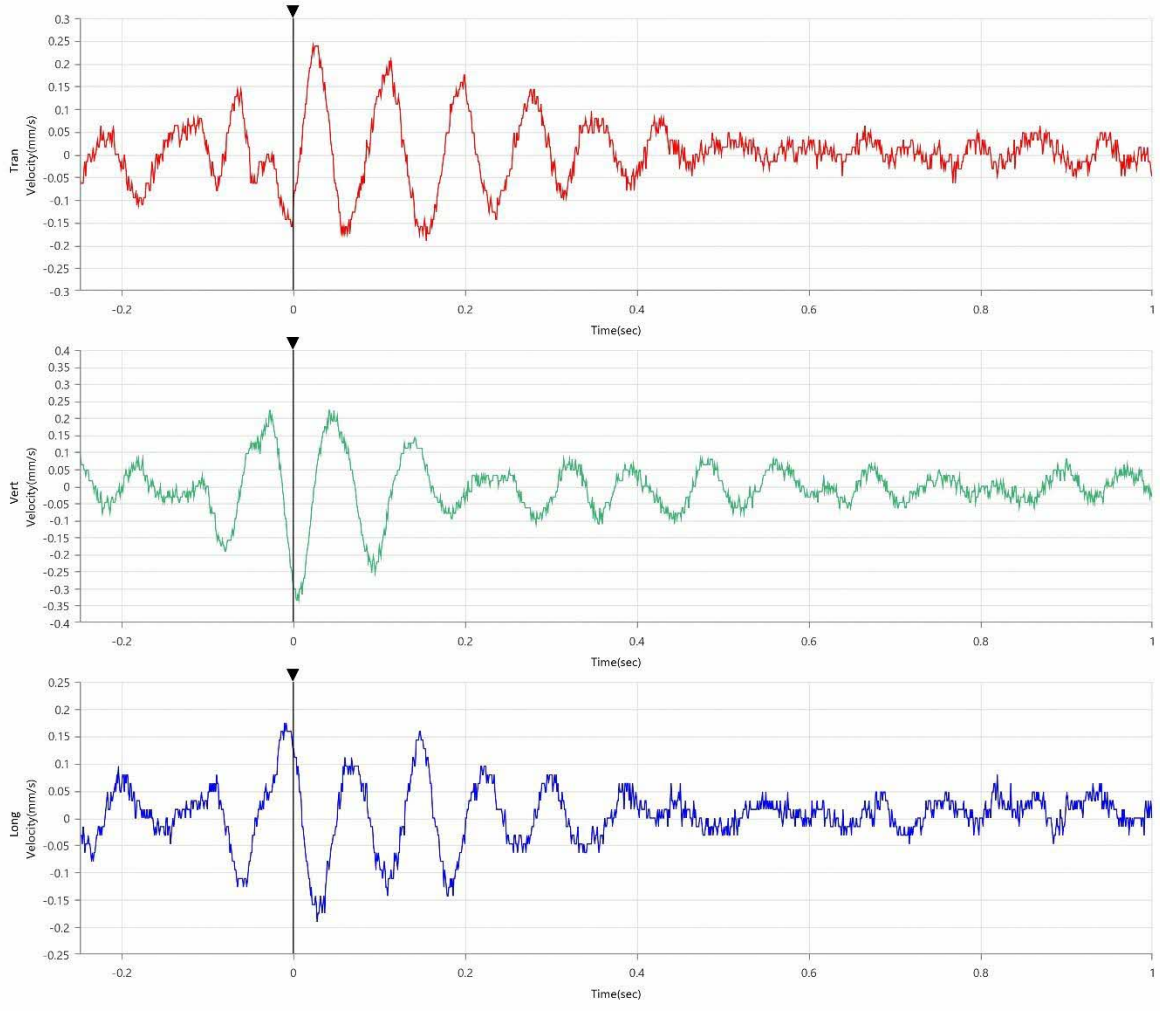
Waveform Trigger Source	Vert at January 6, 2023 11:37:45	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU80.AX0
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.238 mm/s	0.333 mm/s	0.190 mm/s
Zero Crossing Frequency	14.2 Hz	13.8 Hz	13.1 Hz
Time (Relative to Trigger)	0.022 sec	0.003 sec	0.027 sec
Peak Acceleration	0.007 g	0.007 g	0.007 g
Peak Displacement	0.003 mm	0.004 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.357 mm/s at 0.003 sec



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FFT Report

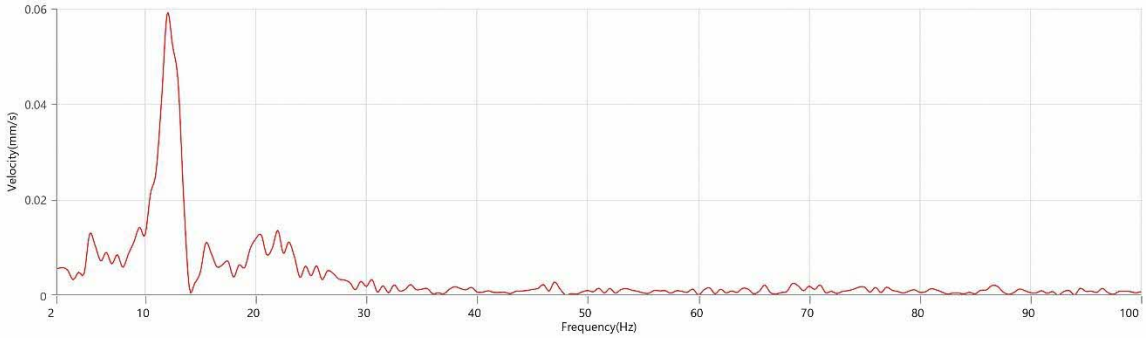
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 11:37:45	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU80.AX0
Operator	-		
Job Number	1		

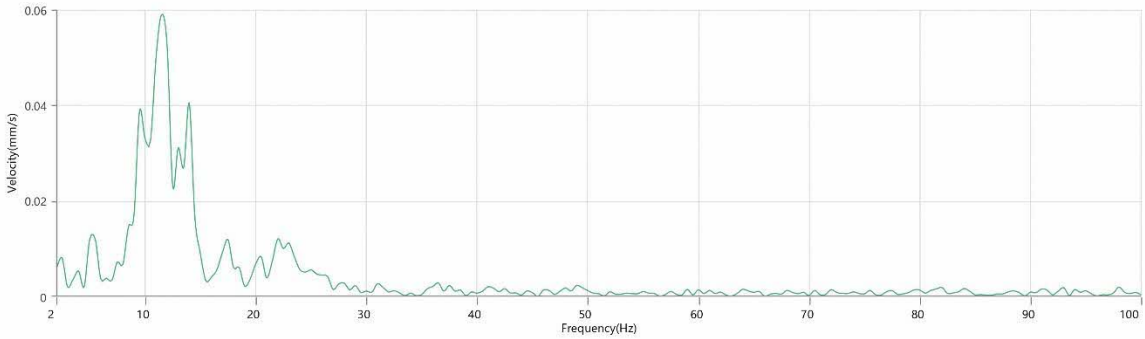
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

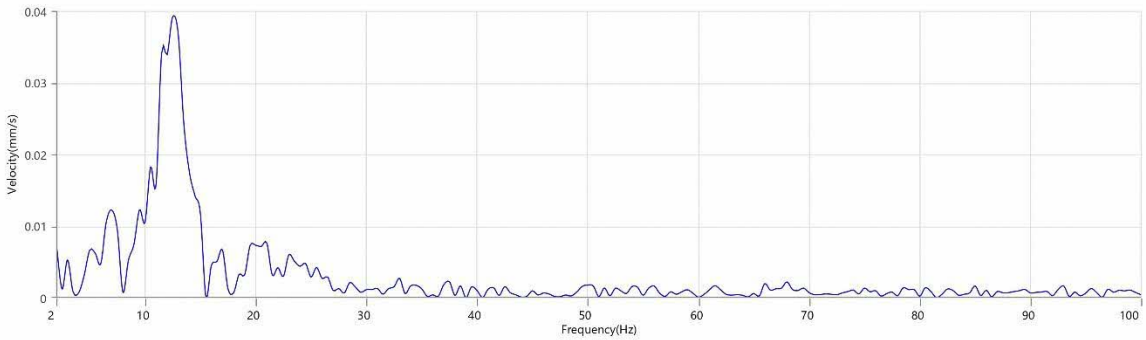
Tran - Dominant Frequency 12.0 Hz, Amplitude 0.059 mm/s (Peak Particle Velocity: 0.238 mm/s)



Vert - Dominant Frequency 11.5 Hz, Amplitude 0.059 mm/s (Peak Particle Velocity: 0.333 mm/s)



Long - Dominant Frequency 12.5 Hz, Amplitude 0.039 mm/s (Peak Particle Velocity: 0.190 mm/s)



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Event Report

Setsco Services Pte Ltd

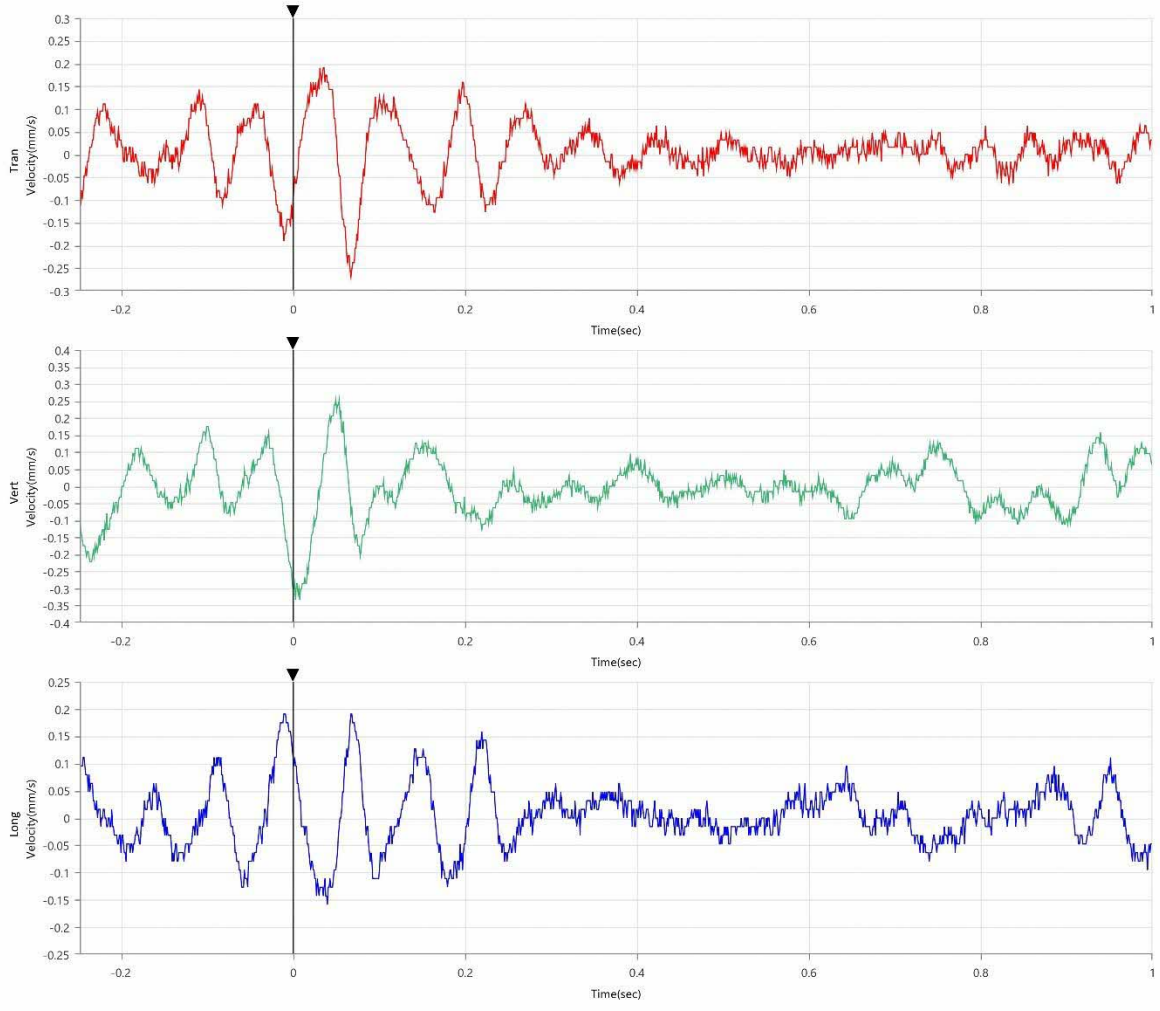
Waveform Trigger Source	Vert at January 6, 2023 12:06:40	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU81.N40
Operator	-		
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.270 mm/s	0.333 mm/s	0.190 mm/s
Zero Crossing Frequency	15.5 Hz	11.1 Hz	12.8 Hz
Time (Relative to Trigger)	0.067 sec	0.003 sec	-0.011 sec
Peak Acceleration	0.007 g	0.007 g	0.005 g
Peak Displacement	0.003 mm	0.005 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.352 mm/s at 0.003 sec



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FFT Report

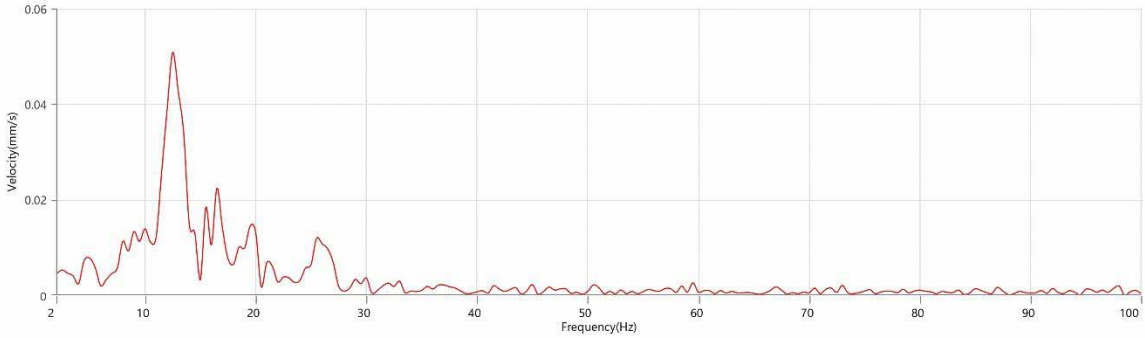
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 12:06:40	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU81.N40
Operator	-		
Job Number	1		

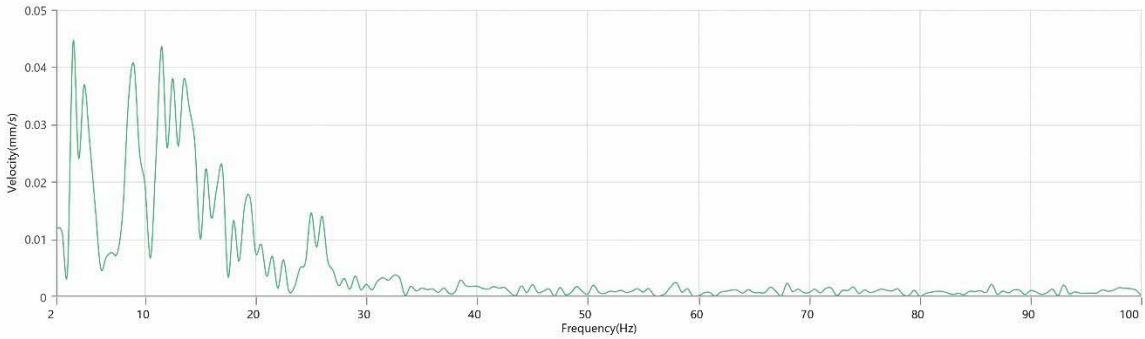
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

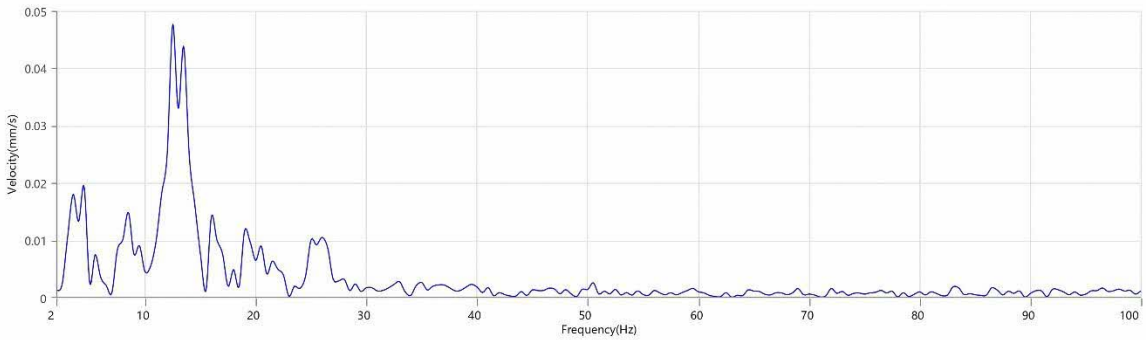
Tran - Dominant Frequency 12.5 Hz, Amplitude 0.051 mm/s (Peak Particle Velocity: 0.270 mm/s)



Vert - Dominant Frequency 3.5 Hz, Amplitude 0.044 mm/s (Peak Particle Velocity: 0.333 mm/s)



Long - Dominant Frequency 12.5 Hz, Amplitude 0.048 mm/s (Peak Particle Velocity: 0.190 mm/s)



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Event Report

Setsco Services Pte Ltd

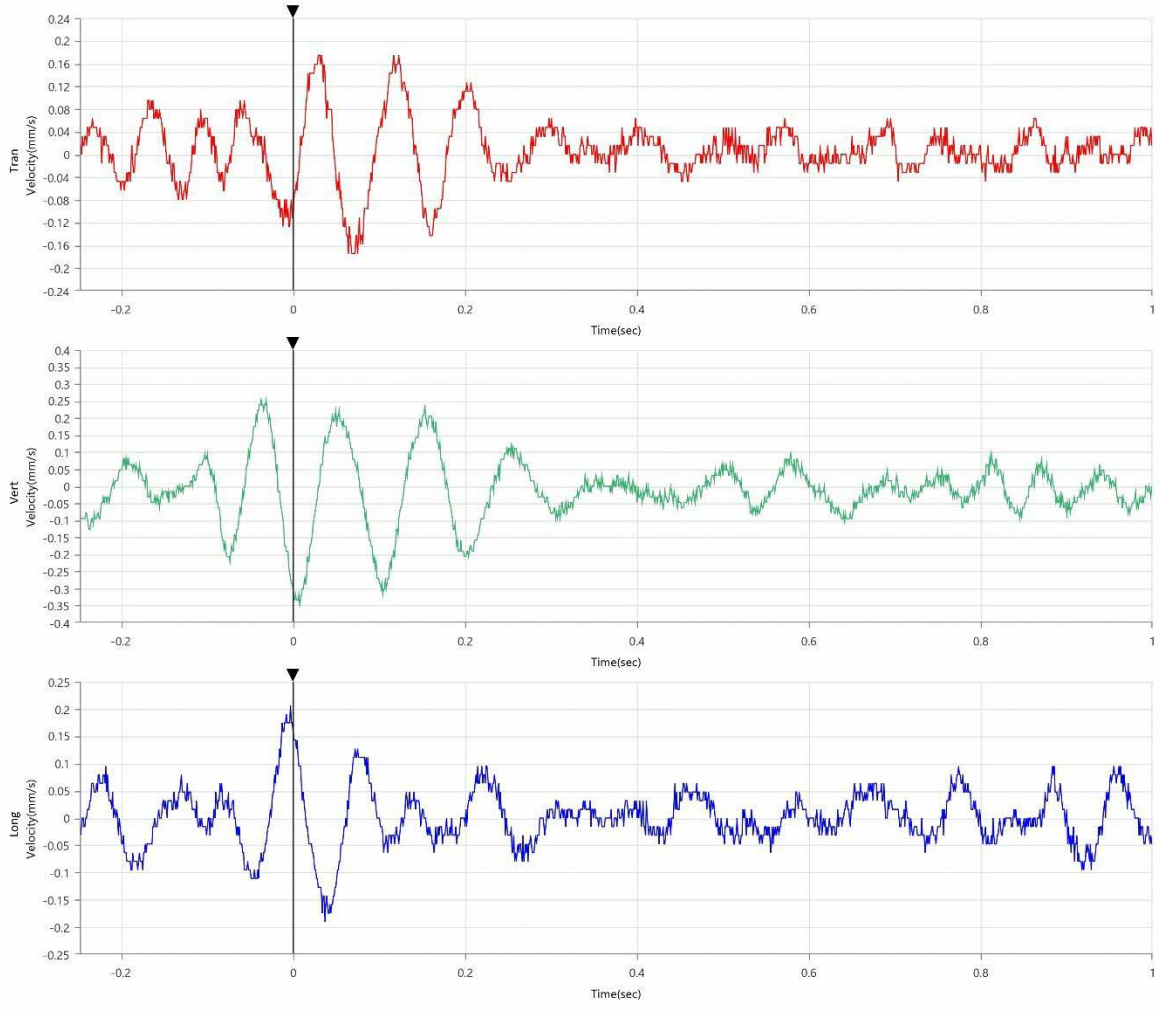
Waveform Trigger Source	Vert at January 6, 2023 13:12:35	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU84.OZ0
Operator	-		
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.175 mm/s	0.349 mm/s	0.206 mm/s
Zero Crossing Frequency	13.5 Hz	11.1 Hz	12.8 Hz
Time (Relative to Trigger)	0.029 sec	0.008 sec	-0.003 sec
Peak Acceleration	0.005 g	0.008 g	0.007 g
Peak Displacement	0.002 mm	0.005 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.371 mm/s at 0.001 sec



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FFT Report

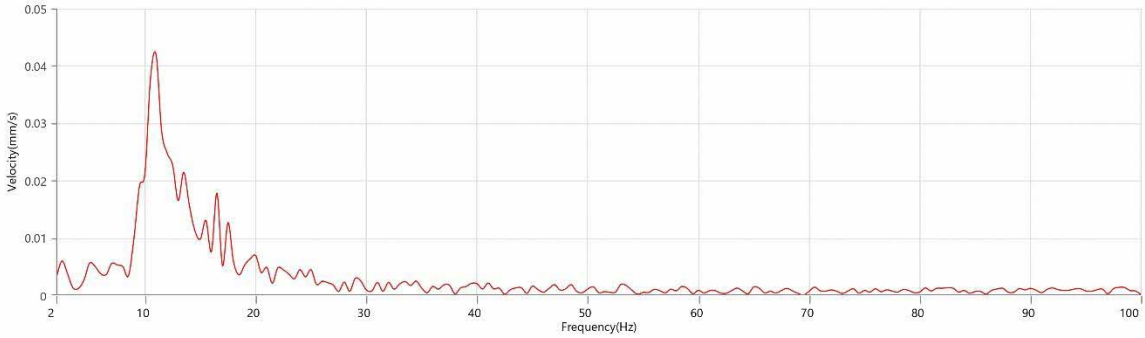
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 13:12:35	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU84.OZ0
Job Number	1		

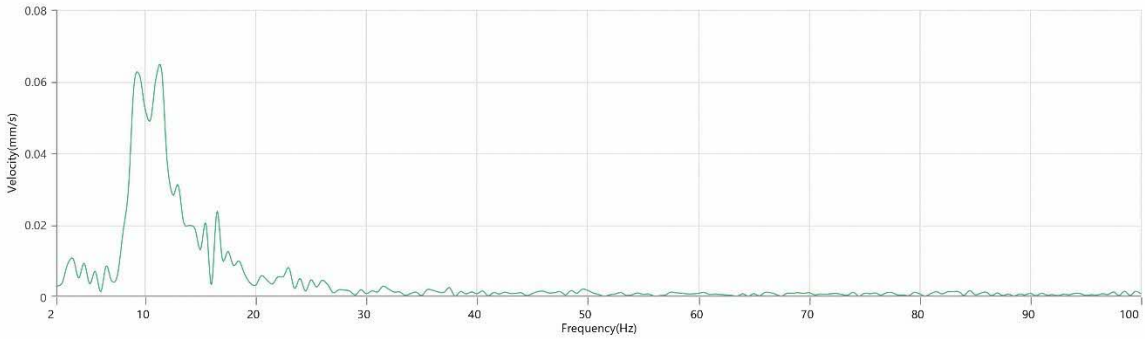
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

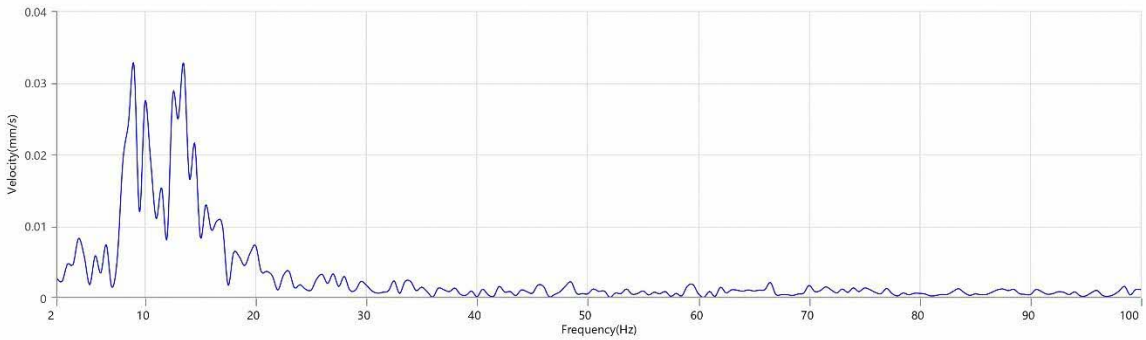
Tran - Dominant Frequency 11.0 Hz, Amplitude 0.042 mm/s (Peak Particle Velocity: 0.175 mm/s)



Vert - Dominant Frequency 11.5 Hz, Amplitude 0.063 mm/s (Peak Particle Velocity: 0.349 mm/s)



Long - Dominant Frequency 13.5 Hz, Amplitude 0.033 mm/s (Peak Particle Velocity: 0.206 mm/s)



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Event Report

Setsco Services Pte Ltd

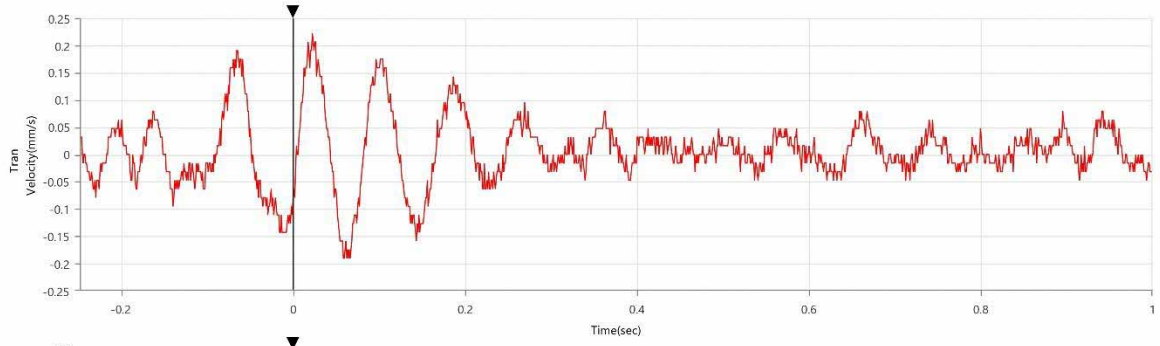
Waveform Trigger Source	Vert at January 6, 2023 13:39:23	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU85.XN0
Operator	-		
Job Number	1		

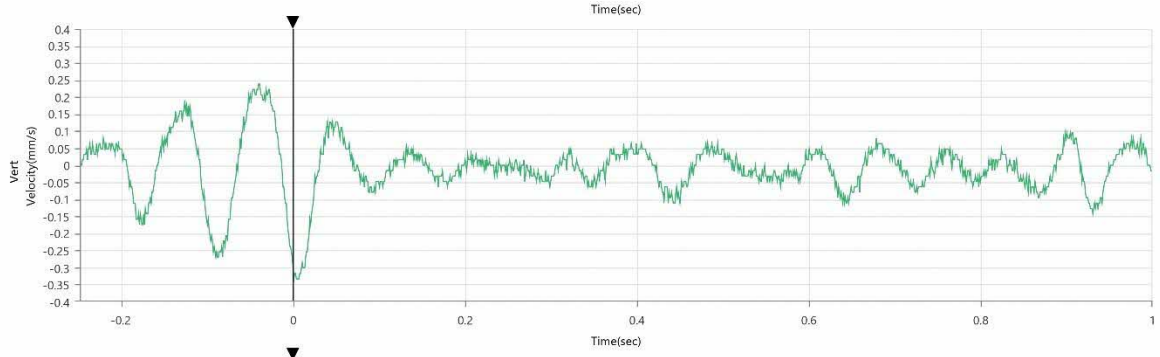
Notes
Location:
Client:
User Name:
General:

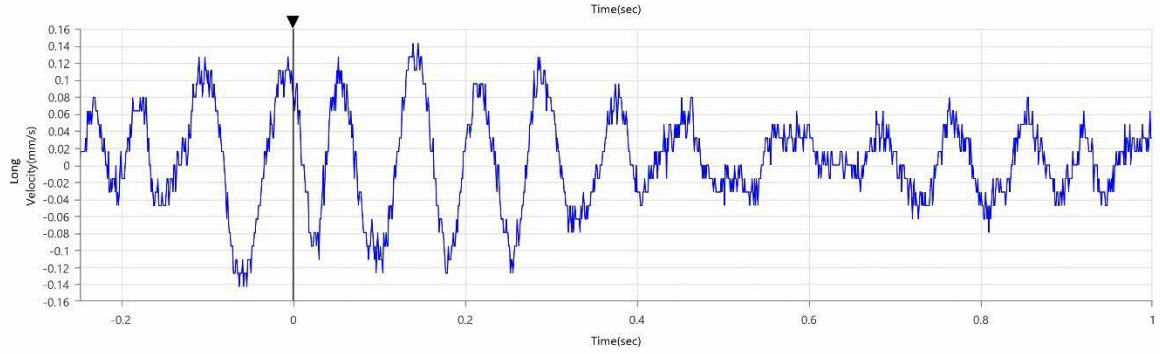
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.222 mm/s	0.333 mm/s	0.143 mm/s
Zero Crossing Frequency	13.5 Hz	11.9 Hz	11.6 Hz
Time (Relative to Trigger)	0.022 sec	0.001 sec	-0.062 sec
Peak Acceleration	0.007 g	0.007 g	0.005 g
Peak Displacement	0.002 mm	0.004 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.349 mm/s at 0.001 sec







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FFT Report

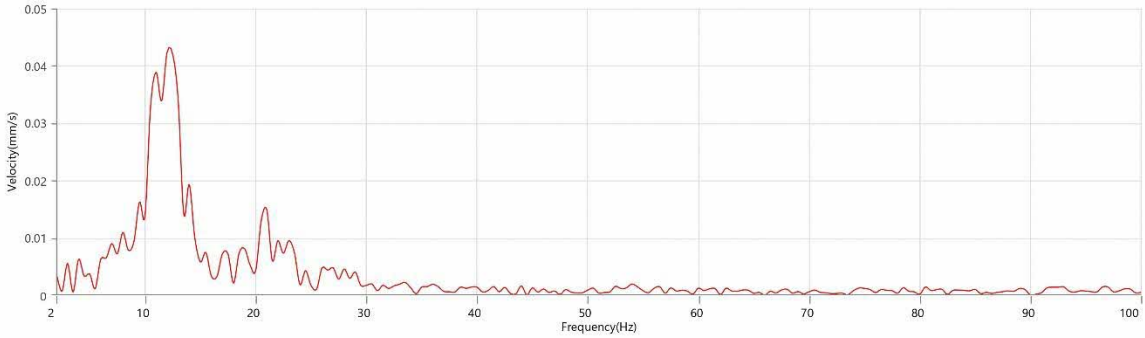
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 13:39:23	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU85.XN0
Job Number	1		

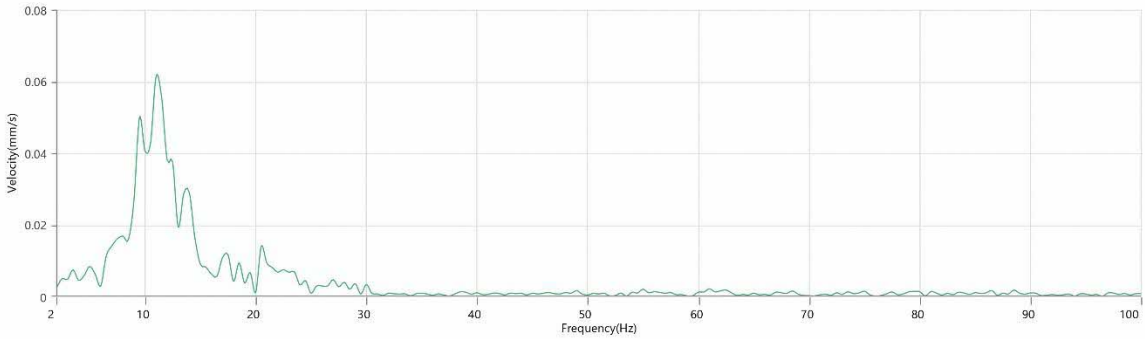
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

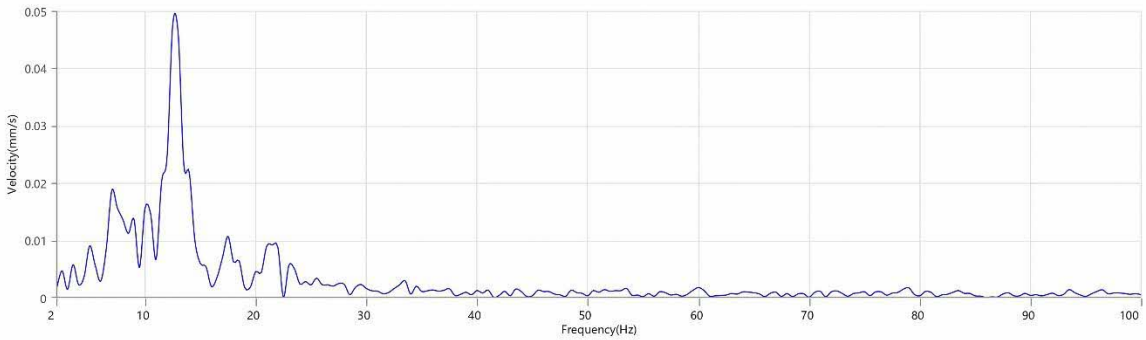
Tran - Dominant Frequency 12.0 Hz, Amplitude 0.042 mm/s (Peak Particle Velocity: 0.222 mm/s)



Vert - Dominant Frequency 11.0 Hz, Amplitude 0.061 mm/s (Peak Particle Velocity: 0.333 mm/s)



Long - Dominant Frequency 12.5 Hz, Amplitude 0.047 mm/s (Peak Particle Velocity: 0.143 mm/s)



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Event Report

Setsco Services Pte Ltd

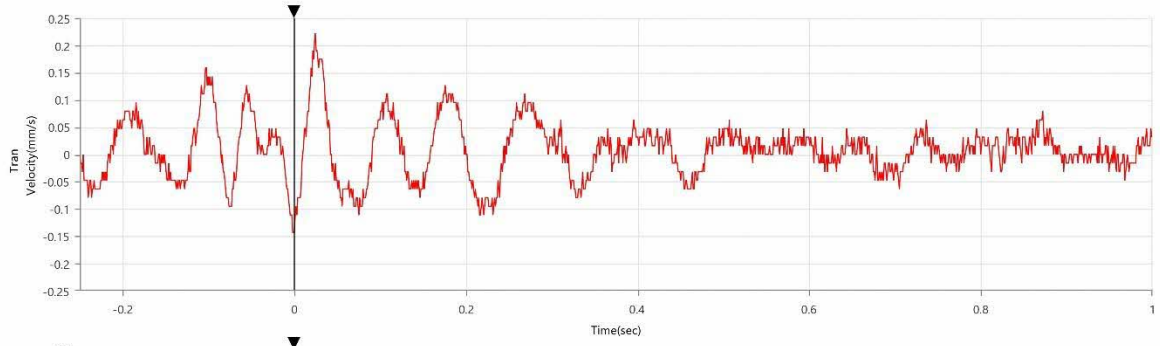
Waveform Trigger Source	Vert at January 6, 2023 14:39:22	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU88.PM0
Job Number	1		

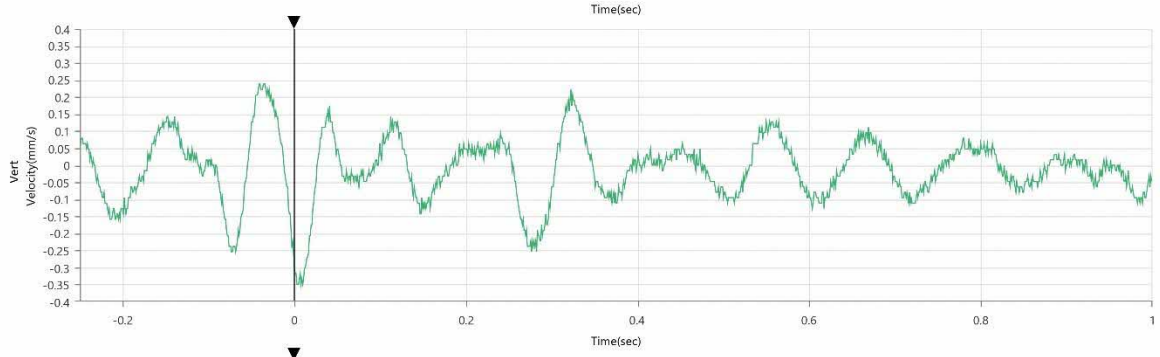
Notes
Location:
Client:
User Name:
General:

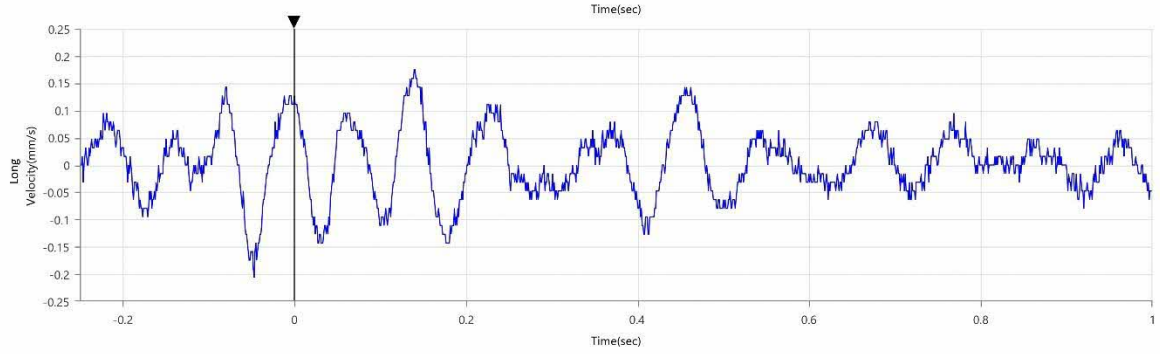
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.222 mm/s	0.349 mm/s	0.206 mm/s
Zero Crossing Frequency	16.0 Hz	13.1 Hz	16.0 Hz
Time (Relative to Trigger)	0.024 sec	0.003 sec	-0.047 sec
Peak Acceleration	0.007 g	0.007 g	0.007 g
Peak Displacement	0.002 mm	0.004 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.383 mm/s at 0.003 sec







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Instantel

FFT Report

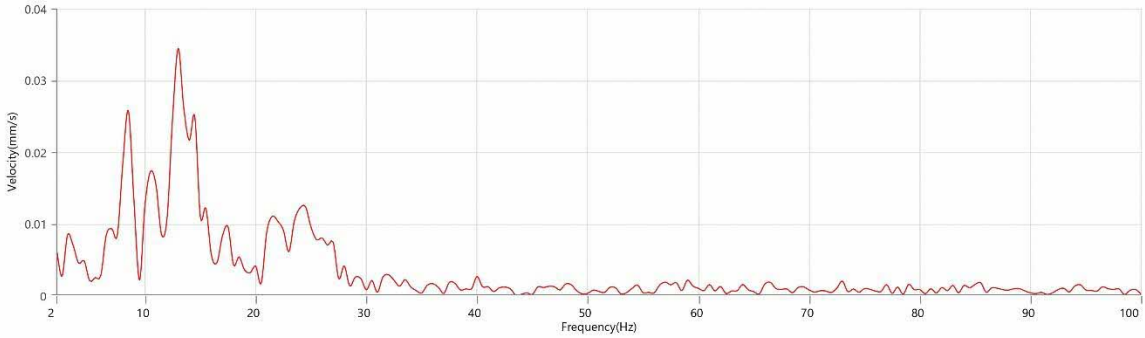
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 14:39:22	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU88.PM0
Job Number	1		

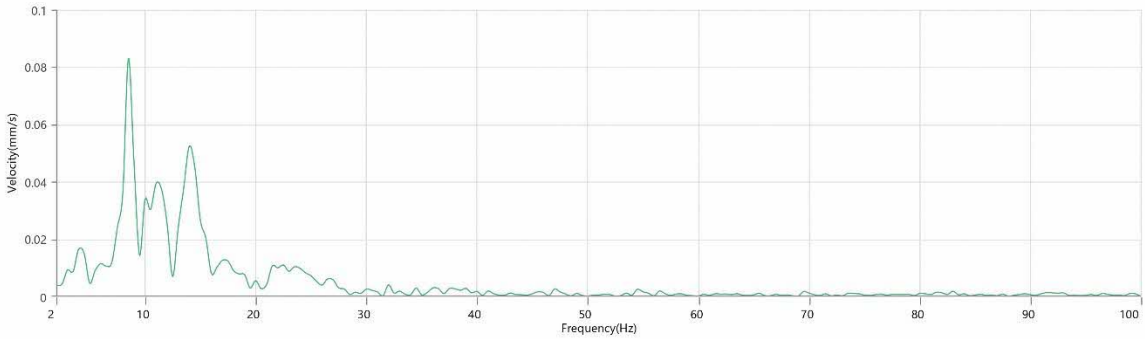
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

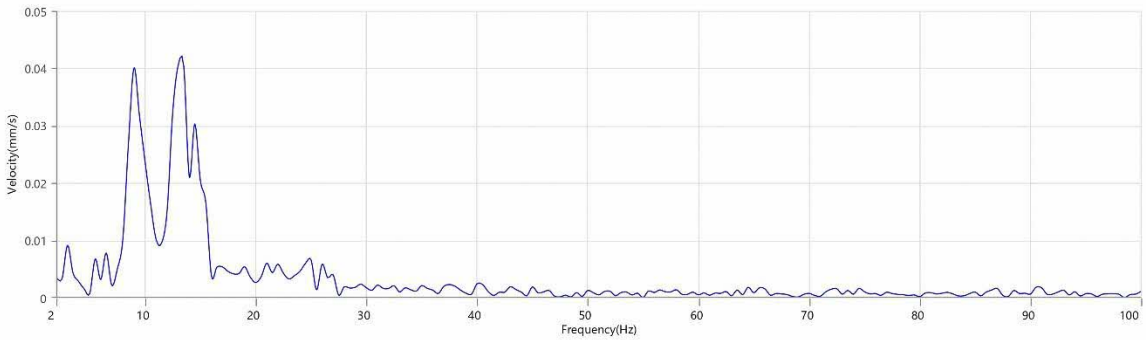
Tran - Dominant Frequency 13.0 Hz, Amplitude 0.034 mm/s (Peak Particle Velocity: 0.222 mm/s)



Vert - Dominant Frequency 8.5 Hz, Amplitude 0.083 mm/s (Peak Particle Velocity: 0.349 mm/s)



Long - Dominant Frequency 13.0 Hz, Amplitude 0.041 mm/s (Peak Particle Velocity: 0.206 mm/s)



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Event Report

Setsco Services Pte Ltd

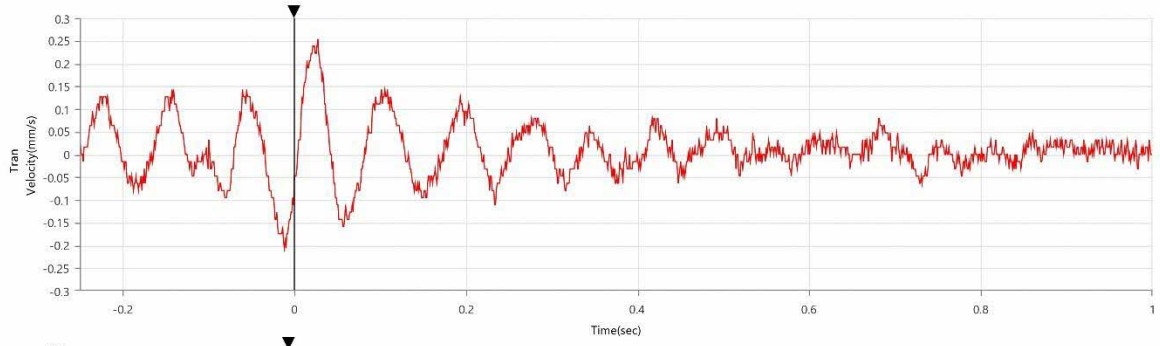
Waveform Trigger Source	Vert at January 6, 2023 15:28:17	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8A.Z50
Job Number	1		

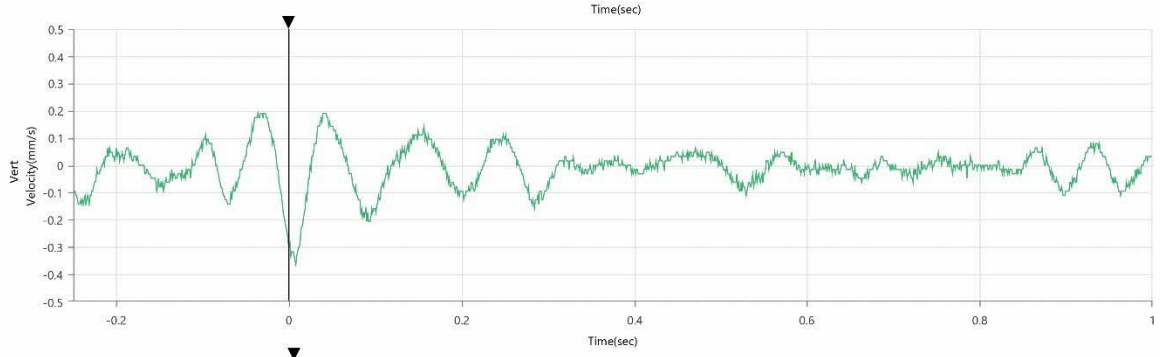
Notes
Location:
Client:
User Name:
General:

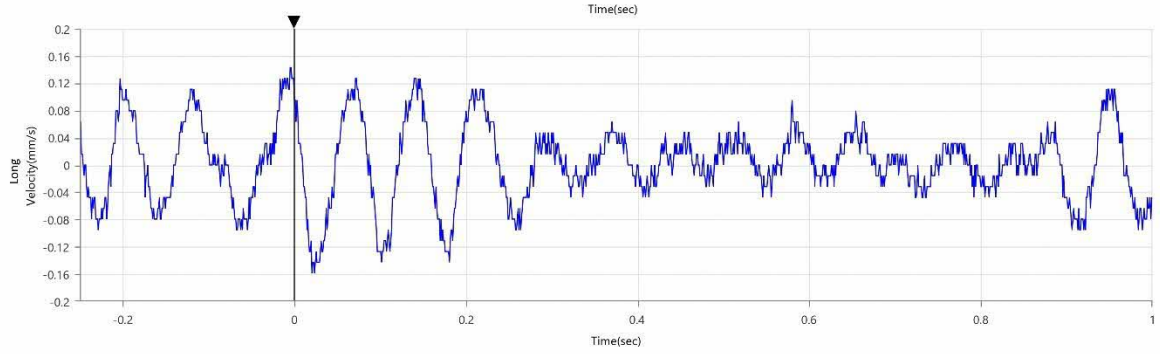
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.254 mm/s	0.365 mm/s	0.159 mm/s
Zero Crossing Frequency	13.5 Hz	13.5 Hz	13.8 Hz
Time (Relative to Trigger)	0.027 sec	0.008 sec	0.021 sec
Peak Acceleration	0.007 g	0.005 g	0.005 g
Peak Displacement	0.003 mm	0.004 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.374 mm/s at 0.008 sec







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FFT Report

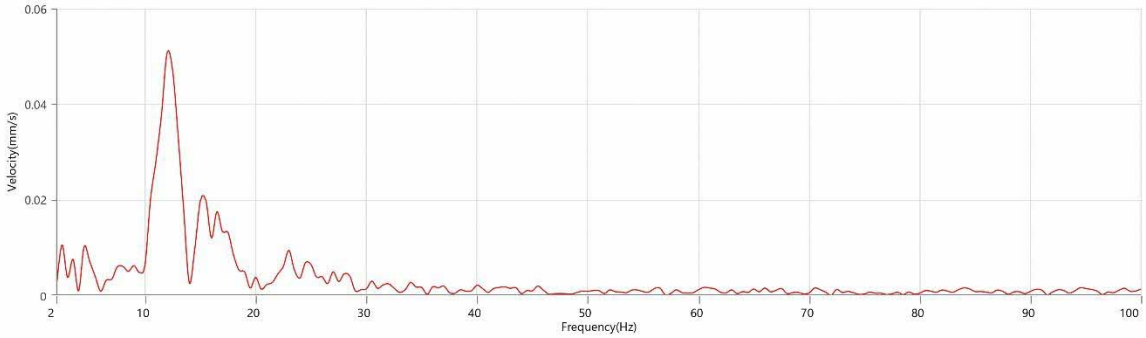
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 15:28:17	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8A.Z50
Job Number	1		

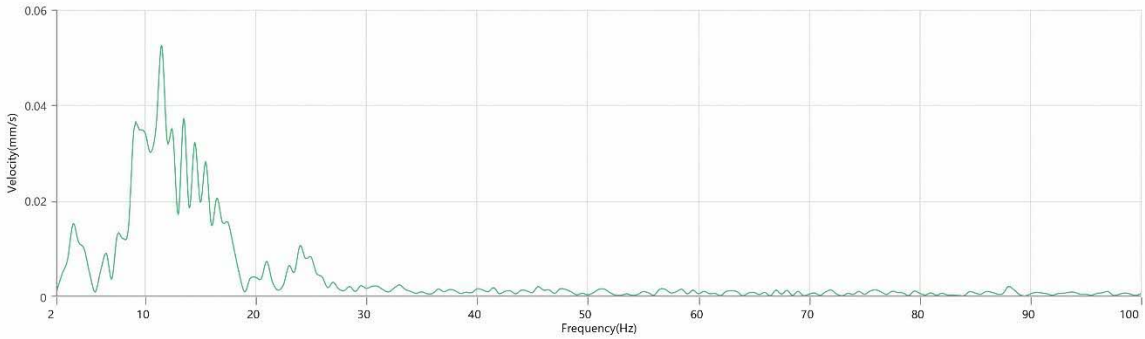
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

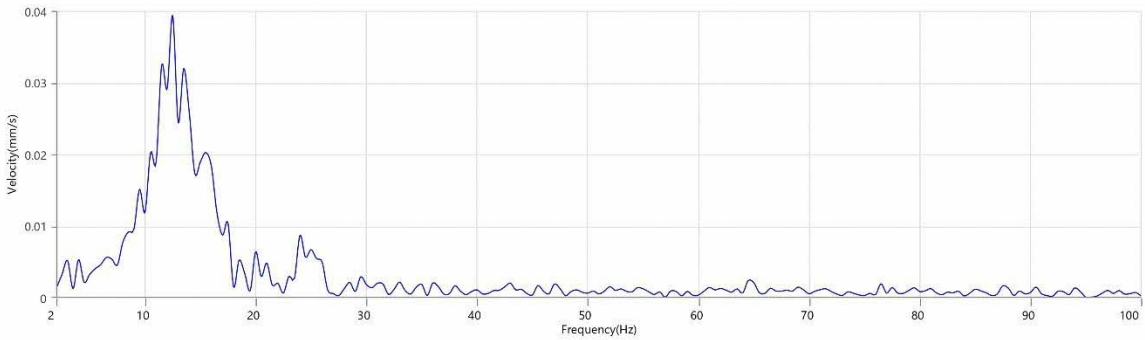
Tran - Dominant Frequency 12.0 Hz, Amplitude 0.051 mm/s (Peak Particle Velocity: 0.254 mm/s)



Vert - Dominant Frequency 11.5 Hz, Amplitude 0.052 mm/s (Peak Particle Velocity: 0.365 mm/s)



Long - Dominant Frequency 12.5 Hz, Amplitude 0.039 mm/s (Peak Particle Velocity: 0.159 mm/s)



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Event Report

Setsco Services Pte Ltd

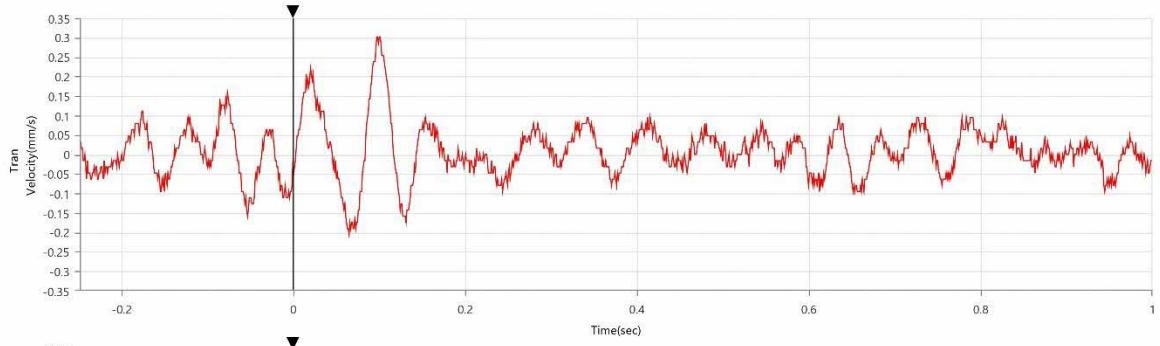
Waveform Trigger Source	Vert at January 6, 2023 15:43:52	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8B.P40
Job Number	1		

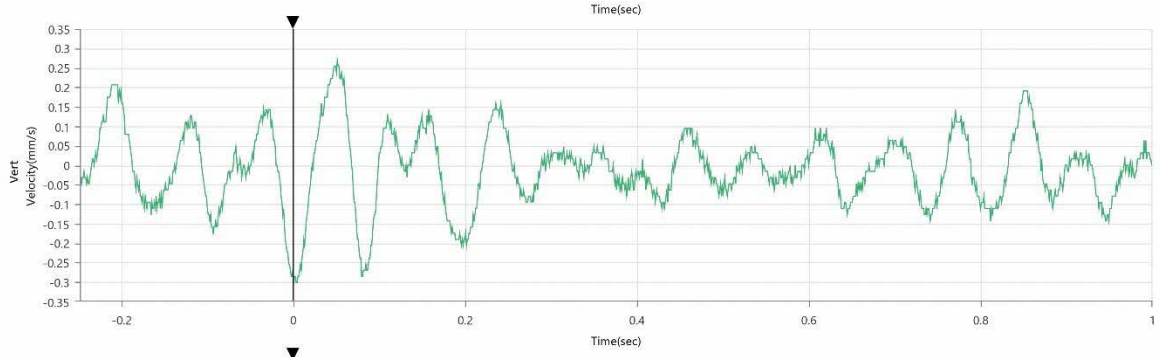
Notes
Location:
Client:
User Name:
General:

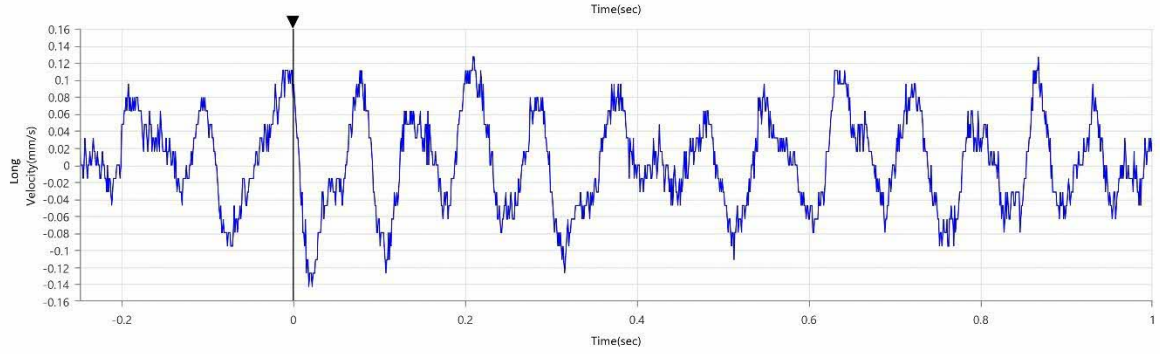
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.302 mm/s	0.302 mm/s	0.143 mm/s
Zero Crossing Frequency	15.5 Hz	13.1 Hz	15.1 Hz
Time (Relative to Trigger)	0.097 sec	0.000 sec	0.018 sec
Peak Acceleration	0.007 g	0.005 g	0.007 g
Peak Displacement	0.003 mm	0.004 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.321 mm/s at -0.003 sec







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FFT Report

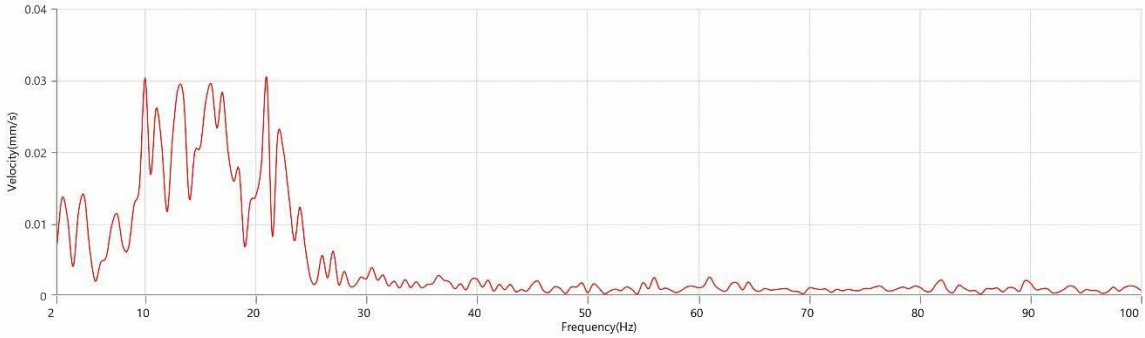
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 15:43:52	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8B.P40
Job Number	1		

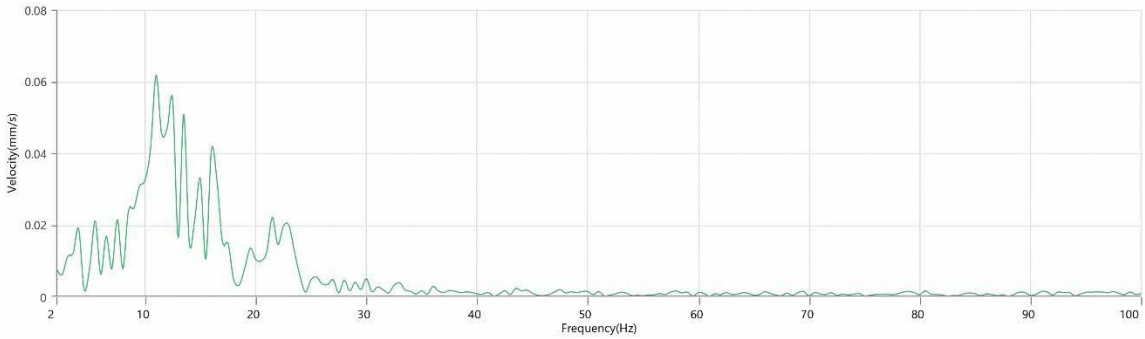
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

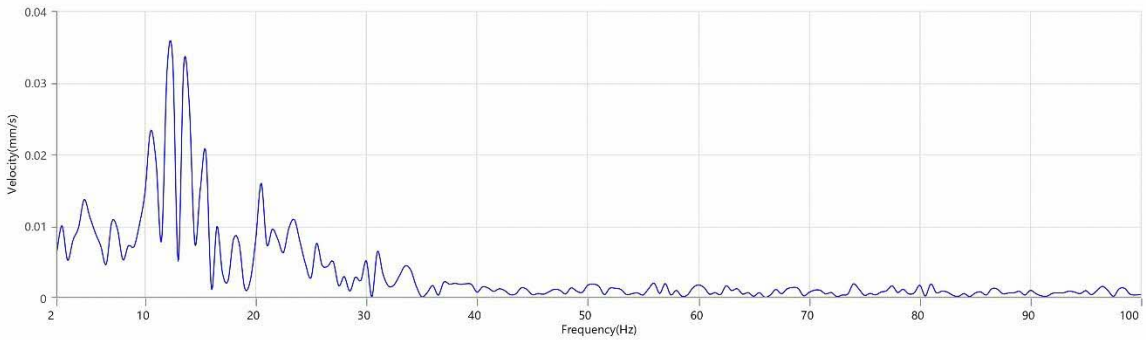
Tran - Dominant Frequency 21.0 Hz, Amplitude 0.030 mm/s (Peak Particle Velocity: 0.302 mm/s)



Vert - Dominant Frequency 11.0 Hz, Amplitude 0.062 mm/s (Peak Particle Velocity: 0.302 mm/s)



Long - Dominant Frequency 12.5 Hz, Amplitude 0.033 mm/s (Peak Particle Velocity: 0.143 mm/s)



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Event Report

Setsco Services Pte Ltd

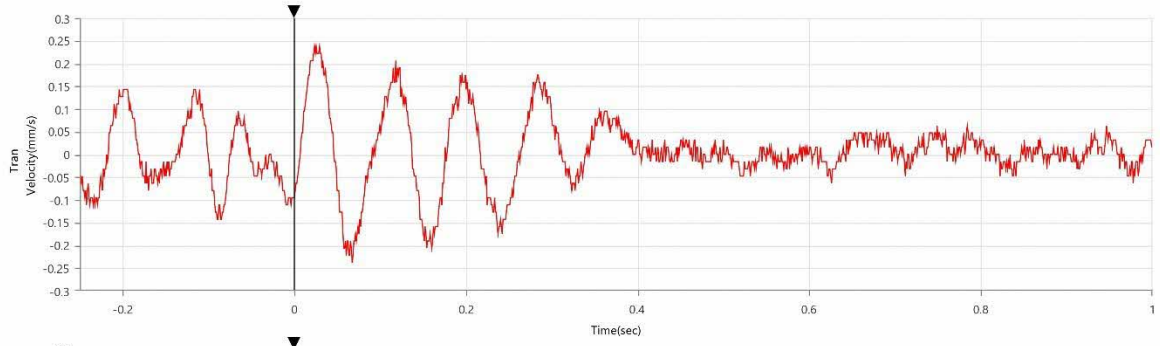
Waveform Trigger Source	Vert at January 6, 2023 16:17:30	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU8D.960
Operator	-		
Job Number	1		

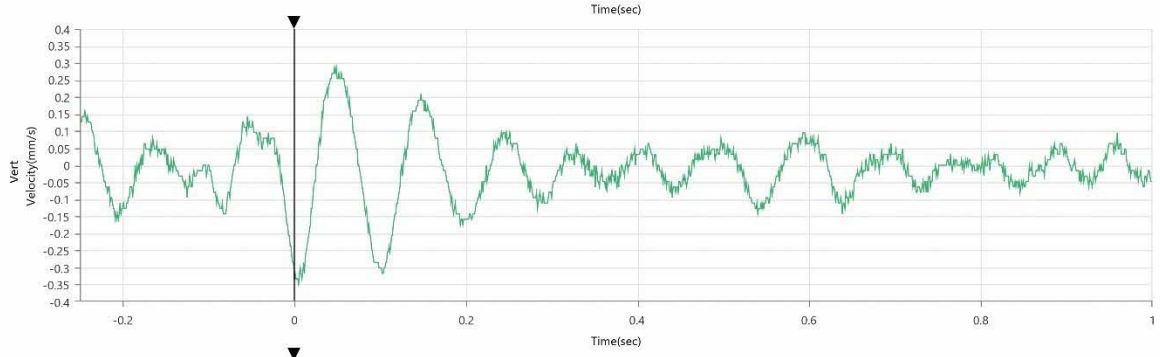
Notes
Location:
Client:
User Name:
General:

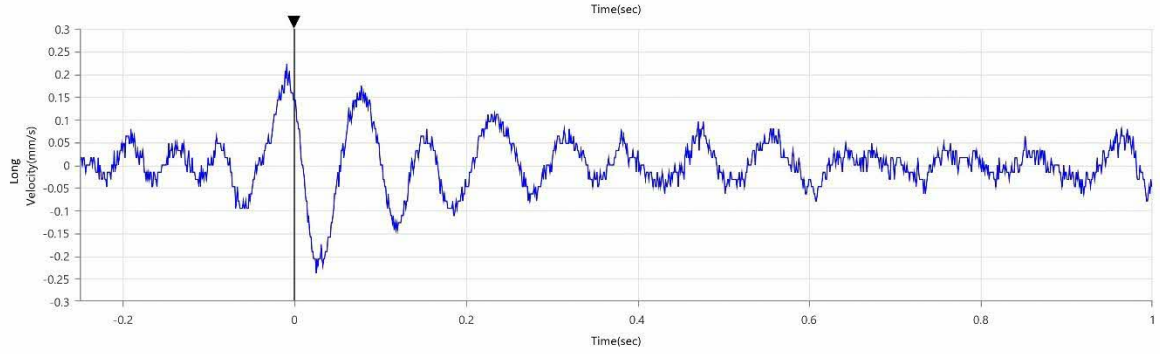
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.238 mm/s	0.349 mm/s	0.238 mm/s
Zero Crossing Frequency	12.8 Hz	11.9 Hz	12.5 Hz
Time (Relative to Trigger)	0.023 sec	0.005 sec	0.025 sec
Peak Acceleration	0.007 g	0.007 g	0.007 g
Peak Displacement	0.003 mm	0.005 mm	0.003 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.375 mm/s at 0.000 sec







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FFT Report

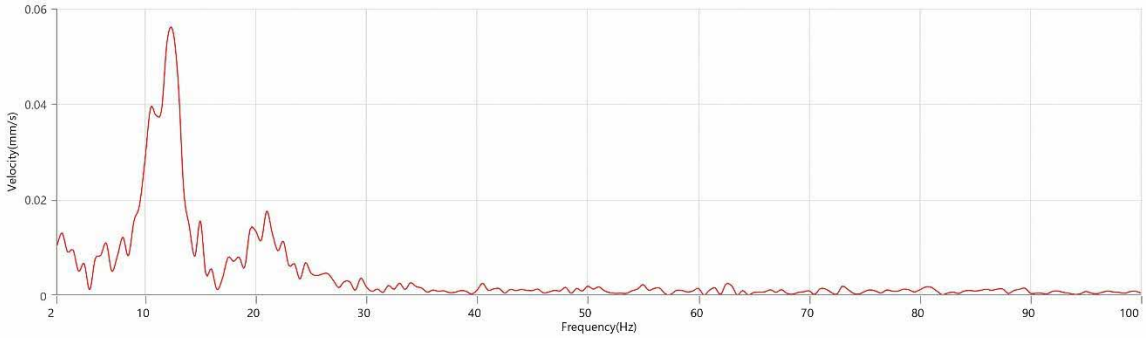
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 16:17:30	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU8D.960
Operator	-		
Job Number	1		

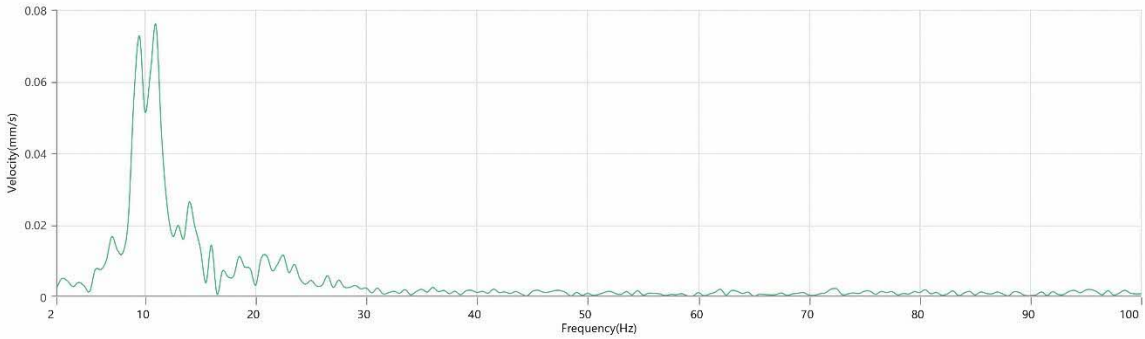
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

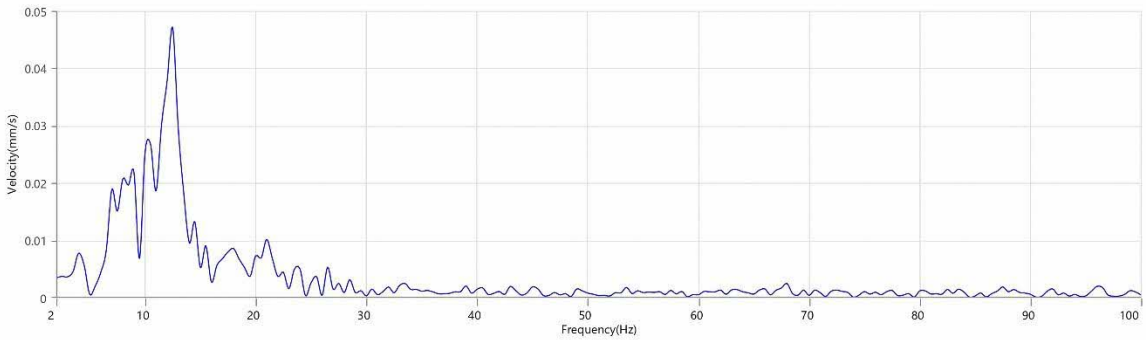
Tran - Dominant Frequency 12.5 Hz, Amplitude 0.055 mm/s (Peak Particle Velocity: 0.238 mm/s)



Vert - Dominant Frequency 11.0 Hz, Amplitude 0.076 mm/s (Peak Particle Velocity: 0.349 mm/s)



Long - Dominant Frequency 12.5 Hz, Amplitude 0.047 mm/s (Peak Particle Velocity: 0.238 mm/s)



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Event Report

Setsco Services Pte Ltd

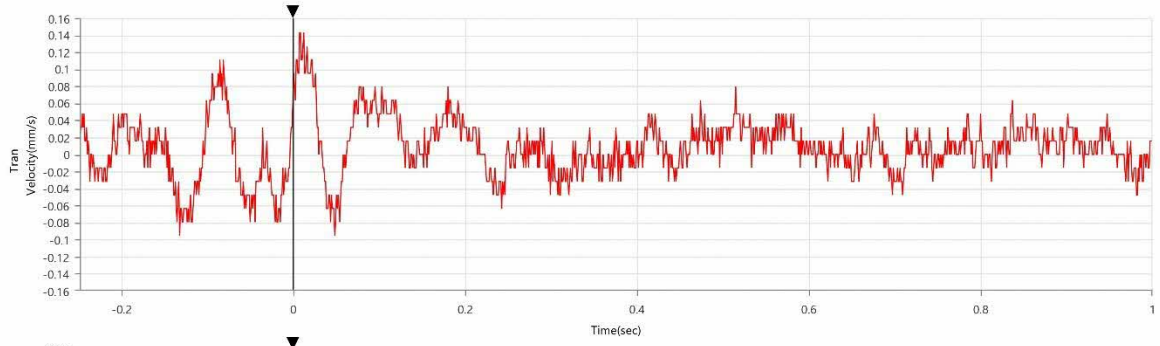
Waveform Trigger Source	Vert at January 6, 2023 16:33:52	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8E.0G0
Job Number	1		

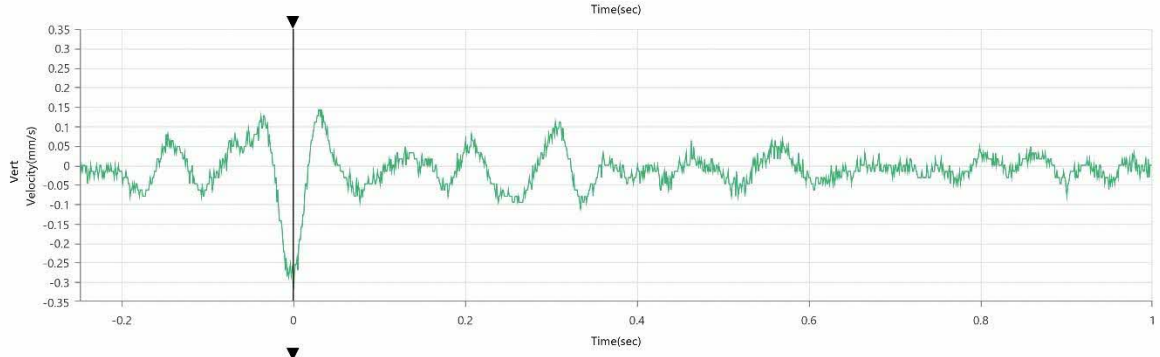
Notes
Location:
Client:
User Name:
General:

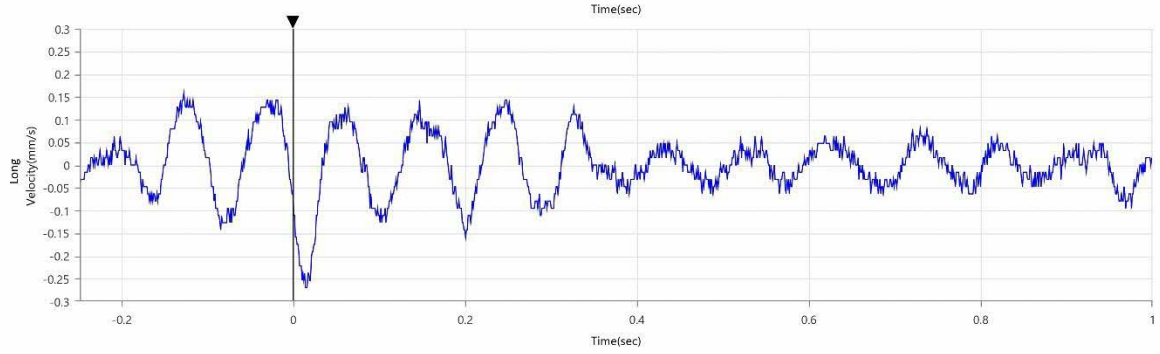
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.143 mm/s	0.317 mm/s	0.270 mm/s
Zero Crossing Frequency	15.1 Hz	13.1 Hz	13.1 Hz
Time (Relative to Trigger)	0.007 sec	0.000 sec	0.014 sec
Peak Acceleration	0.007 g	0.007 g	0.005 g
Peak Displacement	0.002 mm	0.004 mm	0.003 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.350 mm/s at 0.000 sec







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FFT Report

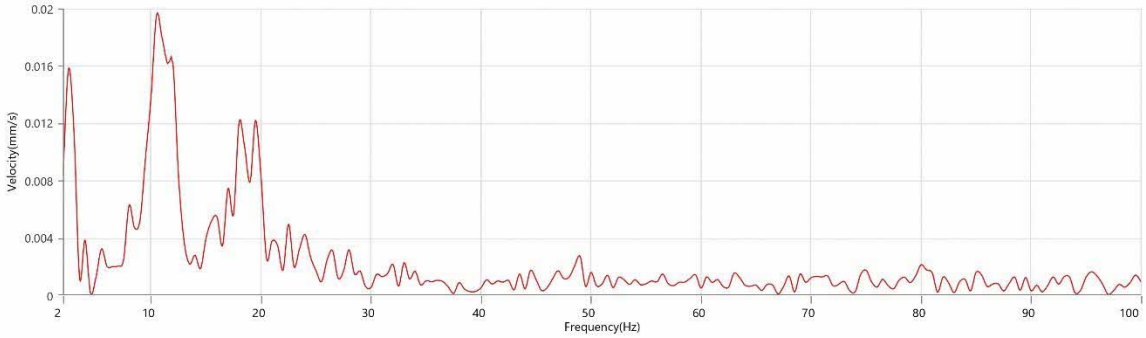
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 16:33:52	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8E.0G0
Job Number	1		

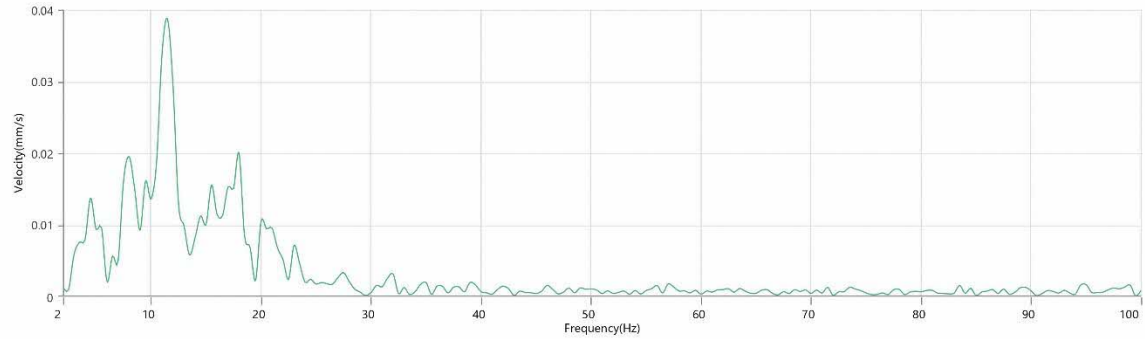
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

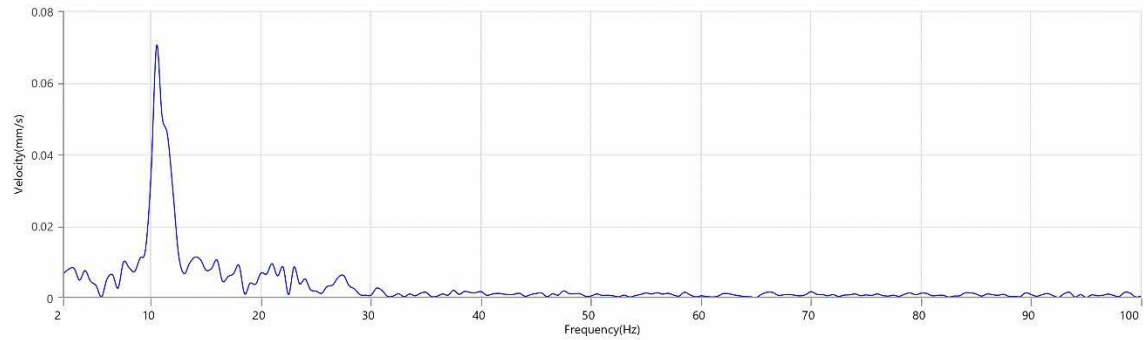
Tran - Dominant Frequency 10.5 Hz, Amplitude 0.020 mm/s (Peak Particle Velocity: 0.143 mm/s)



Vert - Dominant Frequency 11.5 Hz, Amplitude 0.039 mm/s (Peak Particle Velocity: 0.317 mm/s)



Long - Dominant Frequency 10.5 Hz, Amplitude 0.070 mm/s (Peak Particle Velocity: 0.270 mm/s)



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Event Report

Setsco Services Pte Ltd

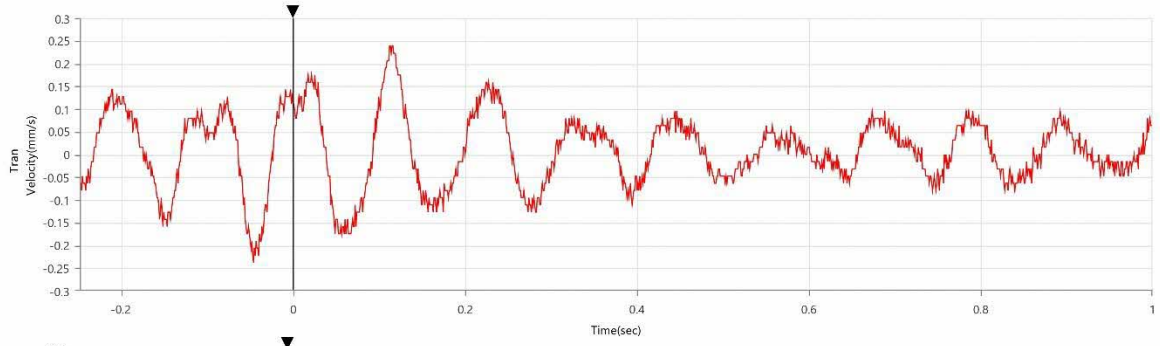
Waveform Trigger Source	Vert at January 6, 2023 16:55:58	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU8F.1A0
Operator	-		
Job Number	1		

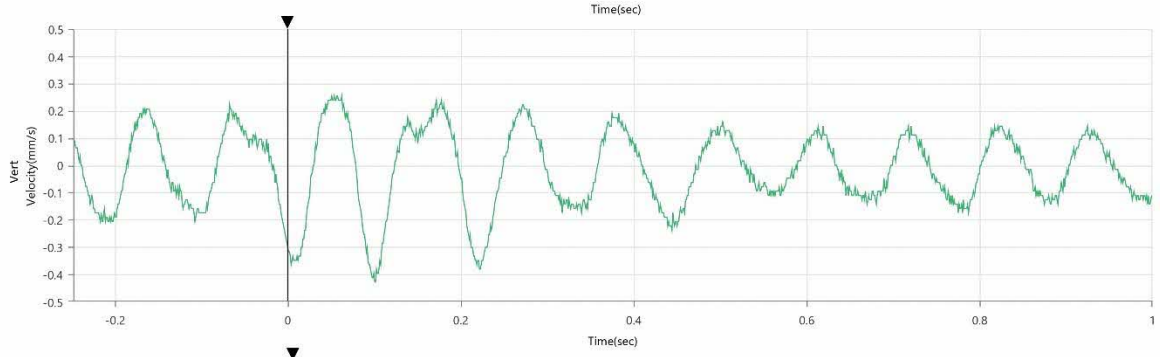
Notes
Location:
Client:
User Name:
General:

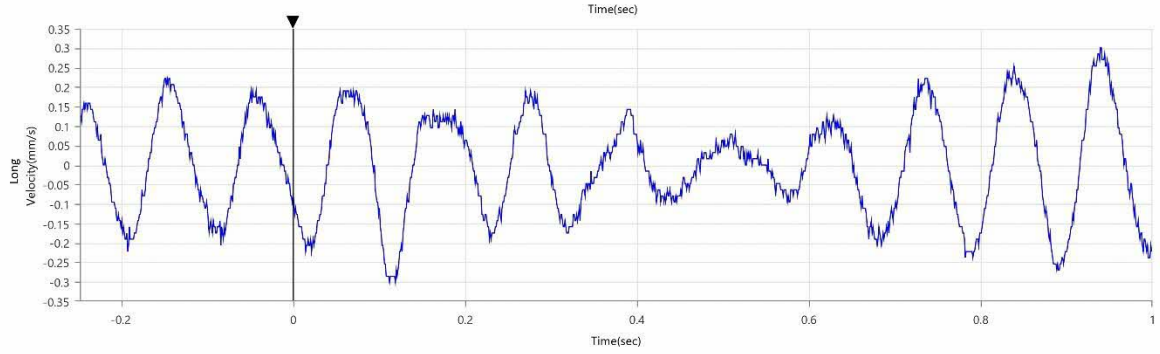
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.238 mm/s	0.429 mm/s	0.302 mm/s
Zero Crossing Frequency	13.1 Hz	11.4 Hz	11.6 Hz
Time (Relative to Trigger)	-0.046 sec	0.101 sec	0.112 sec
Peak Acceleration	0.007 g	0.007 g	0.007 g
Peak Displacement	0.003 mm	0.006 mm	0.005 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.484 mm/s at 0.107 sec







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FFT Report

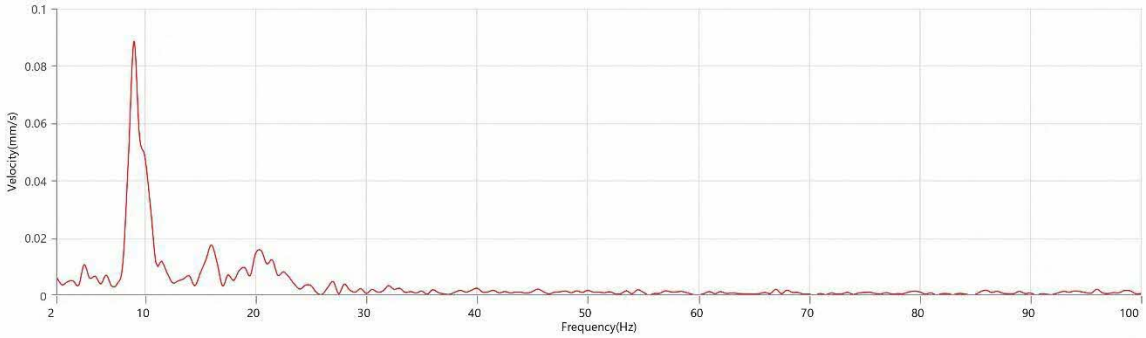
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 16:55:58	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8F.1A0
Job Number	1		

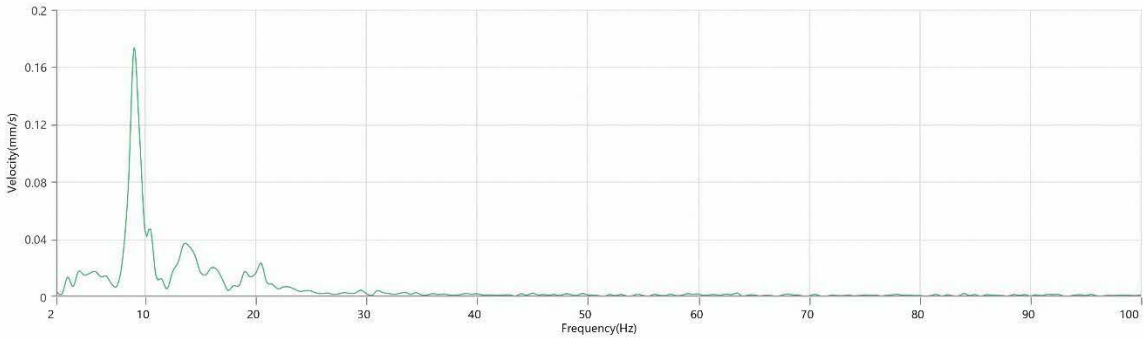
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

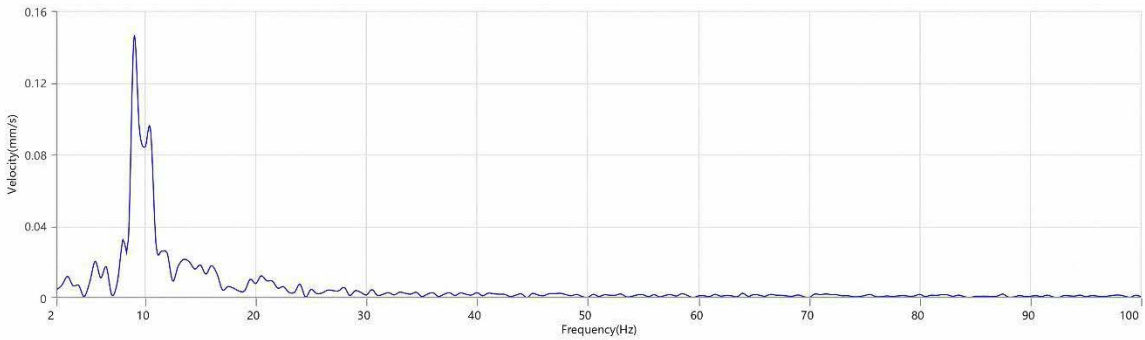
Tran - Dominant Frequency 9.0 Hz, Amplitude 0.088 mm/s (Peak Particle Velocity: 0.238 mm/s)



Vert - Dominant Frequency 9.0 Hz, Amplitude 0.173 mm/s (Peak Particle Velocity: 0.429 mm/s)



Long - Dominant Frequency 9.0 Hz, Amplitude 0.145 mm/s (Peak Particle Velocity: 0.302 mm/s)



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Event Report

Setsco Services Pte Ltd

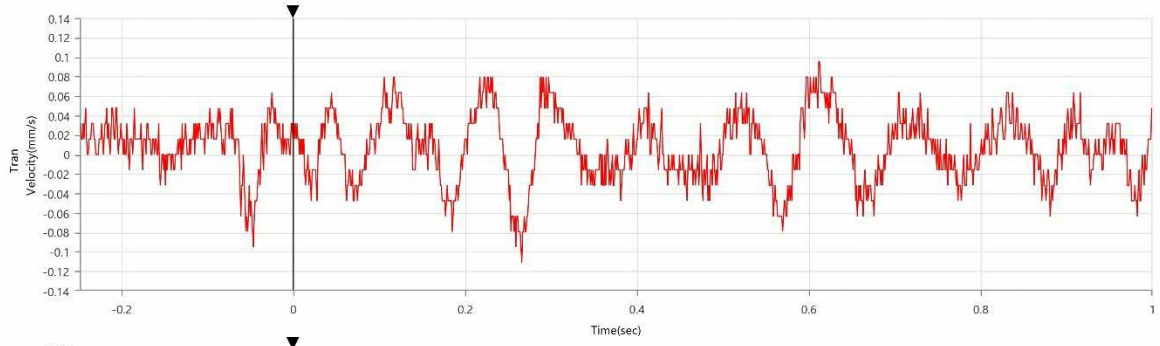
Waveform Trigger Source	Long at January 6, 2023 16:56:00	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU8F.1C0
Operator	-		
Job Number	1		

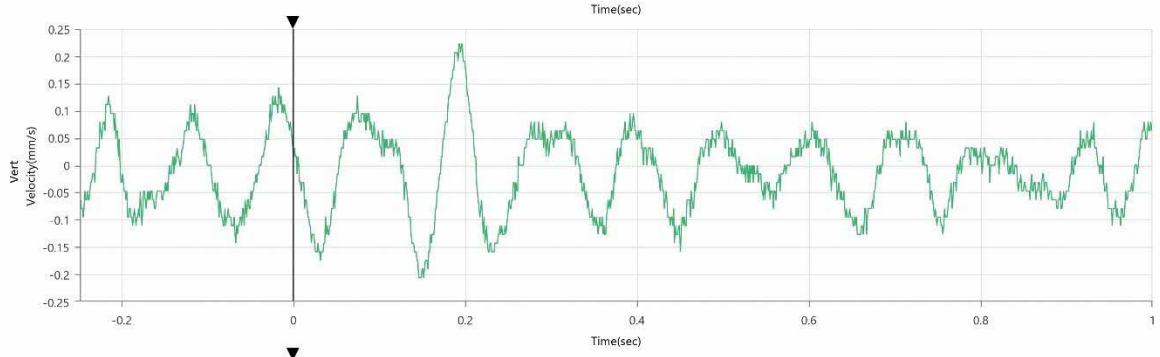
Notes
Location:
Client:
User Name:
General:

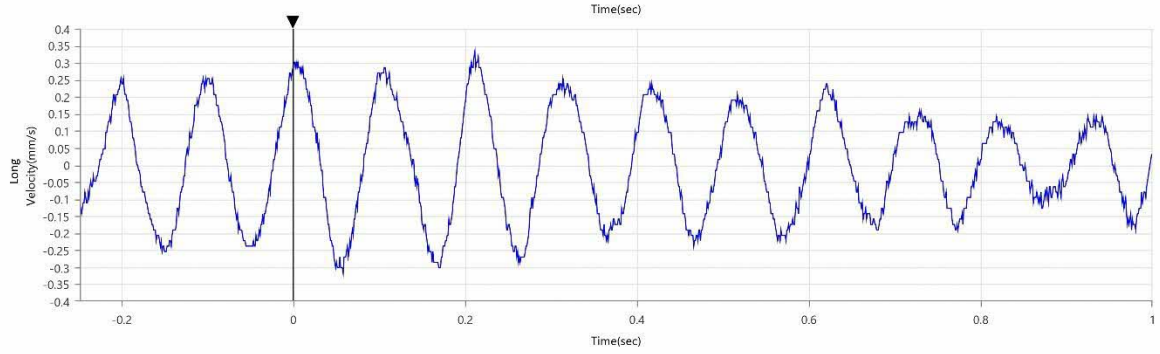
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.111 mm/s	0.222 mm/s	0.333 mm/s
Zero Crossing Frequency	18.3 Hz	13.1 Hz	10.9 Hz
Time (Relative to Trigger)	0.266 sec	0.192 sec	0.211 sec
Peak Acceleration	0.005 g	0.007 g	0.008 g
Peak Displacement	0.001 mm	0.003 mm	0.005 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.337 mm/s at 0.211 sec







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FFT Report

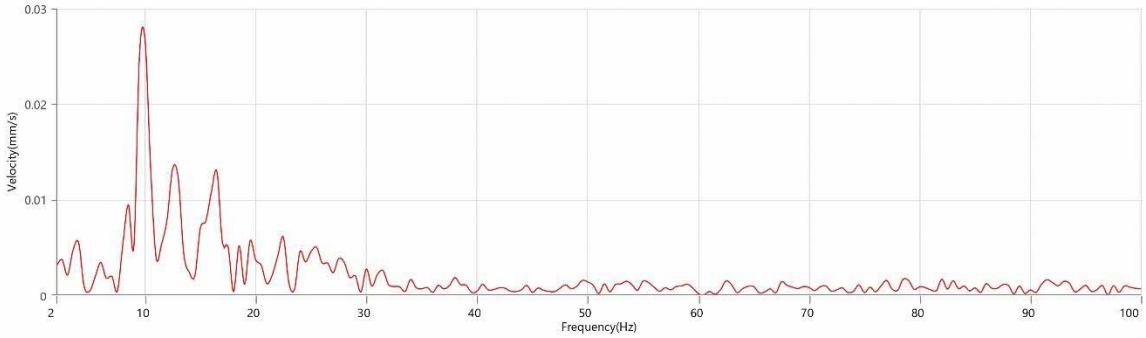
Setsco Services Pte Ltd

Waveform Trigger Source	Long at January 6, 2023 16:56:00	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8F.1C0
Job Number	1		

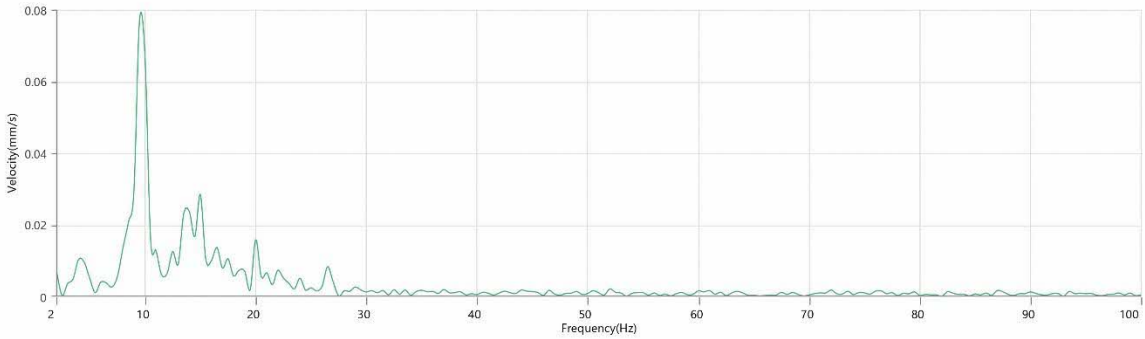
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

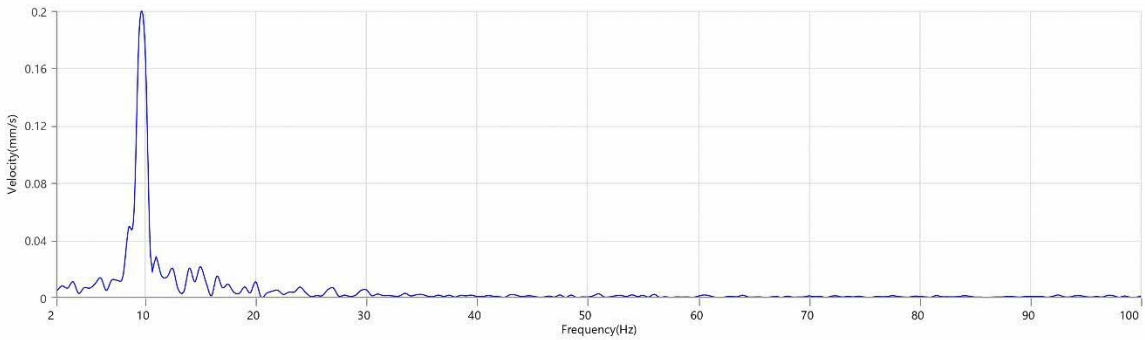
Tran - Dominant Frequency 10.0 Hz, Amplitude 0.027 mm/s (Peak Particle Velocity: 0.111 mm/s)



Vert - Dominant Frequency 9.5 Hz, Amplitude 0.077 mm/s (Peak Particle Velocity: 0.222 mm/s)



Long - Dominant Frequency 9.5 Hz, Amplitude 0.189 mm/s (Peak Particle Velocity: 0.333 mm/s)



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Event Report

Setsco Services Pte Ltd

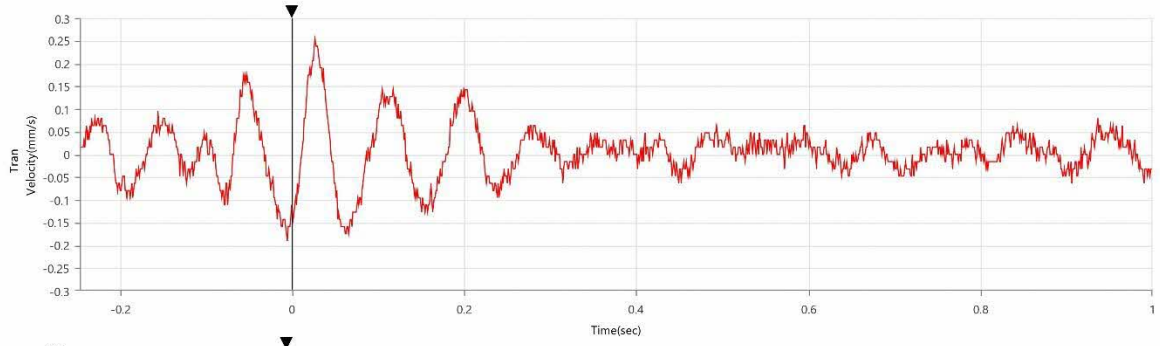
Waveform Trigger Source	Vert at January 6, 2023 17:08:41	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8F.MH0
Job Number	1		

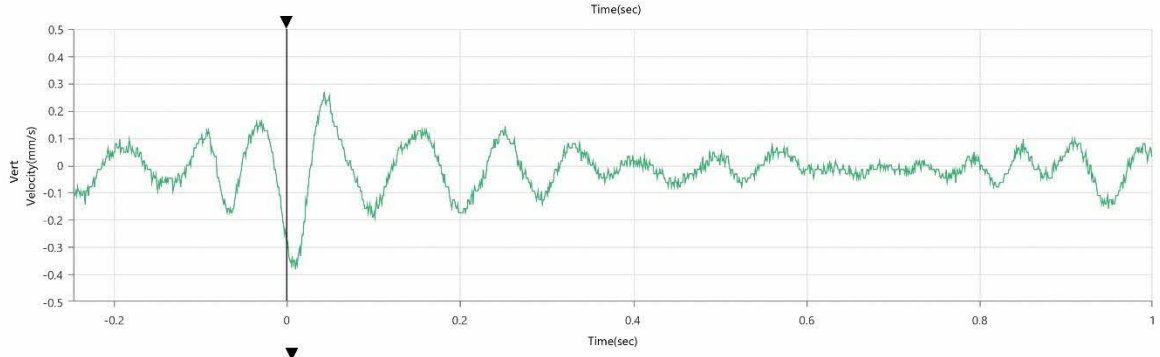
Notes
Location:
Client:
User Name:
General:

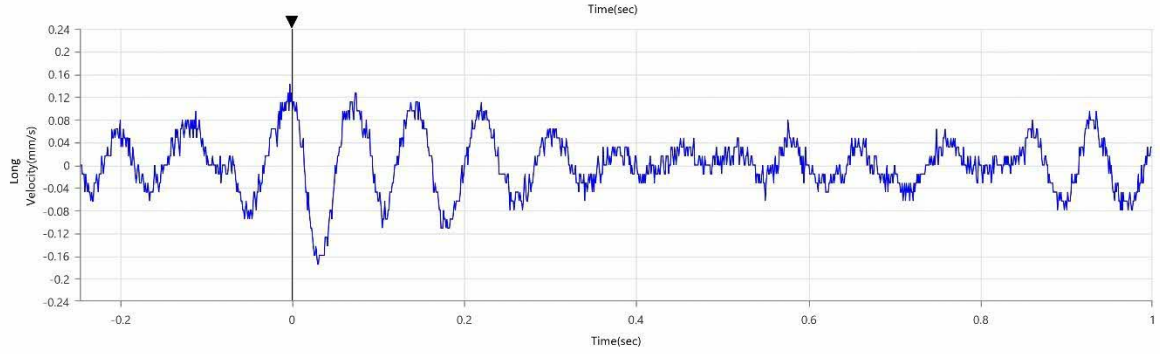
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.254 mm/s	0.381 mm/s	0.175 mm/s
Zero Crossing Frequency	15.1 Hz	12.5 Hz	14.2 Hz
Time (Relative to Trigger)	0.026 sec	0.010 sec	0.029 sec
Peak Acceleration	0.007 g	0.008 g	0.005 g
Peak Displacement	0.003 mm	0.005 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.398 mm/s at 0.005 sec







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Instantel

FFT Report

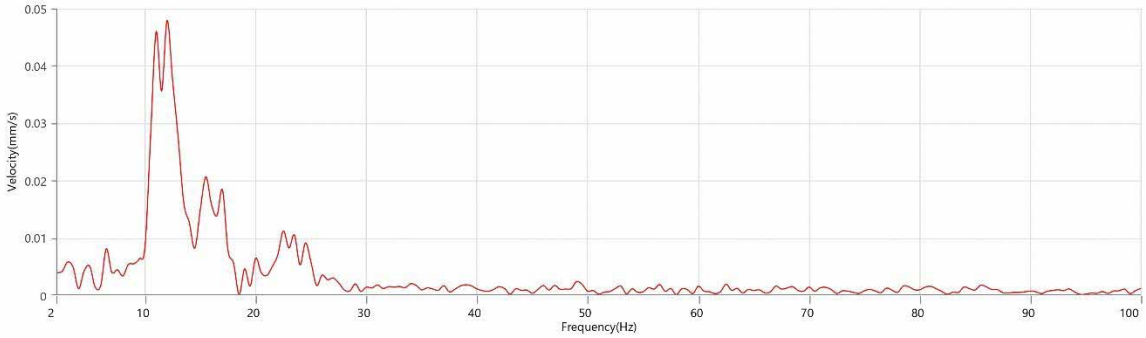
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 17:08:41	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8F.MH0
Job Number	1		

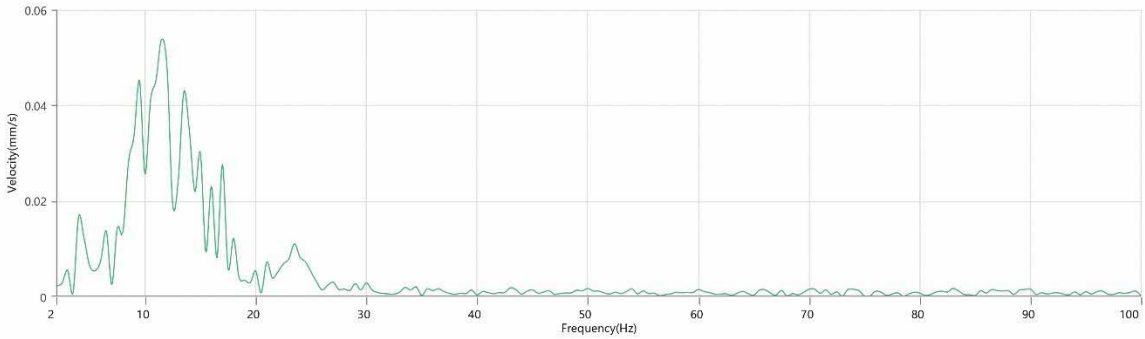
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

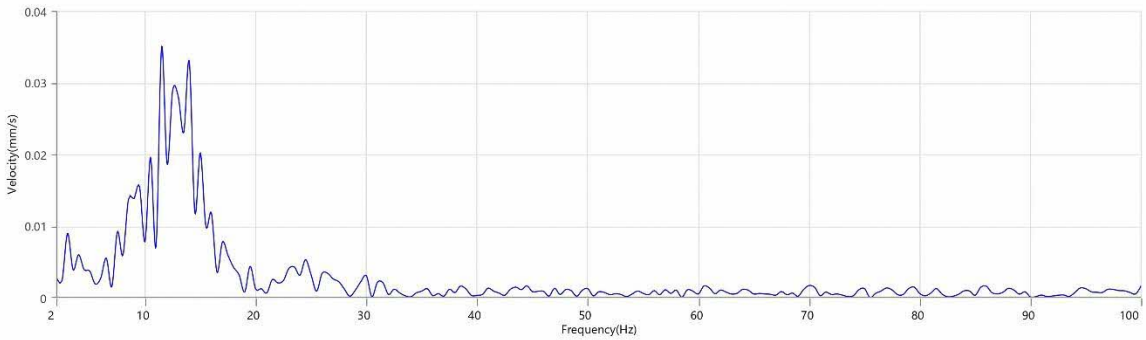
Tran - Dominant Frequency 12.0 Hz, Amplitude 0.048 mm/s (Peak Particle Velocity: 0.254 mm/s)



Vert - Dominant Frequency 11.5 Hz, Amplitude 0.054 mm/s (Peak Particle Velocity: 0.381 mm/s)



Long - Dominant Frequency 11.5 Hz, Amplitude 0.035 mm/s (Peak Particle Velocity: 0.175 mm/s)



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Event Report

Setsco Services Pte Ltd

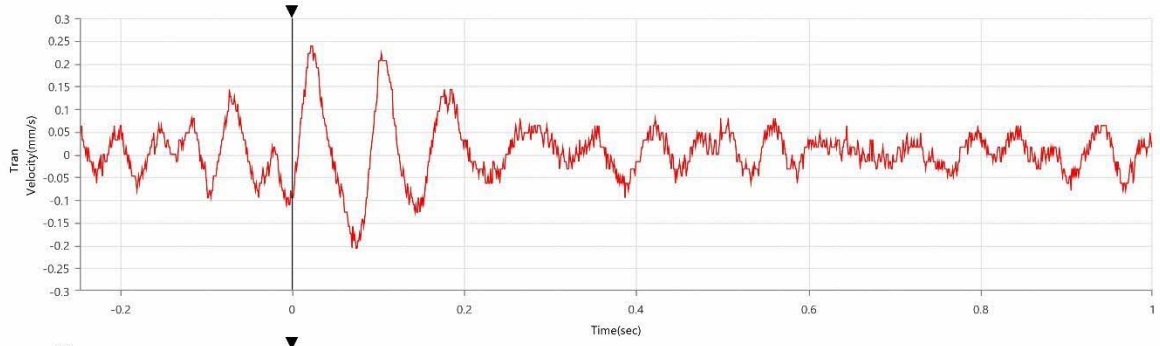
Waveform Trigger Source	Vert at January 6, 2023 18:00:47	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8I.1B0
Job Number	1		

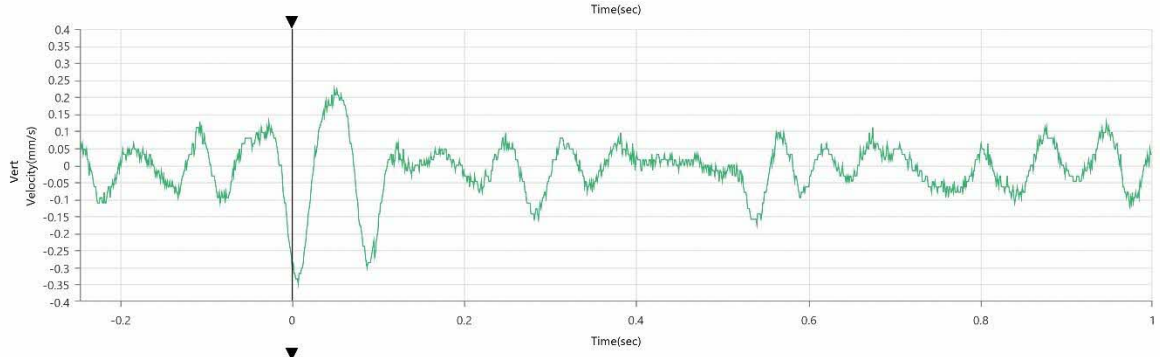
Notes
Location:
Client:
User Name:
General:

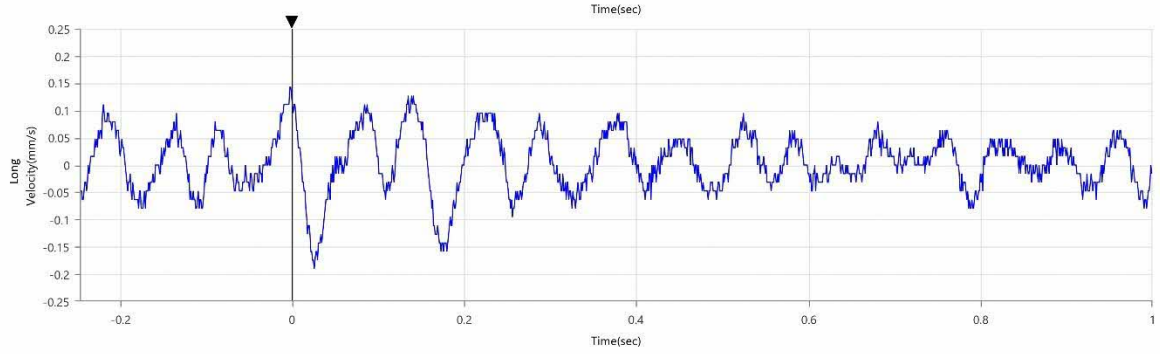
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.238 mm/s	0.349 mm/s	0.190 mm/s
Zero Crossing Frequency	13.8 Hz	13.8 Hz	15.1 Hz
Time (Relative to Trigger)	0.021 sec	0.007 sec	0.025 sec
Peak Acceleration	0.007 g	0.007 g	0.007 g
Peak Displacement	0.003 mm	0.004 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.351 mm/s at 0.007 sec







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FFT Report

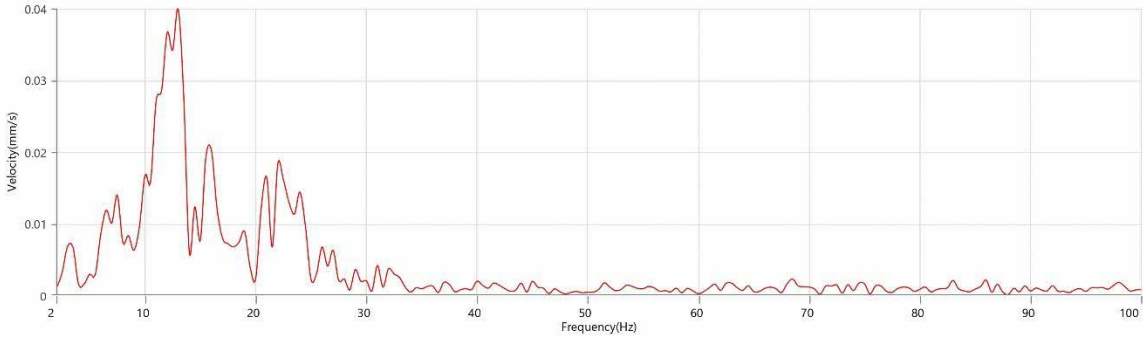
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 18:00:47	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU8I.1B0
Operator	-		
Job Number	1		

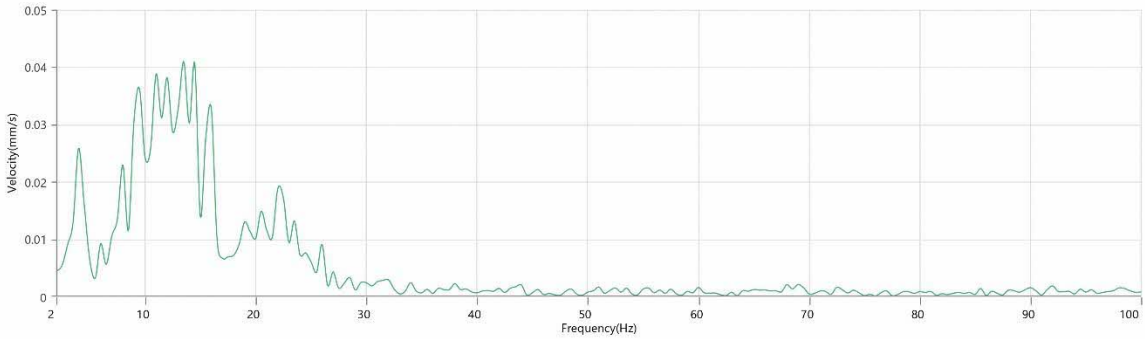
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

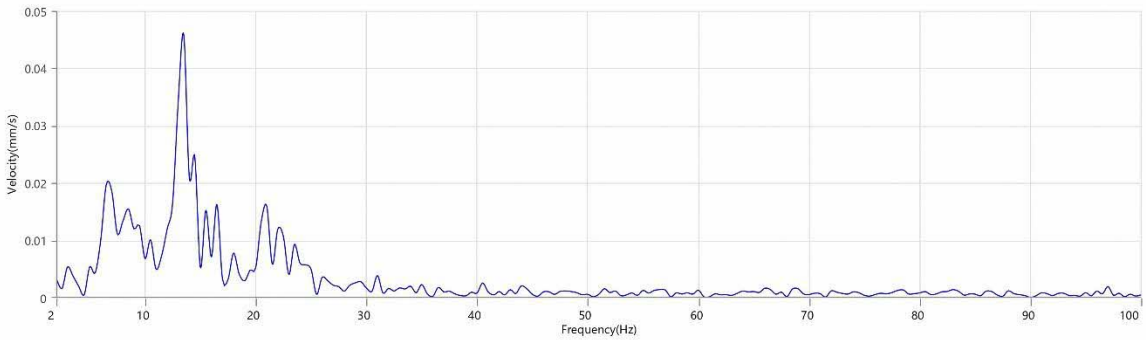
Tran - Dominant Frequency 13.0 Hz, Amplitude 0.040 mm/s (Peak Particle Velocity: 0.238 mm/s)



Vert - Dominant Frequency 13.5 Hz, Amplitude 0.041 mm/s (Peak Particle Velocity: 0.349 mm/s)



Long - Dominant Frequency 13.5 Hz, Amplitude 0.046 mm/s (Peak Particle Velocity: 0.190 mm/s)



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Event Report

Setsco Services Pte Ltd

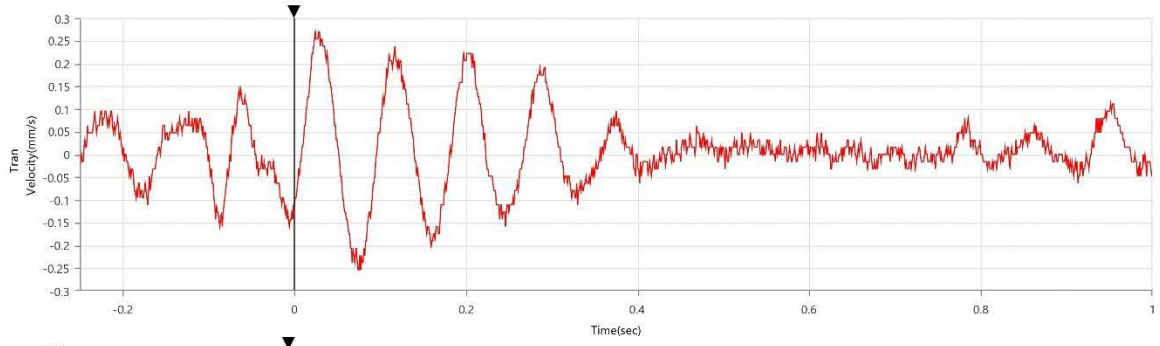
Waveform Trigger Source	Vert at January 6, 2023 18:13:51	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU8I.N30
Operator	-		
Job Number	1		

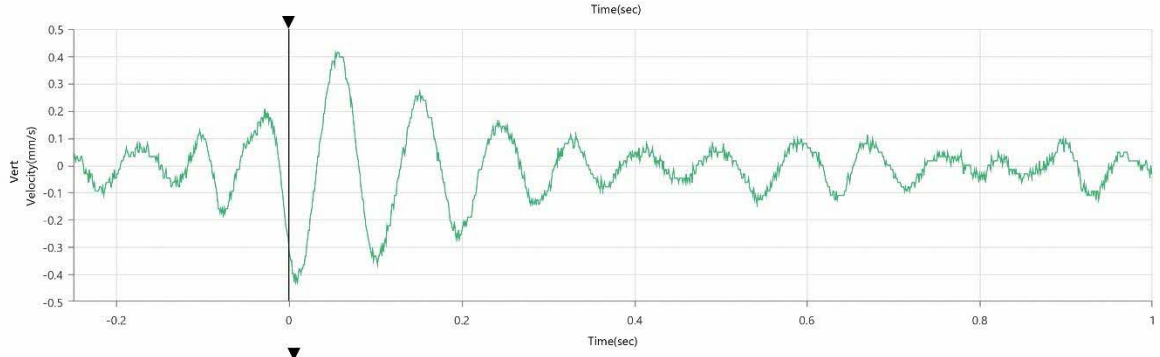
Notes
Location:
Client:
User Name:
General:

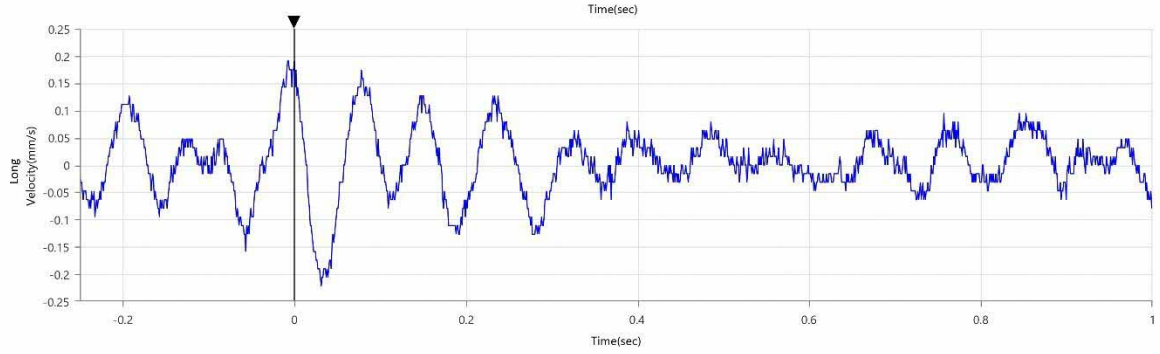
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.270 mm/s	0.429 mm/s	0.222 mm/s
Zero Crossing Frequency	12.2 Hz	11.6 Hz	11.9 Hz
Time (Relative to Trigger)	0.024 sec	0.006 sec	0.031 sec
Peak Acceleration	0.005 g	0.007 g	0.007 g
Peak Displacement	0.003 mm	0.006 mm	0.003 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.445 mm/s at 0.006 sec







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FFT Report

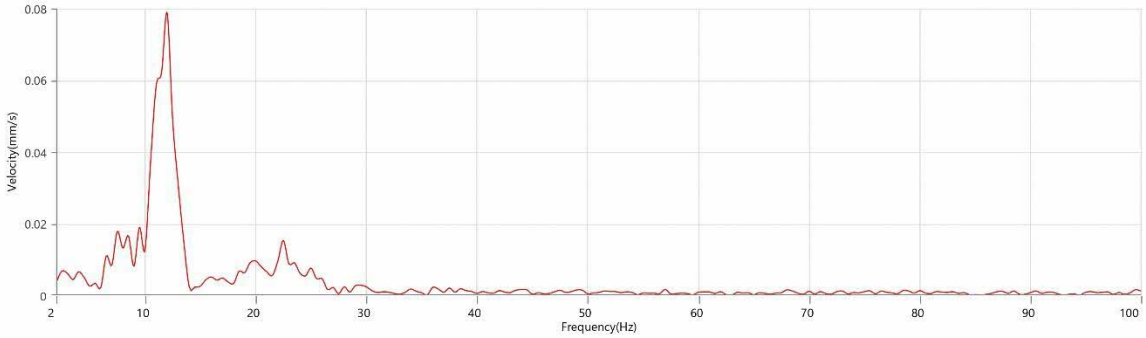
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 18:13:51	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8I.N30
Job Number	1		

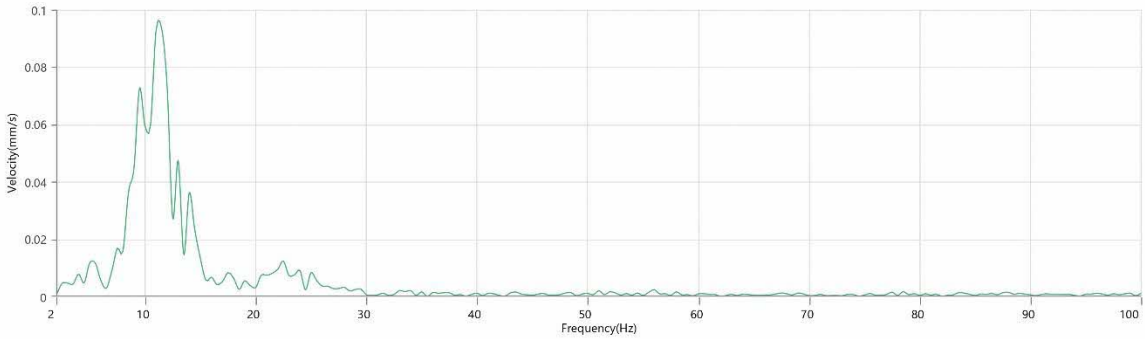
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

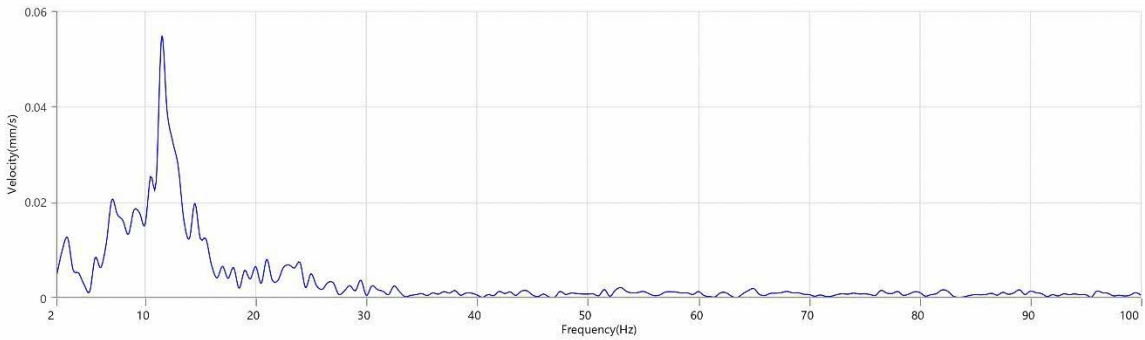
Tran - Dominant Frequency 12.0 Hz, Amplitude 0.079 mm/s (Peak Particle Velocity: 0.270 mm/s)



Vert - Dominant Frequency 11.5 Hz, Amplitude 0.094 mm/s (Peak Particle Velocity: 0.429 mm/s)



Long - Dominant Frequency 11.5 Hz, Amplitude 0.054 mm/s (Peak Particle Velocity: 0.222 mm/s)



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Event Report

Setsco Services Pte Ltd

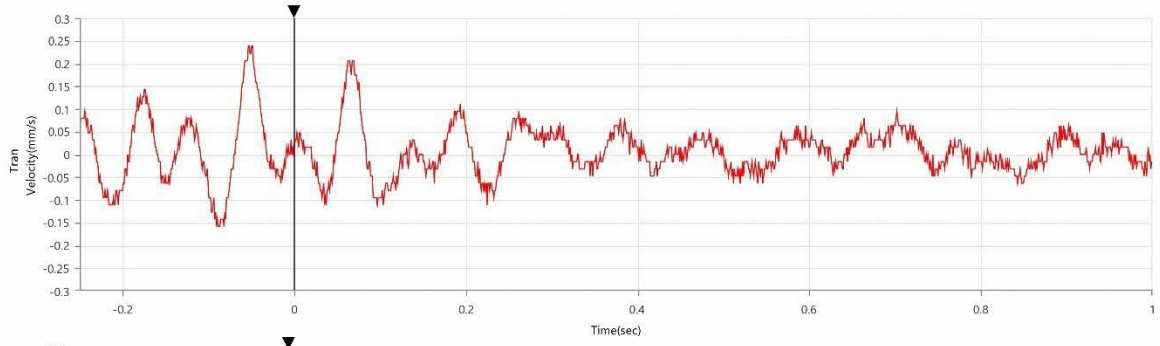
Waveform Trigger Source	Vert at January 6, 2023 18:48:34	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU8K.8Y0
Operator	-		
Job Number	1		

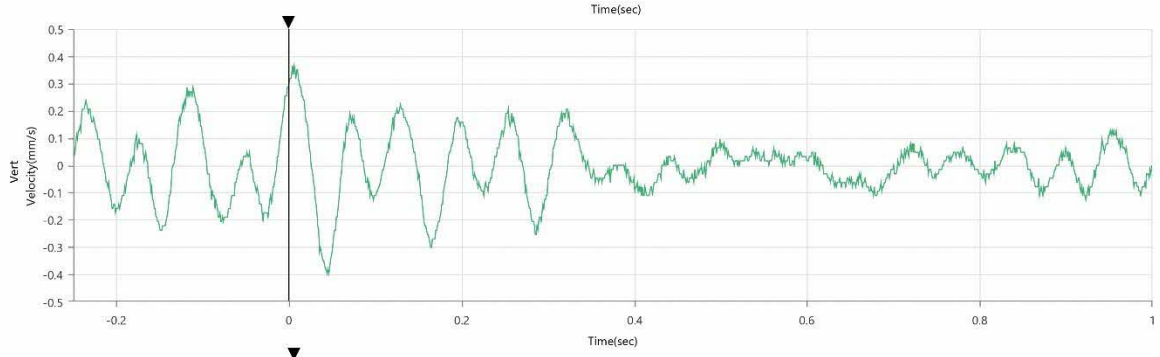
Notes
Location:
Client:
User Name:
General:

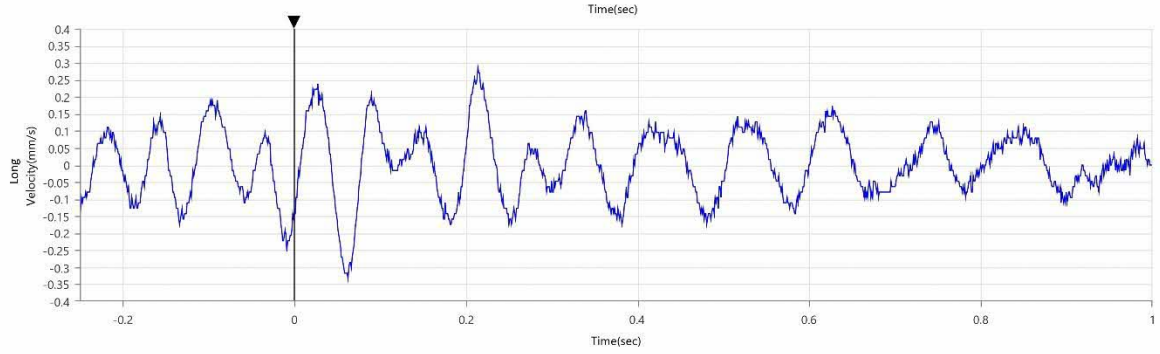
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.238 mm/s	0.397 mm/s	0.333 mm/s
Zero Crossing Frequency	13.8 Hz	14.2 Hz	14.6 Hz
Time (Relative to Trigger)	-0.054 sec	0.044 sec	0.062 sec
Peak Acceleration	0.005 g	0.008 g	0.007 g
Peak Displacement	0.003 mm	0.004 mm	0.003 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.405 mm/s at 0.046 sec







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FFT Report

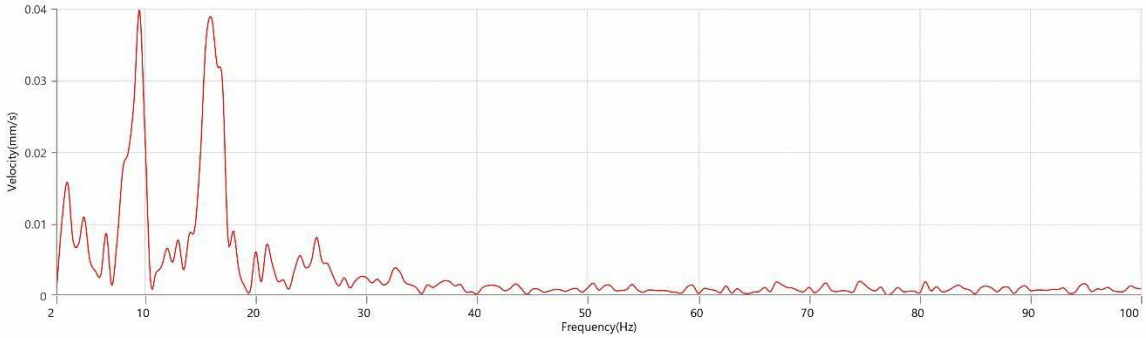
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 18:48:34	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8K.8Y0
Job Number	1		

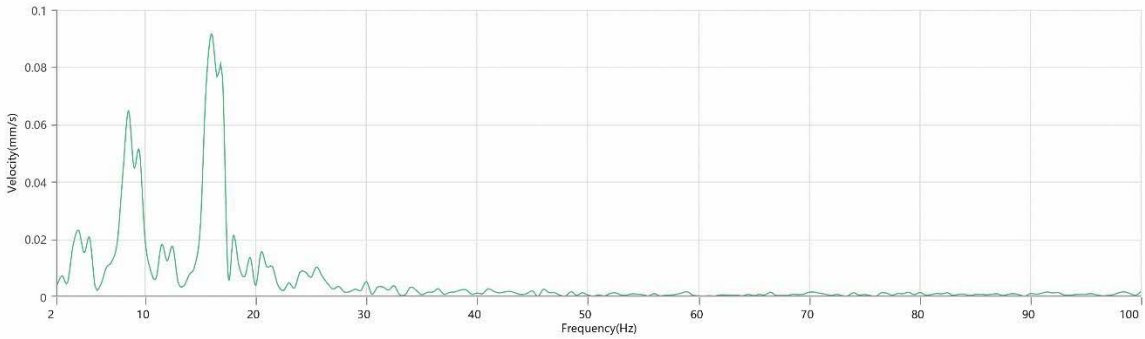
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

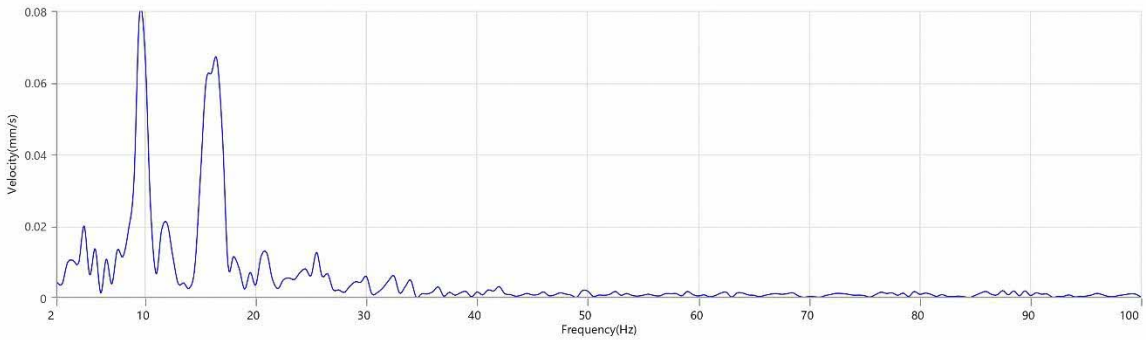
Tran - Dominant Frequency 9.5 Hz, Amplitude 0.040 mm/s (Peak Particle Velocity: 0.238 mm/s)



Vert - Dominant Frequency 16.0 Hz, Amplitude 0.092 mm/s (Peak Particle Velocity: 0.397 mm/s)



Long - Dominant Frequency 9.5 Hz, Amplitude 0.079 mm/s (Peak Particle Velocity: 0.333 mm/s)



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Event Report

Setsco Services Pte Ltd

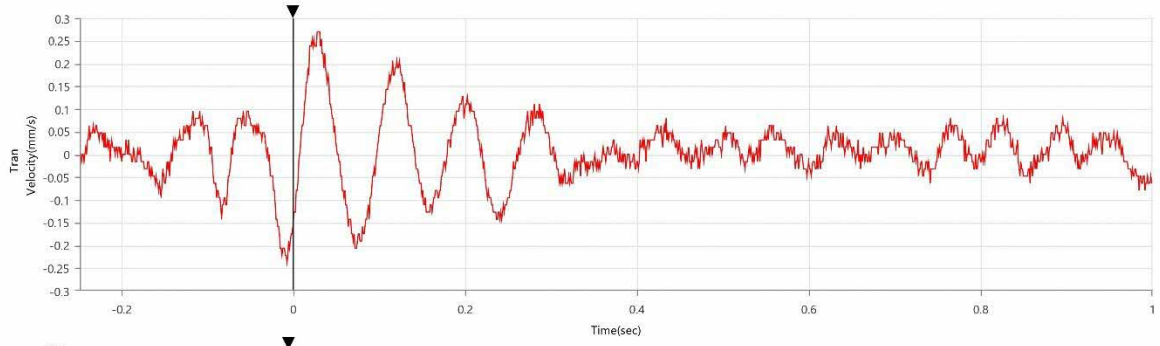
Waveform Trigger Source	Vert at January 6, 2023 18:58:25	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8K.PD0
Job Number	1		

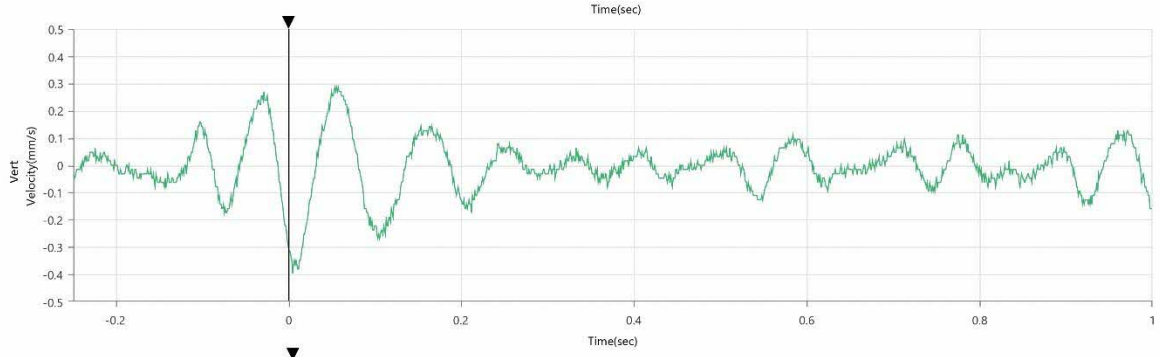
Notes
Location:
Client:
User Name:
General:

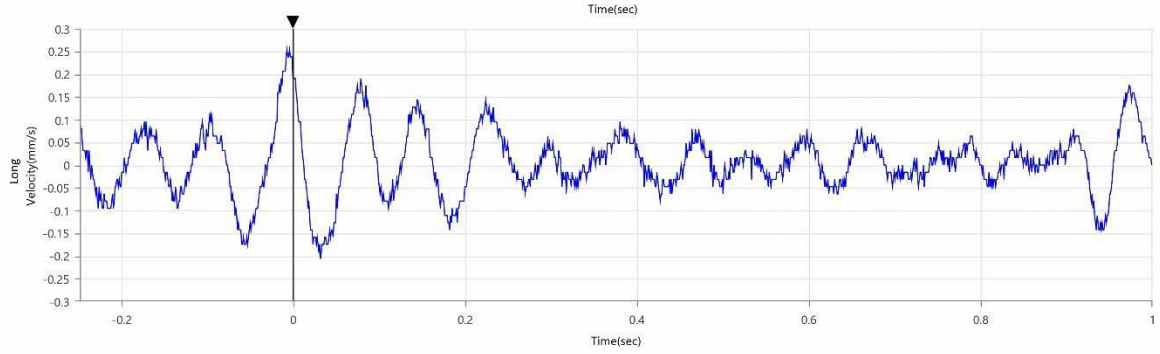
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.270 mm/s	0.397 mm/s	0.254 mm/s
Zero Crossing Frequency	11.9 Hz	11.6 Hz	13.1 Hz
Time (Relative to Trigger)	0.027 sec	0.005 sec	-0.008 sec
Peak Acceleration	0.007 g	0.007 g	0.007 g
Peak Displacement	0.004 mm	0.005 mm	0.003 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.417 mm/s at 0.005 sec







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FFT Report

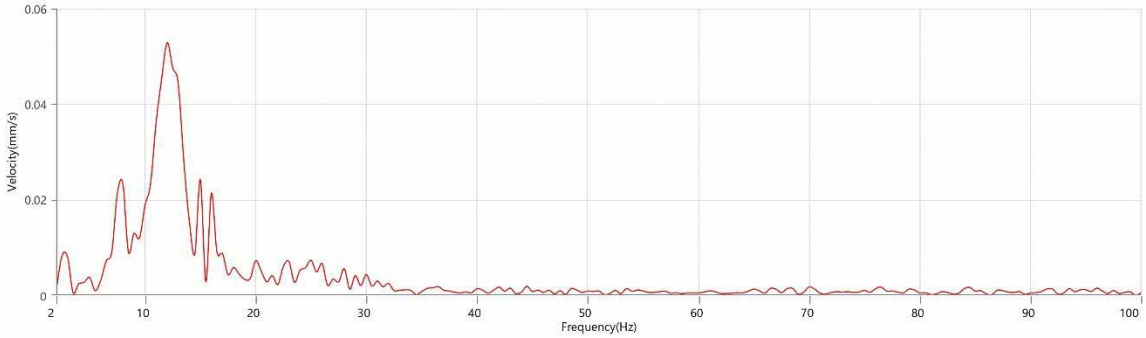
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 18:58:25	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU8K.PD0
Operator	-		
Job Number	1		

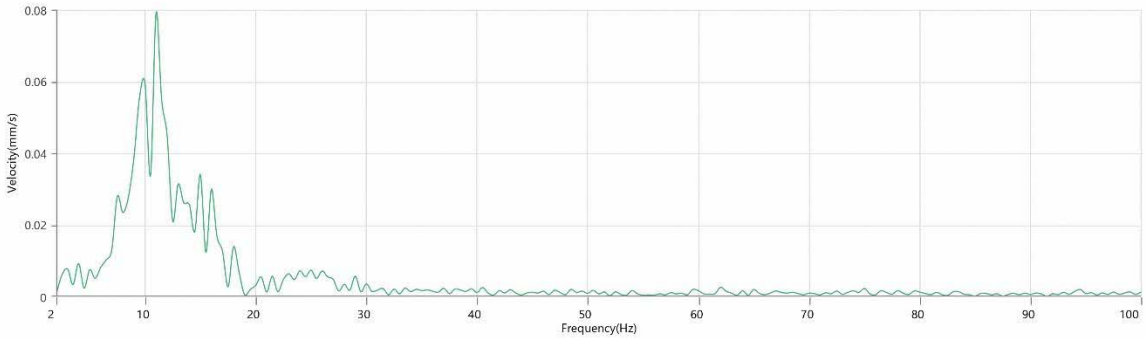
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

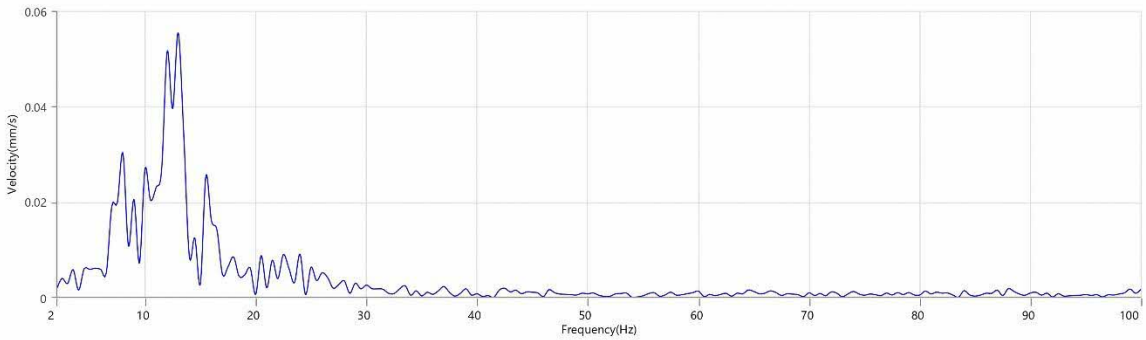
Tran - Dominant Frequency 12.0 Hz, Amplitude 0.053 mm/s (Peak Particle Velocity: 0.270 mm/s)



Vert - Dominant Frequency 11.0 Hz, Amplitude 0.079 mm/s (Peak Particle Velocity: 0.397 mm/s)



Long - Dominant Frequency 13.0 Hz, Amplitude 0.055 mm/s (Peak Particle Velocity: 0.254 mm/s)



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Instantel

Event Report

Setsco Services Pte Ltd

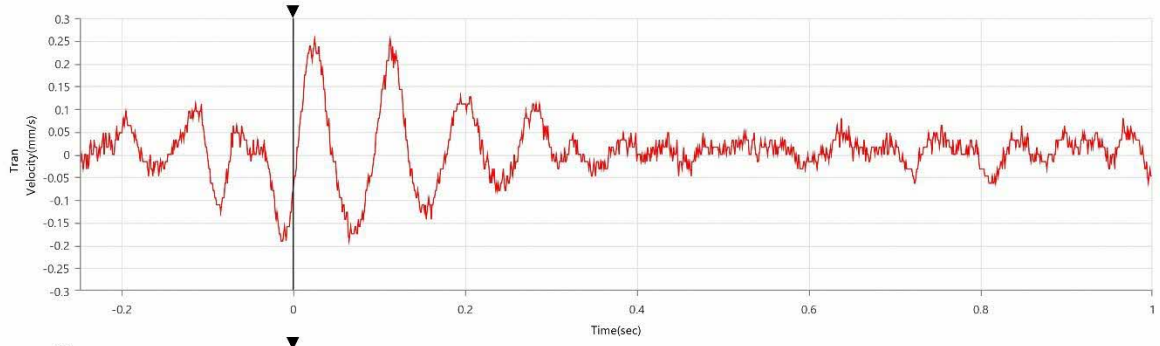
Waveform Trigger Source	Vert at January 6, 2023 19:31:24	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	O706JU8M.8C0
Operator	-		
Job Number	1		

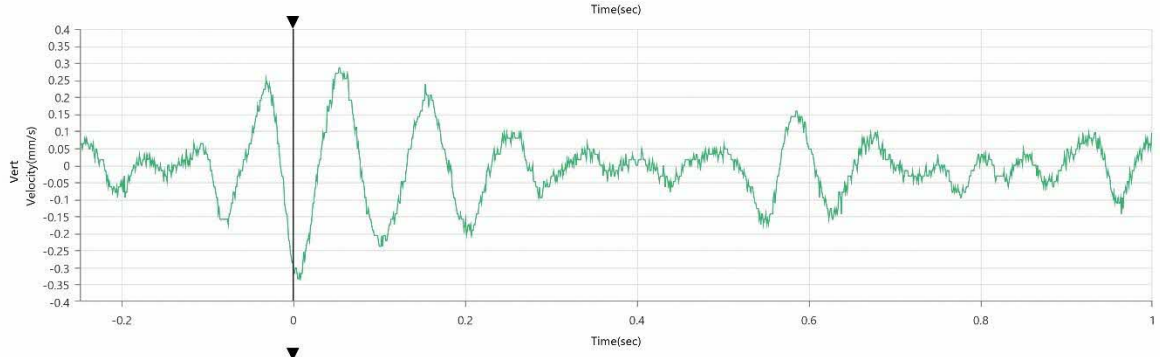
Notes
Location:
Client:
User Name:
General:

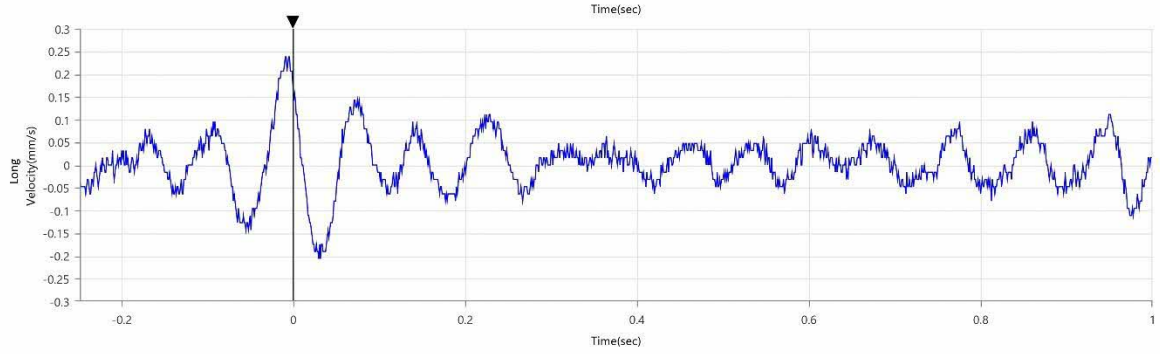
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.254 mm/s	0.333 mm/s	0.238 mm/s
Zero Crossing Frequency	13.1 Hz	11.6 Hz	13.5 Hz
Time (Relative to Trigger)	0.024 sec	0.005 sec	-0.010 sec
Peak Acceleration	0.007 g	0.008 g	0.007 g
Peak Displacement	0.003 mm	0.004 mm	0.003 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.365 mm/s at -0.002 sec







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Instantel

FFT Report

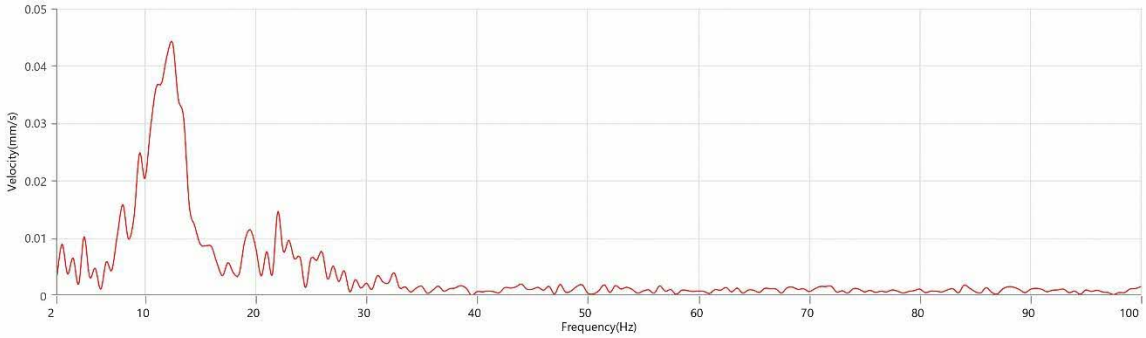
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 19:31:24	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8M.8C0
Job Number	1		

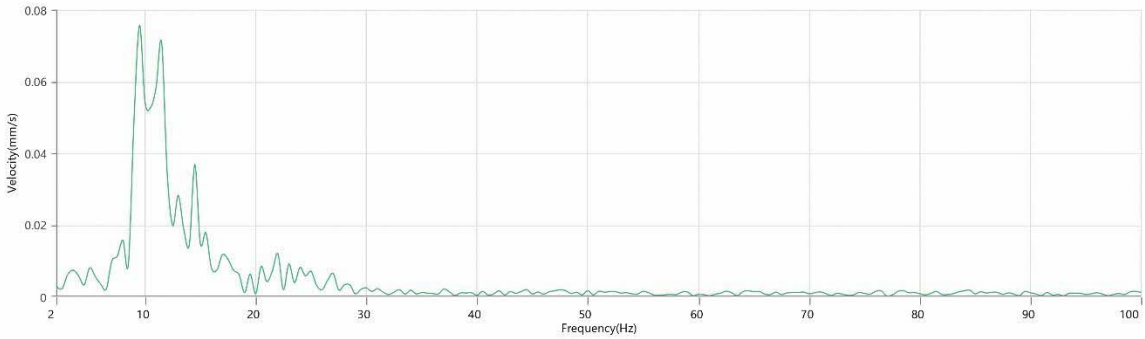
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

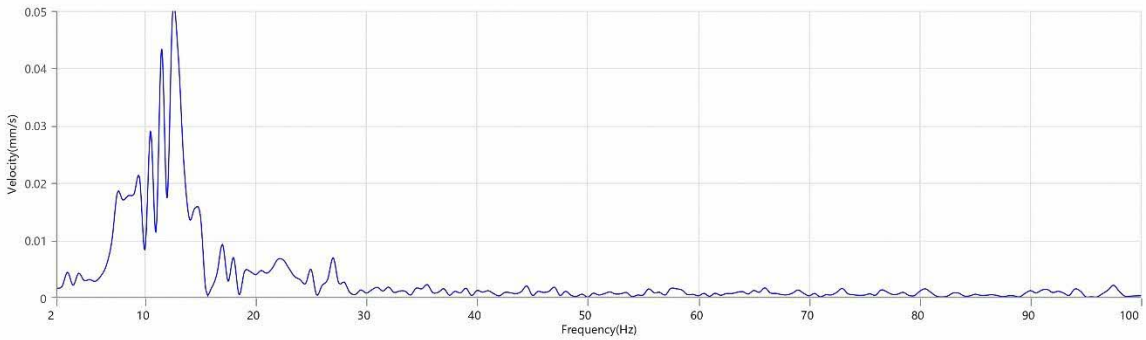
Tran - Dominant Frequency 12.5 Hz, Amplitude 0.044 mm/s (Peak Particle Velocity: 0.254 mm/s)



Vert - Dominant Frequency 9.5 Hz, Amplitude 0.076 mm/s (Peak Particle Velocity: 0.333 mm/s)



Long - Dominant Frequency 12.5 Hz, Amplitude 0.050 mm/s (Peak Particle Velocity: 0.238 mm/s)



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Instantel

Event Report

Setsco Services Pte Ltd

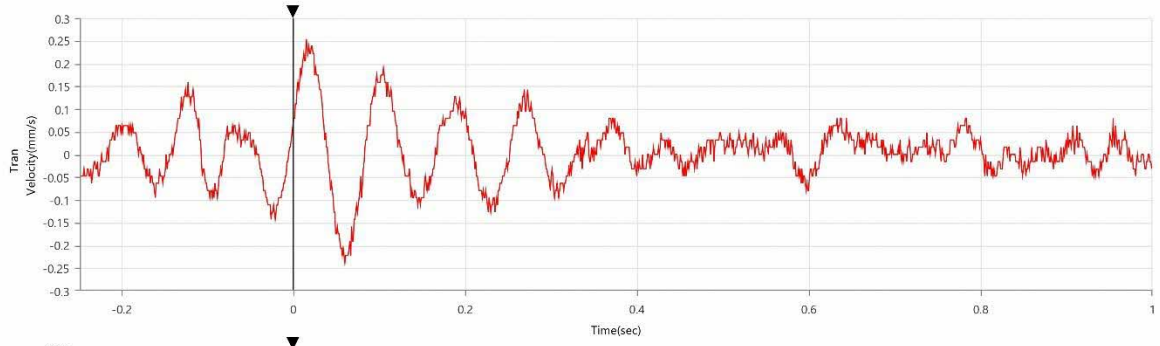
Waveform Trigger Source	Vert at January 6, 2023 19:33:31	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8M.BV0
Job Number	1		

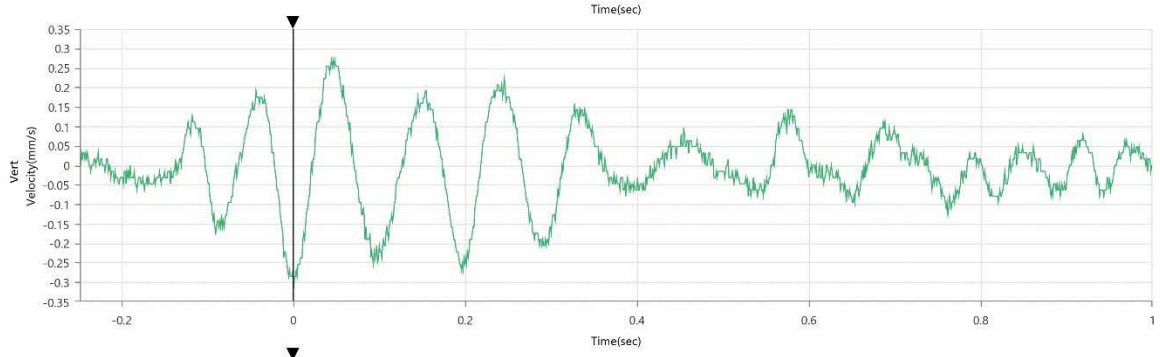
Notes
Location:
Client:
User Name:
General:

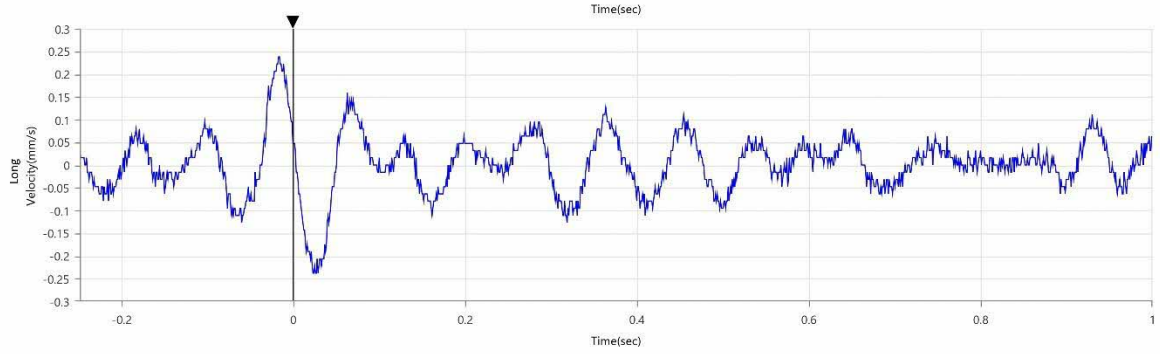
Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.254 mm/s	0.317 mm/s	0.238 mm/s
Zero Crossing Frequency	11.9 Hz	11.9 Hz	12.8 Hz
Time (Relative to Trigger)	0.015 sec	0.000 sec	-0.018 sec
Peak Acceleration	0.007 g	0.007 g	0.007 g
Peak Displacement	0.003 mm	0.004 mm	0.003 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.342 mm/s at 0.015 sec







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Instantel

FFT Report

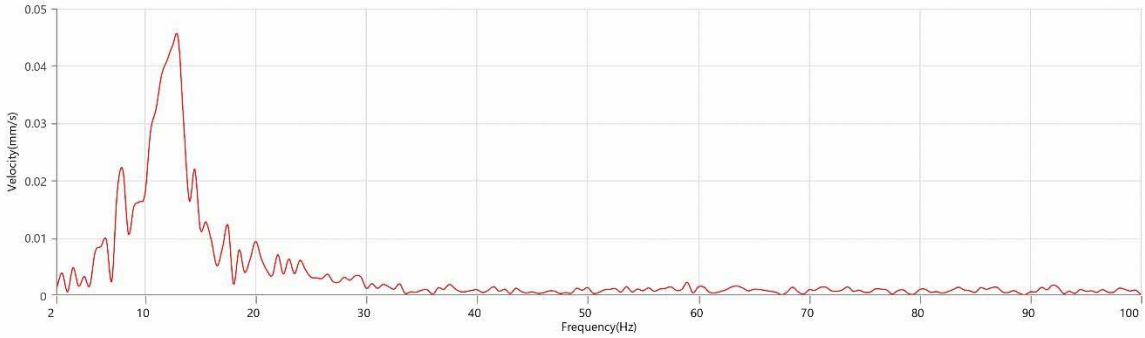
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 6, 2023 19:33:31	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	January 28, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	O706JU8M.BV0
Job Number	1		

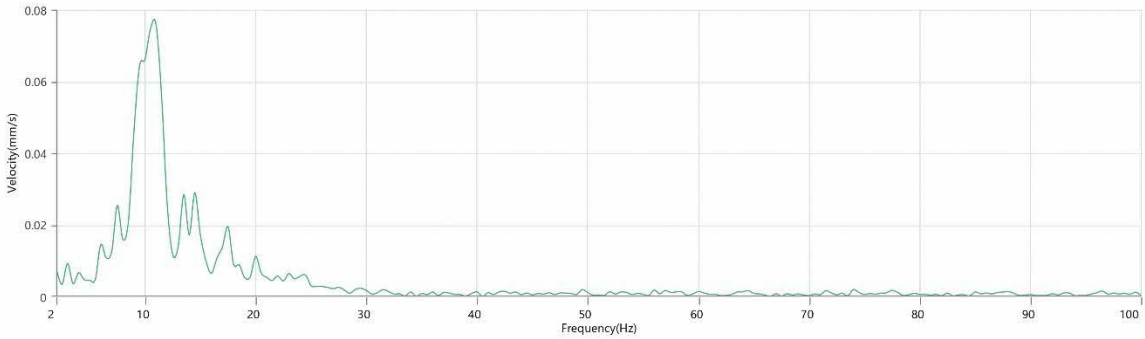
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 6, 2023 10:16:56
Post Event Notes No text to be displayed.

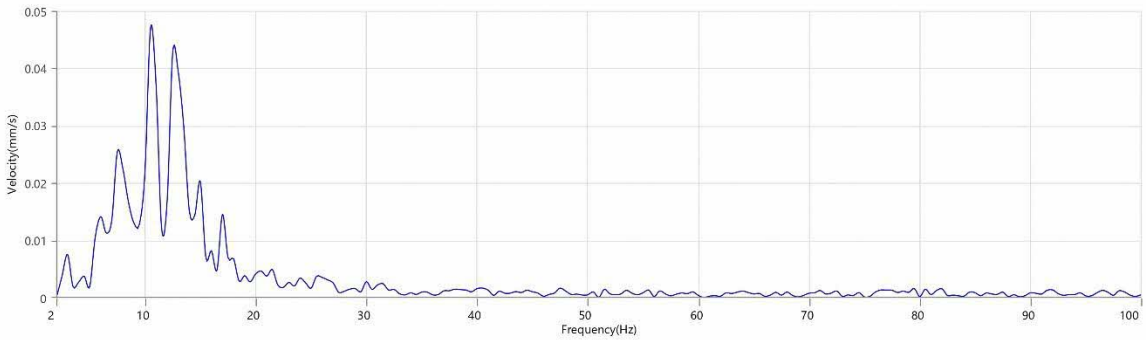
Tran - Dominant Frequency 13.0 Hz, Amplitude 0.045 mm/s (Peak Particle Velocity: 0.254 mm/s)



Vert - Dominant Frequency 11.0 Hz, Amplitude 0.076 mm/s (Peak Particle Velocity: 0.317 mm/s)



Long - Dominant Frequency 10.5 Hz, Amplitude 0.047 mm/s (Peak Particle Velocity: 0.238 mm/s)



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Appendix 1 – Calibration Certificate

Absolute Laboratories

Calibration Certificate

Calibration Number: 220102660355

Customer Name	: Setsco Services Pte Ltd	**Job Reference No**:	22010266
Customer Address	: 531 Bukit Batok Street 23 Singapore 659547	**Certificate Issue Date**:	10/02/2022
Manufacturer	: Instantel	**Calibration Date**:	28/01/2022
Item Description	: Vibration Monitor	**Test Conditions**:	
Model Number	: Minimate Plus	Ambient Temperature:	24.2 °C
Serial Number	: BE13706 (PM-001)	Relative Humidity:	50 %R.H.
Sub-Assemblies S/N	: BG12625	Pressure:	101.1 kPa

This certificate provides traceability of measurement to the International System of Units (SI).

Absolute Laboratories Pte. Ltd. certifies that the above product listed was calibrated in compliance with a quality management system using the applicable and approved Absolute Laboratories Pte. Ltd. calibration procedures as specified.

The reported expanded uncertainty is based on the standard uncertainty multiplied by a factor k = 2 (degrees of freedom = ∞), which corresponds to a level of confidence of approximately 95%.

Calibration Method:

The instrument was calibrated following AL calibration procedure WI- 26-Rev-1

Calibration Equipment(s) Used			
Apparatus	**Serial Number**	**Cal Due Date**	**Certificate Number**
Auto Zero & Gain Test Jig	718A1501-15	21/09/2022	210901582232
DC Power Supply	740622	29/03/2022	210303150818
Digital Multimeter	MY57225429	26/03/2022	1-14220896244-1

Ambient Condition Range:
Temperature: (20-26)°C , Humidity: (25-70)%RH, Pressure: (80-105)kPa

Calibration By : Ang Siong Cheaw, Calibration Officer

Reviewed/Approved By : Rodrigo Manansala, Approving Officer

Absolute Laboratories Pte. Ltd. is an affiliated company of Absolute Instrument Systems (Pte.) Ltd.

Absolute Laboratories Pte. Ltd.
11 Kallang Place #06-02 Singapore 339155
Tel: 65 6296 8012 Fax: 65 6296 3242

…… End of Report ……

TEST REPORT

(This Report is issued subject to the terms & conditions set out below)

ON
GROUND VIBRATION MONITORING

SETSCO
Setsco Services Pte Ltd
531 Bukit Batok Street 23
Singapore 659547
Tel : (65) 6566 7777
Fax: (65) 6566 7718
www.setsco.com
Business Reg. No. 196900269D

Our Reference	:	**MA-8500258548/SAH/2**
Your Reference	:	**6159687**
Report Date	:	**07/02/2023** **Page 1 of 24**
Measured for	:	**DHI WATER & ENVIRONMENT (S) PTE LTD** 2 Venture Drive #18-18 Vision Exchange Singapore 608526 **Attn**: Mr. Bryan Wong
Date of Measurement	:	13th January 2023 to 15th January 2023
Place of Inspection	:	Micron Semiconductor Asia Pte Ltd, 1 North Coast Drive, Singapore 757432

Sahlan Bin Ismail
Testing Officer

Almond Soon
Senior Engineer
Maintenance Testing Department
Mechanical Technology Division

TABLE OF CONTENTS

Introduction

SETSCO SERVICES PTE LTD was appointed by DHI WATER & ENVIRONMENT (S) PTE LTD to carry out Ground Vibration Monitoring at **Micron Semiconductor Asia Pte Ltd, 1 North Coast Drive, Singapore 757432**.

Project

Environmental Baseline Survey

Scope of Measurement

In this monitoring the evaluation of ground vibration is based on the maximum values of the three components of the vibration velocity that is Vertical, Longitudinal and Transverse direction {V (z-axis), L (x-axis) and T (y-axis)}.

The measurement in this three directions would be monitored at location specified in the 'Date of Measurement and Test Locations' section.

The measurement would be in frequency range of 1Hz to 100Hz, velocity-time domain with a minimum trigger level set at **0.3 mm/s**. The monitoring of vibration was conducted based on client's request. The dominant frequency with the corresponding peak particle velocity would be tabulated. The vibration meter was set on continuous and histogram monitoring with readings taken every 5 seconds interval.

Objective of Measurement

The objective of this monitoring at **Micron Semiconductor Asia Pte Ltd, 1 North Coast Drive, Singapore 757432** was to determine the level of the vibration for the purpose of environmental baseline survey.

Measurement Equipment Specification

The measurement equipment for the vibration test measurements are as follows:

- INSTANTEL INC Ground Vibration Monitoring Equipment (Vibration Sensor Tri-axial)

Calibration Certification of the equipment/s is provided in 'Appendix 1- Calibration Certificates' section.

Date of Measurement and Test Locations

The measurements were conducted from 13th January 2023 to 15th January 2023 at the grass patch outside the boundary of **Micron Semiconductor Asia Pte Ltd, 1 North Coast Drive, Singapore 757432**.

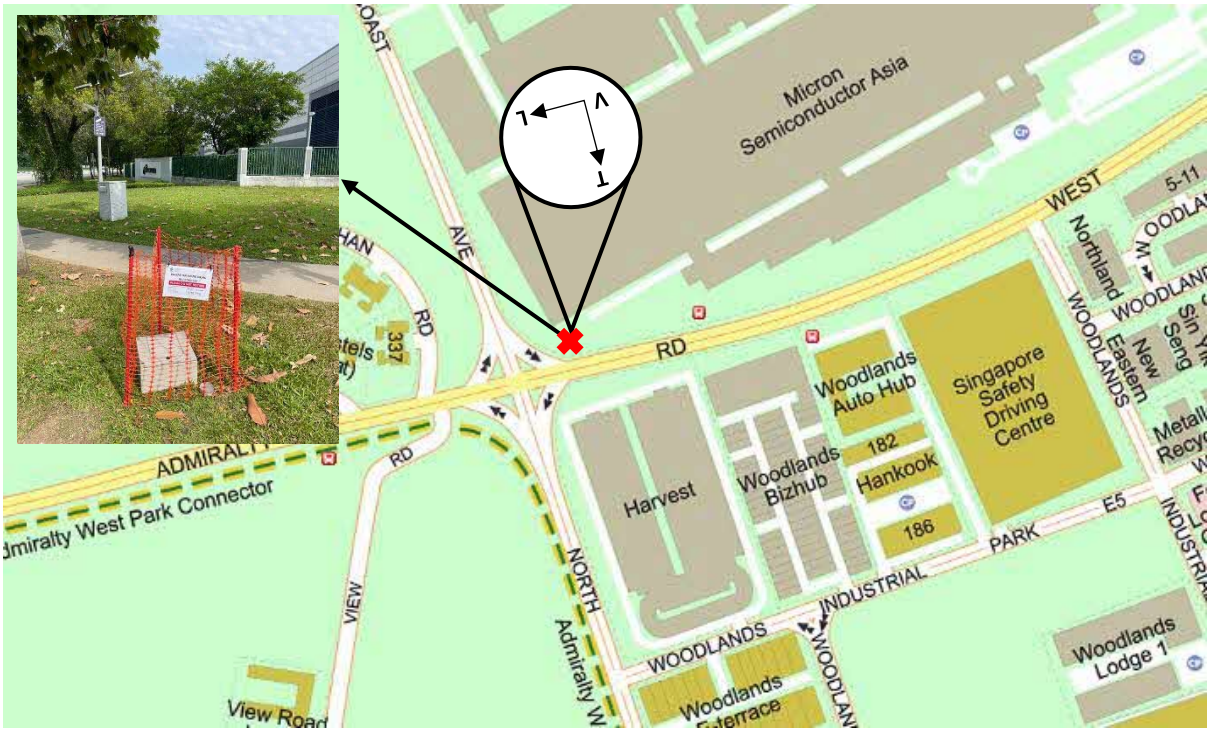

Figure 1: Test Location & Direction of Measurement

Results & Conclusion

For the results of the measurement, refer to the 'Vibration Measurement Data' section.

The details of the measurement show the frequency with the corresponding peak particle velocity in Vertical, Longitudinal and Transverse direction.

Vibration Measurement Data

Instantel

Event Report

Setsco Services Pte Ltd

Start	January 13, 2023 09:55:07	**Serial Number**	BE16768
Finish	January 16, 2023 05:44:07	**Model Number**	MiniMate Plus 10.72.8.17
Number of Intervals/Interval	48828.00/5 sec	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	R768JUKU.7V0
Operator	-		
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes No text to be displayed.
Post Event Notes Micron

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.429 mm/s	0.540 mm/s	0.619 mm/s
Zero Crossing Frequency	>100 Hz	24.4 Hz	>100 Hz
Date	Jan 13, 2023	Jan 13, 2023	Jan 13, 2023
Time	13:35:52	17:24:52	13:35:52
Sensor Check	✓ Passed	✓ Passed	✓ Passed
Frequency	7.6 Hz	7.3 Hz	7.3 Hz
Overswing Ratio	3.8	3.8	5.8

Peak Vector Sum 0.764 mm/s at January 13, 2023 13:35:52

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Instantel

Event Report

Setsco Services Pte Ltd

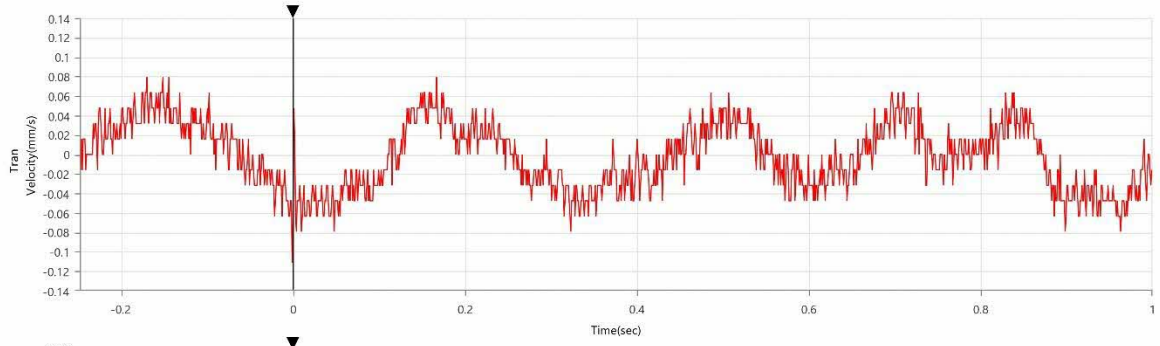
Waveform Trigger Source	Long at January 13, 2023 13:21:43	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	R768JUL3.S70
Operator	-		
Job Number	1		

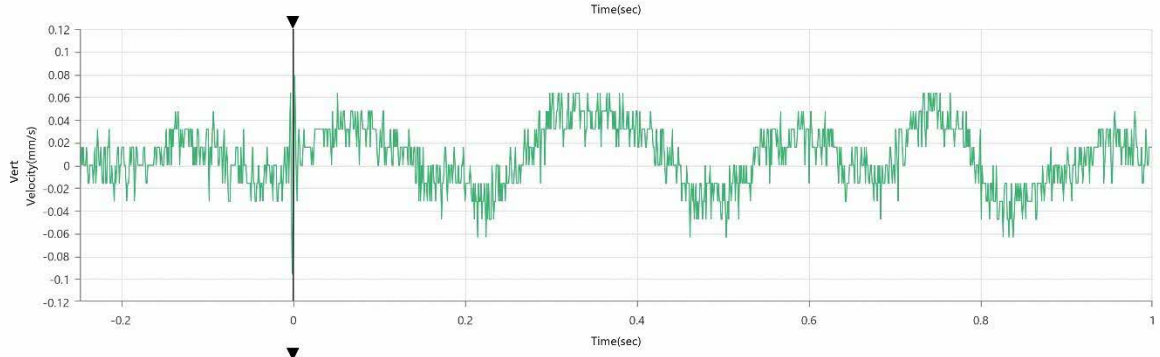
Notes
Location:
Client:
User Name:
General:

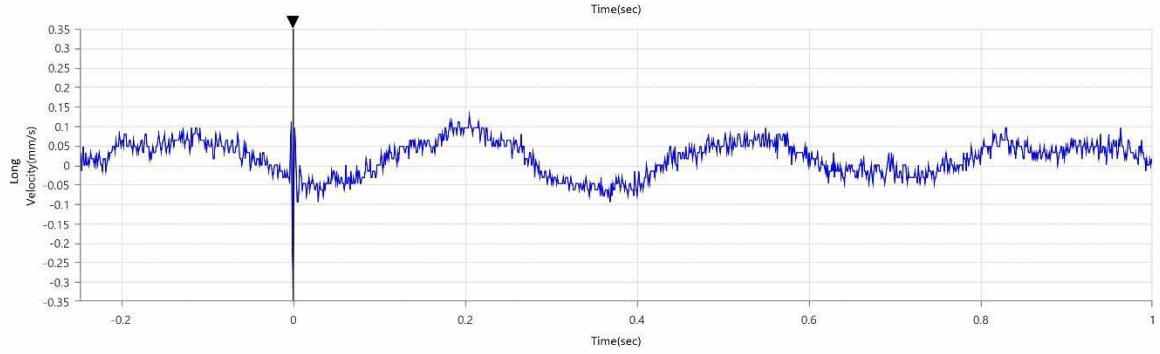
Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.111 mm/s	0.095 mm/s	0.317 mm/s
Zero Crossing Frequency	46.5 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	-0.001 sec	-0.001 sec	0.000 sec
Peak Acceleration	0.012 g	0.010 g	0.030 g
Peak Displacement	0.001 mm	0.001 mm	0.004 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.338 mm/s at 0.000 sec







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FFT Report

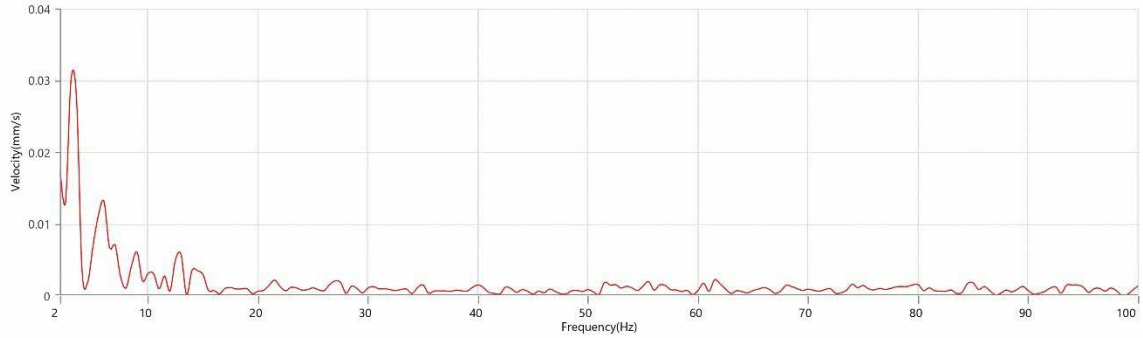
Setsco Services Pte Ltd

Waveform Trigger Source	Long at January 13, 2023 13:21:43	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JUL3.S70
Job Number	1		

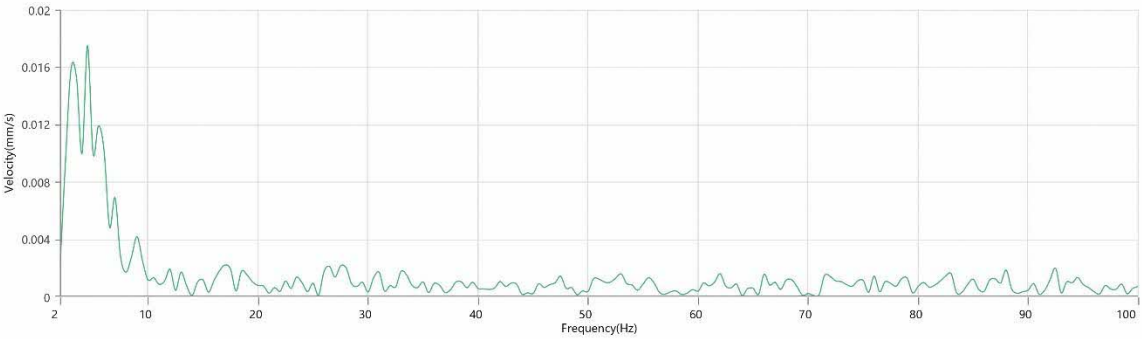
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

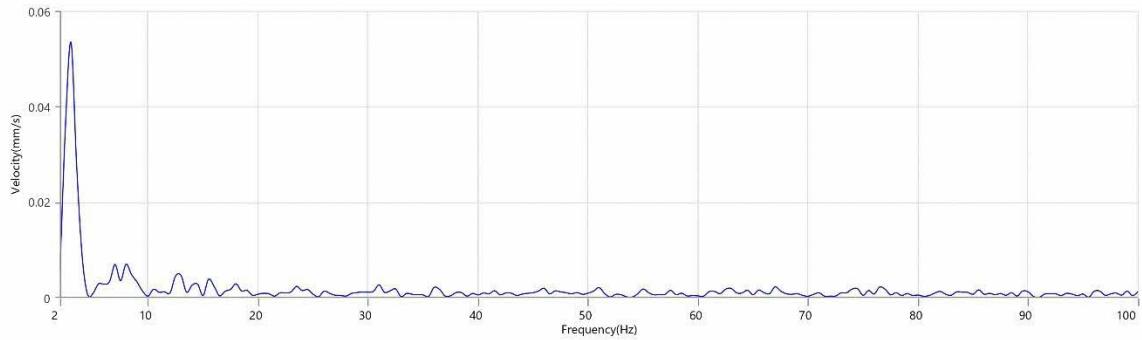
Tran - Dominant Frequency 3.0 Hz, Amplitude 0.030 mm/s (Peak Particle Velocity: 0.111 mm/s)



Vert - Dominant Frequency 4.5 Hz, Amplitude 0.017 mm/s (Peak Particle Velocity: 0.095 mm/s)



Long - Dominant Frequency 3.0 Hz, Amplitude 0.053 mm/s (Peak Particle Velocity: 0.317 mm/s)



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Instantel

Event Report

Setsco Services Pte Ltd

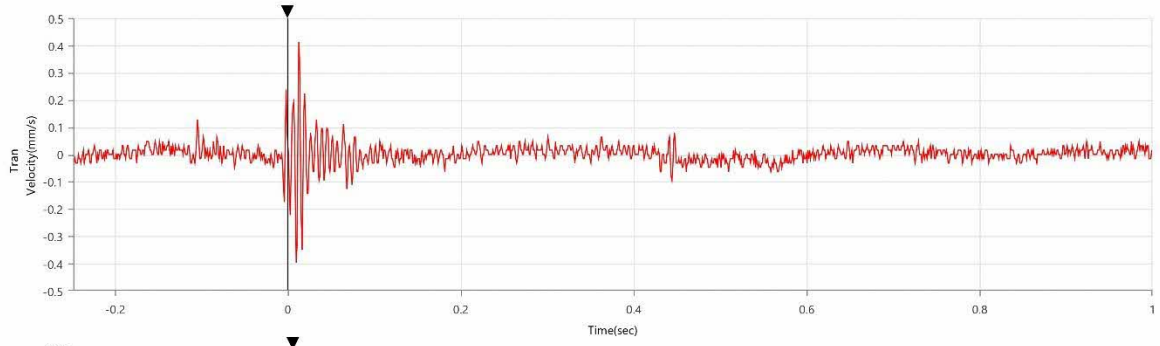
Waveform Trigger Source	Long at January 13, 2023 13:31:38	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	R768JUL4.8Q0
Operator	-		
Job Number	1		

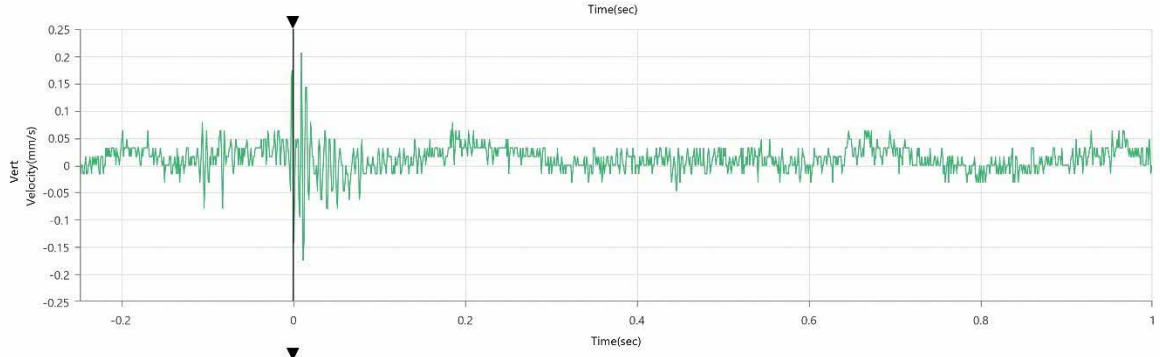
Notes
Location:
Client:
User Name:
General:

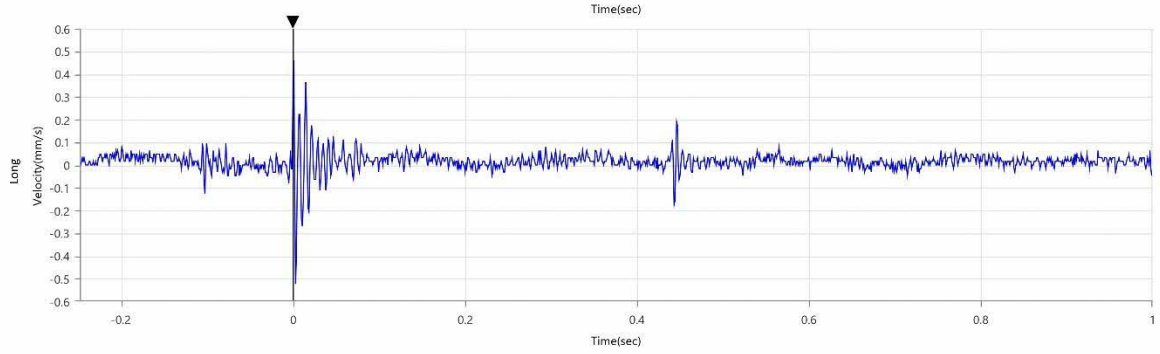
Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.413 mm/s	0.206 mm/s	0.524 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	0.013 sec	0.010 sec	0.003 sec
Peak Acceleration	0.043 g	0.025 g	0.055 g
Peak Displacement	0.000 mm	0.000 mm	0.000 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.571 mm/s at 0.003 sec







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Instantel

FFT Report

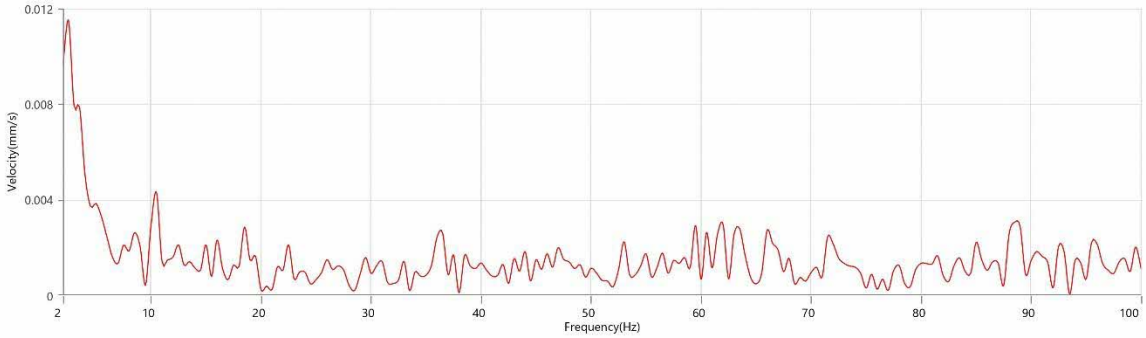
Setsco Services Pte Ltd

Waveform Trigger Source	Long at January 13, 2023 13:31:38	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JUL4.8Q0
Job Number	1		

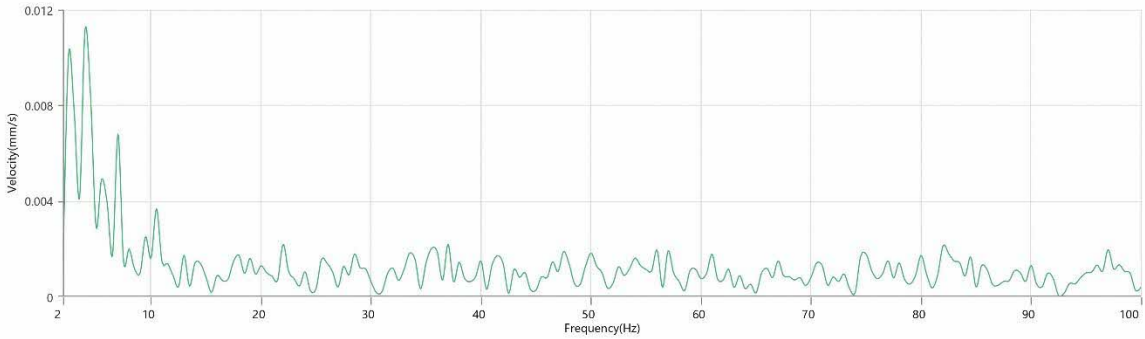
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

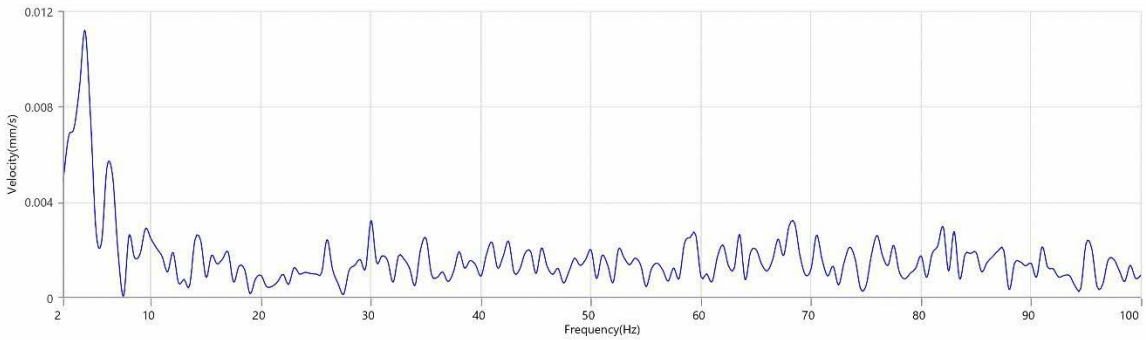
Tran - Dominant Frequency 2.5 Hz, Amplitude 0.011 mm/s (Peak Particle Velocity: 0.413 mm/s)



Vert - Dominant Frequency 4.0 Hz, Amplitude 0.011 mm/s (Peak Particle Velocity: 0.206 mm/s)



Long - Dominant Frequency 4.0 Hz, Amplitude 0.011 mm/s (Peak Particle Velocity: 0.524 mm/s)



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Event Report

Setsco Services Pte Ltd

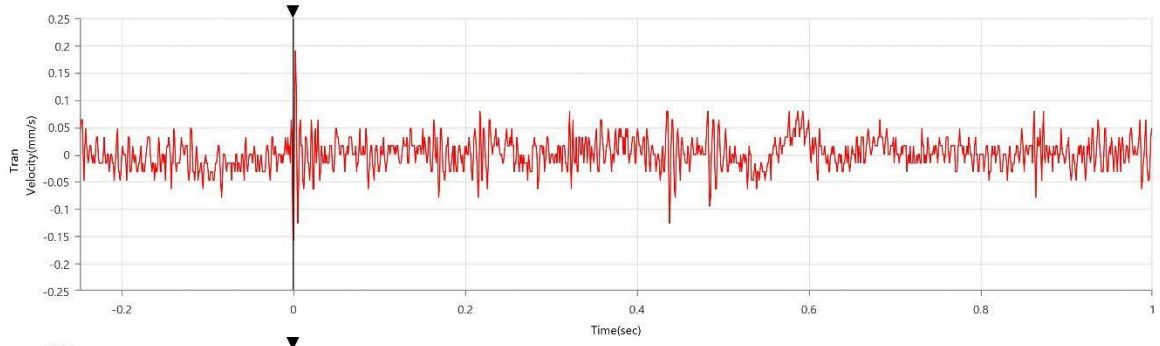
Waveform Trigger Source	Long at January 13, 2023 13:32:12	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	R768JUL4.9O0
Operator	-		
Job Number	1		

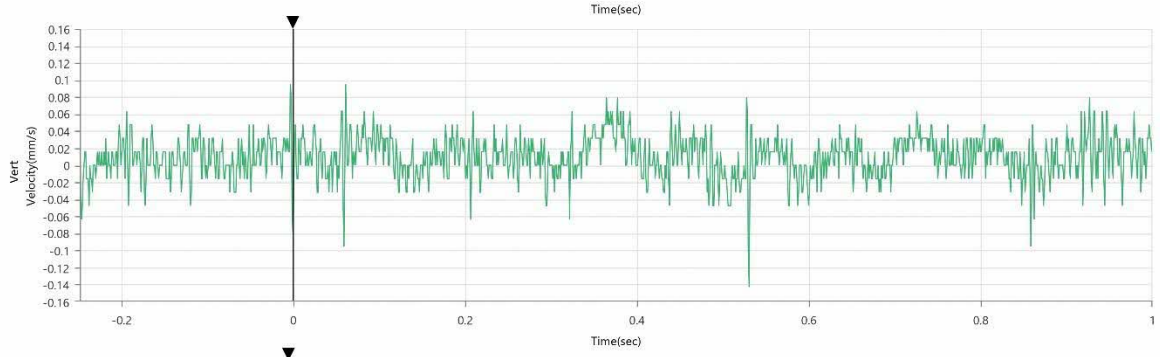
Notes
Location:
Client:
User Name:
General:

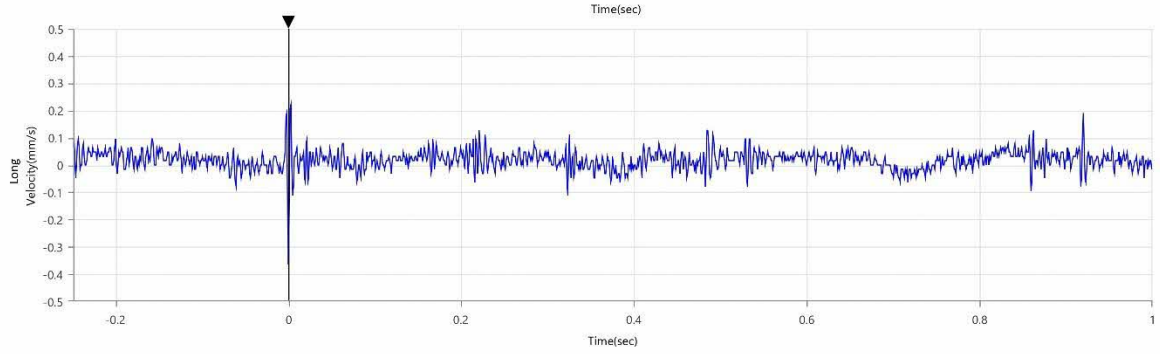
Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.190 mm/s	0.143 mm/s	0.365 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	0.002 sec	0.530 sec	0.000 sec
Peak Acceleration	0.023 g	0.017 g	0.036 g
Peak Displacement	0.000 mm	0.000 mm	0.001 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.399 mm/s at 0.000 sec







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FFT Report

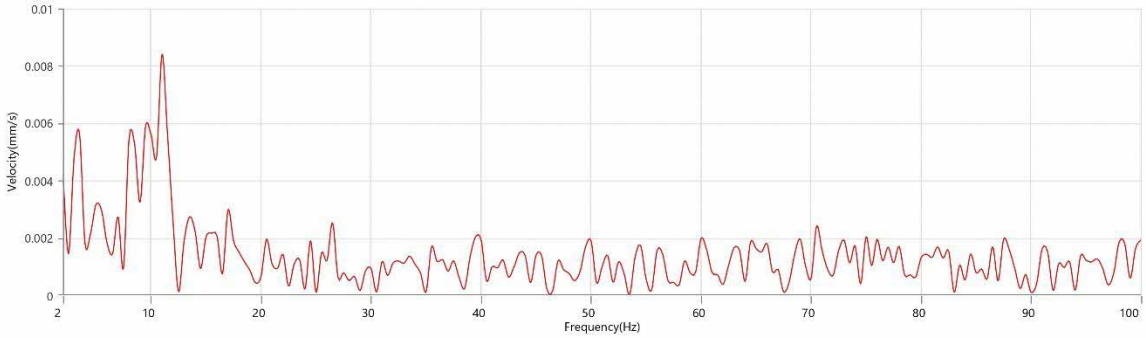
Setsco Services Pte Ltd

Waveform Trigger Source	Long at January 13, 2023 13:32:12	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JUL4.9O0
Job Number	1		

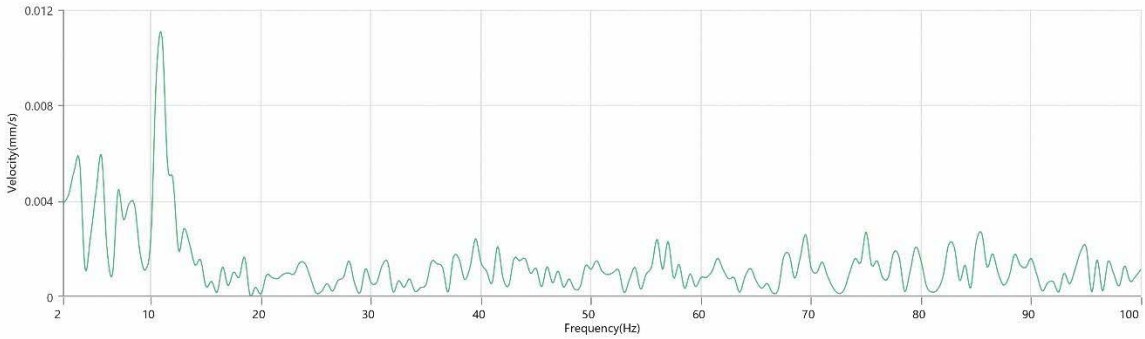
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

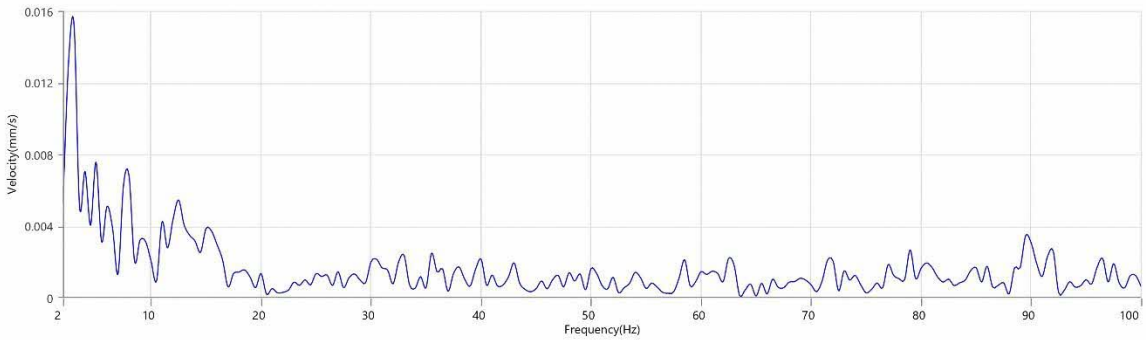
Tran - Dominant Frequency 11.0 Hz, Amplitude 0.008 mm/s (Peak Particle Velocity: 0.190 mm/s)



Vert - Dominant Frequency 11.0 Hz, Amplitude 0.011 mm/s (Peak Particle Velocity: 0.143 mm/s)



Long - Dominant Frequency 3.0 Hz, Amplitude 0.015 mm/s (Peak Particle Velocity: 0.365 mm/s)



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Event Report

Setsco Services Pte Ltd

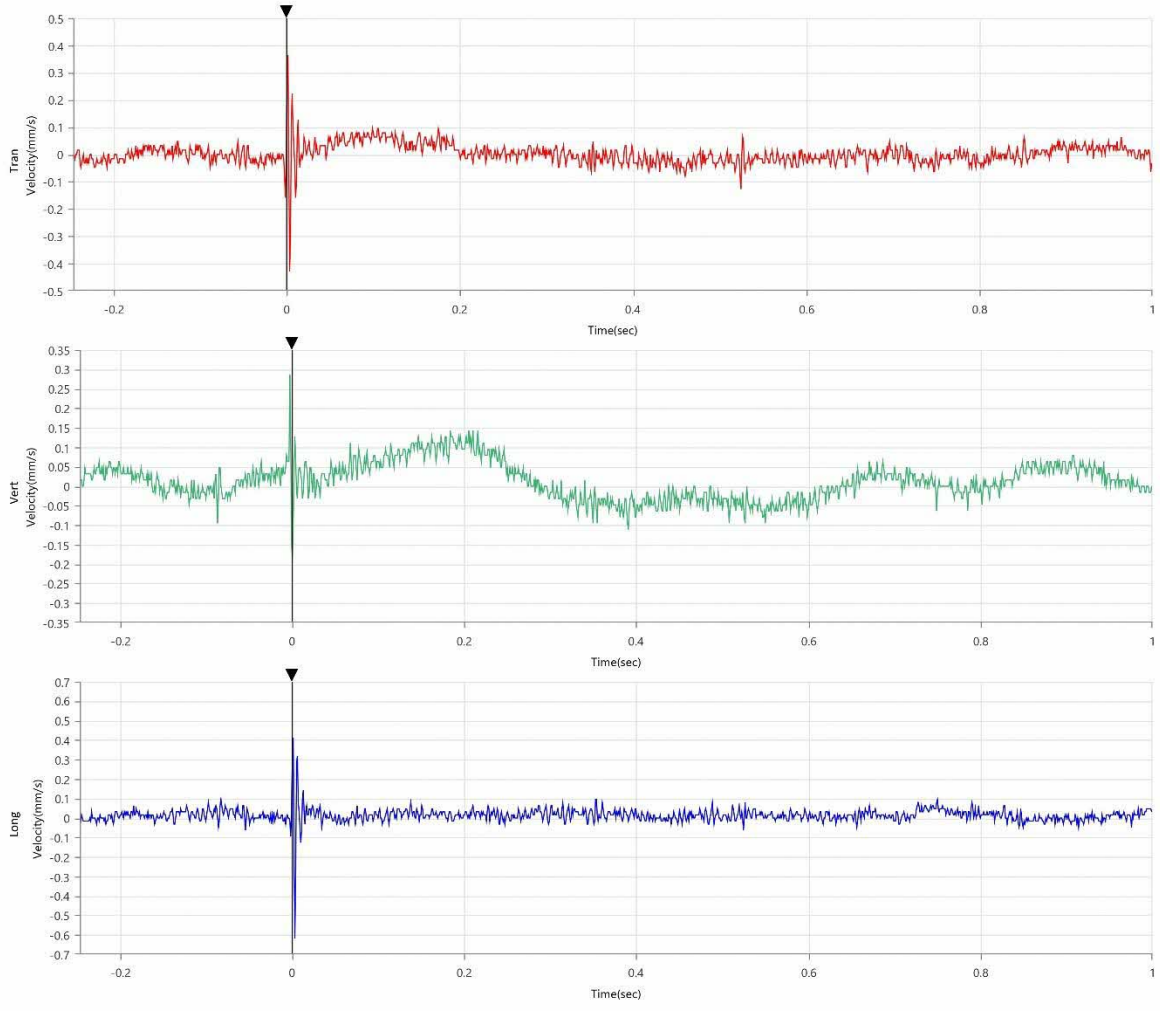
Waveform Trigger Source	Tran at January 13, 2023 13:35:49	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	R768JUL4.FP0
Operator	-		
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.429 mm/s	0.286 mm/s	0.619 mm/s
Zero Crossing Frequency	>100 Hz	39.4 Hz	>100 Hz
Time (Relative to Trigger)	0.003 sec	-0.003 sec	0.003 sec
Peak Acceleration	0.043 g	0.028 g	0.061 g
Peak Displacement	0.002 mm	0.008 mm	0.001 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.764 mm/s at 0.003 sec



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FFT Report

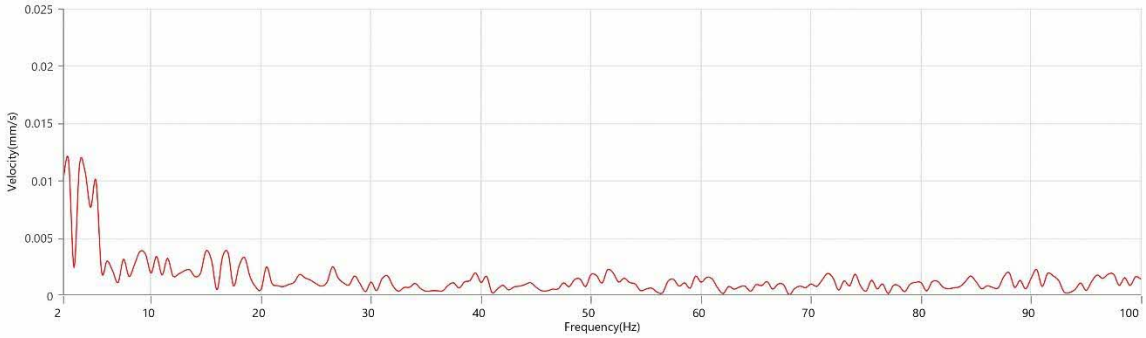
Setsco Services Pte Ltd

Waveform Trigger Source	Tran at January 13, 2023 13:35:49	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JUL4.FP0
Job Number	1		

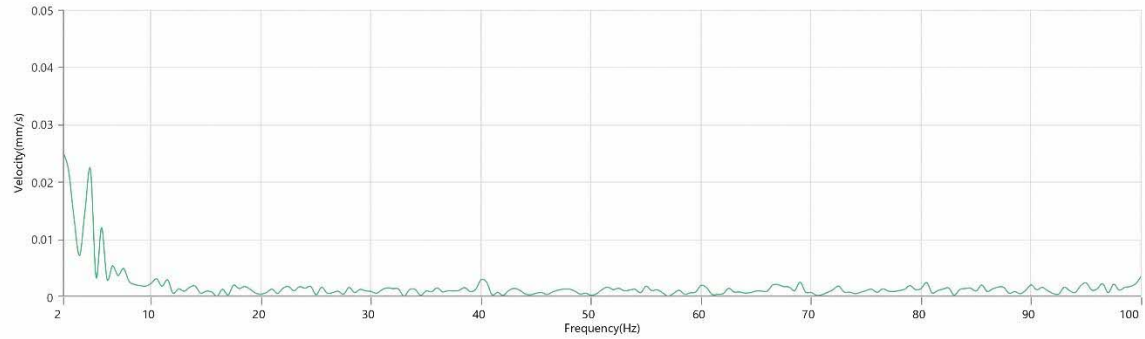
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

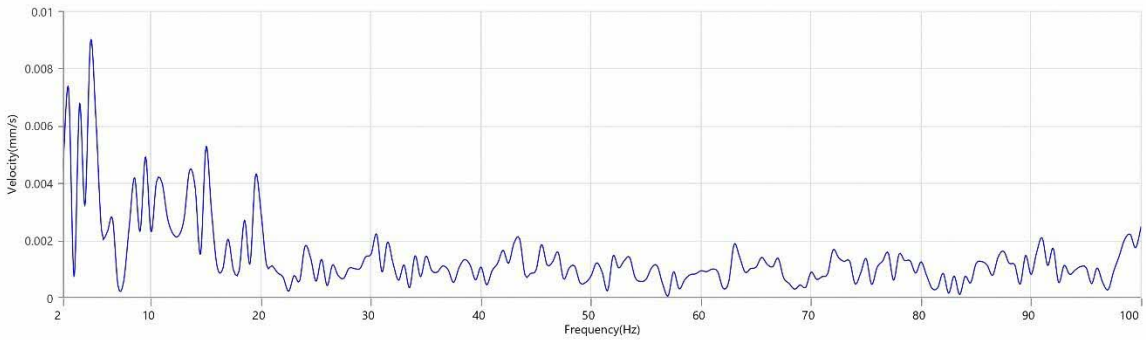
Tran - Dominant Frequency 2.5 Hz, Amplitude 0.012 mm/s (Peak Particle Velocity: 0.429 mm/s)



Vert - Dominant Frequency 2.0 Hz, Amplitude 0.025 mm/s (Peak Particle Velocity: 0.286 mm/s)



Long - Dominant Frequency 4.5 Hz, Amplitude 0.009 mm/s (Peak Particle Velocity: 0.619 mm/s)



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Event Report

Setsco Services Pte Ltd

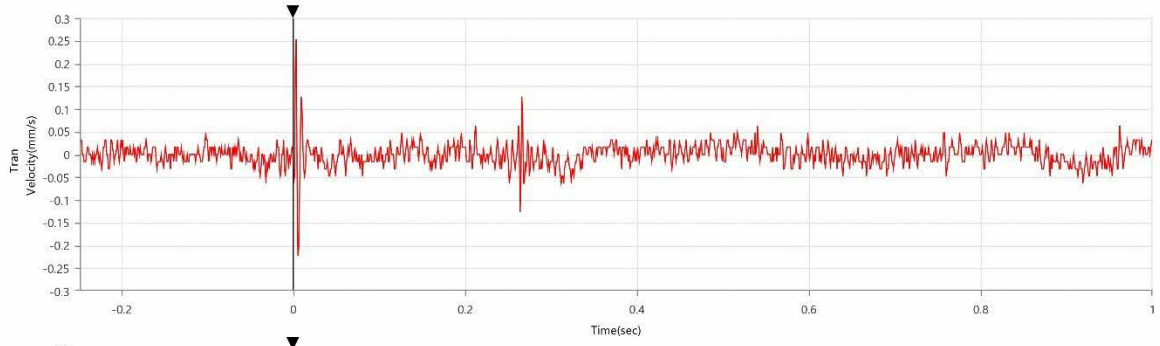
Waveform Trigger Source	Vert at January 13, 2023 13:36:33	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	R768JUL4.GX0
Operator	-		
Job Number	1		

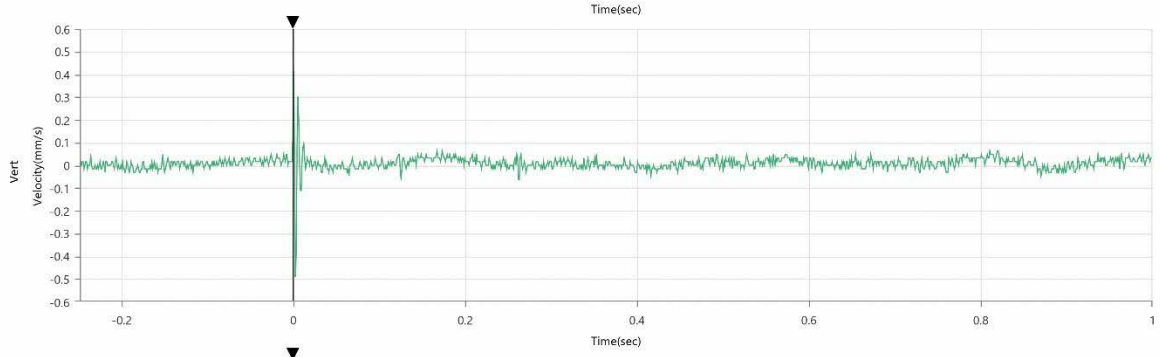
Notes
Location:
Client:
User Name:
General:

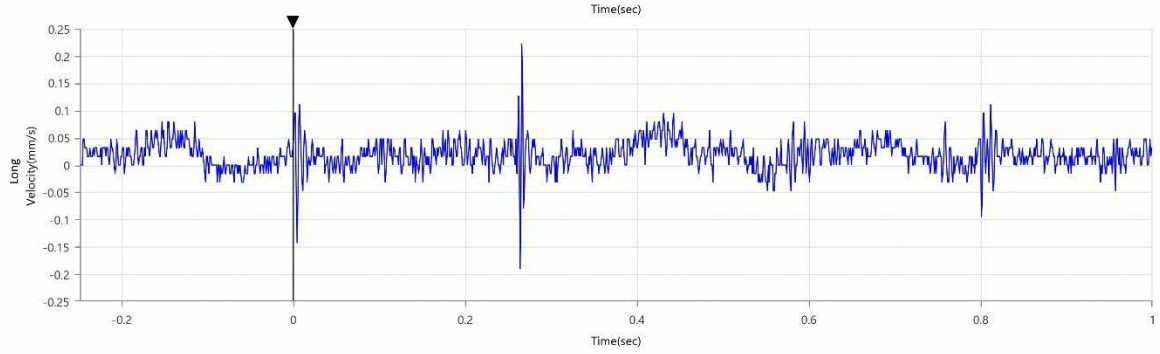
Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.254 mm/s	0.492 mm/s	0.222 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	0.003 sec	0.002 sec	0.266 sec
Peak Acceleration	0.030 g	0.056 g	0.028 g
Peak Displacement	0.000 mm	0.000 mm	0.001 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.542 mm/s at 0.002 sec







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FFT Report

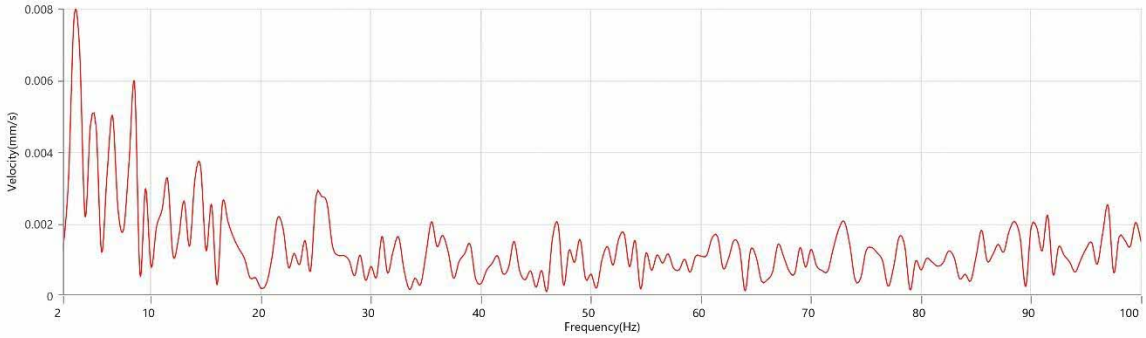
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 13, 2023 13:36:33	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JUL4.GX0
Job Number	1		

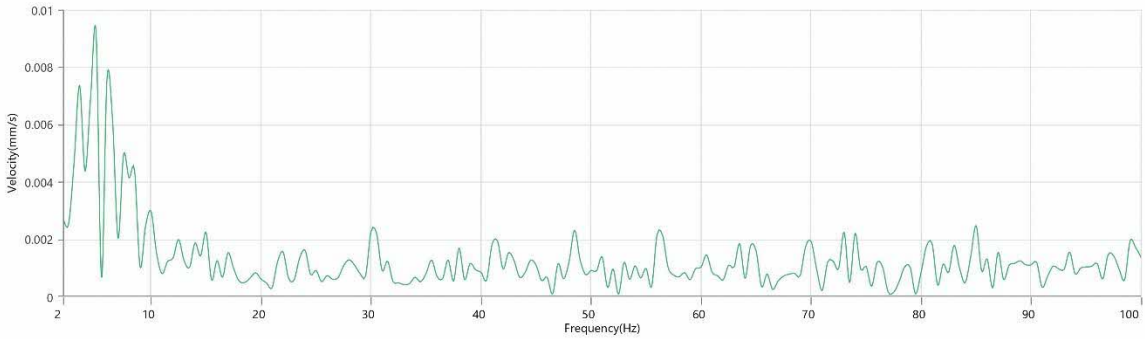
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

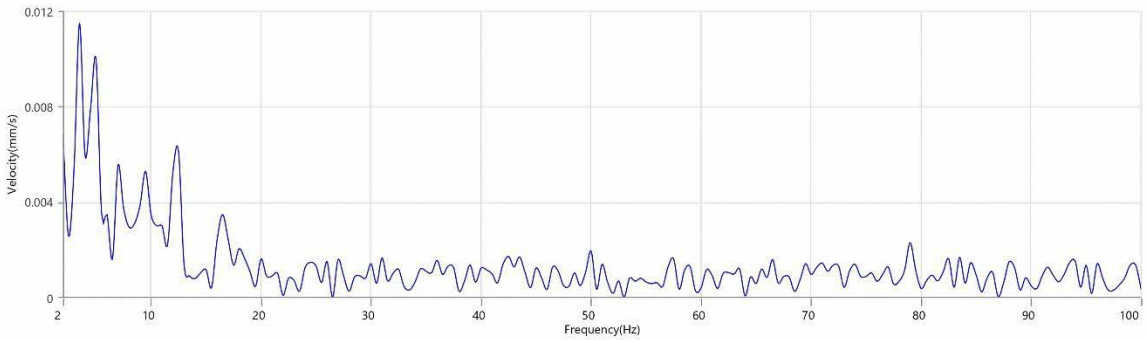
Tran - Dominant Frequency 3.0 Hz, Amplitude 0.008 mm/s (Peak Particle Velocity: 0.254 mm/s)



Vert - Dominant Frequency 5.0 Hz, Amplitude 0.009 mm/s (Peak Particle Velocity: 0.492 mm/s)



Long - Dominant Frequency 3.5 Hz, Amplitude 0.011 mm/s (Peak Particle Velocity: 0.222 mm/s)



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Event Report

Setsco Services Pte Ltd

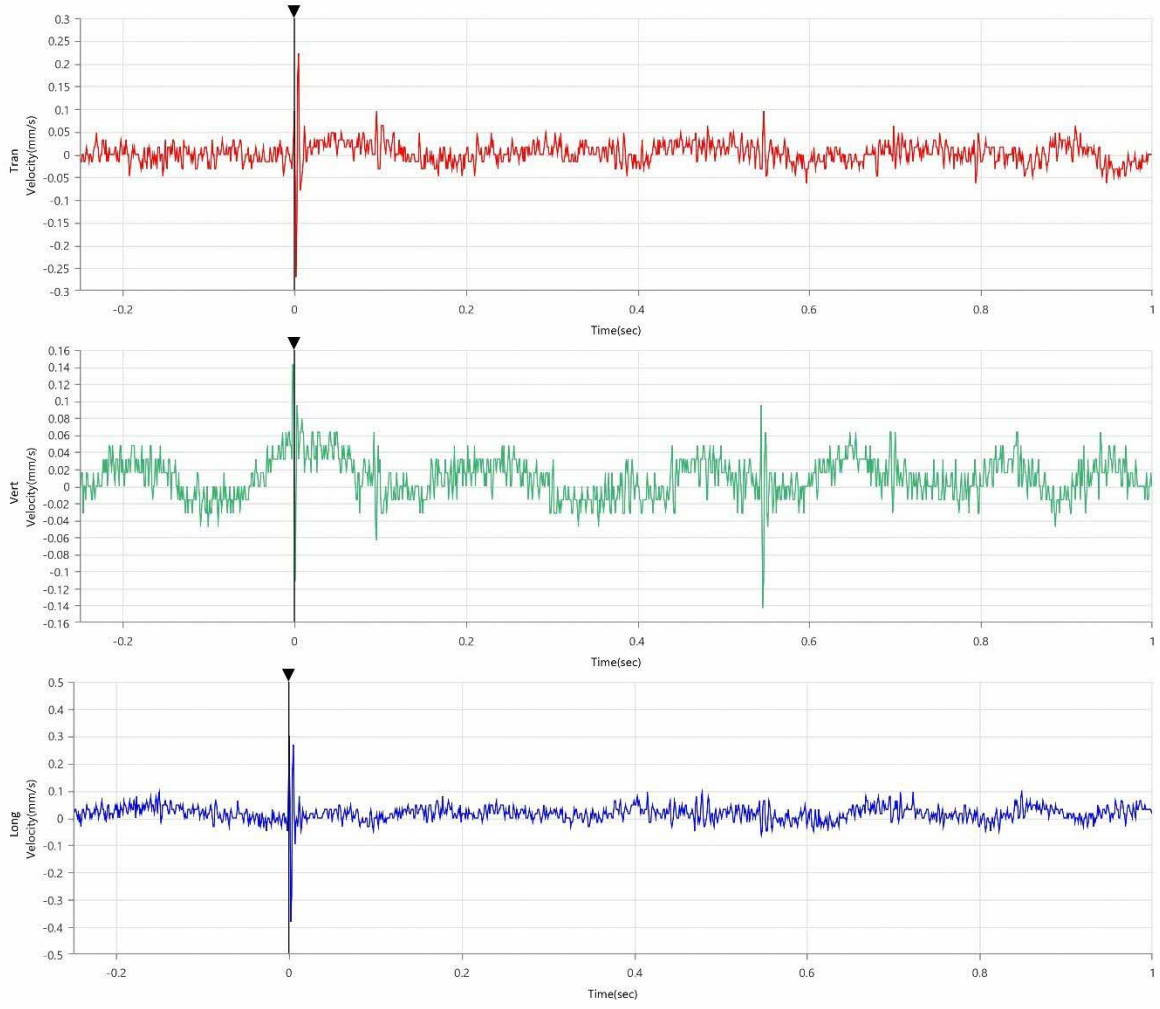
Waveform Trigger Source	Long at January 13, 2023 13:36:50	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	R768JUL4.HE0
Operator	-		
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.270 mm/s	0.143 mm/s	0.381 mm/s
Zero Crossing Frequency	>100 Hz	18.3 Hz	>100 Hz
Time (Relative to Trigger)	0.002 sec	-0.002 sec	0.002 sec
Peak Acceleration	0.033 g	0.018 g	0.048 g
Peak Displacement	0.000 mm	0.001 mm	0.000 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.467 mm/s at 0.002 sec



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FFT Report

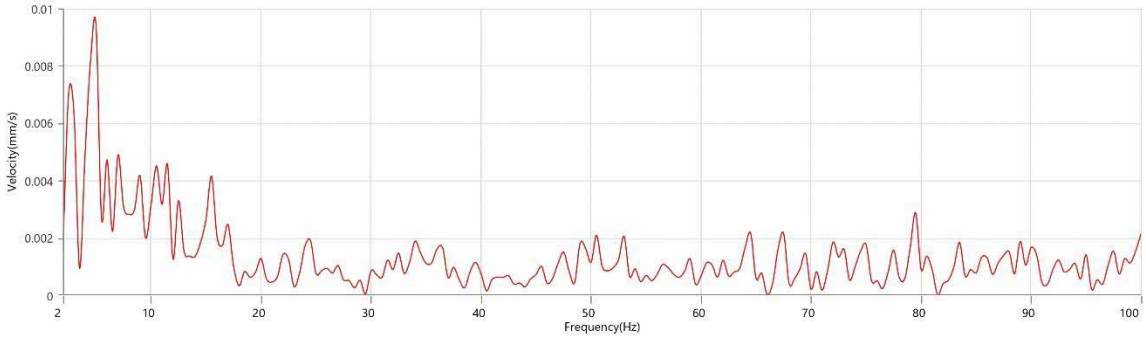
Setsco Services Pte Ltd

Waveform Trigger Source	Long at January 13, 2023 13:36:50	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JUL4.HE0
Job Number	1		

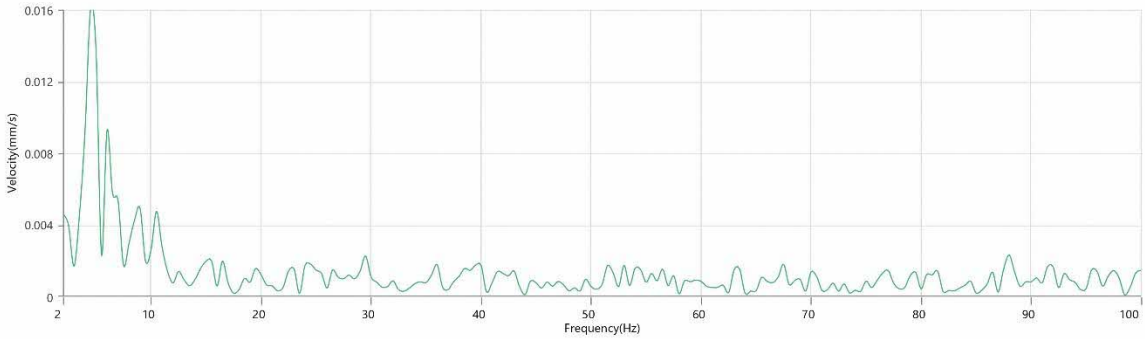
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

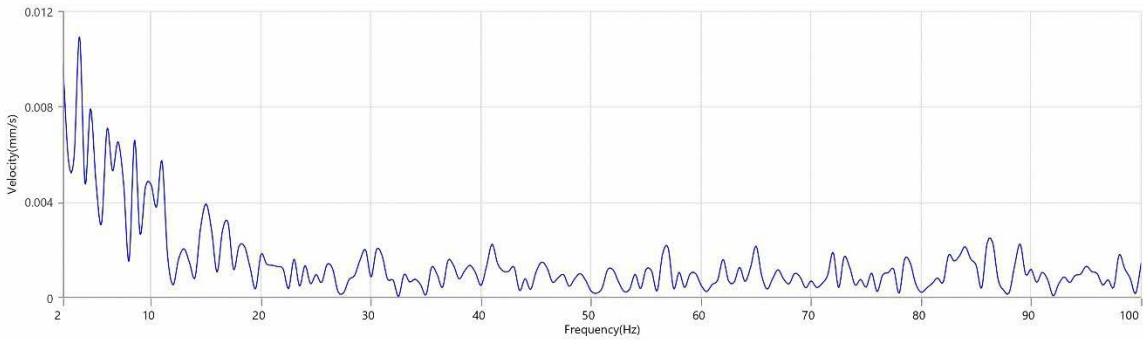
Tran - Dominant Frequency 5.0 Hz, Amplitude 0.009 mm/s (Peak Particle Velocity: 0.270 mm/s)



Vert - Dominant Frequency 4.5 Hz, Amplitude 0.016 mm/s (Peak Particle Velocity: 0.143 mm/s)



Long - Dominant Frequency 3.5 Hz, Amplitude 0.011 mm/s (Peak Particle Velocity: 0.381 mm/s)



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Event Report

Setsco Services Pte Ltd

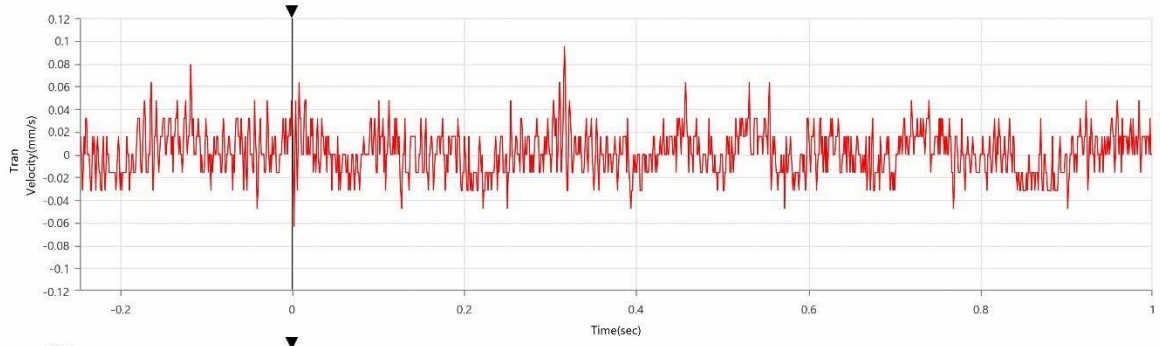
Waveform Trigger Source	Vert at January 13, 2023 13:36:56	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	R768JUL4.HK0
Operator	-		
Job Number	1		

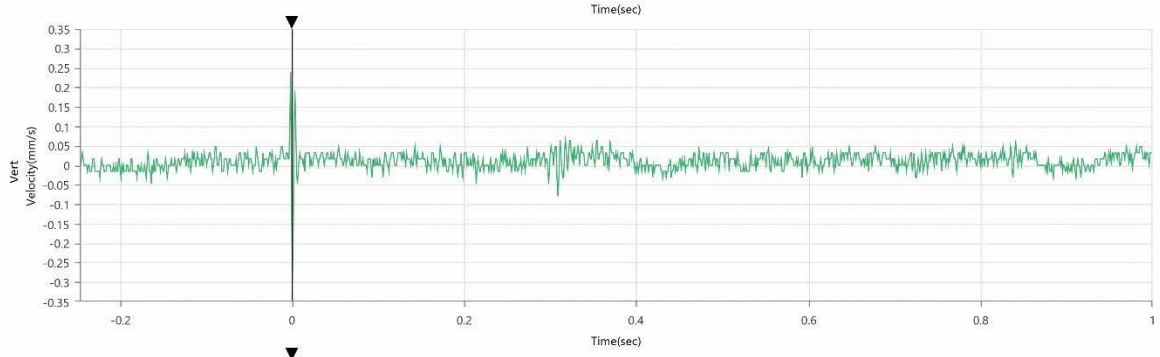
Notes
Location:
Client:
User Name:
General:

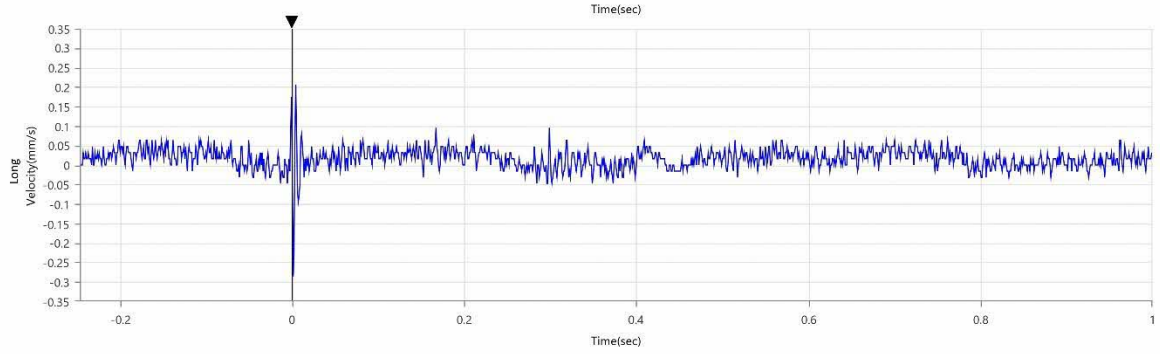
Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.095 mm/s	0.302 mm/s	0.286 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	0.316 sec	0.000 sec	0.001 sec
Peak Acceleration	0.007 g	0.030 g	0.028 g
Peak Displacement	0.000 mm	0.000 mm	0.000 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.335 mm/s at 0.001 sec







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FFT Report

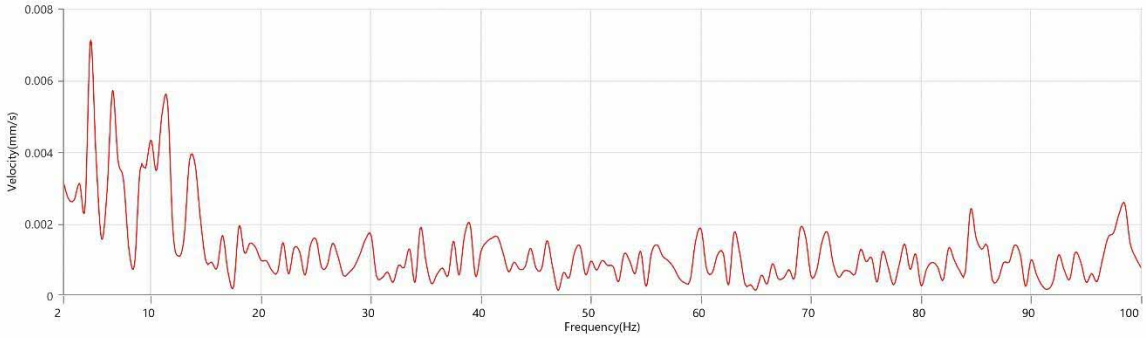
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 13, 2023 13:36:56	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JUL4.HK0
Job Number	1		

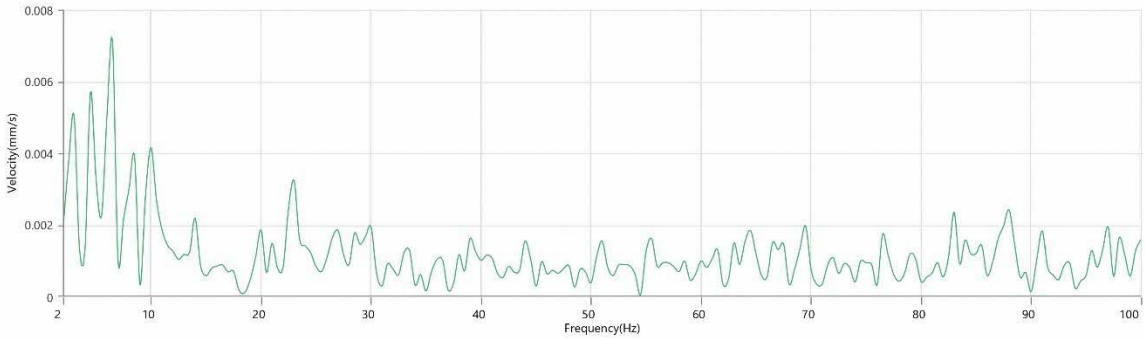
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

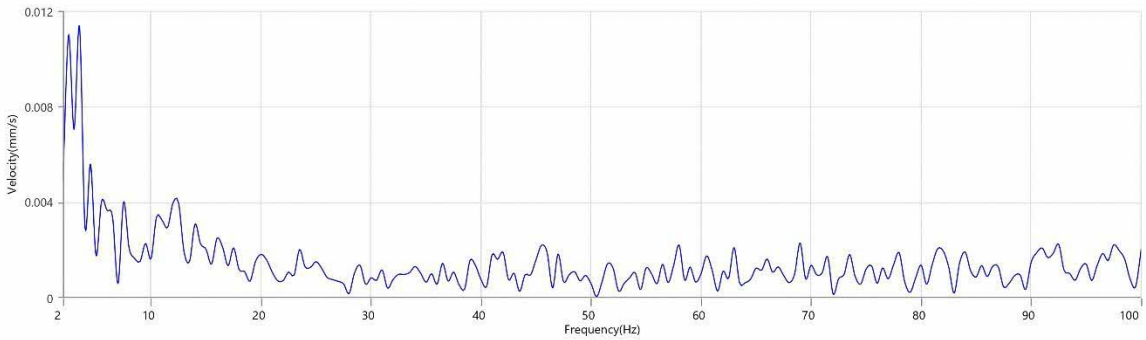
Tran - Dominant Frequency 4.5 Hz, Amplitude 0.007 mm/s (Peak Particle Velocity: 0.095 mm/s)



Vert - Dominant Frequency 6.5 Hz, Amplitude 0.007 mm/s (Peak Particle Velocity: 0.302 mm/s)



Long - Dominant Frequency 3.5 Hz, Amplitude 0.011 mm/s (Peak Particle Velocity: 0.286 mm/s)



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Event Report

Setsco Services Pte Ltd

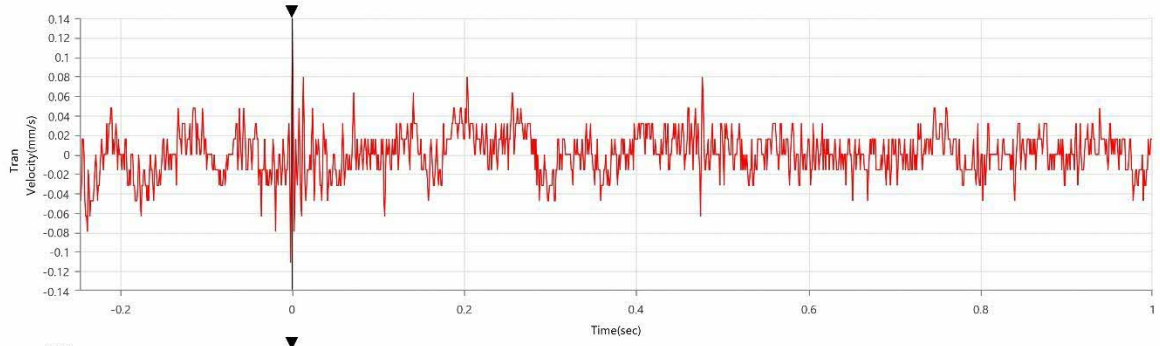
Waveform Trigger Source	Long at January 13, 2023 13:37:25	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	R768JUL4.ID0
Operator	-		
Job Number	1		

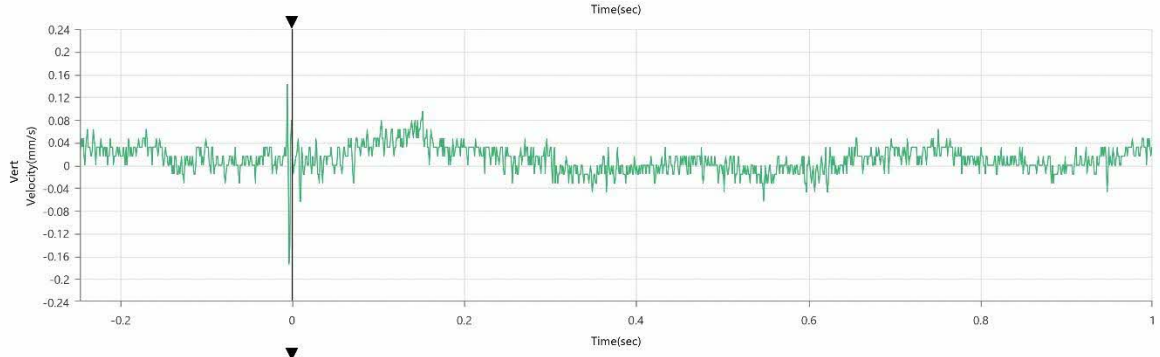
Notes
Location:
Client:
User Name:
General:

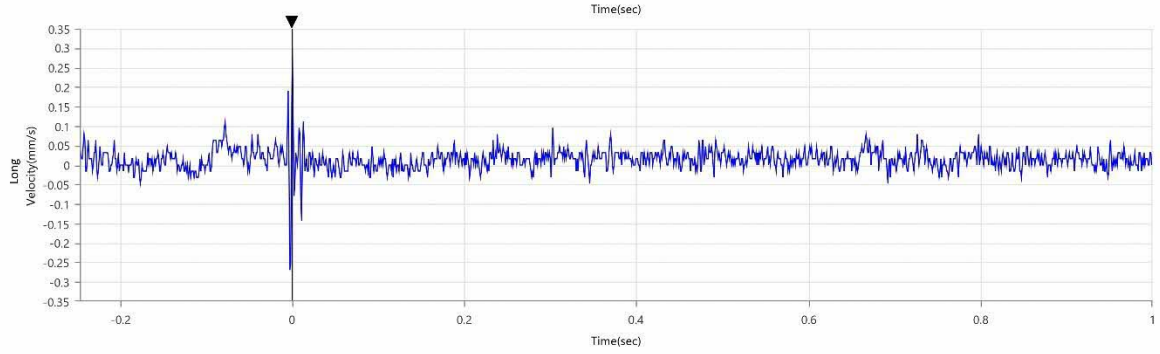
Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.127 mm/s	0.175 mm/s	0.302 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	0.000 sec	-0.004 sec	0.000 sec
Peak Acceleration	0.013 g	0.020 g	0.035 g
Peak Displacement	0.000 mm	0.001 mm	0.001 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.328 mm/s at 0.000 sec







Created by version 1.5.0.28.

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FFT Report

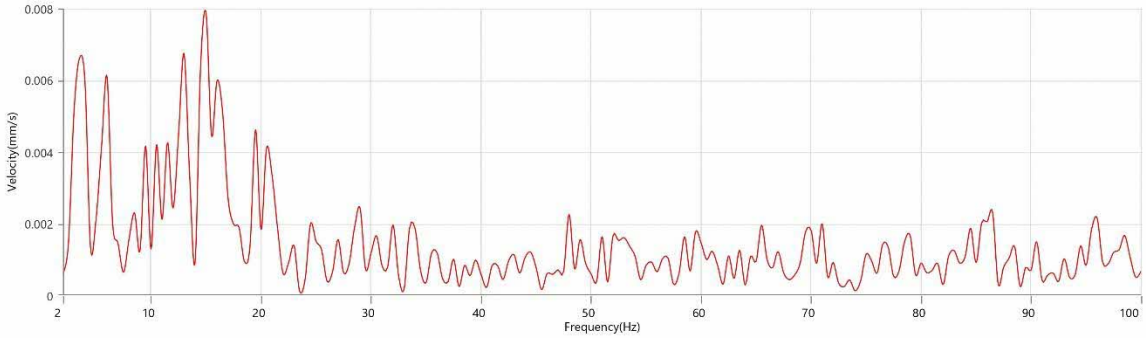
Setsco Services Pte Ltd

Waveform Trigger Source	Long at January 13, 2023 13:37:25	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JUL4.ID0
Job Number	1		

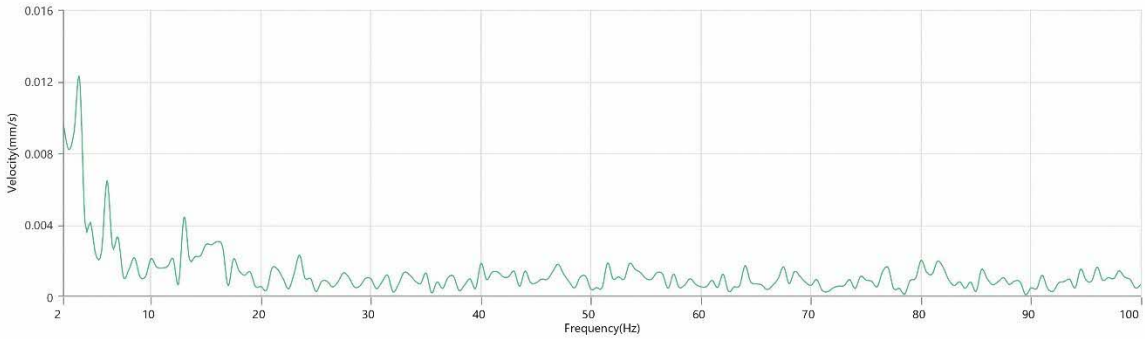
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

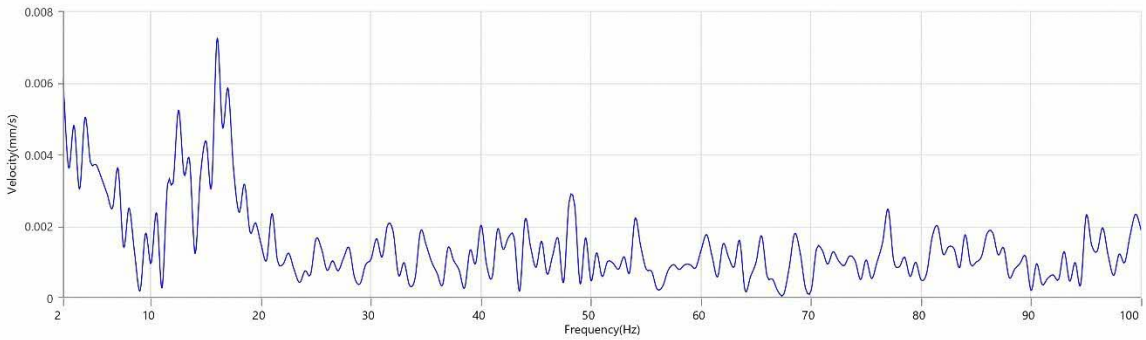
Tran - Dominant Frequency 15.0 Hz, Amplitude 0.008 mm/s (Peak Particle Velocity: 0.127 mm/s)



Vert - Dominant Frequency 3.5 Hz, Amplitude 0.012 mm/s (Peak Particle Velocity: 0.175 mm/s)



Long - Dominant Frequency 16.0 Hz, Amplitude 0.007 mm/s (Peak Particle Velocity: 0.302 mm/s)



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Instantel

Event Report

Setsco Services Pte Ltd

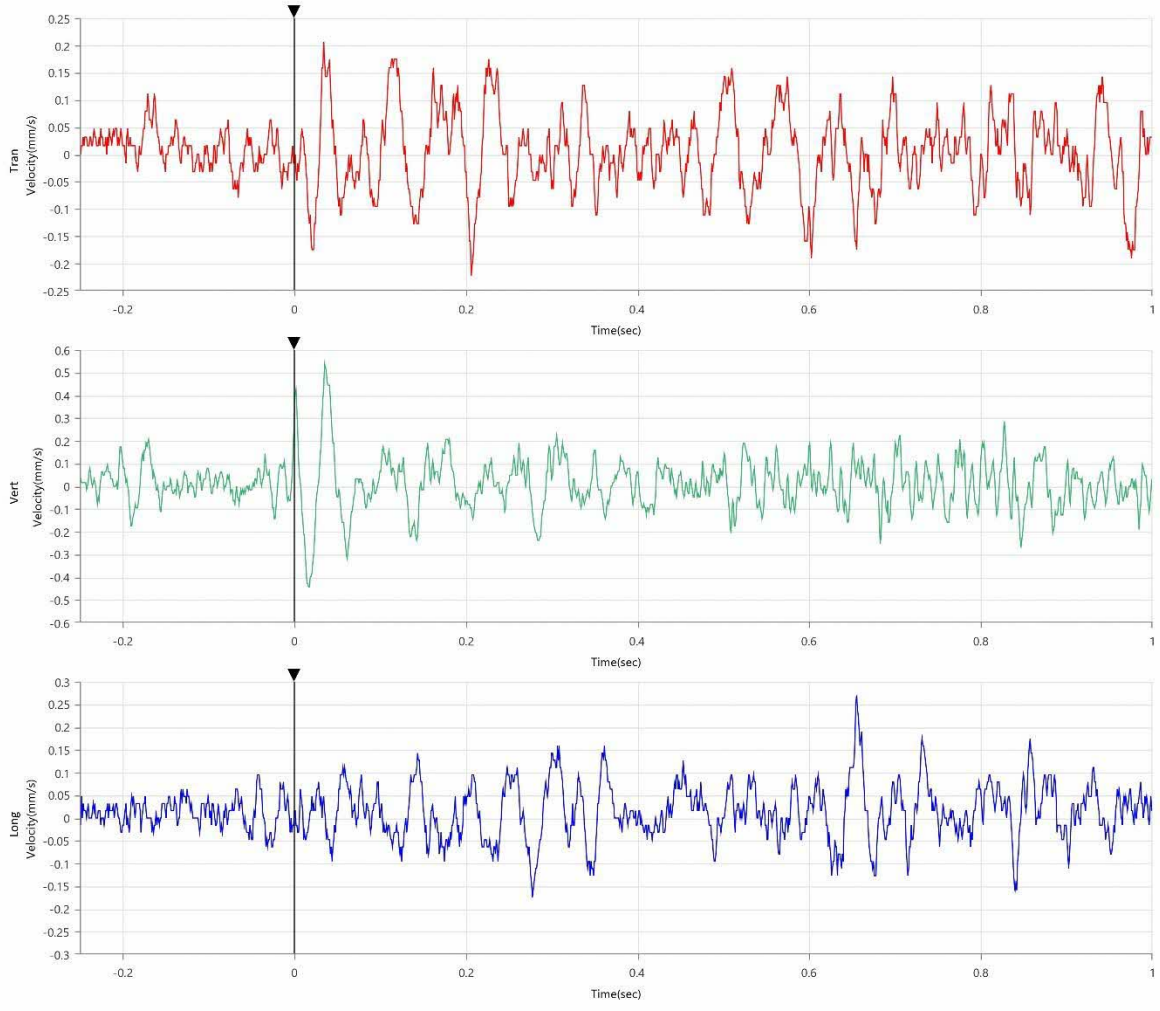
Waveform Trigger Source	Vert at January 13, 2023 17:24:48	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JULF.1C0
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.222 mm/s	0.540 mm/s	0.270 mm/s
Zero Crossing Frequency	25.6 Hz	24.4 Hz	21.3 Hz
Time (Relative to Trigger)	0.206 sec	0.035 sec	0.655 sec
Peak Acceleration	0.008 g	0.017 g	0.010 g
Peak Displacement	0.001 mm	0.003 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.568 mm/s at 0.035 sec



Created by version 1.5.0.28.

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FFT Report

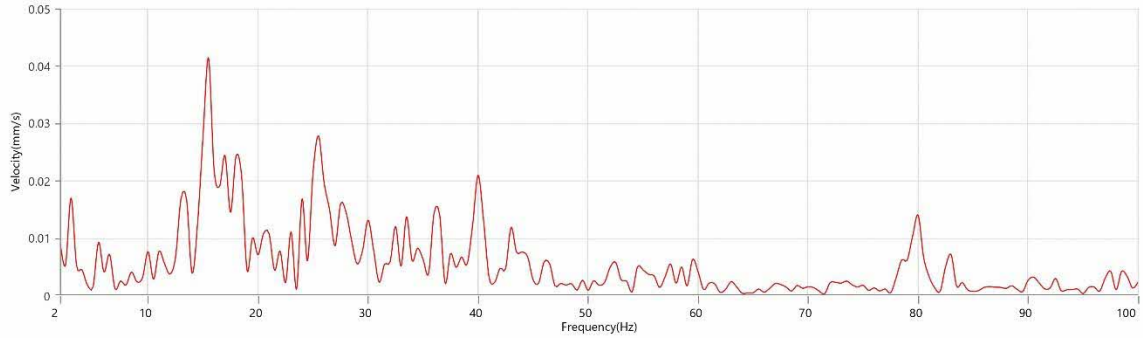
Setsco Services Pte Ltd

Waveform Trigger Source	Vert at January 13, 2023 17:24:48	**Serial Number**	BE16768
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/1.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	R768JULF.1C0
Job Number	1		

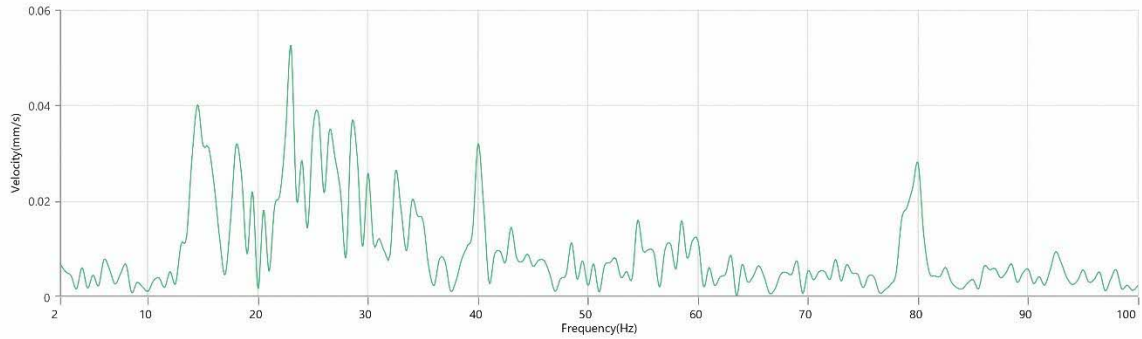
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode January 13, 2023 09:55:07
Post Event Notes No text to be displayed.

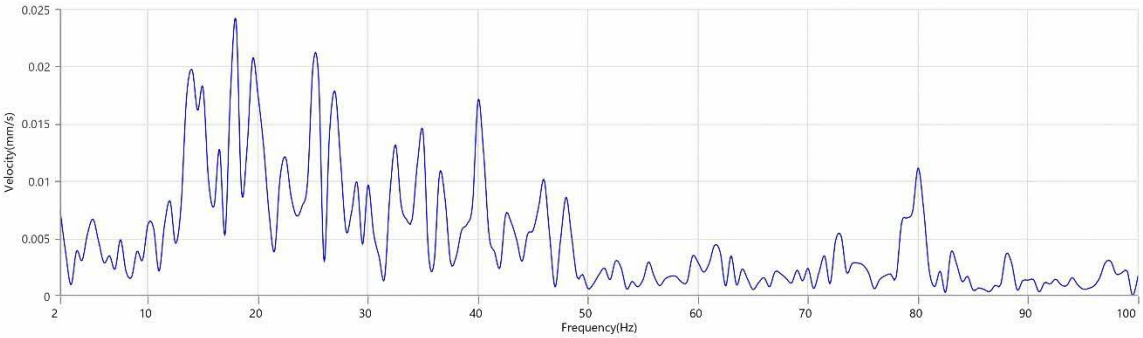
Tran - Dominant Frequency 15.5 Hz, Amplitude 0.041 mm/s (Peak Particle Velocity: 0.222 mm/s)



Vert - Dominant Frequency 23.0 Hz, Amplitude 0.052 mm/s (Peak Particle Velocity: 0.540 mm/s)



Long - Dominant Frequency 18.0 Hz, Amplitude 0.024 mm/s (Peak Particle Velocity: 0.270 mm/s)



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Appendix 1 – Calibration Certificate

Absolute Laboratories

Calibration Certificate

Calibration Number: 220401531291

Customer Name	: Setsco Services Pte Ltd	**Job Reference No**:	22040153
Customer Address	: 531 Bukit Batok Street 23 Singapore 659547	**Certificate Issue Date**:	19/05/2022
Manufacturer	: Instantel	**Calibration Date**:	19/05/2022
Item Description	: Vibration Monitor	**Test Conditions**:	
Model Number	: Minimate Plus	Ambient Temperature:	23.5 °C
Serial Number	: BE16768 (PM-002)	Relative Humidity:	59 %R.H.
Sub-Assemblies S/N	: BG15775	Pressure:	100.6 kPa

This certificate provides traceability of measurement to the International System of Units (SI).

Absolute Laboratories Pte. Ltd. certifies that the above product listed was calibrated in compliance with a quality management system using the applicable and approved Absolute Laboratories Pte. Ltd. calibration procedures as specified.

The reported expanded uncertainty is based on the standard uncertainty multiplied by a factor k = 2 (degrees of freedom = ∞), which corresponds to a level of confidence of approximately 95%.

Calibration Method:

The instrument was calibrated following AL calibration procedure WI- 26-Rev-1

Calibration Equipment(s) Used			
Apparatus	**Serial Number**	**Cal Due Date**	**Certificate Number**
Auto Zero & Gain Test Jig	718A1501-15	21/09/2022	210901582232
DC Power Supply	740622	08/03/2023	220300830623
Digital Multimeter	MY45034436	18/01/2023	1-16173132983-1

Ambient Condition Range:
Temperature: (20-26)°C , Humidity: (25-70)%RH, Pressure: (80-105)kPa

Calibration By : Han Chun Keong, Calibration Officer

Reviewed/Approved By : Rodrigo Manansala, Approving Officer

Absolute Laboratories Pte. Ltd. is an affiliated company of Absolute Instrument Systems (Pte.) Ltd.

Absolute Laboratories Pte. Ltd.
11 Kallang Place #06-02 Singapore 339155
Tel: 65 6296 8012 Fax: 65 6296 3242

…… End of Report ……

TEST REPORT

(This Report is issued subject to the terms & conditions set out below)

ON
GROUND VIBRATION MONITORING

SETSCO
Setsco Services Pte Ltd
531 Bukit Batok Street 23
Singapore 659547
Tel : (65) 6566 7777
Fax: (65) 6566 7718
www.setsco.com
Business Reg. No. 196900269D

Our Reference	:	**MA-8500258548/SAH/3**
Your Reference	:	**6159687**
Report Date	:	**05/04/2023** **Page 1 of 18**
Measured for	:	**DHI WATER & ENVIRONMENT (S) PTE LTD** 2 Venture Drive #18-18 Vision Exchange Singapore 608526 **Attn**: Mr. Bryan Wong
Date of Measurement	:	31th March 2023 to 2nd April 2023
Place of Inspection	:	Admiralty Forest

Sahlan Bin Ismail
Testing Officer

Almond Soon
Senior Engineer
Maintenance Testing Department
Mechanical Technology Division

TABLE OF CONTENTS

Introduction

SETSCO SERVICES PTE LTD was appointed by DHI WATER & ENVIRONMENT (S) PTE LTD to carry out Ground Vibration Monitoring at **Admiralty Forest**.

Project

Environmental Baseline Survey

Scope of Measurement

In this monitoring the evaluation of ground vibration is based on the maximum values of the three components of the vibration velocity that is Vertical, Longitudinal and Transverse direction {V (z-axis), L (x-axis) and T (y-axis)}.

The measurement in this three directions would be monitored at location specified in the 'Date of Measurement and Test Locations' section.

The measurement would be in frequency range of 1Hz to 100Hz, velocity-time domain with a minimum trigger level set at **0.3 mm/s**. The monitoring of vibration was conducted based on client's request. The dominant frequency with the corresponding peak particle velocity would be tabulated. The vibration meter was set on continuous and histogram monitoring with readings taken every 5 seconds interval.

Objective of Measurement

The objective of this monitoring at **Admiralty Forest** was to determine the level of the vibration for the purpose of environmental baseline survey.

Measurement Equipment Specification

The measurement equipment for the vibration test measurements are as follows:

- INSTANTEL INC Ground Vibration Monitoring Equipment (Vibration Sensor Tri-axial)

Calibration Certification of the equipment/s is provided in 'Appendix 1- Calibration Certificates' section.

Date of Measurement and Test Locations

The measurements were conducted from 31th March 2023 to 2nd April 2023 at **Admiralty Forest**.

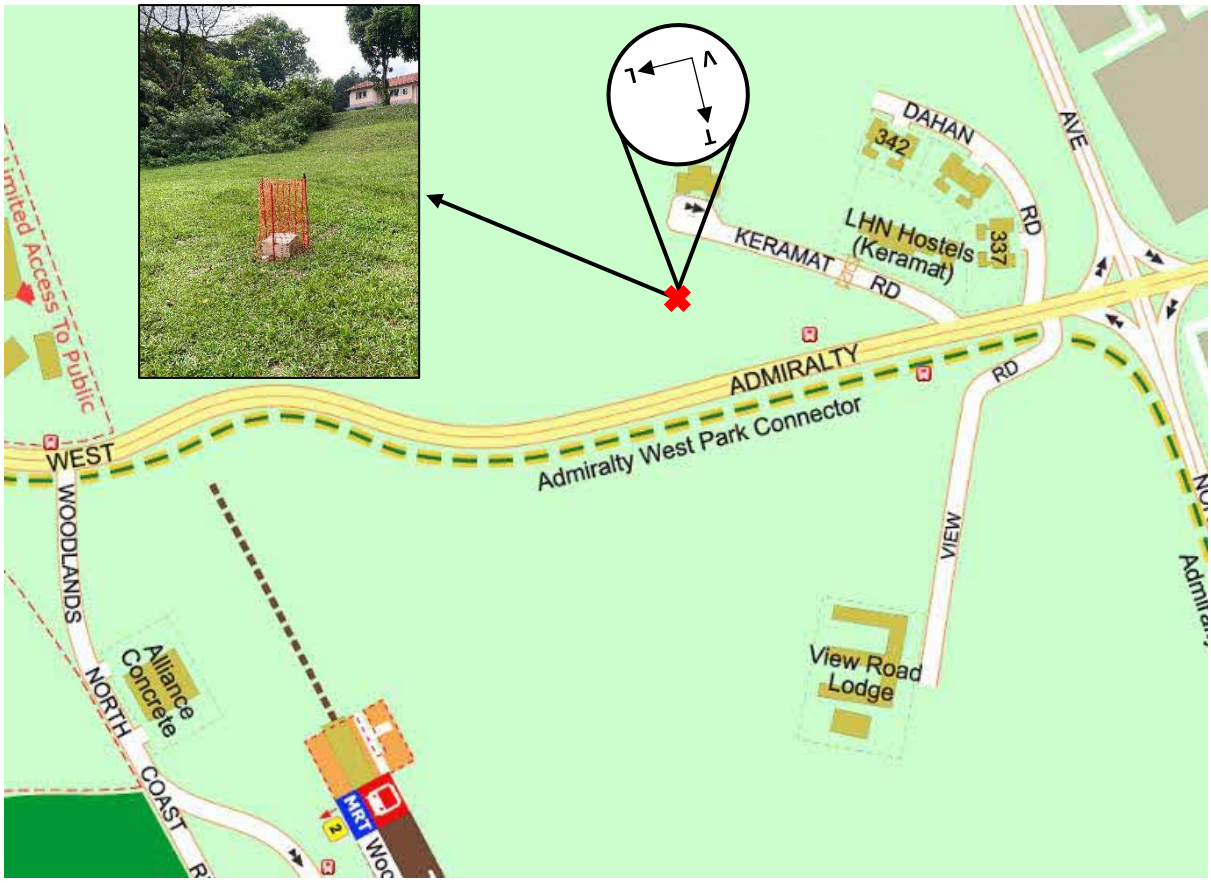


Figure 1: Test Location & Direction of Measurement

Results & Conclusion

For the results of the measurement, refer to the 'Vibration Measurement Data' section.

The details of the measurement show the frequency with the corresponding peak particle velocity in Vertical, Longitudinal and Transverse direction.

Vibration Measurement Data

Instantel

Event Report

Setsco Services Pte Ltd

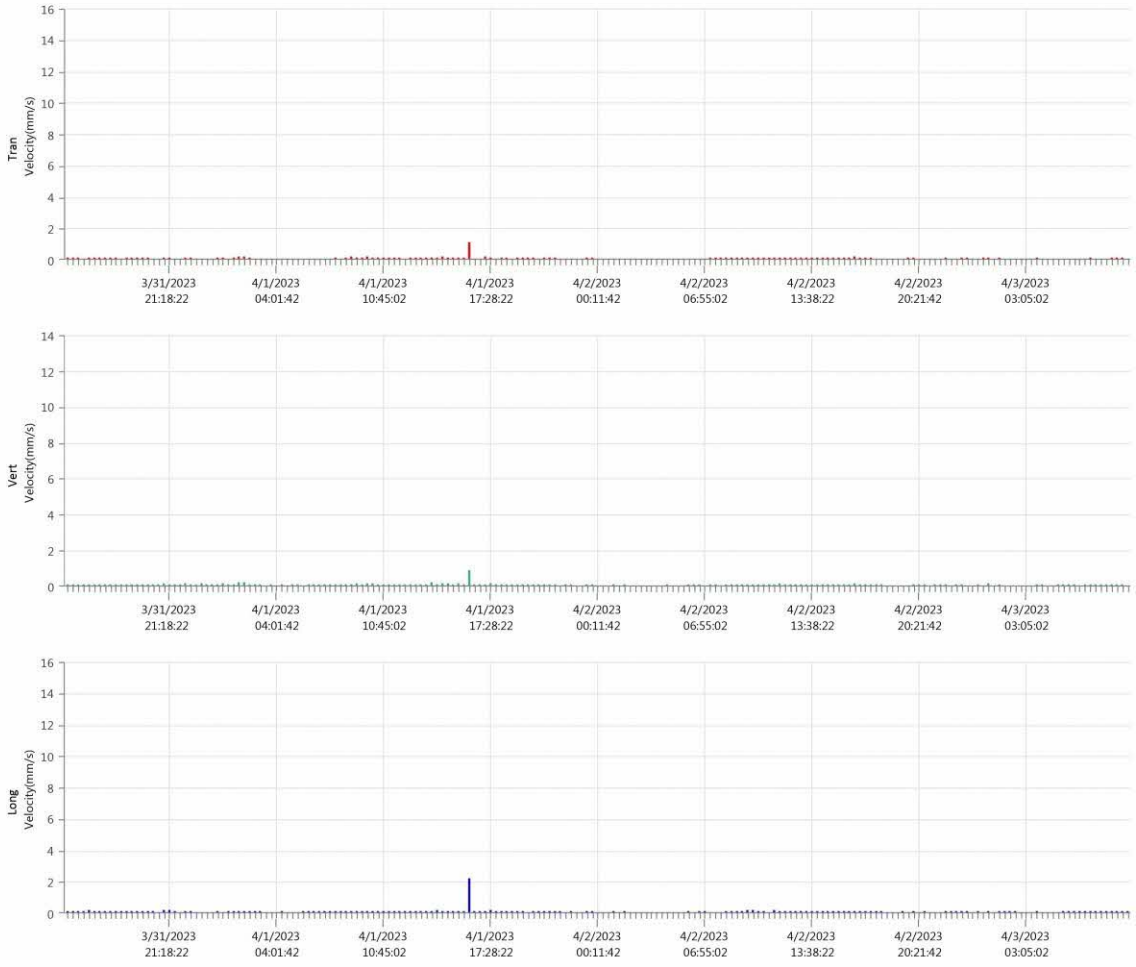
Start	March 31, 2023 14:35:02	**Serial Number**	BE13706
Finish	April 3, 2023 09:45:28	**Model Number**	MiniMate Plus 10.72.8.17
Number of Intervals/Interval	48365.00/5 sec	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	BE13706_20230331143457.IDFH
Operator	-		
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes No text to be displayed.
Post Event Notes Admiralty Forest

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	1.111 mm/s	0.921 mm/s	2.207 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Date	Apr 1, 2023	Apr 1, 2023	Apr 1, 2023
Time	16:24:02	16:24:02	16:24:02
Sensor Check	✓ Passed	✓ Passed	✓ Passed
Frequency	7.5 Hz	7.6 Hz	8.2 Hz
Overswing Ratio	3.7	3.4	3.7

Peak Vector Sum 2.321 mm/s at April 1, 2023 16:24:02



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Instantel

Event Report

Setsco Services Pte Ltd

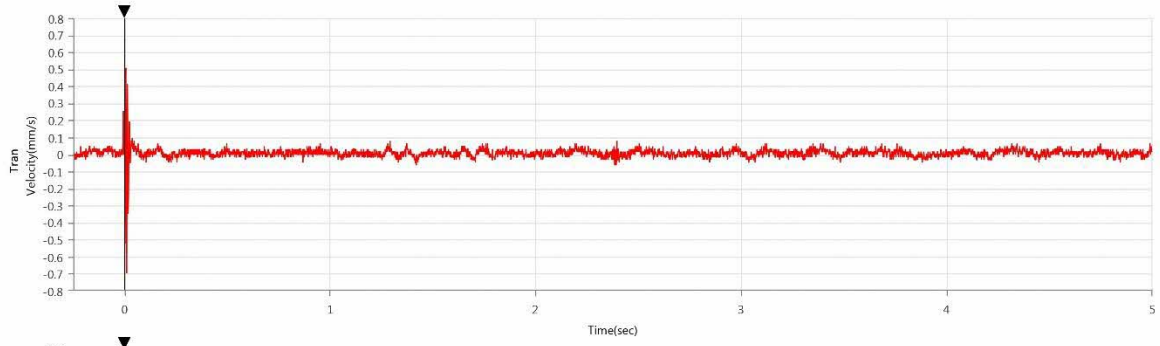
Waveform Trigger Source	Long at March 31, 2023 14:35:18	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/5.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	BE13706_20230331143518.IDFW
Job Number	1		

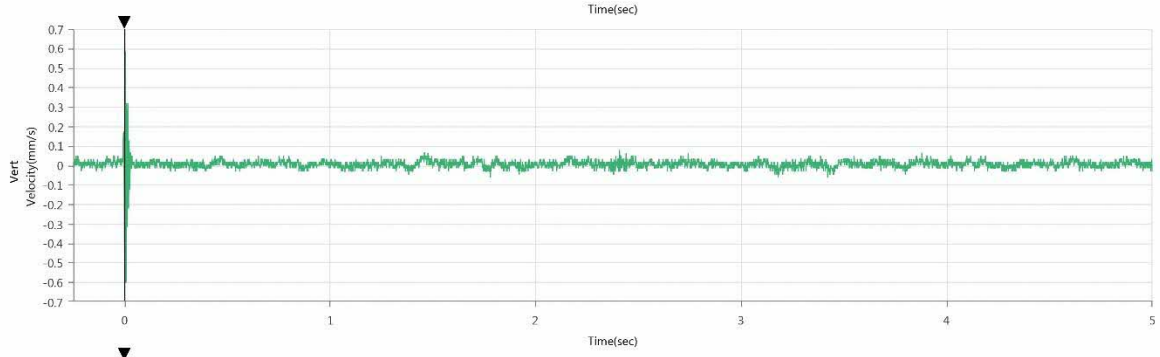
Notes
Location:
Client:
User Name:
General:

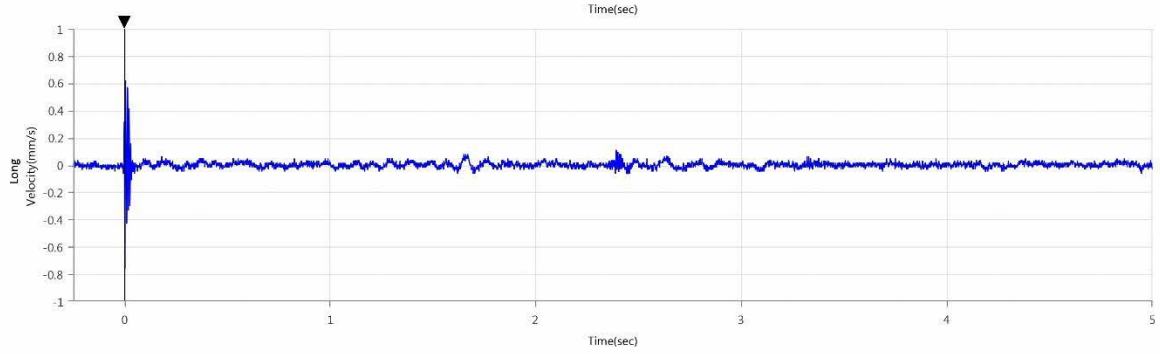
Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.698 mm/s	0.603 mm/s	0.762 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	0.012 sec	0.008 sec	0.003 sec
Peak Acceleration	0.048 g	0.065 g	0.063 g
Peak Displacement	0.001 mm	0.001 mm	0.001 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.886 mm/s at 0.003 sec







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FFT Report

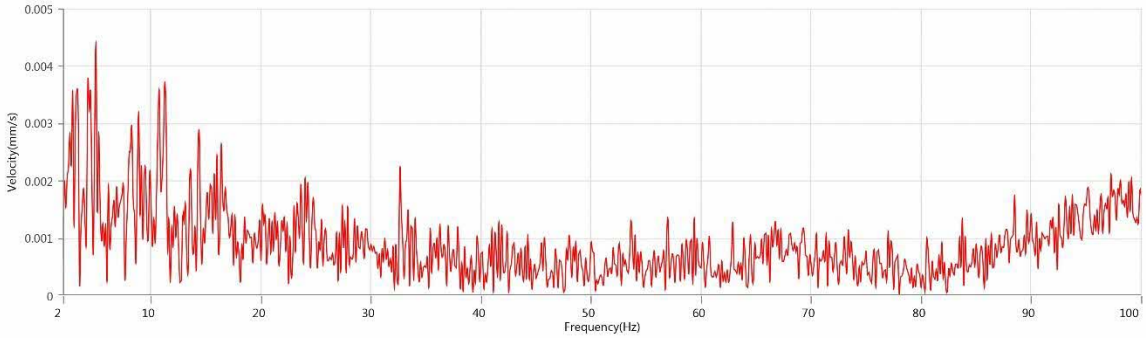
Setsco Services Pte Ltd

Waveform Trigger Source	Long at March 31, 2023 14:35:18	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/5.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	BE13706_20230331143518.IDFW
Job Number	1		

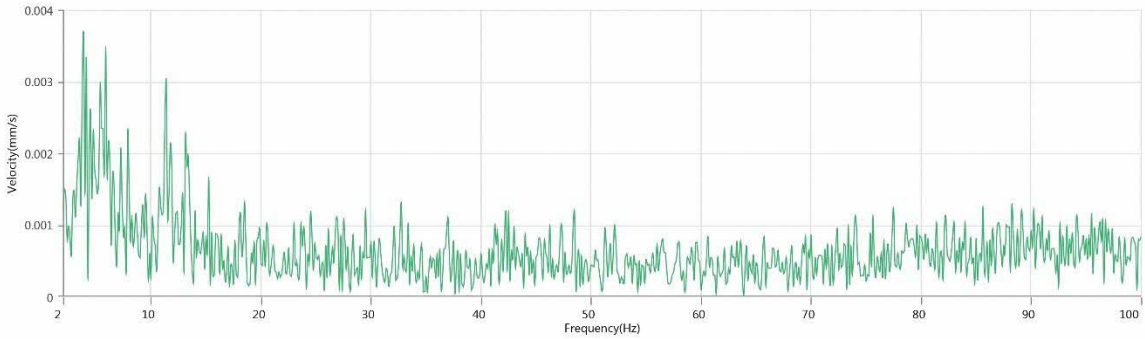
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

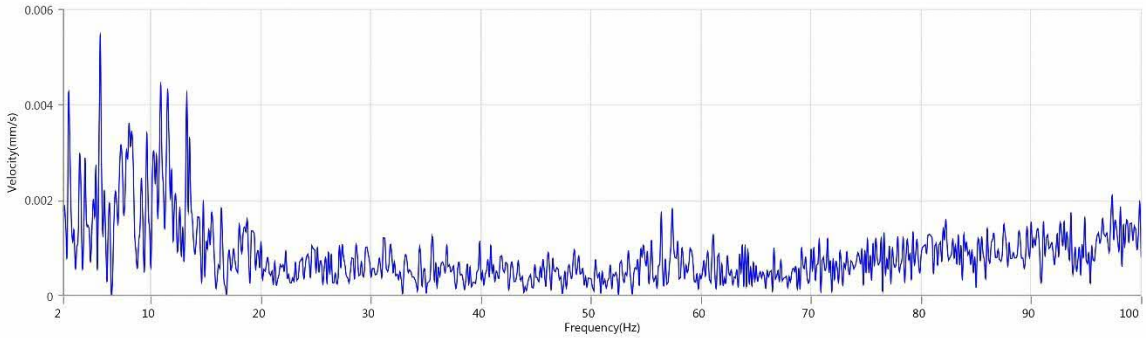
Tran - Dominant Frequency 5.0 Hz, Amplitude 0.004 mm/s (Peak Particle Velocity: 0.698 mm/s)



Vert - Dominant Frequency 3.9 Hz, Amplitude 0.004 mm/s (Peak Particle Velocity: 0.603 mm/s)



Long - Dominant Frequency 5.4 Hz, Amplitude 0.005 mm/s (Peak Particle Velocity: 0.762 mm/s)



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Instantel

Event Report

Setsco Services Pte Ltd

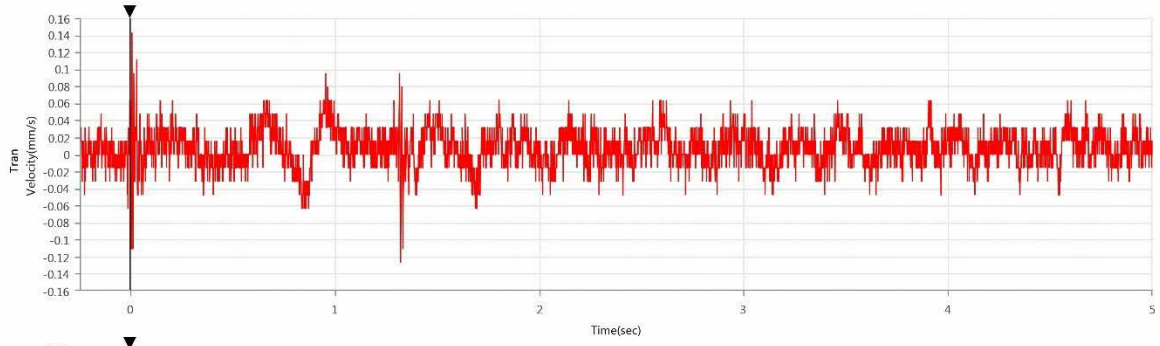
Waveform Trigger Source	Long at March 31, 2023 14:35:40	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/5.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	BE13706_20230331143540.IDFW
Operator	-		
Job Number	1		

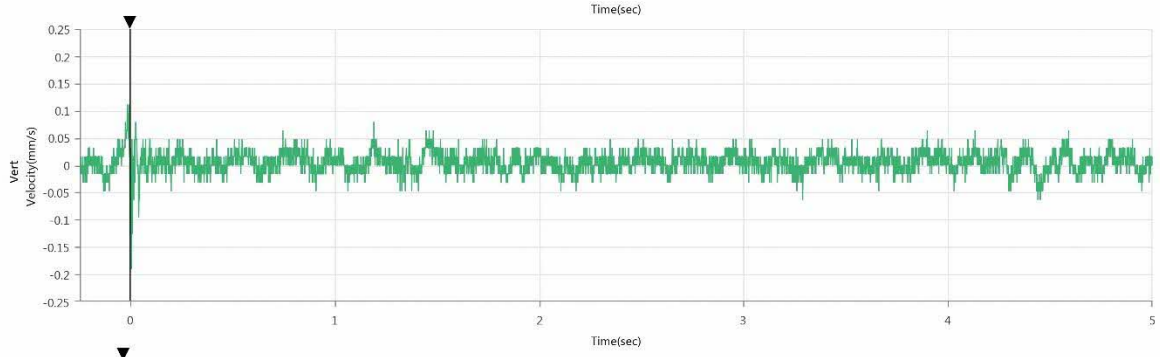
Notes
Location:
Client:
User Name:
General:

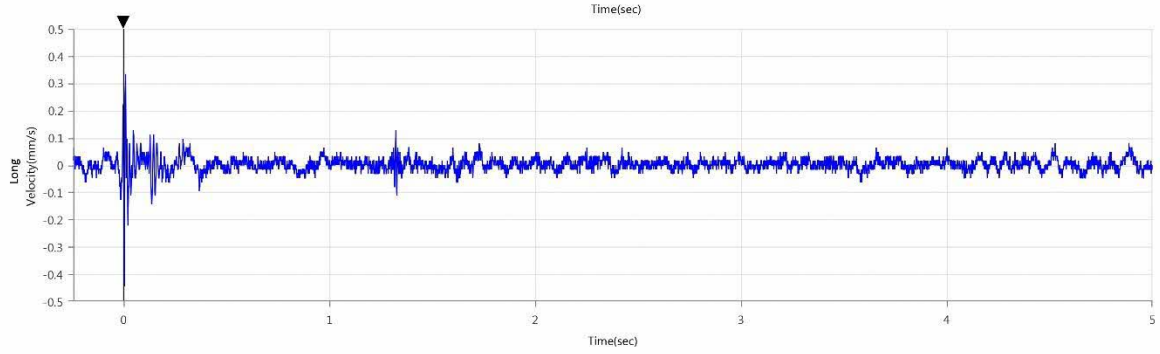
Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.143 mm/s	0.190 mm/s	0.444 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	85.3 Hz
Time (Relative to Trigger)	0.008 sec	0.006 sec	0.001 sec
Peak Acceleration	0.010 g	0.017 g	0.023 g
Peak Displacement	0.001 mm	0.001 mm	0.001 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.448 mm/s at 0.001 sec







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Instantel

FFT Report

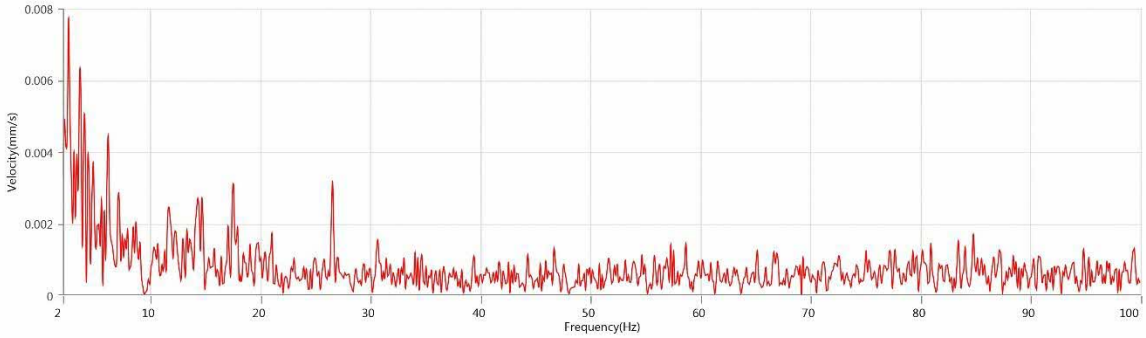
Setsco Services Pte Ltd

Waveform Trigger Source	Long at March 31, 2023 14:35:40	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/5.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	BE13706_20230331143540.IDFW
Job Number	1		

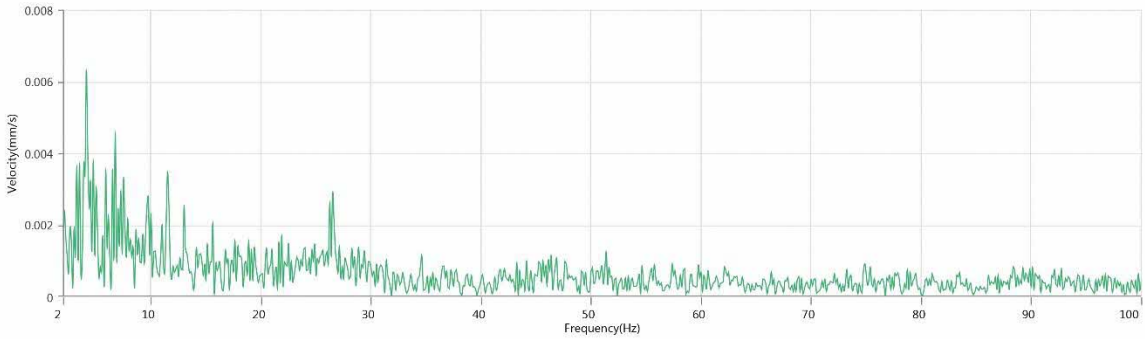
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

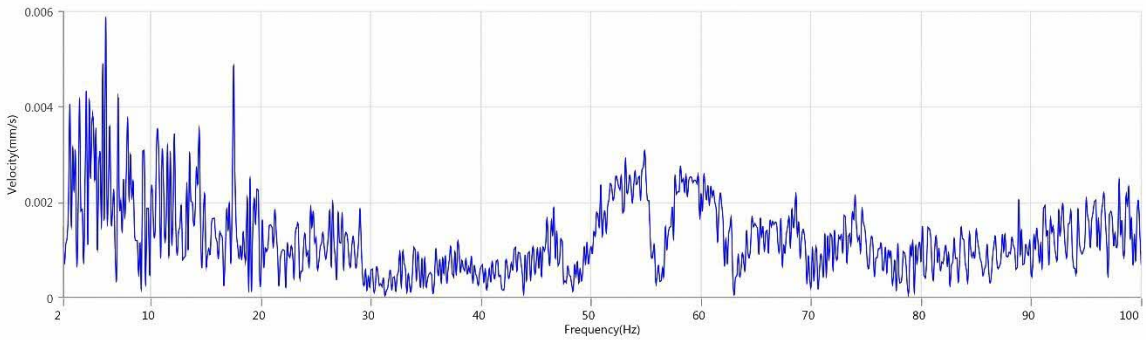
Tran - Dominant Frequency 2.5 Hz, Amplitude 0.008 mm/s (Peak Particle Velocity: 0.143 mm/s)



Vert - Dominant Frequency 4.1 Hz, Amplitude 0.006 mm/s (Peak Particle Velocity: 0.190 mm/s)



Long - Dominant Frequency 5.9 Hz, Amplitude 0.006 mm/s (Peak Particle Velocity: 0.444 mm/s)



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Instantel

Event Report

Setsco Services Pte Ltd

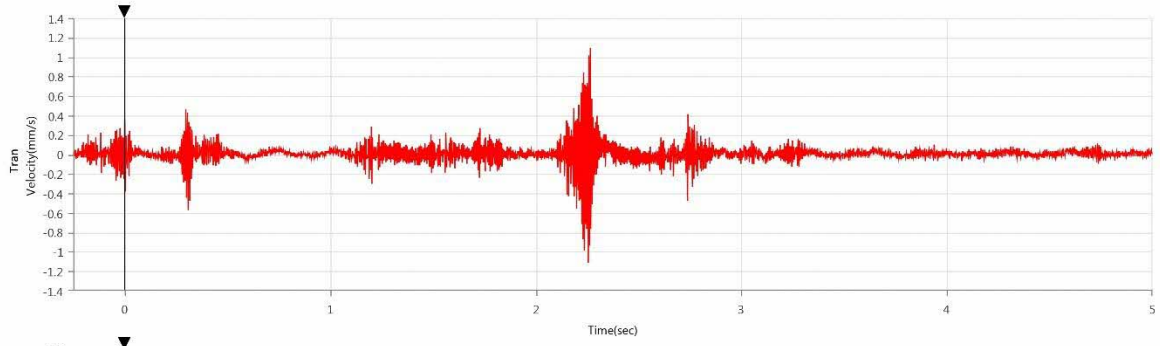
Waveform Trigger Source	Tran at April 1, 2023 16:23:57	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/5.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	BE13706_20230401162357.IDFW
Job Number	1		

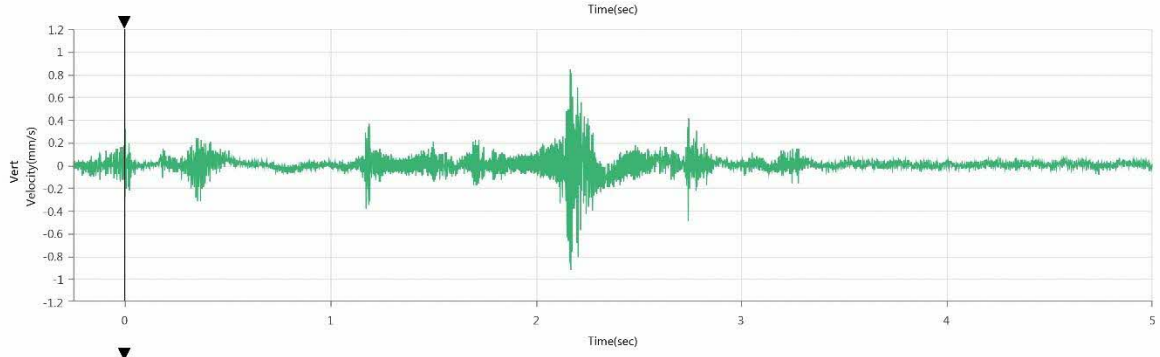
Notes
Location:
Client:
User Name:
General:

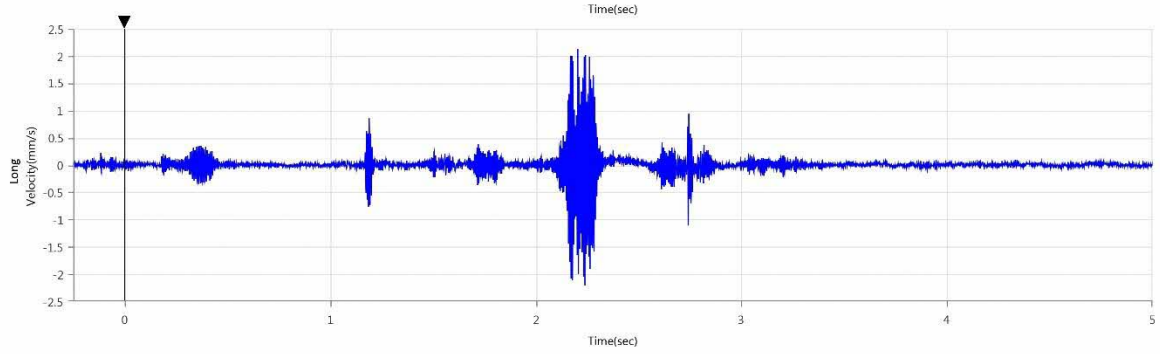
Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	1.111 mm/s	0.921 mm/s	2.207 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	2.255 sec	2.171 sec	2.239 sec
Peak Acceleration	0.129 g	0.094 g	0.219 g
Peak Displacement	0.001 mm	0.001 mm	0.002 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 2.321 mm/s at 2.239 sec







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Instantel

FFT Report

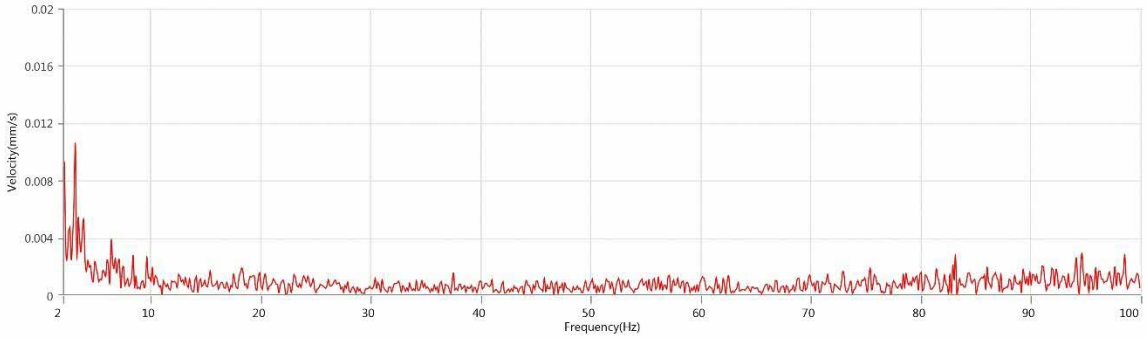
Setsco Services Pte Ltd

Waveform Trigger Source	Tran at April 1, 2023 16:23:57	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/5.00 sec (Fixed)	**Battery Level**	6.6 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	BE13706_20230401162357.IDFW
Job Number	1		

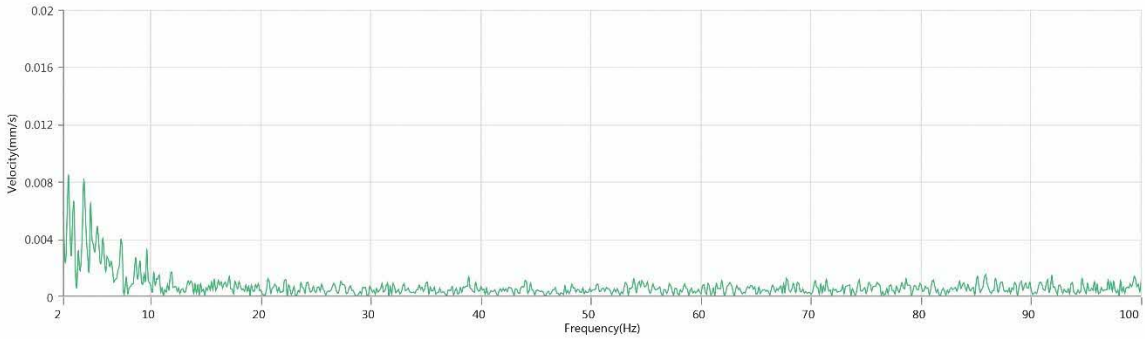
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

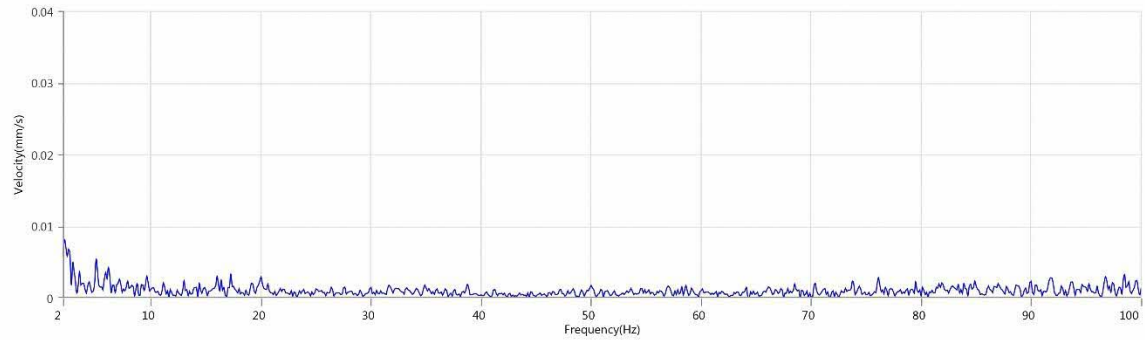
Tran - Dominant Frequency 3.1 Hz, Amplitude 0.011 mm/s (Peak Particle Velocity: 1.111 mm/s)



Vert - Dominant Frequency 2.5 Hz, Amplitude 0.008 mm/s (Peak Particle Velocity: 0.921 mm/s)



Long - Dominant Frequency 2.1 Hz, Amplitude 0.008 mm/s (Peak Particle Velocity: 2.207 mm/s)



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Instantel

Event Report

Setsco Services Pte Ltd

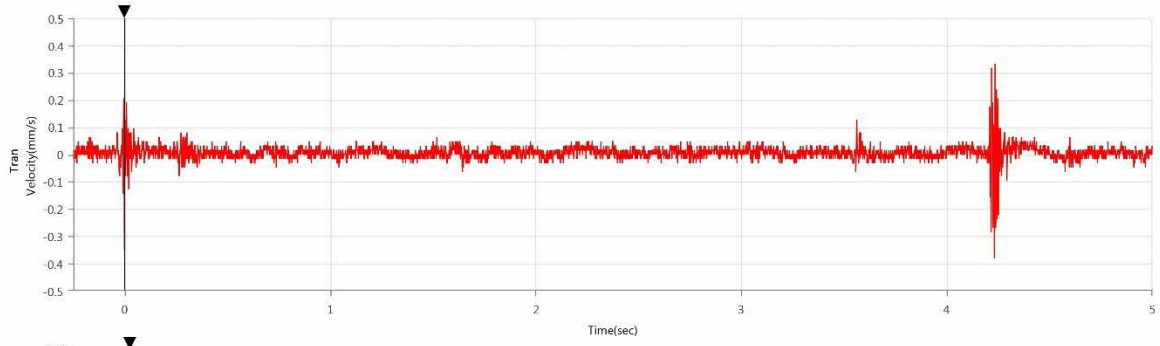
Waveform Trigger Source	Tran at April 3, 2023 09:43:56	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/5.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	BE13706_20230403094356.IDFW
Job Number	1		

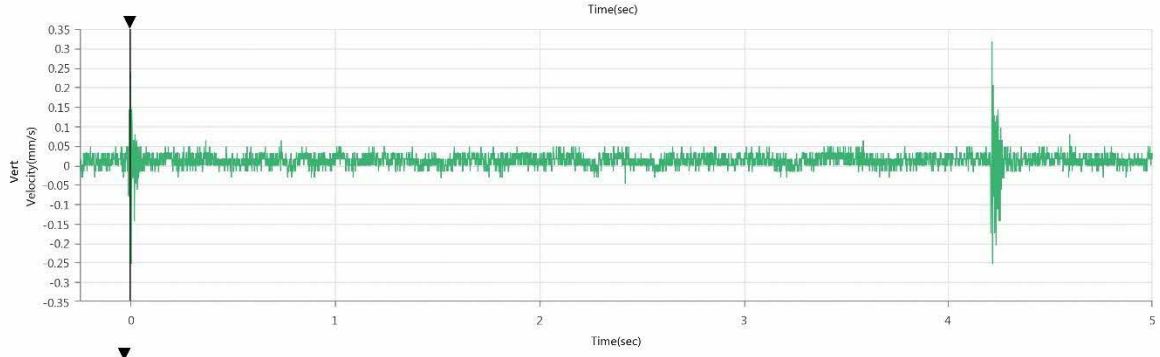
Notes
Location:
Client:
User Name:
General:

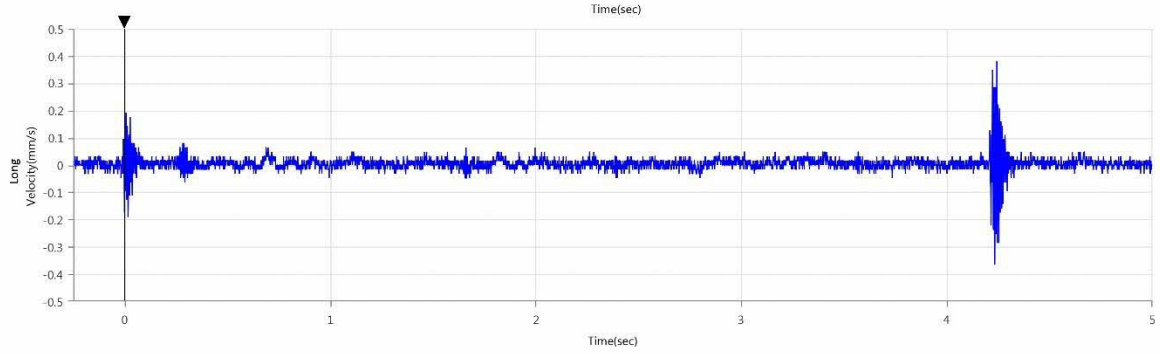
Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.381 mm/s	0.317 mm/s	0.381 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	4.231 sec	4.215 sec	4.243 sec
Peak Acceleration	0.035 g	0.038 g	0.033 g
Peak Displacement	0.000 mm	0.000 mm	0.000 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.482 mm/s at 4.215 sec







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Instantel

FFT Report

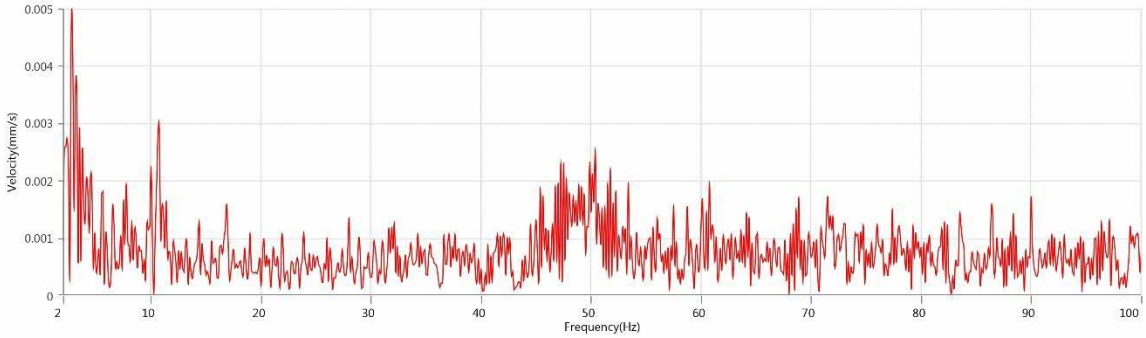
Setsco Services Pte Ltd

Waveform Trigger Source	Tran at April 3, 2023 09:43:56	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/5.00 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	BE13706_20230403094356.IDFW
Job Number	1		

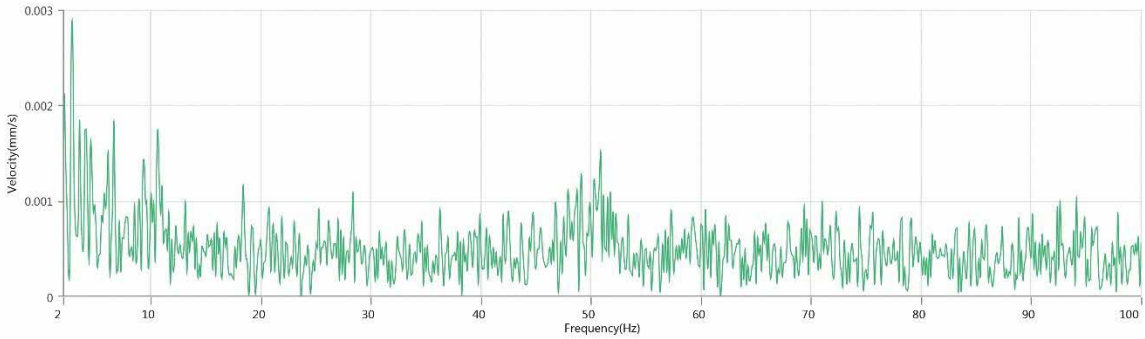
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

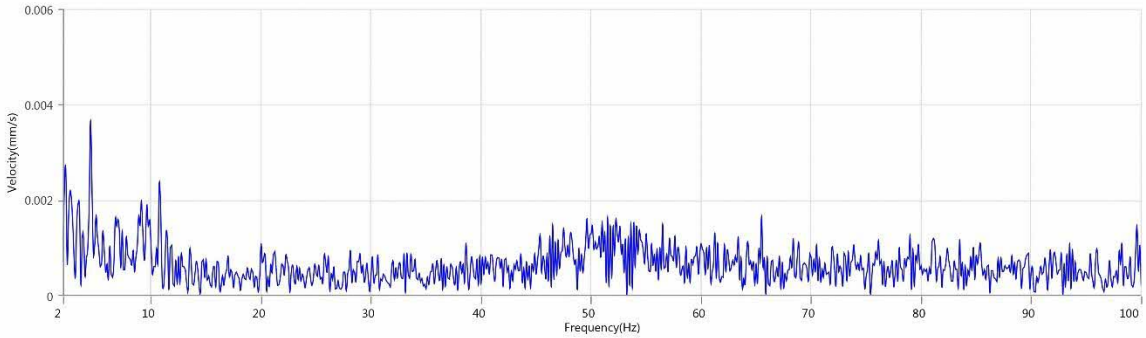
Tran - Dominant Frequency 2.8 Hz, Amplitude 0.005 mm/s (Peak Particle Velocity: 0.381 mm/s)



Vert - Dominant Frequency 2.9 Hz, Amplitude 0.003 mm/s (Peak Particle Velocity: 0.317 mm/s)



Long - Dominant Frequency 4.5 Hz, Amplitude 0.004 mm/s (Peak Particle Velocity: 0.381 mm/s)



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Instantel

Event Report

Setsco Services Pte Ltd

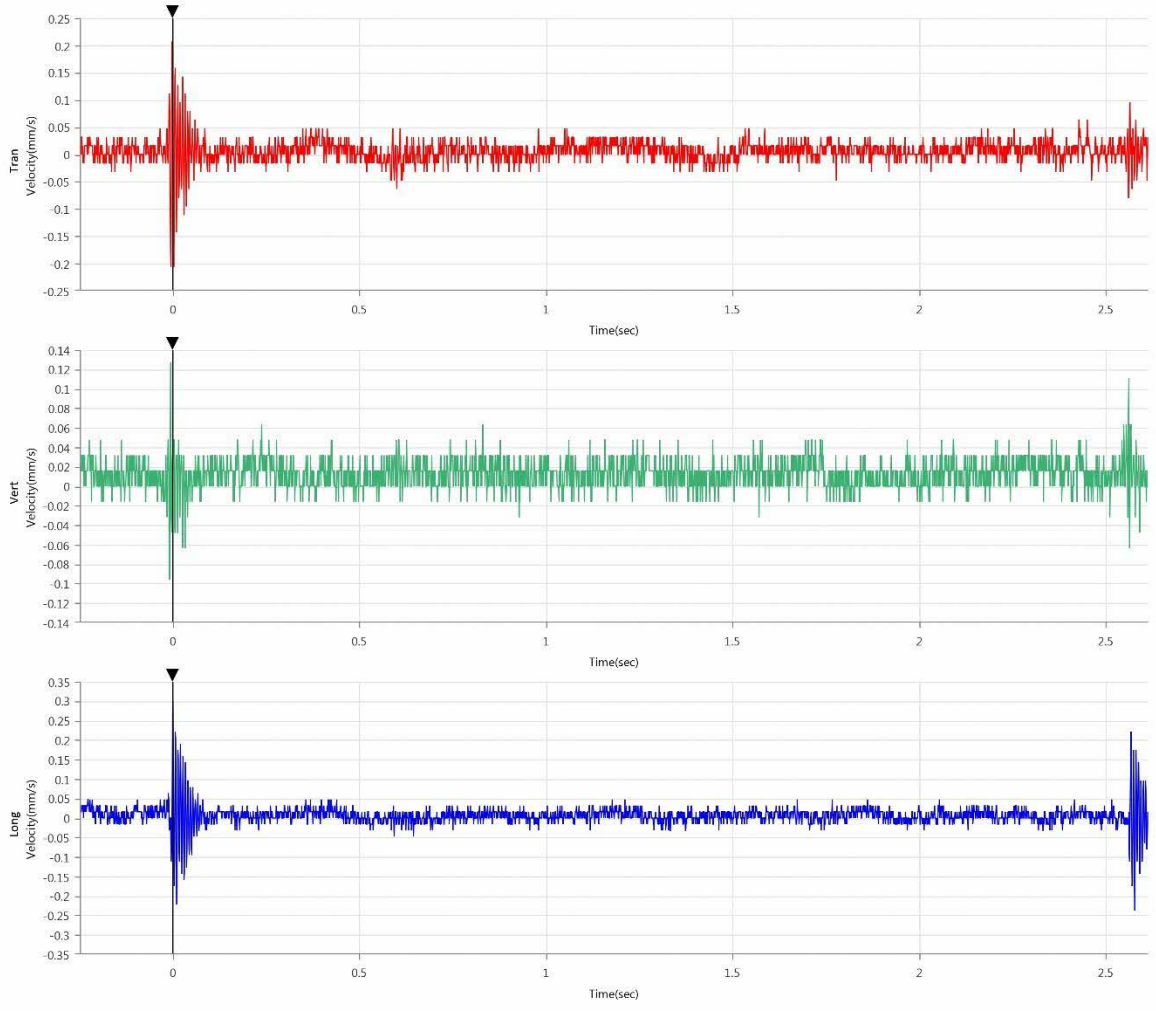
Waveform Trigger Source	Long at April 3, 2023 09:44:04	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/2.61 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	BE13706_20230403094404.IDFW
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.206 mm/s	0.127 mm/s	0.302 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Time (Relative to Trigger)	-0.005 sec	-0.006 sec	0.000 sec
Peak Acceleration	0.020 g	0.015 g	0.023 g
Peak Displacement	0.000 mm	0.000 mm	0.000 mm
Sensor Check	Disabled	Disabled	Disabled

Peak Vector Sum 0.357 mm/s at 0.000 sec



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Instantel

FFT Report

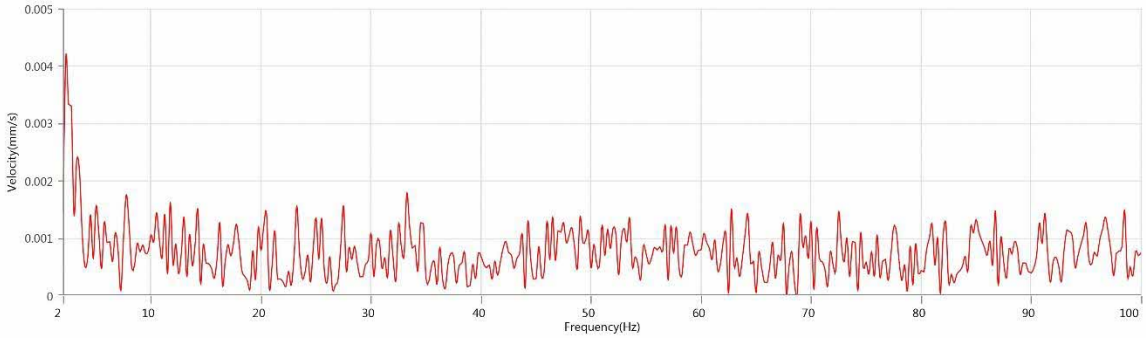
Setsco Services Pte Ltd

Waveform Trigger Source	Long at April 3, 2023 09:44:04	**Serial Number**	BE13706
Trigger Level(s)	Geo 0.300 mm/s	**Model Number**	MiniMate Plus 10.72.8.17
Pre-Trigger/Record Time	0.25 sec/2.61 sec (Fixed)	**Battery Level**	6.7 volts
Sample Rate	1024 sps	**Unit Calibration**	February 24, 2023 by Absolute Instrument Systems
Setup File Name	N/A		
Operator	-	**Event File Name**	BE13706_20230403094404.IDFW
Job Number	1		

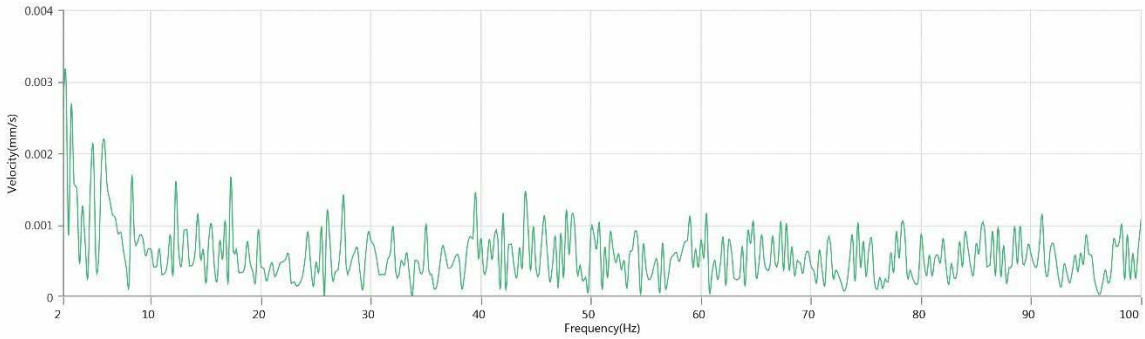
Notes
Location:
Client:
User Name:
General:

Extended Notes Combo Mode March 31, 2023 14:34:56
Post Event Notes No text to be displayed.

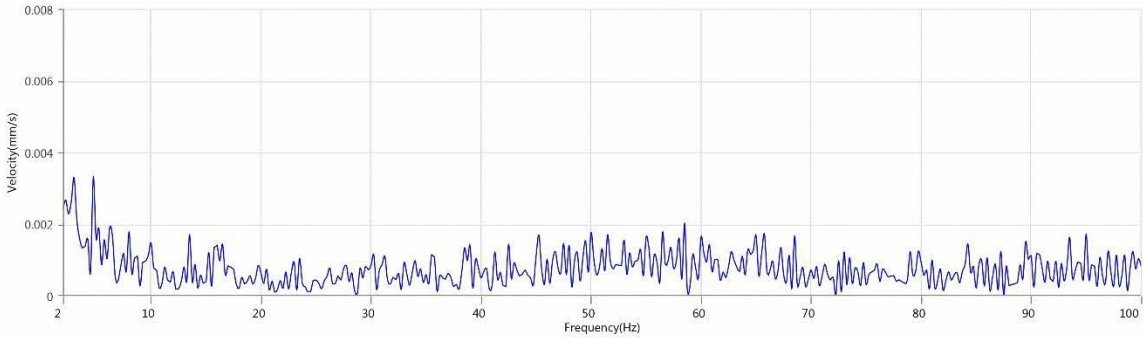
Tran - Dominant Frequency 2.2 Hz, Amplitude 0.004 mm/s (Peak Particle Velocity: 0.206 mm/s)



Vert - Dominant Frequency 2.2 Hz, Amplitude 0.003 mm/s (Peak Particle Velocity: 0.127 mm/s)



Long - Dominant Frequency 3.0 Hz, Amplitude 0.003 mm/s (Peak Particle Velocity: 0.302 mm/s)



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Appendix 1 – Calibration Certificate

Absolute Laboratories

Calibration Certificate

Calibration Number: 230202730683

Customer Name	: Setsco Services Pte Ltd	**Job Reference No**:	23020273
Customer Address	: 531 Bukit Batok Street 23 Singapore 659547	**Certificate Issue Date**:	08/03/2023
Manufacturer	: Instantel	**Calibration Date**:	24/02/2023
Item Description	: Vibration Monitor	**Test Conditions**:	
Model Number	: Minimate Plus	Ambient Temperature:	23 °C
Serial Number	: BE13706 (PM-001)	Relative Humidity:	60 %R.H.
Sub-Assemblies S/N	: BG12625	Pressure:	100.7 kPa

This certificate provides traceability of measurement to the International System of Units (SI).

Absolute Laboratories Pte. Ltd. certifies that the above product listed was calibrated in compliance with a quality management system using the applicable and approved Absolute Laboratories Pte. Ltd. calibration procedures as specified.

The reported expanded uncertainty is based on the standard uncertainty multiplied by a factor k = 2 (degrees of freedom = ∞), which corresponds to a level of confidence of approximately 95%.

Calibration Method:

The instrument was calibrated following AL calibration procedure WI- 26-Rev-1

Calibration Equipment(s) Used			
Apparatus	**Serial Number**	**Cal Due Date**	**Certificate Number**
Auto Zero & Gain Test Jig	718A1501-15	26/08/2023	220802772161
DC Power Supply	740622	07/03/2024	230300740647
Digital Multimeter	MY57225429	12/03/2023	1-16721054926-1

Ambient Condition Range:
Temperature: (20-26)°C , Humidity: (25-70)%RH, Pressure: (80-105)kPa

Calibration By : Ang Siong Cheaw, Calibration Officer

Reviewed/Approved By : Rodrigo Manansala, Approving Officer

Absolute Laboratories Pte. Ltd. is an affiliated company of Absolute Instrument Systems (Pte.) Ltd.

Absolute Laboratories Pte. Ltd.
11 Kallang Place #06-02 Singapore 339155
Tel: 65 6296 8012 Fax: 65 6296 3242

…… End of Report ……

TEST REPORT

(This Report is issued subject to the terms & conditions set out below)

ON
GROUND VIBRATION MONITORING

SETSCO
Setsco Services Pte Ltd
531 Bukit Batok Street 23
Singapore 659547
Tel : (65) 6566 7777
Fax: (65) 6566 7718
www.setsco.com
Business Reg. No. 196900269D

Our Reference	:	**MA-8500258548/SAH/4**
Your Reference	:	**6159687**
Report Date	:	**05/04/2023**

Measured for : **DHI WATER & ENVIRONMENT (S) PTE LTD**
2 Venture Drive
#18-18 Vision Exchange
Singapore 608526

Attn: Mr. Bryan Wong

Date of Measurement : 31th March 2023 to 2nd April 2023

Place of Inspection : Republic Polytechnic
9 Woodlands Ave 9,
Singapore 738964

Sahlan Bin Ismail
Testing Officer

Almond Soon
Senior Engineer
Maintenance Testing Department
Mechanical Technology Division

TABLE OF CONTENTS

Introduction

SETSCO SERVICES PTE LTD was appointed by DHI WATER & ENVIRONMENT (S) PTE LTD to carry out Ground Vibration Monitoring at **Republic Polytechnic, 9 Woodlands Ave 9, Singapore 738964.**

Project

Environmental Baseline Survey

Scope of Measurement

In this monitoring the evaluation of ground vibration is based on the maximum values of the three components of the vibration velocity that is Vertical, Longitudinal and Transverse direction {V (z-axis), L (x-axis) and T (y-axis)}.

The measurement in this three directions would be monitored at location specified in the 'Date of Measurement and Test Locations' section.

The measurement would be in frequency range of 1Hz to 100Hz, velocity-time domain with a minimum trigger level set at **0.3 mm/s**. The monitoring of vibration was conducted based on client's request. The dominant frequency with the corresponding peak particle velocity would be tabulated. The vibration meter was set on continuous and histogram monitoring with readings taken every 5 seconds interval.

Objective of Measurement

The objective of this monitoring at **Republic Polytechnic, 9 Woodlands Ave 9, Singapore 738964** was to determine the level of the vibration for the purpose of environmental baseline survey.

Measurement Equipment Specification

The measurement equipment for the vibration test measurements are as follows:

- INSTANTEL INC Ground Vibration Monitoring Equipment (Vibration Sensor Tri-axial)

Calibration Certification of the equipment/s is provided in 'Appendix 1- Calibration Certificates' section.

Date of Measurement and Test Locations

The measurements were conducted from 31th March 2023 to 2nd April 2023 at **Republic Polytechnic, 9 Woodlands Ave 9, Singapore 738964**.

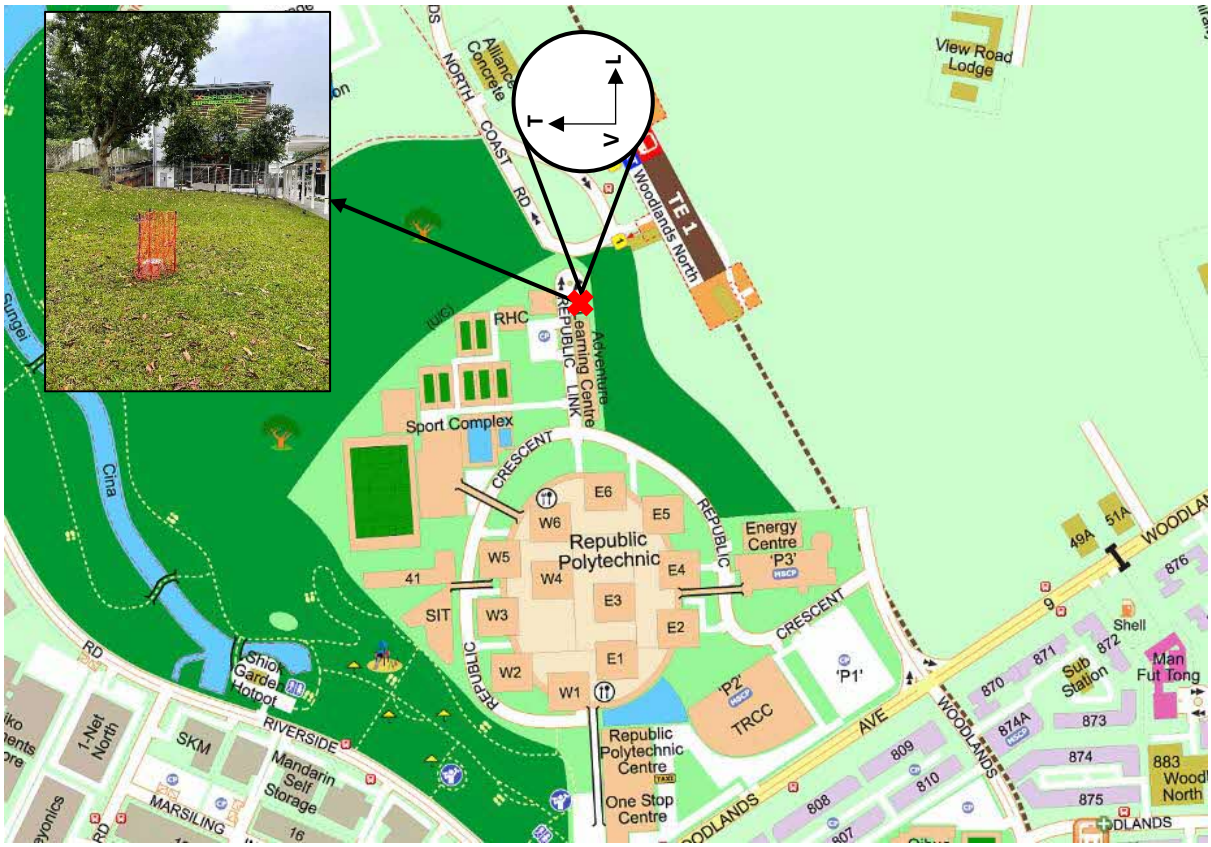


Figure 1: Test Location & Direction of Measurement

Results & Conclusion

For the results of the measurement, refer to the 'Vibration Measurement Data' section.

The details of the measurement show the frequency with the corresponding peak particle velocity in Vertical, Longitudinal and Transverse direction.

Vibration Measurement Data

Instantel

Event Report

Setsco Services Pte Ltd

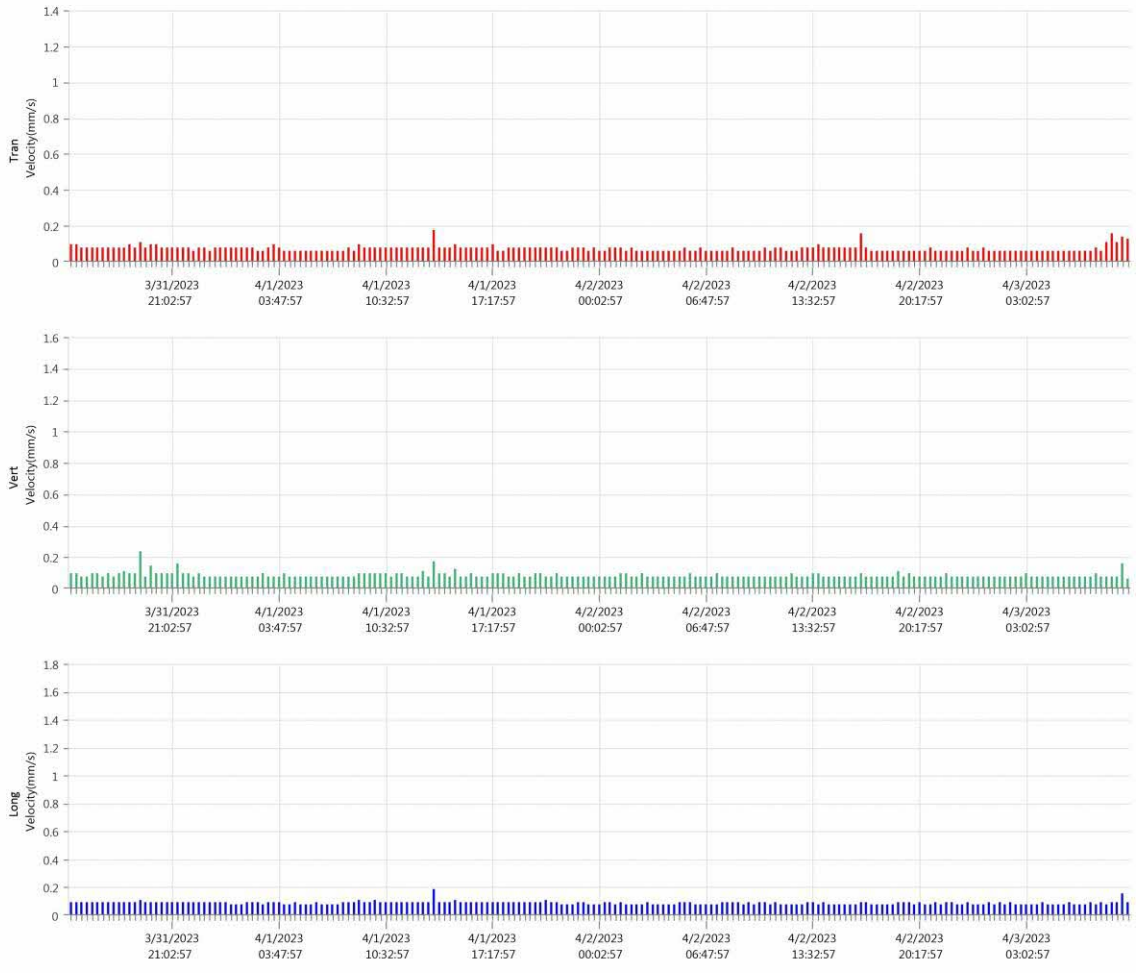
Start	March 31, 2023 14:18:02	**Serial Number**	BE16768
Finish	April 3, 2023 09:33:43	**Model Number**	MiniMate Plus 10.72.8.17
Number of Intervals/Interval	48428.00/5 sec	**Battery Level**	6.1 volts
Sample Rate	1024 sps	**Unit Calibration**	May 19, 2022 by Absolute Instrument Systems
Setup File Name	N/A	**Event File Name**	BE16768_20230331141752.IDFH
Operator	-		
Job Number	1		

Notes
Location:
Client:
User Name:
General:

Extended Notes No text to be displayed.
Post Event Notes Republic Polytechnic

Geophone	**Tran**	**Vert**	**Long**
Peak Particle Velocity	0.175 mm/s	0.175 mm/s	0.190 mm/s
Zero Crossing Frequency	>100 Hz	>100 Hz	>100 Hz
Date	Apr 1, 2023	Apr 1, 2023	Apr 1, 2023
Time	13:42:07	13:42:07	13:42:07
Sensor Check	✓ Passed	✓ Passed	✓ Passed
Frequency	7.6 Hz	7.3 Hz	7.3 Hz
Overswing Ratio	3.8	3.8	5.8

Peak Vector Sum 0.247 mm/s at April 1, 2023 13:42:07



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Appendix 1 – Calibration Certificate

Absolute Laboratories

Calibration Certificate

Calibration Number: 220401531291

Customer Name	: Setsco Services Pte Ltd	**Job Reference No**:	22040153
Customer Address	: 531 Bukit Batok Street 23 Singapore 659547	**Certificate Issue Date**:	19/05/2022
Manufacturer	: Instantel	**Calibration Date**:	19/05/2022
Item Description	: Vibration Monitor	**Test Conditions**:	
Model Number	: Minimate Plus	Ambient Temperature:	23.5 °C
Serial Number	: BE16768 (PM-002)	Relative Humidity:	59 %R.H.
Sub-Assemblies S/N	: BG15775	Pressure:	100.6 kPa

This certificate provides traceability of measurement to the International System of Units (SI).

Absolute Laboratories Pte. Ltd. certifies that the above product listed was calibrated in compliance with a quality management system using the applicable and approved Absolute Laboratories Pte. Ltd. calibration procedures as specified.

The reported expanded uncertainty is based on the standard uncertainty multiplied by a factor k = 2 (degrees of freedom = ∞), which corresponds to a level of confidence of approximately 95%.

Calibration Method:

The instrument was calibrated following AL calibration procedure WI- 26-Rev-1

Calibration Equipment(s) Used			
Apparatus	**Serial Number**	**Cal Due Date**	**Certificate Number**
Auto Zero & Gain Test Jig	718A1501-15	21/09/2022	210901582232
DC Power Supply	740622	08/03/2023	220300830623
Digital Multimeter	MY45034436	18/01/2023	1-16173132983-1

Ambient Condition Range:
Temperature: (20-26)°C , Humidity: (25-70)%RH, Pressure: (80-105)kPa

Calibration By : Han Chun Keong, Calibration Officer

Reviewed/Approved By : Rodrigo Manansala, Approving Officer

Absolute Laboratories Pte. Ltd. is an affiliated company of Absolute Instrument Systems (Pte.) Ltd.

Absolute Laboratories Pte. Ltd.
11 Kallang Place #06-02 Singapore 339155
Tel: 65 6296 8012 Fax: 65 6296 3242

…… End of Report ……

APPENDIX I

Topography Survey Report

YJP SURVEYORS PTE LTD

REPORT ON

TOPOGRAPHIC SURVEY

FOR

61803239 - WNC

Prepared for:
DHI Water & Environment (S) Pte Ltd

Prepared by:
YJP Surveyors Pte Ltd

No.10 Genting Road, #05-00, The Building, Singapore 349473
Tel: +65 67430938 Fax: +65 67436732 Email: office@yjpsurveyors.com

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I. SURVEY INSTRUMENT CALIBRATION CERTIFICATES
II. TOPOGRAPHIC SURVEY PLAN
- YJP_80129_VR_TP-070923-SHEET1 (B&W)
- YJP_80129_VR_TP-070923-SHEET2 (B&W)

Yap Chee Ming, Andrew
Registered Surveyor (96)
FIG/IHO Cat.A. Hydrographer
Oceanographer, M.S.I.S.V

1 INTRODUCTION

YJP Surveyors was appointed by DHI to carry out a Topographic survey for 61803239 - WNC.

This survey report focuses on the land-based survey activities conducted by YJP Surveyors for the purpose of this **Topographic Survey** report.

The survey was carried on 12.08.2023

All levels shown are Singapore Height Datum (SHD) (0.00m Mean Sea Level).

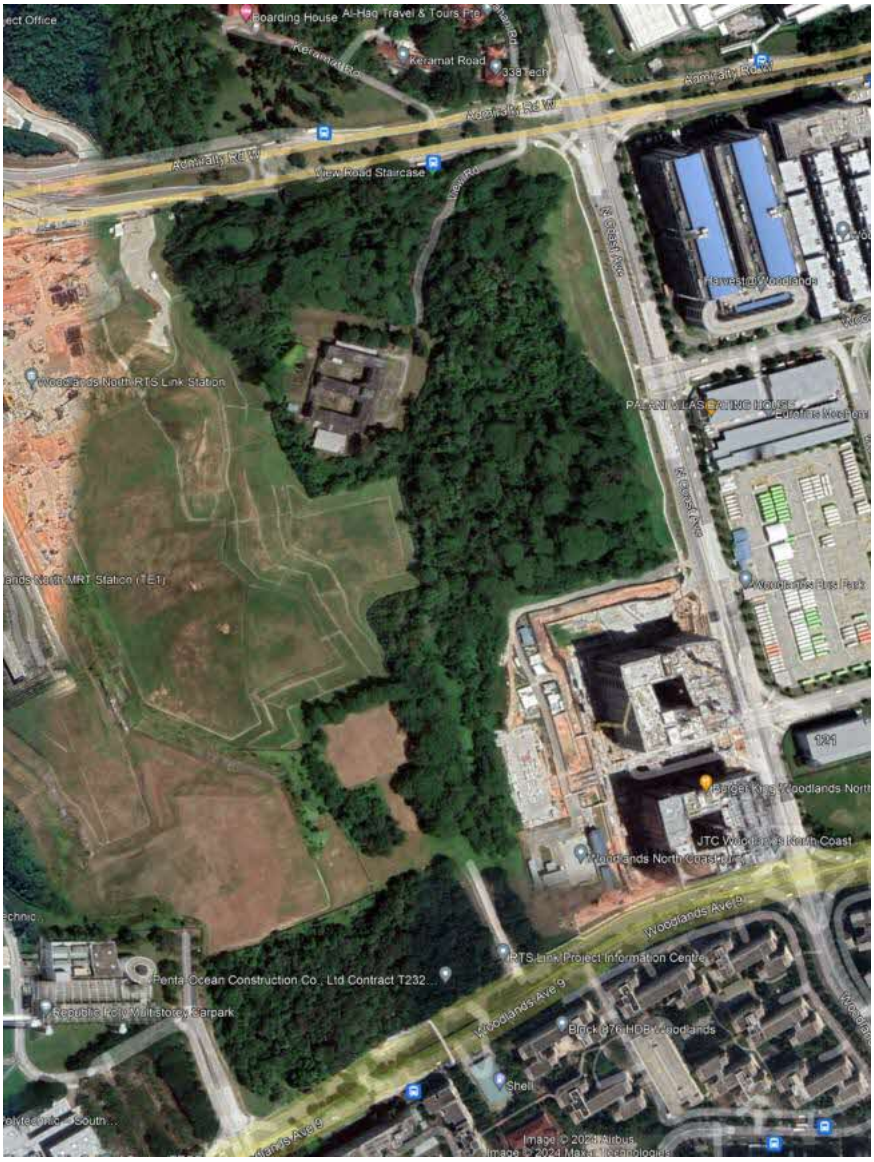

Figure 1: Location map of survey area

2 SURVEY DATUM (TOTAL STATION)

The survey was carried in the SVY21 Datum based on the projection onto WGS84 ellipsoid with a reference point known as Base 7 (situated at Pillar 7 Peirce Reservoir) with the values shown in the table below:

Longitude	103° 49’ 31.975227”	
Latitude	1° 22’ 02.915414”	
Ellipsoidal Height	26.824	
Reduced Level (SHD)	17.113	
Geoidal Undulation	9.711	
Projection Method	Traverse Mercator	
Projection Origin (Unmarked Point)	Longitude	103° 50’ 00”
	Latitude	1° 22’ 00”
False Grid Coordinates of Projection Origin (Pillar 7)	Northing	38744.572m
	Easting	28001.642m

Horizontal & vertical controls are based on SLA VRS RTK system reference to Singapore Height Datum (SHD).

3 LAND SURVEY

Total Station

A topographic survey using a total station Leica TS06plus-3 was conducted and covered the site.

UAV Drone

An aerial survey was conducted by using a BFD drone mounted with a Riegl miniVUX LiDAR sensor and a Sony A7Rii Camera. (see figure 4)

The drone will be assigned autonomous flight paths to follow in order to acquire smooth and consistent flight data while ensuring complete coverage of the ground within the survey area. The data sets are then downloaded and adjusted by Post Processing Kinematics (PPK) procedures to generate a refined point cloud referenced to SVY21 horizontal datum and reduced to Chart Datum (CD). Point cloud classification algorithms are then performed to extract the ground information which are then verified and checked against existing Ground Control Points (GCPs). The comparison table is shown below:

Number	Easting	Northing	Known Z	Laser Z	Dz
E	23131.989	48133.1	21.532	21.488	-0.044
D	23172.866	48145.69	19.015	18.984	-0.031
F	23080.498	47932.31	37.174	37.116	-0.058
600y	23061.184	47924.03	38.653	38.609	-0.044

Average dz	-0.044
Minimum dz	-0.058
Maximum dz	-0.031
Average magnitude	0.044
Root mean square	0.045
Std deviation	0.011

Figure 2: Photo of Drone System

The survey results were plotted on scale 1: 500 as shown on the accompanying drawing no. YJP_80129_VR_TP-070923.

4 SURVEY METHODS AND PROCEDURES (Total Station)

The following instruments were used in the survey:

1. Nikon XS Total Station
   Report No.: CS6108520-2023
   Serial No.: F130307
   Date of Calibration: 20 Feb 2023

2. Trimble Single Prism Set
   Report No.: CS6109080-2023
   Serial No.: SC10289
   Date of Calibration: 26 May 2023

3. Trimble Single Prism Set
   Report No.: CS6109081-2023
   Serial No.: SC10298
   Date of Calibration: 26 May 2023

The calibration certificates of the above survey instruments can be found in Enclosure I.

ENCLOSURES

I. SURVEY INSTRUMENT CALIBRATION CERTIFICATES
II. TOPOGRAPHIC SURVEY PLAN
    a. YJP_80129_VR_TP-070923-SHEET1 (B&W)
    b. YJP_80129_VR_TP-070923-SHEET2 (B&W)

ENCLOSURE I

SURVEY INSTRUMENT CALIBRATION CERTIFICATES

GPS LANDS
(SINGAPORE) PTE LTD
GST Reg. No.: 19-9902549-K Co. Reg. No.: 199902549K
No. 35 Jalan Pemimpin #05-02
Wedge Mount Industrial Building
Singapore 577176
Tel : (65) 6354 5950
Fax : (65) 6354 5949
Email: enquiry@gpslands.com
Website: www.gpslands.com

CERTIFICATE OF CALIBRATION

CUSTOMER NAME	: YJP SURVEYORS PTE LTD
ATTENTION	: MR POON
PROJECT / SITE / OFFICE	: WALK IN
BRAND / INSTRUMENT	: NIKON TOTAL-STATION
MODEL / SERIAL NO	: NIKON XS (2") / F130307
REPORT NO	: CS6108520-2023
DATE OF CALIBRATION	: 20 Feb 2023
NEXT CALIBRATION DATE	: 19 Aug 2023

This certify that the accuracy of the above mentioned instrument is acceptable prior to the calibration on the above date according to TRIMBLE / NIKON / GEODIMETER instrument's specifications. The mentioned instrument was inspected, estimated and calibrated with applicable TRIMBLE / NIKON / GEODIMETER factory procedures and standards traceable to DIN 18723. SAC logo is for ISO 9001:2015 (Quality Management System, QMS) and OHSAS 18001:2007 (Occupational Health and Safety) only.

Accuracy of Instrument:

	Spec	Error before Calibrate	After Calibrate (*)
Circular Bubble	10'/2mm	10'/2mm	10'/2mm
Tilting Sensor	3'	3'	3'
Horizontal Angle	2 secs	2 secs	2 secs
Vertical Angle	2 secs	2 secs	2 secs

	Spec	Error before Calibrate	After Calibrate (*)
Optical Plummet	1 mm	Checked	Checked
Prism Constant	0 mm	Checked	Checked
Measurement (Prism)	2+2ppm	2+2ppm	2+2ppm
Measurement (Reflectorless)	3+2ppm	3+2ppm	3+2ppm

*** Note : Calibrated as according to minimum reading of instrument specified.**

Calibration & Checked By

Lim Kwong Tai
Lead Technical Service Engineer

Betty Wong Si Si
Technical Service Engineer

GPS LANDS
(SINGAPORE) PTE LTD
GST Reg. No.: 19-9902549-K Co. Reg. No.: 199902549K
No. 35 Jalan Pemimpin #05-02
Wedge Mount Industrial Building
Singapore 577176
Tel : (65) 6354 5950
Fax: (65) 6354 5949
Email: enquiry@gpslands.com
Website: www.gpslands.com

Certificate No. 84904/C/0001/SA/En
Certificate No. 84904/D/0001/UK/En

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E 103 50 26

CERTIFICATE OF CALIBRATION

CUSTOMER NAME	: YJP SURVEYORS PTE LTD
ATTENTION	: MR POON
PROJECT / SITE / OFFICE	: WALK IN
BRAND / INSTRUMENT	: TRIMBLE SINGLE PRISM SET
MODEL / SERIAL NO	: TRAVERSE KIT / SC10289
REPORT NO	: CS6109080-2023
DATE OF CALIBRATION	: 26 May 2023
NEXT CALIBRATION DATE	: 25 Nov 2023

This certify that the accuracy of the above mentioned instrument is acceptable prior to the calibration on the above date according to TRIMBLE / NIKON / GEODIMETER instrument's specifications. The mentioned instrument was inspected, collimated and calibrated with applicable TRIMBLE / NIKON / GEODIMETER factory procedures and Standards' traceable to DIN 18723. Singlas logo is for ISO 9001:2015 (Quality Management System, QMS) and OHSAS 18001:2007 (Occupational Health and Safety) only.

Accuracy of Instrument:

	Spec	Error before Calibrate	After Calibrate (*)
Plate Bubble	60"/2 mm	60"/2 mm	60"/2 mm
Circular Bubble	10"/2 mm	10"/2 mm	10"/2 mm
Optical Plummet	1.0 mm	1.0 mm	1.0 mm

*** Note : Calibrated as according to minimum reading of instrument specified.**

Calibration & Checked By

Lim Kwong Tal
Lead Technical Service Engineer

Betty Wong Si Si
Technical Service Engineer

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Certificate No. 84904/D/0001/UK/En

CERTIFICATE OF CALIBRATION

CUSTOMER NAME	: YJP SURVEYORS PTE LTD
ATTENTION	: MR POON
PROJECT / SITE / OFFICE	: WALK IN
BRAND / INSTRUMENT	: TRIMBLE SINGLE PRISM SET*
MODEL / SERIAL NO	: TRAVERSE KIT / SC10298
REPORT NO	: CS6109081-2023
DATE OF CALIBRATION	: 26 May 2023
NEXT CALIBRATION DATE	: 25 Nov 2023

This certify that the accuracy of the above mentioned instrument is acceptable prior to the calibration on the above date according to TRIMBLE / NIKON / GEODIMETER instrument's specifications. The mentioned instrument was inspected, collimated and calibrated with applicable TRIMBLE / NIKON / GEODIMETER factory procedures and Standards' traceable to DIN 18723. Singlas logo is for ISO 9001:2015 (Quality Management System, QMS) and OHSAS 18001:2007 (Occupational Health and Safety) only.

Accuracy of Instrument:

	Spec	Error before Calibrate	After Calibrate (*)
Plate Bubble	60"/2 mm	60"/2 mm	60"/2 mm
Circular Bubble	10"/2 mm	10"/2 mm	10"/2 mm
Optical Plummet	1.0 mm	1.0 mm	1.0 mm

*** Note : Calibrated as according to minimum reading of instrument specified.**

Calibration & Checked By

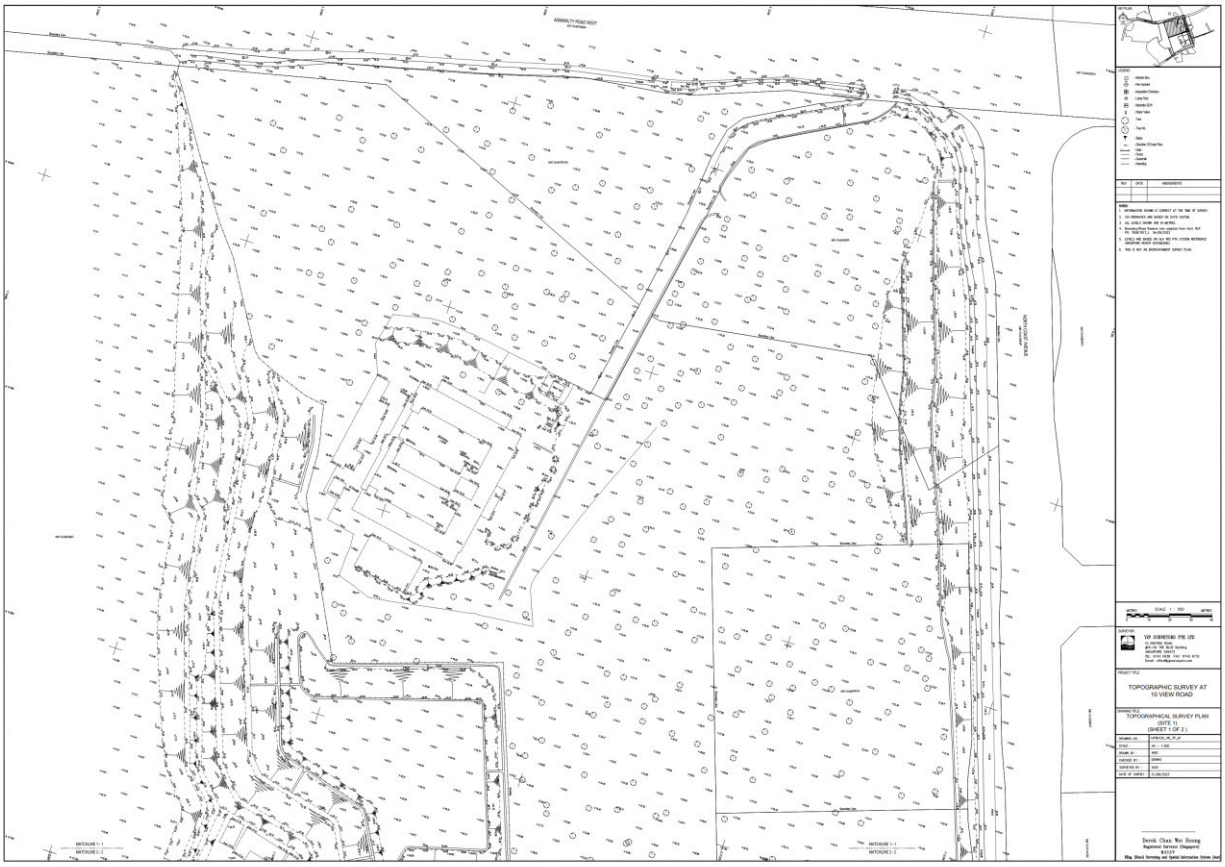
Lim Kwong Tai
Lead Technical Service Engineer

Betty Wong Si Si
Technical Service Engineer

ENCLOSURE II

TOPOGRAPHIC SURVEY PLAN

5 DRAWING



YJP_80129_VR_TP-070923-SHEET1 (B&W)

YJP_80129_VR_TP-070923-SHEET2 (B&W)