SISTEM AMARAN BANJIR MAJLIS BANDARAYA ISKANDAR PUTERI (MBIP) BAGI TEMPOH 24 BULAN

SPESIFIKASI TEKNIKAL

BIL.	BAHAGIAN	MUKA SURAT
A	**KERJA AWALAN**	2/% P%
B	**KERJA-KERJA MEMBEKAL, MEMASANG DAN MENGUJI JALAN SISTEM PEMANTAUAN ARAS AIR**	3/% P%
C	**KERJA-KERJA MEMBEKAL, MEMASANG DAN MENGUJIJALAN DAN MENTAULIAH DASHBOARD PORTAL, APLIKASI MUDAH ALIH, PERKAKASAN SISTEM DIGITAL DAN SISTEM RANGKAIAN KOMUNIKASI**	15/% P%
D	**PERKHIDMATAN PENYELENGGARAAN 24 BULAN DAN PROGRAM LATIHAN KESEDARAN MASYARAKAT BERKENAAN SISTEM PEMANTAUAN AIR MBIP**	17/% P%
E	**PERUNTUKAN SEMENTARA**	19/% P%

DIJANA OLEH -
11.11.2026

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
A	**KERJA AWALAN**			
A.1	**Bon Pelaksanaan** • Jaminan bank ; atau • Jaminan insurans			
A.2	**Polisi Insurans Kerja dan Tanggungan Awam** • Polisi Insurans kerja & tanggungan awam • Polisi pampasan kerja			
A.3	Insurans alat-alat peranti dan perkakasan di tapak			
A.4	Jumlah wang penyediaan Laporan Kemajuan Kerja beserta salinan "soft copy" dalam bentuk CD/disket termasuk gambar-gambar kemajuan kerja (bewarna): SEBELUM, SEMASA & SELEPAS beserta TARIKH mengikut peringkat kerja di setiap lokasi sepanjang tempoh kontrak			
A.5	Jumlah wang penyediaan bagi PPE; safety vest, helmet, boots & tools			
A.6	**Kerja Ukur (oleh juru ukur bertauliah) di kawasan kerja termasuk :** • Keratan merangkumi "limit of contract" dengan tambahan ukuran 5m kiri dan kanan (limit of contract) • Mengofset semua objek yang berada pada 6.1 (di atas) • Mengambil aras laras permukaan tanah/jalan/parit/rupabentuk sediaada • Menyediakan 2 set pelan ukur (hard copy & soft copy) sebelum pembinaan termasuk merandakan jajaran parit/jalan/parkir cadangan (sebagaimana arahan Pegawai Penguasa @ wakilnya) • Menyediakan 2 set pelan ukur (hard copy & soft copy) selepas pembinaan (pelan as-built) termasuk membuat kiraan kuantiti kerja ditapak untuk item-item yang diarahkan oleh pegawai Penguasa @ wakilnya			
A.7	**Pengurusan Trafik (Traffic Management Plan)** • Jumlah wang penyediaan bagi peralatan pengurusan trafik • Kerja Pengesahan laluan Trafik oleh (TMP yang berdaftar			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B	**KERJA-KERJA MEMBEKAL, MEMASANG DAN MENGUJI JALAN SISTEM PEMANTAUAN ARAS AIR**			
B.1	**JALAN ZAPIN 3 (WATER LEVEL, RAIN, CCTV 360°)** Kerja-kerja termasuk dengan membekal, memasang, menguji jalan dan mentauliah ;			
B.1.1	**Peranti Sensor Paras Air** Spesifikasi : • Jenis Sensor : Sensor Aras Air Industri Jenis Radar / Ultrasonik / atau setara • Julat Ukuran : 0 - 10 meter (boleh disesuaikan mengikut keadaan tapak) • Ketepatan Ukuran : +1 mm atau lebih baik • Julat Bekalan Kuasa : 12 - 24V DC • Antara Muka Komunikasi : 4 - 20 mA / RS485 / Modbus RTU • Bahan Sarung (Housing) : PP / Aloi Aluminium / Keluli Tahan Karat • Suhu Operasi : -20 hingga +60 • Tahap Perlindungan : IP68 Pengawal (Controller) : - Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak)			
B.1.2	**Peranti Sensor Taburan Hujan** Spesifikasi :- • Jenis Sensor : Sensor Hujan Jenis Radar / Tipping Bucket Rain Gauge / Sensor Hujan Optikal / atau setara- • Julat Ukuran : 0 - 200 mm/h- • Ketepatan Ukuran : +10%- • Julat Saiz Titisan Hujan : 0.5 - 5.0 mm- • Resolusi Ukuran Hujan : 0.1 mm- • Kekerapan Sampel : 1 saat (1 Hz)- • Antara Muka Komunikasi (Interface) : RS485, RS232, atau SDI-12 (pilih salah satu)- • Protokol Komunikasi : ModBus, NMEA-0183, atau ASCII- • Bekalan Kuasa : 7 - 30V DC- • Tahap Perlindungan : IP65 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak dan capaian rangkaian)			
B.1.3	**Sistem Televisyen Litar tertutup (CCTV) Pintar - 360 darjah + 1TB Micro SD** • Camera Image Sensor [Bullet channel] 1/2.5" Progressive Scan CMOS, [PTZ channel] 1/1.2" Progressive Scan CMOS Min. Illumination [Bullet channel] • Color : 0.0005 Lux @ (F1.0, AGC ON), B/W: 0.0001 Lux @ (F1.0, AGC ON), 0 Lux with light, [PTZ channel] -Color : 0.0005 Lux @ (F1.6, AGC ON), B/W: 0.0001 Lux @ (F1.6, AGC ON), 0 lux with IR • Shutter Speed : 1 s to 1/30000 s - Slow Shutter : Yes Day & Night : [Panoramic channel] Color, [PTZ channel] IR cut filter Zoom[PTZ channel] : 48 x optical, 16x digital Max. Resolution : [Panoramic channel] 3680 x 1656, [PTZ channel] 3840 x 2160 • PTZ - Movement Range : (Pan) 360 endless - Movement Range (Tilt) : [Panoramic channel] 12 to 24 [PTZ channel] -20 to 90 - Pan Speed : [PTZ channel] pan speed: configurable from 0.1 to 160 preset speed: 240/s - Tilt Speed : [PTZ channel] tilt speed: configurable from 0.1 to 120/s, preset speed 200/s [Panoramic channel] tilt speed configurable - Proportional Pan [Panoramic channel] No, [PTZ channel] Yes • Presets : 300 - Patrol Scan : 8 patrols, up to 32 presets for each patrol - Pattern Scan : 4 pattern scans, record time over 10 minutes for each scan - Power-off Memory : Yes - Park Action : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan - 3D Positioning : Yes - PTZ Status Display : Yes - Preset Freezing : Yes • Scheduled Task : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan,dome reboot,dome adjust,aux output • Deep Learning Function - Face Capture : Detects up to 30 faces simultaneously, Uploads face with background and closed-up face pictures - Face Comparison : Up to 10 face libraries. 30000 faces for each library. 150000 faces in total, Recognizes face identity via face modeling, grading and comparing to those in face library, Supports face library encryption • Road Traffic and Vehicle Detection - Smart Function : Support license plate recognition of vehicles and motorcycles (only in checkpoint scenario) Support vehicle attribute detection, including vehicle type, color, brand, driving direction, etc. Support vehicle and non-vehicle counting Blocklist and allowlist: up to 10,000 records - LPR Countries/Regions : 4 areas (Europe, Middle East, Asia-Pacific, Africa) and more than 124 countries/regions - Accuracy (Under recommended installation and lighting conditions) : License plate recognition rate 98%, Capture rate 99%, Driving direction accuracy rate 98% - Vehicle Capture Speed : Front installation in checkpoint scenario: up to 120 km/h - Side installation : up to 80 km/h - Capture Mode : License Plate and Vehicle Mode, Vehicle Priority Mode • Multi-Target-Type Detection Supports simultaneous detection and capture of human body, face and vehicle, Gets 7 face features, 14 human body features and 8 vehicle features Perimeter Protection Line crossing detection, region entrance detection, intrusion detection, region exiting detection			
B.1.4	**Papan Tanda** Spesifikasi : • Saiz : 900mm (T) x 400mm (L) Ketebalan: Min 3mm - Pelekat: vinly reflektif • Pemasangan : Dinding pagar anti-climb			
B.1.5	**Tiang besi hollow bergalvanize dan berlengan** Spesifikasi : • Saiz tiang hollow : 80mm x 80mm • Tebal : 1mm • Tinggi : 5m • Saiz lengan hollow : 50mm x 50mm • Panjang : 4000mm • Tebal : 1mm			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B.1.6	**Tiang Besi Bertulang** Spesifikasi : • Saiz : 150mm tebal beserta 2 lapis BRC A6 dan lapisan hardcore 100mm serta kerja berkaitan			
B.1.7	**Pagar bergalvanize** Spesifikasi : • Material: galvenize dan berkunci :1800mm (lebar) x 1600mm (tinggi) berserta pagar dawai duri • Pintu : 1 unit			
B.1.8	**Set sistem solar dan bateri** Spesifikasi: • Bateri : Rechargable Sealed Lead Acid (SLA),12v 40AH • Solar : Monocrystalline panel,100watt • Solar controller : MPPT,10a			
B.1.9	**Sistem rak, sokongan dan aksesori kalis air** • Saiz: 600mm(P) x 500mm(T) x 300mm (L), IP66			
B.2	**KAMPUNG BATU 8 1/2 (JALAN KILANG NENAS)(WATER LEVEL, RAIN, CCTV 360°)** Kerja-kerja termasuk dengan membekal, memasang, menguji jalan dan mentauliah ;			
B.2.1	**Peranti Sensor Paras Air** Spesifikasi: • Jenis Sensor : Sensor Aras Air Industri Jenis Radar / Ultrasonik / atau setara- • Julat Ukuran : 0 - 10 meter (boleh disesuaikan mengikut keadaan tapak)- • Ketepatan Ukuran : +1 mm atau lebih baik- • Julat Bekalan Kuasa : 12 - 24V DC- • Antara Muka Komunikasi: 4 - 20 mA / RS485 / Modbus RTU- • Bahan Sarung (Housing) : PP / Aloi Aluminium / Keluli Tahan Karat • Suhu Operasi : -20C hingga +60C • Tahap Perlindungan : IP68 Pengawal (Controller) : - Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak)			
B.2.2	**Peranti Sensor Taburan Hujan** Spesifikasi : • Jenis Sensor : Sensor Hujan Jenis Radar / Tipping Bucket Rain Gauge / Sensor Hujan Optikal / atau setara- • Julat Ukuran : 0 - 200 mm/h- • Ketepatan Ukuran : +10%- • Julat Saiz Titisan Hujan : 0.5 - 5.0 mm- • Resolusi Ukuran Hujan : 0.1 mm- • Kekerapan Sampel : 1 saat (1 Hz) • Antara Muka Komunikasi (Interface) : RS485, RS232, atau SDI-12 (pilih salah satu) • Protokol Komunikasi : ModBus, NMEA-0183, atau ASCII- • Bekalan Kuasa : 7 - 30V DC- • Tahap Perlindungan : IP65 Pengawal (Controller) : - Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak dan capaian rangkaian)			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B.2.3	**Sistem Televisyen Litar tertutup (CCTV) Pintar - 360 darjah + 1TB Micro SD** • Camera Image Sensor : [Bullet channel] 1/2.5" Progressive Scan CMOS, [PTZ channel] 1/1.2" Progressive Scan CMOS - Min. Illumination : [Bullet channel] Color: 0.0005 Lux @ (F1.0, AGC ON), B/W: 0.0001 Lux @ (F1.0, AGC ON), 0 Lux with light, [PTZ channel] Color: 0.0005 Lux @ (F1.6, AGC ON), B/W: 0.0001 Lux @ (F1.6, AGC ON), 0 lux with IR - Shutter Speed : 1 s to 1/30000 s - Slow Shutter : Yes - Day & Night : [Panoramic channel] Color, [PTZ channel] IR cut filter - Zoom : [PTZ channel] 48 optical, 16 digital - Max. Resolution : [Panoramic channel] 3680 x 1656, [PTZ channel] 3840 x 2160 • PTZ - Movement Range : (Pan) 360 endless - Movement Range : (Tilt) [Panoramic channel] 12C to 24C [PTZ channel] -20C to 90C - Pan Speed : [PTZ channel] pan speed: configurable from 0.1C to 160/s, preset speed: 24C/s - Tilt Speed : [PTZ channel] tilt speed: configurable from 0.1C to 120C/s, preset speed 200C/s, [Panoramic channel] tilt speed configurable - Proportional Pan : [Panoramic channel] No, [PTZ channel] Yes - Presets : 300 - Patrol Scan : 8 patrols, up to 32 presets for each patrol - Pattern Scan : 4 pattern scans, record time over 10 minutes for each scan - Power-off Memory : Yes - Park Action : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan - 3D Positioning : Yes - PTZ Status Display : Yes - Preset Freezing : Yes - Scheduled Task : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan,dome reboot,dome adjust,aux output • Deep Learning Function - Face Capture : Detects up to 30 faces simultaneously, Uploads face with background and closed-up face pictures - Face Comparison : Up to 10 face libraries. 30000 faces for each library. 150000 faces in total, Recognizes face identity via face modeling, grading and comparing to those in face library, Supports face library encryption • Road Traffic and Vehicle Detection - Smart Function : Support license plate recognition of vehicles and motorcycles (only in checkpoint scenario) Support vehicle attribute detection, including vehicle type, color, brand, driving direction, etc. Support vehicle and non-vehicle counting Blocklist and allowlist: up to 10,000 records - LPR Countries/Regions : 4 areas (Europe, Middle East, Asia-Pacific, Africa) and more than 124 countries/regions Accuracy (Under recommended installation and lighting conditions) : • License plate recognition rate 98%, Capture rate 99%, Driving direction accuracy rate 98% - Vehicle Capture Speed : Front installation in checkpoint scenario: up to 120 km/h - Side installation : up to 80 km/h - Capture Mode : License Plate and Vehicle Mode, Vehicle Priority Mode • Multi-Target-Type Detection -Supports simultaneous detection and capture of human body, face and vehicle, Gets 7 face features, 14 human body features and 8 vehicle features - Perimeter Protection : Line crossing detection, region entrance detection, intrusion detection, region exiting detection			
B.2.4	**Papan Tanda** Spesifikasi : • Saiz : 900mm (T) x 400mm (L) Ketebalan: Min 3mm - Pelekat: vinly reflektif • Pemasangan : Dinding pagar anti-climb			
B.2.5	**Tiang besi hollow bergalvanize dan berlengan** Spesifikasi: • Saiz tiang hollow : 80mm x 80mm • Tebal : 1mm • Tinggi : 5m • Saiz lengan hollow : 50mm x 50mm • Panjang : 4000mm • Tebal : 1mm			
B.2.6	**Lantai Konkrit Bertulang** Spesifikasi : • Saiz : 150mm tebal beserta 2 lapis BRC A6 dan lapisan hardcore 100mm serta kerja berkaitan			
B.2.7	**Pagar bergalvanize** Spesfikasi: • Material: galvenize dan berkunci :1800mm (lebar) x 1600mm (tinggi) berserta pagar dawai duri • Pintu: 1 unit			
B.2.8	**Set Sistem Solar dan bateri** Spesifikasi : • Bateri : Rechargable Sealed Lead Acid (SLA),12v 40AH • Solar : Monocrystalline panel,100watt • Solar controller : MPPT,10a			
B.2.9	**Sistem rak, sokongan dan aksesori kalis air** • Saiz: 600mm(P) x 500mm(T) x 300mm (L), IP66			
B.3	**TAMAN DAMAI JAYA (JALAN MAKMUR 12)(WATER LEVEL, RAIN, CCTV 360°)** Kerja-kerja termasuk dengan membekal, memasang, menguji jalan dan mentauliah ;			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B.3.1	**Peranti Sensor Paras Air** Spesifikasi : • Jenis Sensor : Sensor Aras Air Industri Jenis Radar / Ultrasonik / atau setara • Julat Ukuran : 0 - 10 meter (boleh disesuaikan mengikut keadaan tapak) • Ketepatan Ukuran : +1 mm atau lebih baik • Julat Bekalan Kuasa : 12 - 24V DC • Antara Muka Komunikasi : 4 - 20 mA / RS485 / Modbus RTU • Bahan Sarung (Housing) : PP / Aloi Aluminium / Keluli Tahan Karat • Suhu Operasi : -20C hingga +60C • Tahap Perlindungan : IP68 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak)			
B.3.2	**Peranti Sensor Taburan Hujan** Spesifikasi : • Jenis Sensor : Sensor Hujan Jenis Radar / Tipping Bucket Rain Gauge / Sensor Hujan Optikal / atau setara • Julat Ukuran : 0 - 200 mm/h • Ketepatan Ukuran : 10% • Julat Saiz Titisan Hujan : 0.5 - 5.0 mm • Resolusi Ukuran Hujan : 0.1 mm • Kekerapan Sampel : 1 saat (1 Hz) • Antara Muka Komunikasi (Interface) : RS485, RS232, atau SDI-12 (pilih salah satu) • Protokol Komunikasi : ModBus, NMEA-0183, atau ASCII • Bekalan Kuasa : 7 - 30V DC • Tahap Perlindungan : IP65 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak dan capaian rangkaian)			
B.3.3	**Sistem Televisyen Litar tertutup (CCTV) Pintar - 360 darjah + 1TB Micro SD** • Camera Image Sensor : [Bullet channel] 1/2.5" Progressive Scan CMOS, [PTZ channel] 1/1.2" Progressive Scan CMOS Min. Illumination : [Bullet channel] Color: 0.0005 Lux @ (F1.0, AGC ON), B/W: 0.0001 Lux @ (F1.0, AGC ON), 0 Lux with light, [PTZ channel] Color : 0.0005 Lux @ (F1.6, AGC ON), B/W: 0.0001 Lux @ (F1.6, AGC ON), 0 lux with IR - Shutter Speed : 1s to 1/30000s - Slow Shutter : Yes - Day & Night : [Panoramic channel] Color, [PTZ channel] IR cut filter - Zoom[PTZ channel] 48 x optical, 16 x digital - Max. Resolution : [Panoramic channel] 3680 x 1656, [PTZ channel] 3840 x 2160 • PTZ - Movement Range (Pan) : 360 endless - Movement Range (Tilt) : [Panoramic channel] 12 to 24, [PTZ channel] -20 to 90 - Pan Speed [PTZ channel] pan speed : configurable from 0.1 to 160/s, preset speed: 240/s - Tilt Speed [PTZ channel] tilt speed : configurable from 0.1 to 120/s, preset speed 200/s, [Panoramic channel] tilt speed configurable - Proportional Pan [Panoramic channel] No, [PTZ channel] Yes - Presets : 300 - Patrol Scan : 8 patrols, up to 32 presets for each patrol - Pattern Scan : 4 pattern scans, record time over 10 minutes for each scan - Power-off Memory : Yes • Park Action : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan - 3D Positioning : Yes - PTZ Status Display : Yes - Preset Freezing : Yes - Scheduled Task : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan,dome reboot,dome adjust,aux output • Deep Learning Function - Face Capture : Detects up to 30 faces simultaneously, Uploads face with background and closed-up face pictures Face Comparison : Up to 10 face libraries. 30000 faces for each library. 150000 faces in total, Recognizes face identity via face modeling, grading and comparing to those in face library, Supports face library encryption • Road Traffic and Vehicle Detection - Smart Function : Support license plate recognition of vehicles and motorcycles (only in checkpoint scenario) Support vehicle attribute detection, including vehicle type, color, brand, driving direction, etc. Support vehicle and non-vehicle counting - Blocklist and allowlist : up to 10,000 records - LPR Countries/Regions : 4 areas (Europe, Middle East, Asia-Pacific, Africa) and more than 124 countries/regions - Accuracy (Under recommended installation and lighting conditions): License plate recognition rate 98%, Capture rate 99%, - Driving direction accuracy rate 98% - Vehicle Capture Speed: Front installation in checkpoint scenario: up to 120 km/h - Side installation: up to 80 km/h - Capture Mode : License Plate and Vehicle Mode, Vehicle Priority Mode • Multi-Target-Type Detection : Supports simultaneous detection and capture of human body, face and vehicle, Gets 7 face features, 14 human body features and 8 vehicle features - Perimeter Protection : Line crossing detection, region entrance detection, intrusion detection, region exiting detection			
B.3.4	**Papan Tanda** Spesifikasi : • Saiz : 900mm (T) x 400mm (L) Ketebalan: Min 3mm - • Pelekat : vinly reflektif • Pemasangan : Dinding pagar anti-climb			
B.3.5	**Tiang besi hollow bergalvanize dan berlengan** Spesifikasi : • Saiz tiang hollow: 80mm x 80mm • Tebal: 1mm • Tinggi: 5m • Saiz lengan hollow: Panjang: 4000mm • 50mm x 50mm • Tebal: 1mm			
B.3.6	**Lantai Konkrit Bertulang** Spesifikasi: • Saiz: 150mm tebal beserta 2 lapis BRC A6 dan lapisan hardcore 100mm serta kerja berkaitan			

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B.3.7	**Pagar bergalvanize** Spefikasi: • Material: galvenize dan berkunci :1800mm (lebar) x 1600mm (tinggi) berserta pagar dawai duri • Pintu: 1 unit			
B.3.8	**Set Sistem Solar dan bateri** Spesifikasi : • Bateri : Rechargable Sealed Lead Acid (SLA),12v 40AH • Solar: Monocrystalline panel,50watt • Solar controller : MPPT,10a			
B.3.9	**Sistem rak, sokongan dan aksesori kalis air** • Saiz : 600mm(P) x 500mm(T) x 300mm (L), IP66			
B.4	**KAMPUNG TUAH JAYA (WATER LEVEL, RAIN, CCTV 360°, SIREN)** Kerja-kerja termasuk dengan membekal, memasang, menguji jalan dan mentauliah ;			
B.4.1	**Peranti Sensor Paras Air** Spesifikasi : • Jenis Sensor : Sensor Aras Air Industri Jenis Radar / Ultrasonik / atau setara- • Julat Ukuran : 0 - 10 meter (boleh disesuaikan mengikut keadaan tapak)- • Ketepatan Ukuran : +1 mm atau lebih baik- • Julat Bekalan Kuasa : 12 - 24V DC- • Antara Muka Komunikasi : 4 - 20 mA / RS485 / Modbus RTU- • Bahan Sarung (Housing) : PP / Aloi Aluminium / Keluli Tahan Karat- • Suhu Operasi : -20C hingga +60C- • Tahap Perlindungan : IP68 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak)			
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B.4.4	**Papan Tanda** Spesifikasi : • Saiz : 900mm (T) x 400mm (L) Ketebalan: Min 3mm - • Pelekat : vinly reflektif • Pemasangan : Dinding pagar anti-climb			
B.4.5	**Tiang besi hollow bergalvanize dan berlengan** Spesifikasi : • Saiz tiang hollow : 80mm x 80mm • Tebal : 1mm • Tinggi : 5m • Saiz lengan hollow : 50mm x 50mm • Panjang : 4000mm • Tebal : 1mm			
B.4.6	**Lantai Konkrit Bertulang** Spesifikasi : • Saiz : 150mm tebal beserta 2 lapis BRC A6 dan lapisan hardcore 100mm serta kerja berkaitan			
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B.4.8	**Set Sistem Solar dan bateri** Spesifikasi : • Bateri : Rechargable Sealed Lead Acid (SLA),12v-24v 40AH • Solar : Monocrystalline panel,100watt • Solar controller : MPPT,10a			
B.4.9	**Sistem rak, sokongan dan aksesori kalis air** • Saiz: 600mm(P) x 500mm(T) x 300mm (L), IP66			
B.4.10	**Sistem Siren** Spesifikasi: • Jenis : Siren Amaran Luar Bangunan 360 • Konfigurasi : 1 Set = 4 Unit Siren (4 unit = 1 set) • Jenis Kawalan : Kawalan Hidup/Mati (On/Off) dari jauh melalui Papan Pemuka Web serta pengaktifan automatik berdasarkan nilai bacaan sensor (Sensor Hujan dan Sensor Paras Air) • Bahan : (Perumah dan Ruang Gegaran) Diperbuat daripada ABS (Acrylonitrile Butadiene Styrene) berketahanan tinggi terhadap hentakan • Suhu Operasi : -25C hingga +50C(persekitaran luar) • Tahap Perlindungan : IP65 • Pematuhan Piawaian : Mematuhi Arahan RoHS (Restriction of Hazardous Substances) • Bekalan Kuasa : DC 12V - 24V • Penggunaan Arus Maksimum : 2.63 A (maksimum) • Tahap Bunyi : Sehingga 123 dB @ 1 meter (dengan corak bunyi terbina dalam yang boleh dipilih) • Fungsi Utama : Aktif secara manual melalui papan pemuka dan automatik melalui integrasi IoT (rule chain) dengan sensor hujan dan sensor aras air. Boleh dikawal dari jauh menggunakan aplikasi web dan mudah alih. • Jenis Pemasangan : Dipasang pada tiang (pole-mounted) dengan liputan bunyi 360 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian dan capaian rangkaian di tapak)			
B.5	**SILC (JALAN SILC 2/3)(WATER QUALITY, CCTV 360°)** Kerja-kerja termasuk dengan membekal, memasang, menguji jalan dan mentauliah ;			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B.5.1	**Peranti Sensor Kualiti Air** Spesifikasi : • Jenis Sensor : Sensor Kualiti Air Pelbagai Parameter (Mematuhi Indeks Kualiti Air - WQI Malaysia, Jabatan Alam Sekitar) • Pematuhan Piawaian : Sensor mestilah mampu mengukur enam (6) parameter utama seperti yang ditetapkan oleh Jabatan Alam Sekitar (DOE) Malaysia bagi pengiraan Indeks Kualiti Air (WQI) • Parameter (6 WQI Utama) : 1. Dissolved Oxygen (DO) - Oksigen Terlarut 2. pH - Tahap Keasidan/Kealkalian 3. Biological Oxygen Demand (BOD) - Permintaan Oksigen Biologi 4. Chemical Oxygen Demand (COD) - Permintaan Oksigen Kimia 5. Ammoniacal Nitrogen (NH-N) -Nitrogen Ammonia 6. Total Suspended Solids (TSS) - Jumlah Pepejal Tersuspensi • Parameter Tambahan : Suhu • Controller: MIQ/TC 2020 3G-CR3 • Multi-parameter measuring converter, for connecting up to 20 IQ sensors. -WTW 109170 SensoLyt 700 IQ (pH) Robust digital pH/ORP sensor for pH/ORP electrodes SensoLyt SEA/DWA/ECA/PtA for use with the IQ SENSOR NET. Measuring method: Potentiometric ; Measuring range:0 - 14pH -WTW 600012 Visolid 700 IQ (FREE-CAL) Digital suspended solids sensor for water/wastewater/sludge (ultrasonic cleaning) for use with the IQ SENSOR NET system -WTW 201650 FDO 700 IQ Digital calibration free optical D.O. sensor (universal use). Optimized for monitoring/controlling the O2 input in wastewater treatment plants, for use with IQ SENSOR NET. -WTW 201654 SC-FDO 700 (Dissolved oxygen) Universal sensor cap for 700 IQ -WTW VARiON Plus A comp SET NH4/CompRobust digital ammonium sensor for ion-selective electrodes (in-situ measuring), for use with the IQ SENSOR NET system, delivered with VARiON Ref, VARiON Plus NH4 and VARiON Plus K electrodes. With built-in lightning protection, pre-amplifier and temperature sensor. -WTW 481048 CarboVis 701 IQ: Optical COD/TOC/DOC/BOD or SAC sensor (60 mm) with spectral processing of the UV-VIS range, for measurement in the inlet/effluent/BNR part of municipal wastewater treatement plans with integrated ultrasonic cleaning. -WTW 480042 SACIQ-7,0: Sensor adapter cable for all IQ sensors, with IP 68 waterproof connection to the IQ SENSOR NET system. Cable length 7m -Buffer Solutions • Ketepatan Ukuran : +0.1 mg/L (DO), +0.2 pH, +5% daripada bacaan (parameter lain) Isyarat Keluaran (Output Signal) : RS485 / Modbus RTU / 4 - 20 mA • Bekalan Kuasa : DC 12V - 24V • Bahan Probe : Keluli Tahan Karat (Stainless Steel) / PVC tahan kakisan • Tahap Perlindungan : IP68 (boleh direndam sepenuhnya di dalam air) • Jenis Pemasangan : Direndam (submersible) atau dipasang secara tetap di platform pemantauan • Penentukuran (Calibration) : Ditala di kilang (factory calibrated) dengan pilihan penentukuran semula di lapangan (field re-calibration) Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian dan capaian rangkaian di lokasi pemasangan)			
B.5.2	**Sistem Televisyen Litar tertutup (CCTV) Pintar - 360 darjah + 1TB Micro SD** • Camera Image Sensor : [Bullet channel] 1/2.5" Progressive Scan CMOS, [PTZ channel] 1/1.2" Progressive Scan CMOS Min. Illumination : [Bullet channel] Color: 0.0005 Lux @ (F1.0, AGC ON), B/W: 0.0001 Lux @ (F1.0, AGC ON), 0 Lux with light, [PTZ channel] Color : 0.0005 Lux @ (F1.6, AGC ON), B/W: 0.0001 Lux @ (F1.6, AGC ON), 0 lux with IR - Shutter Speed : 1s to 1/30000s - Slow Shutter : Yes - Day & Night : [Panoramic channel] Color, [PTZ channel] IR cut filter - Zoom[PTZ channel] 48 x optical, 16 x digital - Max. Resolution : [Panoramic channel] 3680 x 1656, [PTZ channel] 3840 x 2160 • PTZ - Movement Range (Pan) : 360 endless - Movement Range (Tilt) : [Panoramic channel] 12 to 24, [PTZ channel] -20 to 90 - Pan Speed [PTZ channel] pan speed : configurable from 0.1 to 160/s, preset speed: 240/s - Tilt Speed [PTZ channel] tilt speed : configurable from 0.1 to 120/s, preset speed 200/s, [Panoramic channel] tilt speed configurable - Proportional Pan [Panoramic channel] No, [PTZ channel] Yes - Presets : 300 - Patrol Scan : 8 patrols, up to 32 presets for each patrol - Pattern Scan : 4 pattern scans, record time over 10 minutes for each scan - Power-off Memory : Yes • Park Action : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan - 3D Positioning : Yes - PTZ Status Display : Yes - Preset Freezing : Yes - Scheduled Task : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan,dome reboot,dome adjust,aux output • Deep Learning Function - Face Capture : Detects up to 30 faces simultaneously, Uploads face with background and closed-up face pictures Face Comparison : Up to 10 face libraries. 30000 faces for each library. 150000 faces in total, Recognizes face identity via face modeling, grading and comparing to those in face library, Supports face library encryption • Road Traffic and Vehicle Detection - Smart Function : Support license plate recognition of vehicles and motorcycles (only in checkpoint scenario) Support vehicle attribute detection, including vehicle type, color, brand, driving direction, etc. Support vehicle and non-vehicle counting - Blocklist and allowlist : up to 10,000 records - LPR Countries/Regions : 4 areas (Europe, Middle East, Asia-Pacific, Africa) and more than 124 countries/regions - Accuracy (Under recommended installation and lighting conditions): License plate recognition rate 98%, Capture rate 99%, - Driving direction accuracy rate 98% - Vehicle Capture Speed: Front installation in checkpoint scenario: up to 120 km/h - Side installation: up to 80 km/h - Capture Mode : License Plate and Vehicle Mode, Vehicle Priority Mode • Multi-Target-Type Detection : Supports simultaneous detection and capture of human body, face and vehicle, Gets 7 face features, 14 human body features and 8 vehicle features - Perimeter Protection : Line crossing detection, region entrance detection, intrusion detection, region exiting detection			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B.5.3	**Papan Tanda** Spesifikasi : • Saiz : 900mm (T) x 400mm (L) Ketebalan: Min 3mm - • Pelekat: vinly reflektif • Pemasangan: Dinding pagar anti-climb			
B.5.4	**Tiang besi hollow bergalvanize dan berlengan berserta perangkap sampah** Spesifikasi : • Saiz tiang hollow : 80mm x 80mm • Tebal : 1mm • Tinggi : 10m • Saiz lengan hollow : 50mm x 50mm • Panjang : 4000mm • Tebal : 1mm			
B.5.5	**Lantai Konkrit Bertulang** Spesifikasi: • Saiz: 150mm tebal beserta 2 lapis BRC A6 dan lapisan hardcore 100mm serta kerja berkaitan			
B.5.6	**Pagar bergalvanize** Spesifikasi : • Material : galvenize dan berkunci :1800mm (lebar) x 1600mm (tinggi) berserta pagar dawai duri • Pintu : 1 unit			
B.5.7	**Set Sistem Solar dan bateri** Spesifikasi: • Bateri: Rechargable Sealed Lead Acid (SLA),12v 100AH (4) • Solar: Monocrystalline panel,600watt • Solar controller: MPPT,30a			
B.5.8	**Sistem rak, sokongan dan aksesori kalis air** • Saiz : 800mm(P) x 800mm(T) x 250mm (L), IP66			
B.6	**NUSAJAYA INDUSTRIAL PARK 2 (JALAN BAYU 3/14)(AIR QUALITY)** Kerja-kerja termasuk dengan membekal, memasang, menguji jalan dan mentauliah ;			
B.6.1	**Peranti Sensor Kualiti Udara (Pemantauan Bau)** Specification : • Jenis Sensor : Sensor Kualiti Udara Pelbagai Gas (IoT Bersepadu) untuk Pemantauan Bau • Fungsi Utama : Mengesan dan mengukur kepekatan gas yang menyebabkan bau busuk (malodorous compounds) di kawasan sekitar industri, tapak pelupusan sampah, atau loji kumbahan • Gas / Parameter Sasaran: 1. Hidrogen Sulfida 2. Ammonia 3. Sebatian Organik Meruap (VOC Volatile Organic Compounds) -jumlah keseluruhan atau jenis tertentu 4. Metana Julat Ukuran : 1. Hidrogen Sulfida : range : 0~100ppm, accuracy : +3%, resolution : 0.1ppm 2. Ammonia : range: 0~100ppm, accuracy : +3%, resolution : 0.1ppm 3. Volatile Organic Compounds (VOC) : range: 0~1000ppm, accuracy : +3%, resolution : 1ppm 4. Methane : range: 0~10000ppm, accuracy: +3%, resolution : 1ppm • Ketepatan / Resolusi Ukuran : +2% Skala Penuh (FS) atau lebih baik / Resolusi 0.1 ppm • Prinsip Pengesanan : Elektrokimia dan PID (Photo-Ionization Detector) untuk VOC • Masa Tindak Balas (T90) : <30 saat • Isyarat Keluaran (Output Signal) : RS485 / Modbus RTU / 4 - 20 mA • Bekalan Kuasa : 12 -24V DC • Bahan Perumah (Housing) : Aloi Aluminium / ABS tahan UV • Penarafan Perumah (Enclosure Rating) : IP65 atau lebih baik (sesuai untuk penggunaan luar bangunan) • Suhu Operasi : -20C hingga +55C Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak dan capaian rangkaian)			
B.6.2	**Papan Tanda** Spesifikasi : • Saiz : 900mm (T) x 400mm (L) Ketebalan: Min 3mm • Pelekat : vinly reflektif • Pemasangan : Dinding pagar anti-climb			
B.6.3	**Tiang besi hollow bergalvanize dan berlengan** Spesifikasi : • Saiz tiang hollow : 80mm x 80mm • Tebal : 1mm • Tinggi: 5m • Saiz lengan hollow : 50mm x 50mm • Panjang: 4000mm • Tebal: 1mm			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B.6.4	**Lantai Konkrit Bertulang** Spesifikasi : • Saiz : 150mm tebal beserta 2 lapis BRC A6 dan lapisan hardcore 100mm serta kerja berkaitan			
B.6.5	**Pagar bergalvanize** Spesifikasi : • Material : galvenize dan berkunci : 1800mm (lebar) x 1600mm (tinggi) berserta pagar dawai duri • Pintu : 1 unit			
B.6.6	**Set Sistem Solar dan bateri** Spesifikasi : • Bateri : Rechargable Sealed Lead Acid (SLA),12v 40A • Solar : Monocrystalline panel,100watt • Solar controller: MPPT,10a			
B.6.7	**Sistem rak, sokongan dan aksesori kalis air** • Saiz : 600mm(P) x 500mm(T) x 300mm (L), IP66			
B.7	**KAMPUNG BARU MUAFAKAT (WATER LEVEL, RAIN, CCTV 360°, SIREN)** Kerja-kerja termasuk dengan membekal, memasang, mengujijalan dan mentauliah ;			
B.7.1	**Peranti Sensor Paras Air** Spesifikasi : • Jenis Sensor : Sensor Aras Air Industri Jenis Radar / Ultrasonik / atau setara • Julat Ukuran : 0 -10 meter (boleh disesuaikan mengikut keadaan tapak) • Ketepatan Ukuran : +1 mm atau lebih baik • Julat Bekalan Kuasa : 12 - 24V DC • Antara Muka Komunikasi : 4 - 20 mA / RS485 / Modbus RTU • Bahan Sarung (Housing) : PP / Aloi Aluminium / Keluli Tahan Karat • Suhu Operasi : -20C hingga +60C • Tahap Perlindungan : IP68 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak)			
B.7.2	**Peranti Sensor Taburan Hujan** Spesifikasi : • Jenis Sensor : Sensor Hujan Jenis Radar / Tipping Bucket Rain Gauge / Sensor Hujan Optikal / atau setara • Julat Ukuran : 0 - 200 mm/h • Ketepatan Ukuran : +10% • Julat Saiz Titisan Hujan : 0.5 - 5.0 mm • Resolusi Ukuran Hujan : 0.1 mm • Kekerapan Sampel : 1 saat (1 Hz) • Antara Muka Komunikasi (Interface) : RS485, RS232, atau SDI-12 (pilih salah satu) • Protokol Komunikasi : ModBus, NMEA-0183, atau ASCII • Bekalan Kuasa : 7 - 30V DC • Tahap Perlindungan : IP65 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak dan capaian rangkaian)			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B.7.3	**Sistem Televisyen Litar tertutup (CCTV) Pintar - 360 darjah + 1TB Micro SD** • Camera Image Sensor : [Bullet channel] 1/2.5" Progressive Scan CMOS, [PTZ channel] 1/1.2" Progressive Scan CMOS Min. Illumination : [Bullet channel] Color: 0.0005 Lux @ (F1.0, AGC ON), B/W: 0.0001 Lux @ (F1.0, AGC ON), 0 Lux with light, [PTZ channel] Color : 0.0005 Lux @ (F1.6, AGC ON), B/W: 0.0001 Lux @ (F1.6, AGC ON), 0 lux with IR - Shutter Speed : 1s to 1/30000s - Slow Shutter : Yes - Day & Night : [Panoramic channel] Color, [PTZ channel] IR cut filter - Zoom[PTZ channel] 48 x optical, 16 x digital - Max. Resolution : [Panoramic channel] 3680 x 1656, [PTZ channel] 3840 x 2160 • PTZ - Movement Range (Pan) : 360 endless - Movement Range (Tilt) : [Panoramic channel] 12 to 24, [PTZ channel] -20 to 90 - Pan Speed [PTZ channel] pan speed : configurable from 0.1 to 160/s, preset speed: 240/s - Tilt Speed [PTZ channel] tilt speed : configurable from 0.1 to 120/s, preset speed 200/s, [Panoramic channel] tilt speed configurable - Proportional Pan [Panoramic channel] No, [PTZ channel] Yes - Presets : 300 - Patrol Scan : 8 patrols, up to 32 presets for each patrol - Pattern Scan : 4 pattern scans, record time over 10 minutes for each scan - Power-off Memory : Yes • Park Action : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan - 3D Positioning : Yes - PTZ Status Display : Yes - Preset Freezing : Yes - Scheduled Task : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan,dome reboot,dome adjust,aux output • Deep Learning Function - Face Capture : Detects up to 30 faces simultaneously, Uploads face with background and closed-up face pictures Face Comparison : Up to 10 face libraries. 30000 faces for each library. 150000 faces in total, Recognizes face identity via face modeling, grading and comparing to those in face library, Supports face library encryption • Road Traffic and Vehicle Detection - Smart Function : Support license plate recognition of vehicles and motorcycles (only in checkpoint scenario) Support vehicle attribute detection, including vehicle type, color, brand, driving direction, etc. Support vehicle and non-vehicle counting - Blocklist and allowlist : up to 10,000 records - LPR Countries/Regions : 4 areas (Europe, Middle East, Asia-Pacific, Africa) and more than 124 countries/regions - Accuracy (Under recommended installation and lighting conditions): License plate recognition rate 98%, Capture rate 99%, - Driving direction accuracy rate 98% - Vehicle Capture Speed: Front installation in checkpoint scenario: up to 120 km/h - Side installation: up to 80 km/h - Capture Mode : License Plate and Vehicle Mode, Vehicle Priority Mode • Multi-Target-Type Detection : Supports simultaneous detection and capture of human body, face and vehicle, Gets 7 face features, 14 human body features and 8 vehicle features - Perimeter Protection : Line crossing detection, region entrance detection, intrusion detection, region exiting detection			
B.7.4	**Sistem Siren** Spesifikasi: • Jenis : Siren Amaran Luar Bangunan 360 (Kawalan IoT) • Konfigurasi : 1 Set = 4 Unit Siren (4 unit = 1 set) • Jenis Kawalan : Kawalan Hidup/Mati (On/Off) dari jauh melalui Papan Pemuka Web serta pengaktifan automatik berdasarkan nilai bacaan sensor (Sensor Hujan dan Sensor Paras Air) • Bahan : (Perumah dan Ruang Gegaran) Diperbuat daripada ABS (Acrylonitrile Butadiene Styrene) berketahanan tinggi terhadap hentakan • Suhu Operasi : -25C hingga +50C(persekitaran luar) • Tahap Perlindungan : IP65 • Pematuhan Piawaian : Mematuhi Arahan RoHS (Restriction of Hazardous Substances) • Bekalan Kuasa : DC 12V - 24V • Penggunaan Arus Maksimum : 2.63 A (maksimum) • Tahap Bunyi : Sehingga 123 dB @ 1 meter (dengan corak bunyi terbina dalam yang boleh dipilih) • Fungsi Utama : Aktif secara manual melalui papan pemuka dan automatik melalui integrasi IoT (rule chain) dengan sensor hujan dan sensor aras air. Boleh dikawal dari jauh menggunakan aplikasi web dan mudah alih. • Jenis Pemasangan : Dipasang pada tiang (pole-mounted) dengan liputan bunyi 360 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian dan capaian rangkaian di tapak)			
B.7.5	**Papan Tanda** Spesifikasi : • Saiz : 900mm (T) x 400mm (L) Ketebalan: Min 3mm - Pelekat: vinly reflektif • Pemasangan : Dinding pagar anti-climb			
B.7.6	**Tiang besi hollow bergalvanize dan berlengan** Spesifikasi : • Saiz tiang hollow : 80mm x 80mm • Tebal : 1mm • Tinggi : 5m • Saiz lengan hollow : 50mm x 50mm • Panjang : 4000mm • Tebal : 1mm			
B.7.7	**Lantai Konkrit Bertulang** Spesifikasi : • Saiz: 150mm tebal beserta 2 lapis BRC A6 dan lapisan hardcore 100mm serta kerja berkaitan			
B.7.8	**Pagar bergalvanize** Spesifikasi : • Material : galvenize dan berkunci :1800mm (lebar) x 1600mm (tinggi) berserta pagar dawai duri • Pintu: 1 unit			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B.7.9	**Set sistem solar dan bateri** Spesifikasi : • Bateri : Rechargable Sealed Lead Acid (SLA),12v-24v 40AH • Solar Panel : Monocrystalline panel,100watt • Solar controller : MPPT,10a			
B.7.10	**Sistem rak, sokongan dan aksesori kalis air** • Saiz : 600mm(P) x 500mm(T) x 300mm (L), IP66			
B.8	**PERSIARAN LAYAR PERAK(WATER LEVEL, RAIN, CCTV 360°)** Kerja-kerja termasuk dengan membekal, memasang, mengujijalan dan mentauliah;			
B.8.1	**Peranti Sensor Paras Air** Spesifikasi : • Jenis Sensor : Sensor Aras Air Industri Jenis Radar / Ultrasonik / atau setara • Julat Ukuran : 0 - 10 meter (boleh disesuaikan mengikut keadaan tapak) • Ketepatan Ukuran : +1 mm atau lebih baik • Julat Bekalan Kuasa : 12 - 24V DC • Antara Muka Komunikasi : 4 - 20 mA / RS485 / Modbus RTU • Bahan Sarung (Housing) : PP / Aloi Aluminium / Keluli Tahan Karat • Suhu Operasi : -20C hingga +60C • Tahap Perlindungan : IP68 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak)			
B.8.2	**Peranti Sensor Taburan Hujan** Spesifikasi : • Jenis Sensor : Sensor Hujan Jenis Radar / Tipping Bucket Rain Gauge / Sensor Hujan Optikal / atau setara • Julat Ukuran : 0 - 200 mm/h • Ketepatan Ukuran : +10% • Julat Saiz Titisan Hujan : 0.5 - 5.0 mm • Resolusi Ukuran Hujan : 0.1 mm • Kekerapan Sampel : 1 saat (1 Hz) • Antara Muka Komunikasi (Interface) : RS485, RS232, atau SDI-12 (pilih salah satu) • Protokol Komunikasi : ModBus, NMEA-0183, atau ASCII • Bekalan Kuasa : 7 - 30V DC • Tahap Perlindungan : IP65 Pengawal (Controller) : • Jenis Komunikasi : WiFi / 4G / LoRa / NB-IoT (bergantung kepada kesesuaian tapak dan capaian rangkaian)			
B.8.3	**Sistem Televisyen Litar tertutup (CCTV) Pintar - 360 darjah + 1TB Micro SD** • Camera Image Sensor : [Bullet channel] 1/2.5" Progressive Scan CMOS, [PTZ channel] 1/1.2" Progressive Scan CMOS Min. Illumination : [Bullet channel] Color: 0.0005 Lux @ (F1.0, AGC ON), B/W: 0.0001 Lux @ (F1.0, AGC ON), 0 Lux with light, [PTZ channel] Color : 0.0005 Lux @ (F1.6, AGC ON), B/W: 0.0001 Lux @ (F1.6, AGC ON), 0 lux with IR - Shutter Speed : 1s to 1/30000s - Slow Shutter : Yes - Day & Night : [Panoramic channel] Color, [PTZ channel] IR cut filter - Zoom[PTZ channel] 48 x optical, 16 x digital - Max. Resolution : [Panoramic channel] 3680 x 1656, [PTZ channel] 3840 x 2160 • PTZ - Movement Range (Pan) : 360 endless - Movement Range (Tilt) : [Panoramic channel] 12 to 24, [PTZ channel] -20 to 90 - Pan Speed [PTZ channel] pan speed : configurable from 0.1 to 160/s, preset speed: 240/s - Tilt Speed [PTZ channel] tilt speed : configurable from 0.1 to 120/s, preset speed 200/s, [Panoramic channel] tilt speed configurable - Proportional Pan [Panoramic channel] No, [PTZ channel] Yes - Presets : 300 - Patrol Scan : 8 patrols, up to 32 presets for each patrol - Pattern Scan : 4 pattern scans, record time over 10 minutes for each scan - Power-off Memory : Yes • Park Action : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan - 3D Positioning : Yes - PTZ Status Display : Yes - Preset Freezing : Yes - Scheduled Task : Preset,pattern scan,patrol scan,auto scan,tilt scan,random scan,frame scan,panorama scan,dome reboot,dome adjust,aux output • Deep Learning Function - Face Capture : Detects up to 30 faces simultaneously, Uploads face with background and closed-up face pictures Face Comparison : Up to 10 face libraries. 30000 faces for each library. 150000 faces in total, Recognizes face identity via face modeling, grading and comparing to those in face library, Supports face library encryption • Road Traffic and Vehicle Detection - Smart Function : Support license plate recognition of vehicles and motorcycles (only in checkpoint scenario) Support vehicle attribute detection, including vehicle type, color, brand, driving direction, etc. Support vehicle and non-vehicle counting - Blocklist and allowlist : up to 10,000 records - LPR Countries/Regions : 4 areas (Europe, Middle East, Asia-Pacific, Africa) and more than 124 countries/regions - Accuracy (Under recommended installation and lighting conditions): License plate recognition rate 98%, Capture rate 99%, - Driving direction accuracy rate 98% - Vehicle Capture Speed: Front installation in checkpoint scenario: up to 120 km/h - Side installation: up to 80 km/h - Capture Mode : License Plate and Vehicle Mode, Vehicle Priority Mode • Multi-Target-Type Detection : Supports simultaneous detection and capture of human body, face and vehicle, Gets 7 face features, 14 human body features and 8 vehicle features - Perimeter Protection : Line crossing detection, region entrance detection, intrusion detection, region exiting detection			
B.8.4	**Papan tanda** Spesifikasi : • Saiz: 900mm (T) x 400mm (L) Ketebalan: Min 3mm - Pelekat: vinyl reflektif • Pemasangan: Dinding pagar anti-climb			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
B.8.5	**Tiang besi hollow bergalvanize dan berlengan** Spesifikasi : • Saiz tiang hollow : 80mm x 80mm • Tebal : 1mm • Tinggi : 5m • Saiz lengan hollow : 50mm x 50mm • Panjang : 4000mm • Tebal : 1mm			
B.8.6	**Lantai Konkrit Bertulang** Spesifikasi : • Saiz : 150mm tebal beserta 2 lapis BRC A6 dan lapisan hardcore 100mm serta kerja berkaitan			
B.8.7	**Pagar bergalvanize** Spesifikasi : • Material : galvenize dan berkunci :1800mm (lebar) x 1600mm (tinggi) berserta pagar dawai duri • Pintu : 1 unit			
B.8.8	**Set sistem solar dan bateri** Spesifikasi : • Bateri : Rechargable Sealed Lead Acid (SLA),12v 40AH • Solar Panel : Monocrystalline panel,100watt • Solar controller: MPPT,10a			
B.8.9	**Sistem rak, sokongan dan aksesori kalis air** • Saiz : 600mm(P) x 500mm(T) x 300mm (L), IP66			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
C	**KERJA-KERJA MEMBEKAL, MEMASANG DAN MENGUJIJALAN DAN MENTAULIAH DASHBOARD PORTAL, APLIKASI MUDAH ALIH, PERKAKASAN SISTEM DIGITAL DAN SISTEM RANGKAIAN KOMUNIKASI**			
C.1	DASHBOARD & APLIKASI MUDAH ALIH			
C.1.1	**IOT Platform** • Langganan IoT Platform (Cloud-based) selama dua puluh empat (24) bulan dengan keupayaan berintegrasi dengan peranti Water Level, Water Quality, Air Quality, Rain Gauge dan Siren • Semua peranti hendaklah menghantar data secara automatik ke platform pemantauan IoT (Cloud IoT Dashboard) dan boleh diakses melalui laman web serta mobile app			
C.1.2	**Pemantauan data secara real-time** • Pemantauan dan paparan data Water Level, Rainfall Intensity, Water Quality Index (WQI), Air Quality dan Siren secara-real time melalui dashboard dan mobile app. Sistem juga mampu memaparkan bacaan parameter terperinci daripada sensor-sensor tersebut.			
C.1.3	**Konfigurasi API** • Konfigurasi API bagi tujuan integrasi sistem untuk penerimaan, penyimpanan dan paparan data daripada sensor			
C.1.4	**Perkhidmatan Notifikasi dan Kawalan Siren** Keupayaan sistem dan mobile app untuk : • Menghantar notifikasi amaran kepada pengguna berdasarkan nilai ambang (threshold) yang ditetapkan • Mengawal fungsi on/off Siren secara remote			
C.1.5	**Penyimpanan Data (Data Logging)** • Data bacaan mestilah disimpan secara automatik di pangkalan data awan (cloud database) sekurang-kurangnya 2 tahun untuk tujuan analisis dan audit.			
C.1.6	**Laporan & Analitik** • Sistem perlu mempunyai keupayaan muat turun data (CSV/Excel) serta menjana laporan prestasi dan amaran automatik.			
C.1.7	**Domain bersama SSL Certificate (SSL/TLS)** • Penyediaan domain bagi sistem lengkap dengan sijil keselamatan SSL/TLS. Sambungan data antara pelayan dan pengguna mesti dilindungi menggunakan penyulitan SSL/TLS bagi memastikan kerahsiaan dan integriti data. • Akses sistem hanya dibenarkan kepada pengguna berdaftar (authenticated users) sahaja.			
C.1.8	**Integrasi API** • Integrasi API data sensor ke dalam Dashboard MBIP bagi tujuan pemantauan menyeluruh			
C.2	PERKHIDMATAN SERVER HOSTING - co hosting			
C.2.1	a) dashboard (1 VM System, 1 VM DB) [4 CPU, 16GB, 150GB] * 24 bulan			
C.2.2	b) Software subscription Teltonika RMS (3 Years Subscription)			
C.3	MEMBEKAL, MEMASANG & MENTAULIAH PERKAKASAN BAGI DASHBOARD MBIP			
C.3.1	**Smart Board - 50"** • Samsung SmartBoard LH55WMB-WBGC come with LFD STAND SAM-STN-WM55R, • LFD TRAY SAM-CY-TF65BBC , • LFD FLIP PEN SAM-CY-PENR			
C.3.2	**PC** • IntelÂ® Coreâ„¢ i7 14700 (20 cores, up to 5.4 GHz Turbo, 65 W) • Windows 11 Pro, English • Intel Integrated Graphics • 32GB: 2 x 16 GB, DDR5, 4400 MT/s, non-ECC • 1 TB, M.2 2280, TLC PCIe Gen4 NVMe, SSD, SED Ready • Precision 3680 Tower with 300W (80 Plus Platinum) PSU • Monitor			
C.3.3	Aksesori yang berkaitan (Stand TV, Cable HDMI, Extension Plug)			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
C.3.4	**Network Video Recorder 8 TB, (8 Channel DS-7608NI-M2) + 8TB HDD Video and Audio** • IP Video Input 8-ch Up to 32 MP resolution *After ultra HD resolution mode is enabled, the NVR supports up to 8-ch 32 MP/24 MP IP video inputs. • Incoming Bandwidth128 Mbps • Outgoing Bandwidth256 Mbps • HDMI Output8K (7680 x 4320)/30Hz, 4K (3840 x 2160)/60Hz, 4K (3840 x 2160)/30Hz, 2K (2560 x 1440)/60Hz, 1920 x 1080/60Hz • VGA Output1920 x 1080/60Hz • Video Output ModeHDMI/VGA independent outpu • CVBS Output1-ch, BNC (1.0 Vp-p, 75), resolution: PAL: 704 x 576, NTSC: 704 x 480 • Audio Output1-ch, RCA (Linear, 1 K) • Two-Way Audio1-ch, RCA (2.0 Vp-p, 1 K, using the audio input) • Decoding • Decoding FormatH.265+/H.265/H.264+/H.264 • Recording Resolution 32 MP/24 MP/12 MP/8 MP/6 MP/5 MP/4 MP/3 MP/1080p/UXGA/720p/VGA /4CIF/DCIF/ 2CIF/CIF/QCIF *After ultra HD resolution mode is enabled, the NVR supports up to 8-ch 32 MP/24 MP IP video inputs. • Synchronous Playback8-ch • Decoding Capability2-ch@32 MP (30 fps)+2-ch@8MP(30fps)/10-ch@8 MP (30 fps)/20-ch@4 MP (30 fps)/40-ch@1080p (30 fps) • Dual-Stream RecordingSupport • Stream TypeVideo, Video & Audio • Audio CompressionG.711ulaw/G.711alaw/G.722/G.726/AAC/MP2L2 • Network • Remote Connection128 • Network ProtocolTCP/IP, DHCP, IPv4, IPv6, DNS, DDNS, NTP, RTSP, SADP, SMTP, SNMP, NFS, iSCSI, ISUP, UPnP, HTTP, HTTPS, ONVIF(Version 2.2), OTAP • Network Interface2, RJ-45 10/100/1000 Mbps self-adaptive Ethernet interface • Camera Access ProtocolONVIF(Version 2.5), RTSP • Auxiliary Interface • SATA2 SATA interfaces • CapacityUp to 16 TB capacity for each disk • Alarm In/Out4/1 • USB InterfaceFront panel: 1 USB 2.0; Rear panel: 1 USB 3.0 • General • Power Supply12 VDC, 3.33 A • Consumption 15 W (without HDD) • Working Temperature-10C to 55C (14Ã?Â°F to 131Ã?Â°F) • Working Humidity10% to 90% • Dimension (W x D x H)385 x 315 x 52 mm (15.2" x 12.4" x 2.0") • <3 kg (without HDD, 2.2 lb.)			
C.4	RANGKAIAN KOMUNIKASI NETWORK			
C.4.1	a) Sim kad (8 Site * 24 Bulan + 3 Bulan 'fasa development')			
C.4.2	**4G modem router Teltonika + external antenna (8 Site)** **Mobile** • Mobile module : 4G LTE Cat 4 up to 150 DL/50 UL Mbps; 3G up to 21 DL/5.76 UL Mbps; 2G up to 236.8 DL/236.8 UL kbp • SMS : SMS status, SMS configuration, EMAIL to SMS, SMS to EMAIL, SMS to HTTP, SMS to SMS, scheduled SMS, SMS autoreply, SMPP • APN : Auto APN • Bridge : Direct connection (bridge) between mobile ISP and device on LAN **Ethernet** • WAN : 1 x WAN port 10/100 Mbps, compliance IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI/MDIX • LAN : 3 x LAN ports, 10/100 Mbps, compliance IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX **Network** • Routing : Static routing, Dynamic routing (BGP, OSPF v2, RIP v1/v2, EIGRP, NHRP), Policy based routing Network protocols : TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, SFTP, FTP, SMTP, SSL/TLS, ARP, VRRP, PPP, PPPoE, UPNP, SSH, DHCP, Telnet, SMPP, SNMP, MQTT, Wake On Lan (WOL), VXLAN **Power** • Connector : 4-pin industrial DC power socket • Input voltage range : 9 Â¢â‚¬â€œ 30 VDC, reverse polarity protection; surge protection >31 VDC 10us max • PoE (passive) : Passive PoE over spare pairs. Possibility to power up through LAN1 port, not compatible with IEEE802.3af, 802.3at and 802.3bt standards, Mode B, 9 - 30 VDC • Power consumption : < 2 W idle, < 7 W Max **Physical Interfaces** • Ethernet : 4 x RJ45 ports, 10/100 Mbps **Operating Environment** • Operating temperature : -40 to 75°C • Operating humidity : 10% to 90% non-condensing • Ingress Protection Rating : IP30			
C.4.3	c) Tablet Storage : 256 GB Network : Wireless Only Size : 13 Inch			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
D	**PERKHIDMATAN PENYELENGGARAAN 24 BULAN DAN PROGRAM LATIHAN KESEDARAN MASYARAKAT BERKENAAN SISTEM PEMANTAUAN AIR MBIP**			
D.1	**PENYELENGGARAAN PENCEGAHAN DAN PEMBAIKAN** • Penyelenggaraan Pencegahan (Preventive Maintenance) • Sensor Paras Air (Water Level) - Pemeriksaan fizikal, pembersihan muka sensor, semakan komunikasi, penentukuran semula,kemas kini firmware, penggantian bateri, solar controller, dan laporan prestasi.			
D.1.1	**Sensor Hujan (Rain Sensor)** • Pembersihan/semakan permukaan sensor, semakan mekanisme sensor, semakan sambungan data ke papan pemuka.			
D.1.2	**Sensor Kualiti Udara (Air Quality)** • Semakan housing dan penapis, penentukuran gas, penggantian gas cell, ujian fungsi amaran bau, semakan sambungan rangkaian, kemas kini firmware.			
D.1.3	**Sensor Kualiti Air (Water Quality)** • Pembersihan probe, penentukuran parameter (DO, pH, BOD, COD, NH4, TSS), semakan kabel, validasi data dengan bacaan manual, lab test, dan laporan servis. Semakan sambungan rangkaian, kemas kini firmware			
D.1.4	**Sistem Siren IoT (360°)** • Pemeriksaan struktur dan tiang, ujian fungsi manual dan automatik, semakan bateri sandaran, kemas kini firmware, dan log penyelenggaraan.			
D.1.5	**Sistem CCTV** • Pemeriksaan kamera dan DVR/NVR, pembersihan lensa, semakan sambungan rangkaian, kemas kini firmware, ujian rakaman dan playback.			
D.1.6	**Lain-lain (Umum)** • Pemeriksaan penebat kabel, kekemasan pemasangan, pengujian komunikasi sistem IoT, dan laporan penyelenggaraan lengkap.			
D.2	Penyelenggaraan Pembaikan (Corrective Maintenance)			
D.2.1	**Sensor Paras Air (Water Level)** • Penggantian sensor atau komponen elektronik yang gagal, pembaikan pendakap, atau konfigurasi semula komunikasi.			
D.2.2	**Sensor Hujan (Rain Sensor)** • Penggantian mekanisme tipping / corong / PCB rosak, semakan kuasa dan sambungan semula.			
D.2.3	**Sensor Kualiti Udara (Air Quality)** • Penggantian gas module, penentukuran semula selepas pembaikan, atau reset firmware.			
D.2.4	**Sensor Kualiti Air (Water Quality)** Gantian tip individu, recalibration selepas baik pulih, dan ujian fungsi.			
D.2.5	**Sistem Siren IoT (360°)** • Pemeriksaan struktur dan tiang, ujian fungsi manual dan automatik, semakan bateri sandaran, kemas kini firmware, dan log penyelenggaraan. • Baik pulih unit siren, penggantian speaker, modul kawalan, atau bateri sandaran rosak.			
D.2.6	**Sistem CCTV** • Gantian kamera / komponen rosak, sambungan semula ke rangkaian, atau konfigurasi IP semula.			
D.2.7	**Lain-lain (Umum)** • Apa-apa pembaikan lain yang diperlukan untuk memastikan sistem beroperasi sepenuhnya.			
D.3	**Sistem dan Mobile App** Penyelenggaraan sistem dan mobile app dalam tempoh dua belas (12) bulan, meliputi: • Semakan status server, database dan sambungan API • Kemas kini versi sistem dan mobile app, plugin dan dependencies bagi memastikan prestasi optimum • Pelaksanaan backup pangkalan data dan konfigurasi sistem			
D.4	LATIHAN DAN PEMINDAHAN PENGETAHUAN / TEKNOLOGI (TOT)			
D.4.1	**Khidmat latihan menggunakan dashboard dan mobile app Menjalankan latihan kepada pengguna akhir sistem. seperti keperluan berikut:** • Kekerapan latihan (1 kali) • Bilangan peserta (20 peserta) • Tempoh latihan 2 hari • Kos tempat latihan, makan, minum akan akan ditanggung oleh petender			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
D.4.2	**Montaj pelancaran termasuk apa-apa hebahan seperti :** • Gimik pelancaran • Video promosi			

BIL.	SPESIFIKASI	YA	TIDAK	CATATAN
E	**PERUNTUKAN SEMENTARA** KERJA-KERJA PENAMBAHBAIKAN - INFRASTUKTUR RANGKAIAN DAN KERJA-KERJA AWAM			