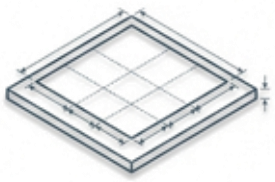
EXECUTIVE SUMMARY

Proposed Development of The Glasswool Manufacturing Facility by NetZero Technology Sdn. Bhd. at Part of Lot 3432 (Lot lama: Lot 4184), Kulim East Industrial Park, Mukim Pekan Padang Meha, District of Kulim, Kedah Darul Aman

Introduction





Site Area: **9.672 hectares (23.9 acres)**

Legal Requirement

Activity 14(b)(ii) under EIA Order 2015

Project Proponent

NetZero Technology Sdn. Bhd.

Classification

HPI (High Polluting Industry)

EIA Consultant

NHS Environmental Services Sdn. Bhd.

Statement of Needs

POLICY ALIGNMENT

Supports Twelfth Malaysia Plan (RMKe-12) Theme 3, National Physical Plan 4 (NPP-4) Policy 17, Rancangan Struktur Negeri Kedah 2035.

MARKET GROWTH

Malaysia insulation market expanding 12-15% annually

IMPORT SUBSTITUTION

Saves **RM 85-95 million/year** in insulation imports from China, Thailand, Australia.

Project Description

Core Operations

Raw Material: 42,000-48,000 tonnes/year recycled glass cullet

Melting: 5.0 tonnes/hour at 1,300-1,500°C

Insulation: fibrorus materials

Existing Operations: PGF Insulation Sdn. Bhd. in Prai, Penang since 1984

PHASE 1: 41,600 MT/year

PHASE 2: 62,400 MT/year

PHASE 3: 83,200 MT/year

Full Capacity

CONSTRUCTION PHASE (18 Months)

- **Dust:** 70 – 90 µg/m3
- **Erosion :** Construction on preprepared land with platform
- **Truck Movement:** 30-40/day

OPERATIONAL PHASE

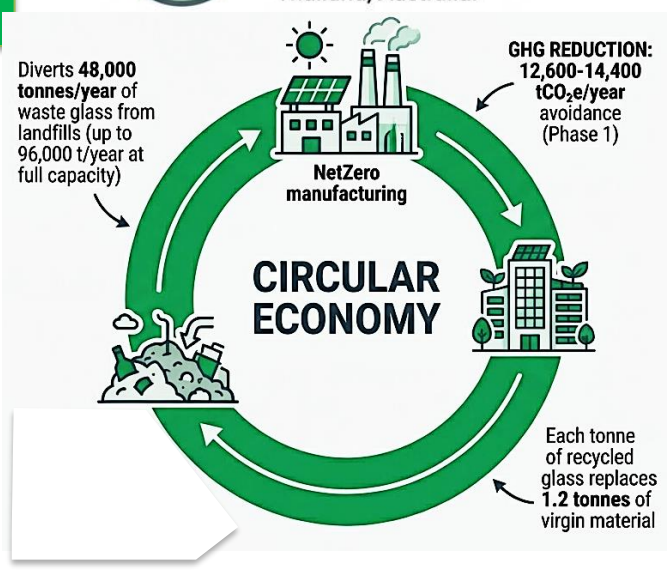
- **Noise:** 48-52dBA at boundary
- **Scheduled Waste (APCS dust) : 15-22 t/year**
- **Vehicle Movement :** 120-150/day

Economic Footprint

Investment: USD 9.4 million (equipment from Hangzhou Shenglian and Anhui Sundiatec)

Workforce: 184 direct (Phase 1) → 368 (full capacity)

Indirect Jobs: 600-800



Existing Environment (Baseline Data)

Air Quality: PM_{10} 28-30 µg/m³ (below MAAQS 2020 limit of 100 µg/m³) – **GOOD**

Water Quality: Sungai Jemerli – BOD_5 and phosphorus exceed NWQS Class IIB – **ATTENTION**

Noise: Daytime Leq 56.6-59.8 dBA (DOE limit 55 dBA) – **SLIGHTLY EXCEEDS**

Vibration: 0.293-1.108 mm/s PPV – within DOE 2021 limits – **GOOD**

Aquatic: BMWP score 74 (moderate water quality) – **MODERATE**

Wildlife: Low diversity, A., outside Central Forest Spine, no protected species – **LOW**

Flora: Site cleared, no rare/endangered species – **LOW SENSITIVITY**

Meteorology (Butterworth Station 2012-2022): Rainfall 2,343.9 mm/year, Temperature 27.9°C, Humidity 79.9%, East wind 27.5%

Community Perception

Overall Acceptance

80%



Zone 1 (0-3 km) Perception

80% Local Hire

1% Profit CSR

Dedicated Annual Environmental Budget

Competent Person

Workforce Experience

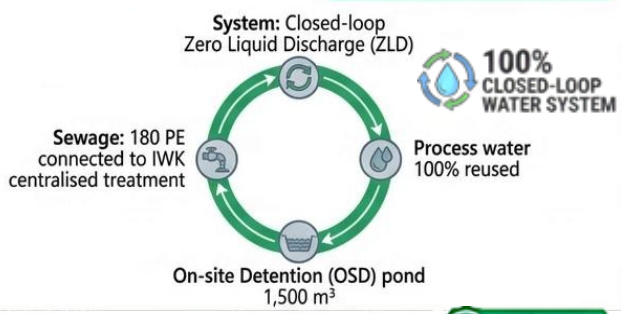
Potential Impact & Mitigation Measures

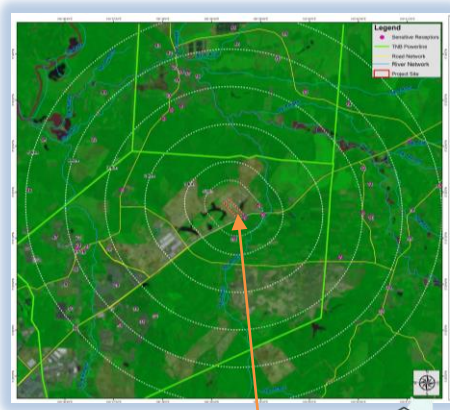
AIR QUALITY

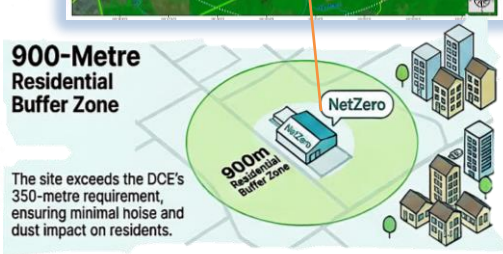
- **Monitoring: CEMS** on Chimney 1 continuous, real-time link to DOE Kedah and Putrajaya
- **Adopt Stricter Compliance Limit**: Adopting stricter compliance limit = 400 mg NO_2 for Chimney 2 for Phase 1 operation; Remodeling of air quality before operation of Phase 2 & Phase 3 to determine NO_2 & SO_2 limit of compliance.

WATER QUALITY

Residual Impact: LOW

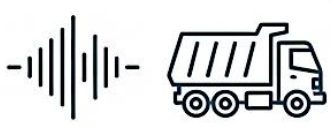






NOISE & TRAFFIC

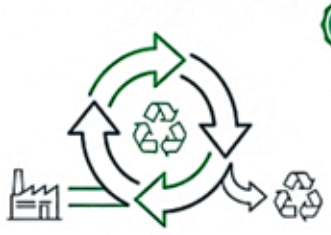
Residual Impact: LOW



Control: Acoustic enclosures for blowers, building envelope (15-25 dBA attenuation)
Confined to enclosed production hall
Traffic Management Plan implemented
Heavy vehicle routing via FT004 and Butterworth-Kulim Expressway

WASTE

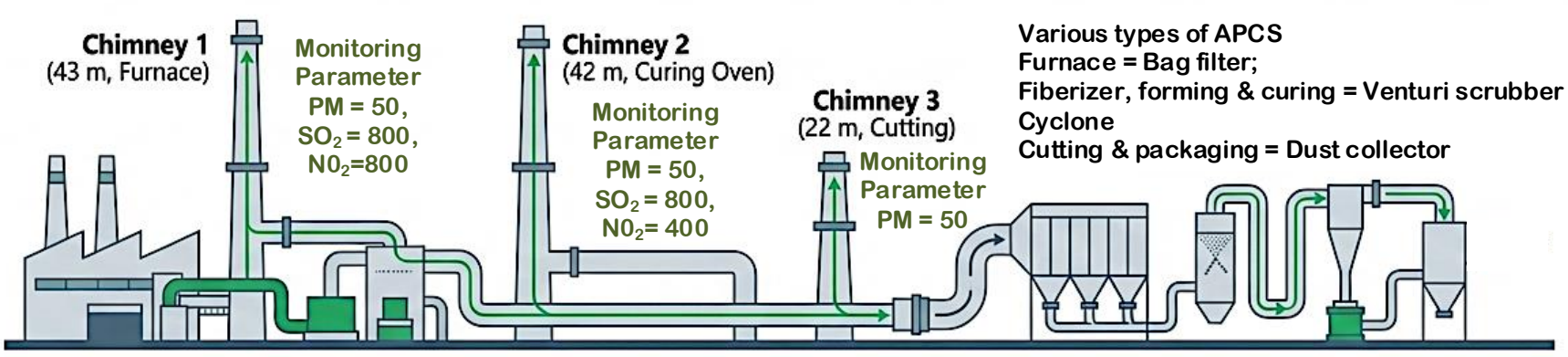
Residual Impact: LOW



650 tonnes/month reject material recycled back into production
Scheduled waste: SW 305, 306, 409, 410, 422, possibly SW 104
Compliance: EQ (Scheduled Wastes) Regulations 2005

AIR QUALITY (Most Critical Impact)

Residual Impact: LOW



Various types of APCS
Furnace = Bag filter;
Fiberizer, forming & curing = Venturi scrubber & Cyclone
Cutting & packaging = Dust collector

OVERALL CONCLUSION: ENVIRONMENTALLY VIABLE

Environmental benefits (energy savings, waste recovery) substantially outweigh manageable costs

RESIDUAL IMPACT: MINOR

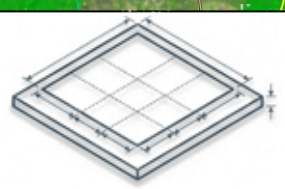
Air quality, resource use, climate impacts classified as 'Minor' after mitigation

RINGKASAN EKSEKUTIF

Cadangan Pembangunan Fasiliti Pembuatan Penebat Gentian Kaca (Glasswool) oleh NetZero Technology Sdn. Bhd. di Sebahagian Lot 3432 (Lot Lama: Lot 4184), Taman Perindustrian Kulim East, Mukim Pekan Padang Meha, Daerah Kulim, Kedah Darul Aman.

Pengenalan





Keluasan Tapak: **9.672** hektar (23.9 ekar)

Keperluan Perundangan

Aktiviti 14(b)(ii) di bawah Perintah EIA 2015

Pemaju Projek

NetZero Technology Sdn. Bhd.

Klarifikasi

Industri Berpotensi Mencemar Tinggi (HPI).

Perunding EIA

NHS Environmental Services Sdn. Bhd.

Pernyataan Keperluan

PENYELARASAN DASAR
Menyokong Tema 3 Rancangan Malaysia Kedua Belas (RMKe-12), Polisi 17 Rancangan Fizikal Negara ke-4 (NPP-4), dan Rancangan Struktur Negeri Kedah 2035.

PERTUMBUHAN PASARAN:
Pasaran penebat Malaysia berkembang 12–15% setiap tahun.

PENGGANTIAN IMPORT:
Menjimatkan RM 85–95 juta/tahun daripada import dari China, Thailand, dan Australia.

Deskripsi Projek

Operasi Teras:

Bahan Mentah: 42,000–48,000 tan/tahun sisa kaca kitar semula.

Peleburan: 5.0 tan/jam pada suhu 1,300–1,500°C. .

Produk: Bahan penebat gentian.

Fasa 1: 41,600 MT/tahun | **Fasa 2: 62,400 MT/tahun** | **Fasa 3: 83,200 MT/tahun** → Full Capacity

FASA PEMBINAAN (18 Bulan)

- **Habuk:** 70–90 µg/m³.
- **Hakisan:** Pembinaan di atas tanah sedia ada dengan platform
- **Pergerakan Lori:** 30–40 kenderaan/hari.

FASA OPERASI

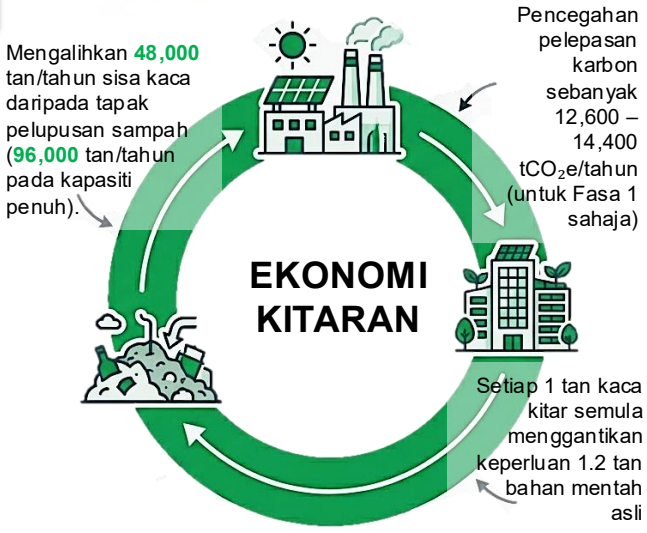
- **Bunyi Bising:** 48–52 dBA di sempadan.
- **Sisa Terjadual:** 15–22 tan/tahun (habuk APCS).
- **Pergerakan Kenderaan:** 120–150 kenderaan/hari.

Jejak Ekonomi

Pelaburan:
USD 9.4 juta
(peralatan daripada Hangzhou Shenglian dan Anhui Sundiatec)

Tenaga Kerja:
184
langsung (Fasa 1) → 368 (kapasiti penuh)

Pekerjaan Tidak Langsung:
600-800



Persekitaran Sedia Ada (Data Garis Dasar)

Kualiti Udara
PM_{10} : 28-30 ug/m³ (di bawah had MAAQS 2020 iaitu 100 ug/m³ – **BAIK**

Kualiti Air
Sungai Jemerli – BOD_5 dan fosforus melebihi Kelas IIB NWQS – **PERLU PERHATIAN**

Bunyi
Waktu Siang Leq 56.6-59.8 dBA (Had Jabatan Alam Sekitar (JAS) 55 dBA) – **SEDIKIT MELEBIHI HAD**

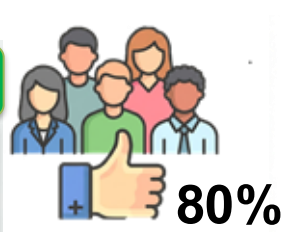
Getaran
0.293-1.108 mm/s PPV – dalam had JAS 2021 – **BAIK**

Akuatik
Akuatik: Skor BMWP 74 (kualiti air sederhana) – **SEDERHANA**

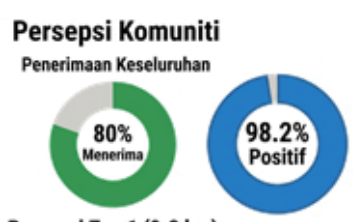
Hidupan Liar
Kepelbagaian rendah, berada di luar Central Forest Spine, tiada spesies dilindungi – **RENDAH**

Meteorologi
(Stesen Butterworth 2012-2022): Curahan hujan 2,343.9 mm/tahun, Suhu 27.9°C, Kelembapan 79.9%, Angin Timur 27.5%

Flora
Tapak telah dibersihkan, tiada spesies jarang/terancam – **KEPEKAAN RENDAH**



Pengambilan Pekerja Tempatan



1% keuntungan CSR

Bajet Tahunan Khusus Bagi Pengurusan Alam Sekitar



Orang Yang Berwibawa (OYB)



Tenaga Kerja Berpengalaman

Potensi Impak & Langkah Mitigasi

KUALITI UDARA

- **Pemantauan CEMS**: CEMS pada Cerobong 1 secara berterusan, pautan masa nyata ke JAS Kedah dan Putrajaya.
- **Pematuhan Had Lebih Ketat**: Mengguna pakai had pematuhan lebih ketat = 400 mg NO_2 untuk Cerobong 2 bagi operasi Fasa 1; Pemodelan kualiti udara sebelum operasi Fasa 2 & Fasa 3 untuk menentukan had pematuhan NO_2 & SO_2.

KUALITI AIR

Kesan Sisa: RENDAH

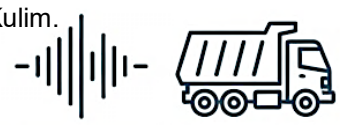
Pelepasan Cecair Sifar (Zero Liquid Discharge - ZLD)



BUNYI & TRAFIK

Kesan Sisa: RENDAH

- Kawalan: Kepungan akustik untuk penghembus, sampul bangunan (pengurangan 15-25 dBA).
- Operasi: Terhad di dalam dewan pengeluaran tertutup.
- Pelan Pengurusan Trafik dilaksanakan.
- Laluan Kenderaan Berat: Melalui FT004 dan Lebuhraya Butterworth-Kulim.



SISA

Kesan Sisa: RENDAH

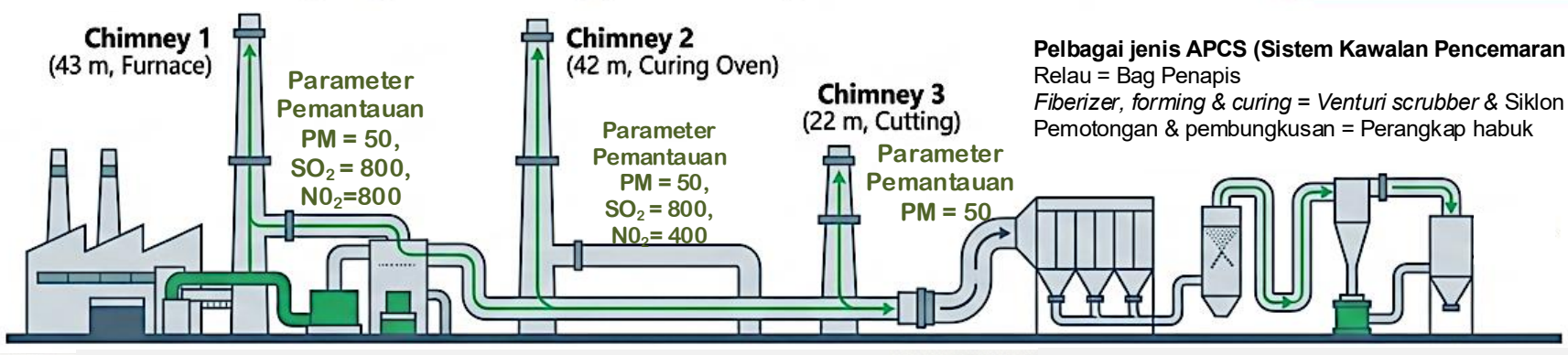
- Kitar Semula: 650 tan/bulan bahan reject dikitar semula ke dalam pengeluaran.
- Sisa Terjadual: SW 305, 306, 409, 410, 422, SW 104.
- Pematuhan: Peraturan-Peraturan Kualiti Alam Sekeliling (Sisa Terjadual) 2005.





KUALITI UDARA (Impak Paling Kritikal)

Kesan Sisa: RENDAH



Pelbagai jenis APCS (Sistem Kawalan Pencemaran Udara)
Relau = Bag Penapis
Fiberizer, forming & curing = *Venturi scrubber* & Siklon
Pemotongan & pembungkusan = Perangkap habuk

KESIMPULAN KESELURUHAN:
MAMPAN DARI SEGI ALAM SEKITAR
Manfaat alam sekitar (penjimatan tenaga, pemulihan sisa) secara substansial melebihi kos yang boleh diurus.

IMPAK SISA: MINOR
Kualiti udara, penggunaan sumber, dan impak iklim diklasifikasikan sebagai 'Minor' selepas mitigasi.