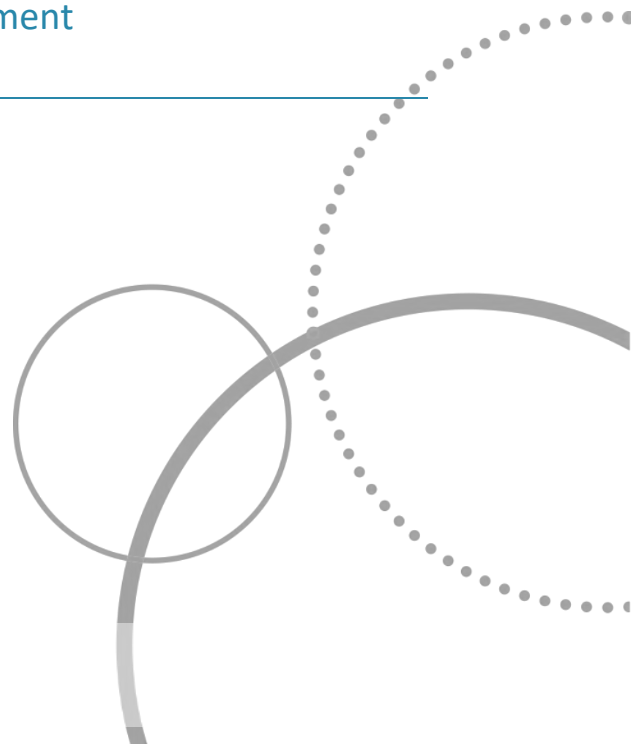




Coleshill Green Hydrogen, Flint

Air Quality and Construction Dust Risk Assessment

Client:	Renewable Energy Systems Ltd
Project No:	5956
Version:	V1.1
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1. Introduction

RES plan to construct a green hydrogen production facility at a site south of the Kimberly Clark Coleshill Paper Mill in Flint, within the Flintshire County Council (FCC) local authority area.

Green hydrogen is produced by splitting water (H₂O) into hydrogen and oxygen via a process of electrolysis powered by renewable energy. This means that no CO₂ or other pollutants are created during production. There is therefore no requirement to undertake an air quality impact assessment of the operational phase of the facility.

It is understood that there will be preliminary earthworks and construction activities associated with the Proposed Development. A Construction Dust Risk Assessment as therefore been undertaken by ITP Energised in accordance with the Institute of Air Quality Management (IAQM) guidance (IAQM, 2014).

2. Method of Assessment

2.1 Study Area

The study area for dust risk assessment has been defined in accordance with the IAQM guidance (IAQM, 2014) which stipulates that *“an assessment will normally be required where there is:*

- A ‘human receptor’ within:
 - o 350 m of the boundary of the site; and/or
 - o 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).
- A [designated] ecological receptor within:
 - o 50 m of the boundary of the site;
 - o 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).”

The study area considered as part of the dust risk assessment is shown in **Drawing 1**. The area surrounding the site comprises mixed commercial and residential use. The closest residential properties are located on Old London Road to the south of the site.

There are therefore human receptors within 350 m of the site boundary. There are no ecological receptors within 50 m of the site boundary. Therefore, only impacts upon human receptors have been considered as part of this assessment.

2.2 Emission Sources

The dust risk assessment below has been carried out using the criteria in the IAQM Guidance on the assessment of dust from demolition and construction (IAQM, 2014) to determine the impact magnitude and sensitivity of the area around the dust generating activities associated with the project.

Typical dust generating sources associated with differing construction activities are outlined below.

Demolition

There are no buildings or infrastructure being demolished as this part of the project, therefore dust impacts from demolition activities have not been considered in this assessment.

Earthworks

Site clearance works, the digging of trenches for foundations and utilities and temporary stockpiling of material represents the principal activities that may generate emissions of particulate material. The potential



for stockpiles of materials to generate dust depends on the nature of the material. The current grounds of the site include both soft and friable earth.

The magnitude of emissions and risk of impacts associated with the earthworks activities can be determined, as follows:

Dust Emission Magnitude

- The total area of earthworks is less than 10,000 m² (approximately 6,700 m²). In accordance with the IAQM guidance, the potential dust emission magnitude for earthworks is assessed as **Medium**.

Sensitivity and Risk of Impacts

- There are between 10 - 100 high sensitivity receptors all within 100 - 350 m of the proposed earthworks area. Sensitivity of the area to dust soiling due to earthworks is therefore assessed as **Low**.

The medium magnitude with low sensitivity results in the risk of dust soiling impacts due to earthworks being assessed as **Low**.

- The average 2023 annual mean PM₁₀ background concentrations background concentrations (DEFRA, 2023) at receptors within 350 m of the site boundary is approximately 10 µg/m³, which is below the IAQM criterion of 24 µg/m³. There are between 10 - 100 high sensitivity receptors all within 100 - 350 m of the proposed earthworks area. Sensitivity of residents to human health impacts due to earthworks is therefore assessed as **Low**.

The large magnitude with low sensitivity results in the risk of dust impacts on human health due to earthworks as being **Low**.

Construction Phase

Dust emissions during construction can give rise to elevated dust deposition and PM₁₀ concentrations. These are generally short-lived changes over a few hours or days, which occur over a limited time period of several weeks or months and are usually in defined phases.

Dust Emission Magnitude

- The total building volume is estimated to be < 25,000 m³ (approximately 2,100 m³). In accordance with the IAQM guidance, the potential dust emission magnitude for construction is therefore assessed as **Small**.

Sensitivity and Risk of Impacts

- There are between 10 - 100 high sensitivity receptors all within 100 - 350 m of the proposed construction area. Sensitivity of the area to dust soiling due to construction is therefore assessed as **Low**.

The small magnitude with low sensitivity results in the risk of dust soiling impacts due to construction being assessed as **Negligible**.

- The average 2023 annual mean PM₁₀ background concentrations background concentrations (DEFRA, 2023) at receptors within 350 m of the site boundary is approximately 10 µg/m³, which is below the IAQM criterion of 24 µg/m³. There are between 10 - 100 high sensitivity receptors all within 100 - 350 m of the proposed earthworks area. Sensitivity of residents to human health impacts due to construction is therefore assessed as **Low**.

The small magnitude with the low sensitivity results in the risk of dust impacts on human health due to construction being assessed as **Negligible**.



Track-out Material

Without site-specific mitigation, the IAQM guidance states that track-out can occur from roads up to 200 m from the site exit of a small construction site. The impact declines with distance from the roads and therefore, it is only necessary to consider track-out up to 50 m from the edge of the road.

There are no sensitive human receptors within 50 m of the track-out route, therefore the dust impacts from track-out activities has not been considered in this assessment.

3. Summary of Results

3.1 Overall Dust Emission Magnitude

The overall dust emission magnitude is summarised in **Table 1-A**

Table 1-A – Overall Dust Emission Magnitude

Activities	Dust Emission Magnitude
Demolition	N/A
Earthworks	Medium
Construction	Small
Track-out	N/A

3.2 Overall Sensitivity of the Surrounding Area

Table 1-B below summarises the sensitivity of the surrounding area.

Table 1-B – Overall Sensitivity of the Surrounding Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Track-out
Dust Soiling	N/A	Low	Low	N/A
Human Health	N/A	Low	Low	N/A

3.3 Overall Risk of Dust Impacts

Table 1-C below summarises the dust risk to define site-specific mitigation.

Table 1-C – Summary of Dust Risk to Define Site-Specific Mitigation

Potential Impact	Risk of Dust Impact			
	Demolition	Earthworks	Construction	Track-out
Dust Soiling	N/A	Low	Negligible	N/A
Human Health	N/A	Low	Negligible	N/A



4. Conclusions

The construction dust risk assessment detailed above concludes that without specific site mitigation measured there are:

- 10 - 100 high sensitivity human receptors within 350 m of the Proposed Development site, subject to:
 - Low risk of dust soiling during earthworks and construction;
 - Low risk to human health impacts during earthworks; and
 - Negligible risk to human health impacts during construction.

Experience in the UK is that good construction management is capable of mitigating the impact of fugitive emissions of particulate matter effectively. In all but the most exceptional circumstances, risk of dust impacts at receptors can be controlled to ensure that they are negligible or low at worst.

The good practice and site-specific mitigation measures to be implemented during construction are detailed below and it is understood are being implemented by the contractor.

Risk of dust impacts associated with the construction of the Proposed Development will therefore be negligible to low and associated effects will be **not significant** once good practice and site-specific mitigation measures are implemented.

5. Good Practice Dust Mitigation Measures

Outlined below are recommendations for mitigation measures, based on the overall risk of dust impacts as assessed above. These are measures that are listed as Desirable or Highly Recommended in the IAQM guidance for Low to Medium risk developments.

Proposed mitigation for communications:

- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary; and
- Display the head or regional office contact information.

Proposed mitigation for dust management:

- Develop and implement a Dust Management Plan (DMP). This may include measures to control other emissions, approved by the Local Authority.

Proposed mitigation for site management:

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the local authority when asked; and
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the logbook.



Proposed mitigation for monitoring:

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the Local Authority when asked; and
- Increase frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Proposed mitigation for preparing and maintaining the site:

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible;
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Avoid site runoff of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site; and
- Cover, seed or fence stockpiles to prevent wind whipping.

Proposed mitigation for site operations:

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event, using wet cleaning methods.

Proposed mitigation for waste management:

- Prohibit bonfires and burning of waste materials.

Operating vehicle/machinery and sustainable travel:

- Ensure all vehicles switch off engines when stationary;
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable;
- Impose and signpost a maximum speed limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas; and
- Issue all suppliers and contractors with delivery routes and access times/restrictions.

Proposed mitigation specific to earthworks:

- Re-vegetate earthworks and exposed areas/soils stockpiles to stabilise surfaces as soon as practicable.



Proposed mitigation specific to construction:

- Avoid scabbling (roughening of concrete surfaces) if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; and
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

Proposed mitigation specific to track-out:

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. this may require a sweeper being continuously in use;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport; and
- Record all inspections of haul routes and any subsequent action in a site logbook.



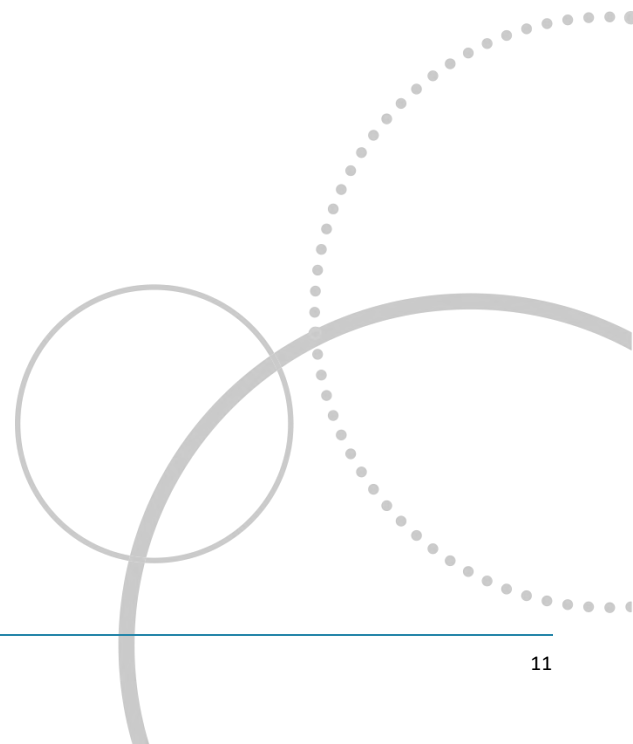
References

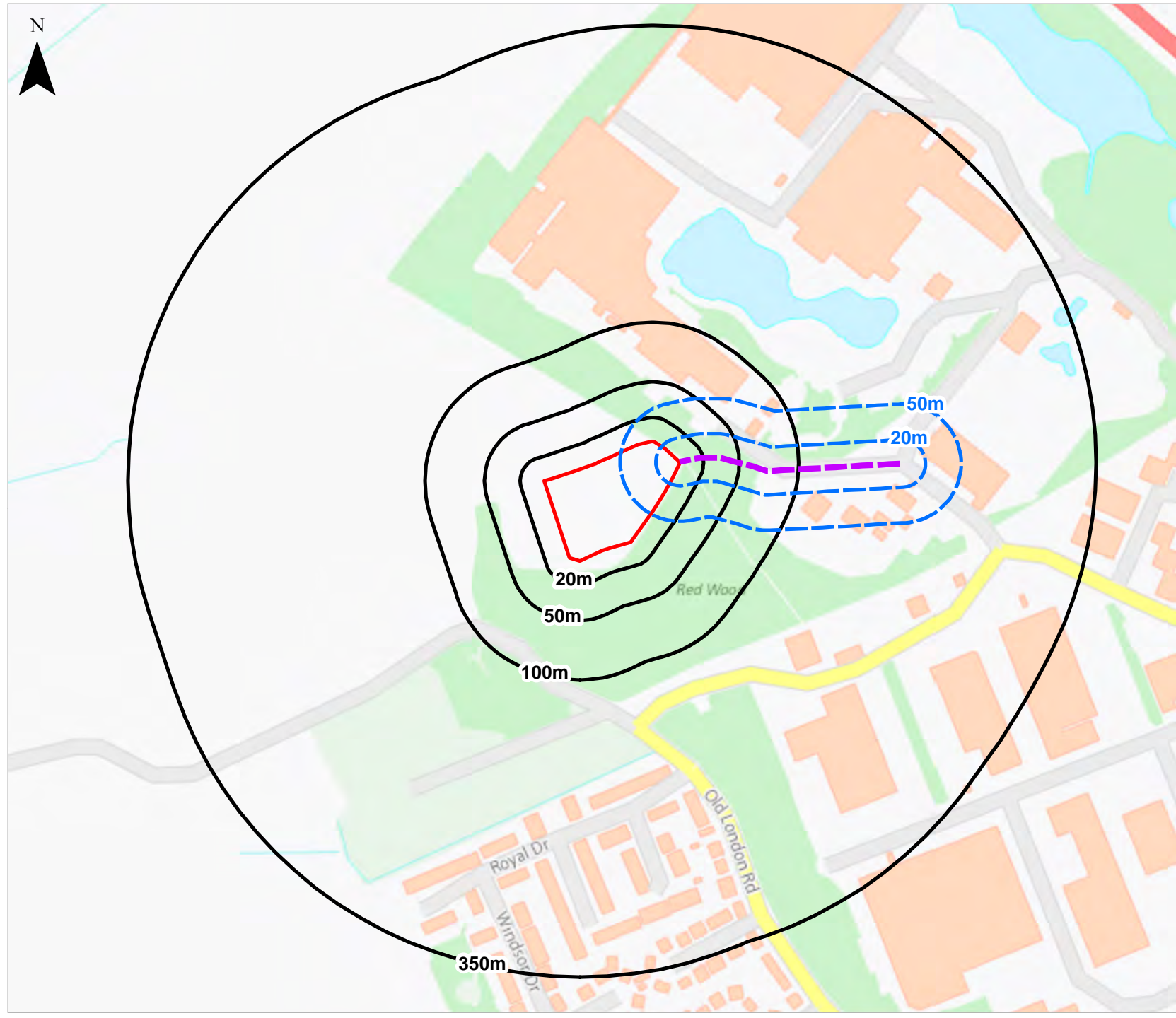
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IAQM. (2014). *Guidance on the Assessment of Dust from Demolition and Construction Version 1.1*.



Drawing



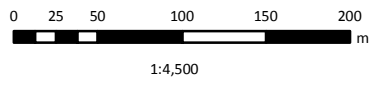


- KEY**
- Site Boundary
 - Construction Dust Risk Assessment Buffer
 - Trackout Route
 - Trackout Dust Risk Assessment Buffer



Coordinate System: British National Grid
Projection: Transverse Mercator

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Coleshill Green Hydrogen, Flint
Construction Dust Risk Assessment

Drawing 1
Construction Phase Dust Risk Assessment Area

Date: 08/03/2023	Lead: ER	Review: AD	Version: V1
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