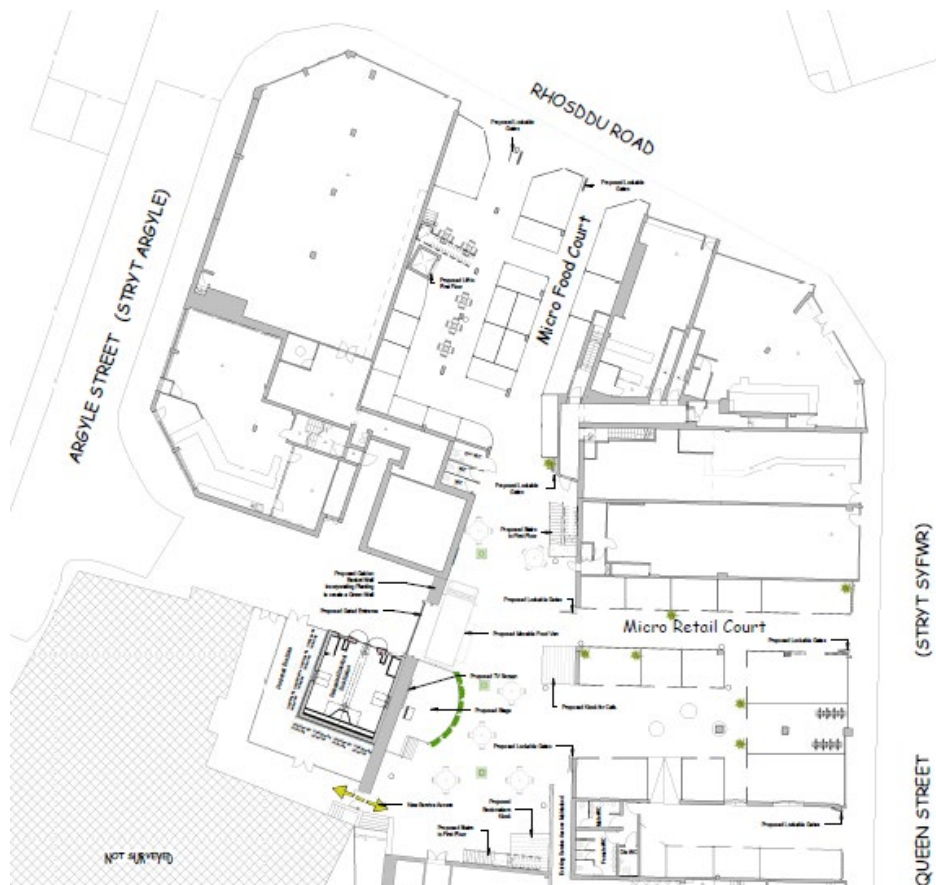


Richard Andrews Architects

Michael Barnes

Dust Management Report



AS-19-1170-RPT-01 Rev 0

14 October 2019

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Contents

1.0	Introduction	1
2.0	Legislation and Guidance	1
2.1	Institute of Air Quality Management Guidance	1
3.0	Construction Dust Risk Assessment	1
3.1	Overview	1
3.2	Screening	2
3.3	Site Sensitivity	2
3.4	Construction Activity Magnitude	3
3.5	Risk of Construction Dust Impacts	4
4.0	Construction Dust Mitigation Measures	5
5.0	Construction Dust Monitoring Strategy	8
6.0	Summary	9
7.0	References	10

1.0 Introduction

Atmospheric Solutions have been engaged by Richard Andrews Architects to prepare a dust management report for the redevelopment of Wrexham's town centre, between Hope Street, Rhosddu Road and Queen Street.

2.0 Legislation and Guidance

2.1 Institute of Air Quality Management Guidance

2.1.1 Guidance on the Assessment of Dust

The Institute of Air Quality Management (IAQM) published the Assessment of Dust from Demolition and Construction Sites (Ref 1) in 2012, which gives guidance on the assessment of air quality impacts from construction activities. This guidance provides a framework for assessing the risk of dust effects that may arise and suggests appropriate dust and air emissions mitigation measures for sites according to the level of risk.

2.1.2 Guidance on Air Quality Monitoring

The IAQM published the Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (Ref 2) in 2018, which gives additional guidance on the selection of dust monitoring methodology, techniques, monitors and monitor locations, as well as provides guidance on setting site action limits.

3.0 Construction Dust Risk Assessment

3.1 Overview

Dust emissions are generated from demolition and construction activities and require assessment in line with the IAQM assessment methodology.

The key sources of dust from construction sites include:

- demolition activities;
- earth-moving activities;
- general construction activities; and
- construction vehicles on site and on local roads.

Given the variable nature of demolition and construction activities, and the variability of dust emissions generated from these activities, a qualitative assessment process has been devised by the IAQM.

The adoption of this qualitative risk assessment process, and the incorporation of the subsequently recommended mitigation measures, is considered to reduce the risk of construction dust emissions such that any impacts can be considered not significant.

3.2 Screening

An assessment of the potential for impacts from construction dust is generally required if there are:

- human receptors within 350 m of the site boundary, or within 50 m of the route used by construction vehicles on a public highway, up to 500 m from the site entrance; or
- ecological receptors within 50 m of the site boundary; or within 50 m of the route used by construction vehicles on a public highway, up to 500 m from the site entrance.

If either of these criteria are met, the qualitative risk assessment is required.

For the proposed development, there are human receptors within 350 m and an assessment is required. However, there are no ecological receptors in the vicinity of the development site, and as such no ecological assessment is required.

3.3 Site Sensitivity

Receptors

The surrounding area has a moderate density of commercial units, which are considered to have a medium sensitivity to dust. Residential receptors, which have a high sensitivity to dust, do not have a large presence in the immediate vicinity of the site area.



Figure 1: Site Boundary (Red Line) and Local Area

Background Dust Concentrations

Wrexham County Borough Council carries out particulate matter monitoring for PM₁₀ at an automatic monitoring station approximately 700 metres from the redevelopment site. The annual average PM₁₀ concentration is used in the IAQM guidance to determine the capacity of the local environment to manage with increased dust loadings, and as such assists in determining the overall sensitivity of the area, in conjunction with the number and type of receptors.

The annual average PM₁₀ concentrations for the local authority monitoring site for 2017, the latest year available, is 11.5 µg/m³ (Ref 3). The proposed development site is expected to experience relatively similar particular matter levels as the automatic monitoring site. Additionally, the Defra predicted background PM₁₀ concentration for the site area for 2019 is 12.5 µg/m³ (Ref 4). As such, the expected PM₁₀ background concentration is considered to be significantly less than 24 µg/m³, which is the threshold at which the dust guidelines consider a site to have a high dust background.

Summary of Site Sensitivity

The site area has a moderate number of medium sensitive (i.e. commercial) receptors in close proximity, which results in the site having a low sensitivity to dust soiling effects. Given the relatively low background PM₁₀ concentration, coupled with the absence of significant numbers of high sensitivity residential receptors, the human health receptor sensitivity is considered to be negligible.

3.4 Construction Activity Magnitude

Demolition

The existing buildings will be retained, with only relatively small amounts of physical alterations on the outside of the buildings, in addition to creating pathways through the buildings. As such, any required demolition works for the development is considered to represent a small dust emission magnitude in line with the IAQM guidance.

Earthworks

There will not be any significant earthworks, given the buildings are being mostly retained, with only minor alterations outside the building, as such this activity is considered to represent a small dust emission magnitude in line with the IAQM guidance.

Construction

The existing buildings will be retained and refurbished, with creation of pathways through the buildings and the construction of an outdoor area. By measure of the approximate building volume, the dust emissions magnitude for this activity is considered to be medium, however it is noted that this is highly conservative given the majority of activities will be associated with refurbishment.

Vehicle Track-out

Given the relatively small scale of the construction activities, it is considered that there will be less than 10 one-way vehicle movements from the site per day. As such, the dust emissions magnitude for associated with construction vehicle track-out is considered to be small.

3.5 Risk of Construction Dust Impacts

The dust emission magnitudes for the various stages of construction activities is considered to be at most medium. Based on the low site sensitivity for dust soiling effects, the IAQM dust risk assessment procedure defines the potential dust impact to be low in terms of dust soiling, and negligible for health effects. These results are summarised in Table 1.

Table 1: Summary of the Site Construction Dust Risks

Potential Impact	Demolition	Earthworks	Construction	Track-out
Dust soiling	Negligible	Negligible	Low Risk	Negligible
Health effects	Negligible	Negligible	Negligible	Negligible

Under best practice guidance, the proposed development will constitute a low risk for construction activities.

4.0 Construction Dust Mitigation Measures

Under best practice guidance, the proposed development will constitute a low risk for construction activities.

The use of appropriate mitigation measures throughout the construction period will ensure that impacts to sensitive receptors are minimised or removed. The below mitigation measures are those considered desirable or highly recommended by the IAQM in order to mitigate the potential impact of construction dust emissions. It should be noted that this list has been tailored for low risk sites, in line with the most conservative result of the dust risk assessment, which is for dust soiling impacts from construction activities.

The following best practice mitigation measures are recommended to be included in the construction method statement:

Site Management

- Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.
- Display the head or regional office contact information.
- Record and respond to all dust and air quality pollutant emissions complaints.
- Make the complaints log available to the local authority when asked.
- Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions.
- Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.

Preparing and Maintaining the Site

- Plan the site layout such that machinery and dust causing activities are located away from receptors.
- Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.
- Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution where practicable.
- Avoid site runoff of water or mud.

- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials from site as soon as possible.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicle / Machinery and Sustainable Travel

- Ensure all non-road mobile machinery (NRMM) comply with the relevant standards.
- Ensure all vehicles switch off engines when stationary – no idling vehicles.
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where possible.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced haul routes and 10 mph on un-surfaced haul routes and work areas.

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 mitigation (using recycled water where possible).
- Use enclosed chutes, 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.
- 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.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Demolition (Where Applicable)

- Ensure water suppression is used during demolition operations.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Earthworks

- 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 additional control measures are in place.

Measures Specific to Track-Out

- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.

With the implementation of these mitigative measures, dust emissions from the site during construction are not expected to result in any significant impacts.

5.0 Construction Dust Monitoring Strategy

Following the construction dust risk assessment, the required construction dust monitoring can be formulated, in line with the IAQM guidance on monitoring activities.

Based on the construction dust risk assessment, the proposed works represent a low risk in terms of dust soiling, and a negligible risk for human health impacts for the construction activities.

Based on this risk level, monitoring is limited to site inspections of the work areas.

Dust monitoring is not required by the IAQM guidelines for low risk sites.

Should dust-related complaints be received, however, the requirements for dust monitoring may need to be revisited in the future. By implementing the dust mitigation measures of Section 4.0, this is unlikely to occur for this development.

An indicative chart for the monitoring required is shown in Figure 2 for reference.

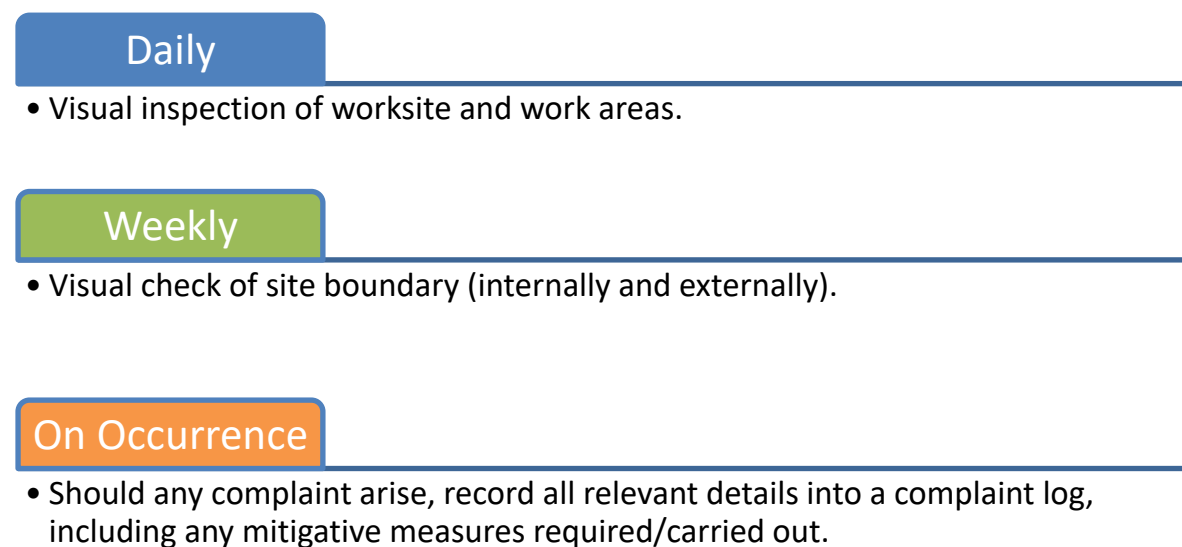


Figure 2: Construction Dust Monitoring Strategy

6.0 Summary

The construction dust risk assessment of the planned works at Wrexham's town centre, between Hope Street, Rhosddu Road and Queen Street in the Wrexham County Borough has shown that, in general, dust generated from the construction activities is expected to result in a low risk of amenity (dust soiling) impacts and a negligible risk for adverse human health impacts.

With the implementation of the recommended mitigation measures, the potential dust impacts can be considered as not significant.

Based on this, in accordance with the IAQM guidelines, monitoring is limited to visual observations of the work sites and boundaries.

7.0 References

- Ref 1. Institute of Air Quality Management. Guidance on the Assessment of Dust from Demolition and Construction Sites. 2014.
- Ref 2. Institute of Air Quality Management. Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites. 2018.
- Ref 3. North Wales Combined Authority. Air Quality Annual Status Report for 2017. 2018.
- Ref 4. Department for Environment Food & Rural Affairs. Air pollution background concentration maps. 2015.