Installation of external Liquid Nitrogen Tank

(Provision of an externally located Liquid Nitrogen tank and protective cage for the use of scientific research and production).

Design and Access Statement

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Section 1
Introduction

1 Introduction

1.1 Project Overview

Nanoco Technologies Ltd is considering expanding its current research and scale-up laboratory space within their currently occupied building. To facilitate and support this expansion it will be necessary to install an additional 2000 litre liquid Nitrogen tank in the service yard to the rear of the building.

1.2 Report Structure

The following areas are discussed within this report:

- Context and analysis;
- Design;
- Access;
- Other Issues; and
- Supporting Information & Drawings

1.3 Consultation

The team has consulted closely with the key stakeholders; principally the client and their landlord.

Discussions have been held with the landlord and their consultants. Designs have been developed to ascertain the preferred solution.

As this is not a significant intervention it was not considered necessary to liaise with the Local Authority planning department prior to application.

Section 2
Context & Analysis

2 Context and Analysis

2.1 Location

The proposed services installation is on an existing site at 46 Grafton Street, Manchester M13 9NT. The site is close to other University campus facilities and is approximately 2km south-east of Manchester City Centre.

Please refer to the Location Plan and other drawings as referenced in section 6 of this document.

2.2 Immediate Context

The tank and protective cage will be installed in the rear service yard of the existing facility. The proposed tank will not be visible from the street. The yard is overlooked by the rear of the surrounding buildings, all of which have similar uses. It is already utilised for similar purposes (i.e. the storage and servicing of laboratory liquids and gases).

In the context of the existing yard the proposed tank will not be detrimental to the overall appearance of the building and yard or impact on the wider surrounding area.

There are no potential hazards to the building users or the general public from the tank. The tank will be protected by a secure galvanised steel cage and serviced by trained personnel.

2.3 Current site uses.

The building is purpose designed as a scientific research facility and the rear yard is currently in use for the servicing of the buildings including current provision of a similar existing liquid nitrogen tank and other laboratory gas cylinders etc.

2.4 Application Boundary

The application boundary encloses sufficient space to facilitate all project works including:

- The existing buildings,
- External service yard for the manoeuvring and parking of vehicles, and loading of goods,
- Car parking facilities associated with the development;
- Provision for access to service the building for the purpose of refuse collection, deliveries and fire-fighting;
- Existing landscaping (unaltered by this proposal)

2.5 Topography

The application site is fairly flat, varying from approximately 40.25 above sea level. The yard is fairly level and paved in concrete and tarmac with gentle ramps to negotiate slight changes in level such as the kerbs. Access to the tank will therefore be level.

Figures: Photographs of the existing building, site, and surrounding area.



Fig 2.1 Overview of the whole service yard.



Fig 2.3 Closer view of the proposed tank location from the same viewpoint

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Fig 2.4 Area of hard standing for tank location showing ramped access.



Fig 2.5 View of location for tank and cage.



Fig 2.6 View of location for tank and cage.



Fig 2.7 Existing LN tank in the service yard showing example of typical/ similar appearance and finishes to that of the proposal.

Section 3
Design

3 Design

This section aims to cover aspects of the proposed design not already described in the previous sections – please refer to these in support of this section. The full list of the supporting information & drawings are provided in Section 6 of this document.

3.1 Process

3.1.1 Assessment

The need for the additional Liquid Nitrogen tank has been identified by the client. It is essential for the internal expansion of the laboratory space that is being facilitated by taking additional internal lab space from the landlord within the existing building.

3.1.2 Involvement

Key stakeholders including the client and their landlord have been consulted. Please refer to the section on consultation in the introduction (section 1) to this document.

3.1.3 Evaluation

The location of the tank has been identified as the optimum location for its use and servicing. The tank must be located outside of the building for safety reasons. The location must take into consideration the minimum length of connection pipework for safety and cost reasons.

3.1.4 Design

The tank is of a standard proprietary design and the cage is of a standard design to suit the size of the tank. The appearance is unobtrusive in the context of the service yard with neutral colour finishes such as the galvanised steel cage and stainless steel tank.

3.2 Use

As a direct replacement and upgrade of an existing building there is no significant change of use. The existing building was purpose built as an industrial factory and has been adapted for use as storage and distribution warehouse for many years. Therefore the use class is B1 and B8. The building functions well in its current location. In this excellent hub location it is well placed for access by road and is established and well known to the industry. Because of the site contamination and the surrounding business park it is not particularly suited for any alternative uses. The construction to current industry standards will secure the continued operation of this building into the foreseeable future.

3.3 Amount

A 2000 litre tank is required to satisfy the projected demands of the laboratory.

3.4 Layout

The square base of the cage will be placed in a corner niche with the back and right-hand side up against the existing wall. The location is currently occupied by external lab gas cylinders

3.5 Scale

The diameter of the tank is approximately 1.2 metres, and the height is 2.8 metres. The base plinth of the tank assembly is 1.4m wide by 1.7m deep. The surrounding cage is estimated to be approximately 2m x 2m on plan and 3.2m high. Refer to detail drawing as referenced in section 6.

3.6 Appearance and Materials

3.6.1 General approach and appearance

The overall appearance of the tank and cage will be as unobtrusive as possible. It is not visible from the street but even from within the yard ist will blend in amongst the other existing servicing and equipment.

3.6.2 External walls

The external walls of the cage will be galvanised steel wire mesh (e.g. 50mm square mesh).

This is to provide security and safety while allowing free ventilation around the vessel.

3.6.3 Roof

The roof of the cage will be galvanised sheet steel to shed direct rainfall away from the tank.

3.6.4 Fenestration

Not applicable. No change to the existing facility.

3.7 Landscaping

Existing service yard to be unaltered. No landscaping works.

3.7.1 Hard landscaping and paving

No change to the existing facility.

3.7.2 Trees and planting

No change to the existing facility.

3.7.3 Boundary treatment and fencing.

No change to the existing facility.

3.7.4 External Lighting.

No additional lighting proposed.

3.8 Design and Sustainability

The tank is a super-insulated dewar vessel to maintain the required temperature for liquid nitrogen. There is no power supply requirement and therefore it will not contribute to the energy usage of the building. Liquid nitrogen is an inert substance and does not pose any threat to the environment.

Section 4
Access

4 Access

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4.1 Pedestrian Access

Pedestrian access to and within the service yard will remained unchanged. The location of the proposed tank is easily accessible for servicing, refilling, and maintenance.

The surrounding hard-standing is level with small ramps over the kerbs and therefore is suitable for wheelchairs and service trolleys.

4.2 Vehicular Access & Parking

The service yard is currently accessed by a service tanker so refill the similar, existing liquid nitrogen tank. A liquid nitrogen tank will supply nitrogen gas to the building. The 2000L tank will be filled once a week by a small lorry with a liquid nitrogen tank. The refilling process will take approximately 10 minutes. A similar 900L tank is already on site and it envisaged that both tanks will be filled at the same time.

The tank will pipe nitrogen gas into the building for use in Nanoco's production process. The system operated quietly in normal operations.

4.3 Car Parking

No change to the existing facility.

4.4 Waste Management

The proposed tank will not produce any waste. Therefore the existing waste management regime will not be changed.

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Section 5
Other Issues

5 Other Issues

Other issues that have been considered in the preparation of this statement.

5.1 Planning Validation Checklist

The Planning validation checklist was reviewed and it considered that the flowing items were not applicable to this application:

- Desktop SI/ Land contamination assessment – no breaking of ground required.
- Foul sewage/ drainage statement – no waste/ drainage outlet required.
- Refuse disposal / recycling details – no additional waste or change to waste disposal proposed.
- Landscape/ boundary treatment – no changes to the existing site proposed.
- Environmental/ ecological impact assessment/ tree surveys etc. – no changes to site proposed.
- Acoustic assessment – proposed installation is silent in operation.
- Design for Access 2. Level access is provided as described in section 4 but full assessment/ report is not appropriate for this proposal.

5.2 Local Planning Policy

The proposal is not believed to be contrary to any local or national planning policy.

Section 6
Supporting Information

6 Supporting Information

6.1 Proposed Drawings

The following drawings form part of the planning application:

- P(01)01 - Site Location Plan (1:1250 @ A3),
- P(01)02 - Site Plan (1:500 @ A3)
- P(02)10 - GA Plan (1:50 @ A3)
- P(03)01 - Site Elevations/ Sections (1:200 @ A1)
- P(53)01 - Details of tank and cage (1:50 @ A3)

6.2 Supporting Documents

The following documents form part of the planning application:

- Design and Access Statement (M7601/4.1_DAS_P2)