

Merthyr Tydfil County Borough Council – Cyfarthfa Castle Drainage Scheme

Construction Environmental Management Plan



Noel Fitzpatrick Ltd – Merthyr Tydfil County Borough Council

Cyfarthfa Castle Drainage Scheme

October 2025

Merthyr Tydfil County Borough Council – Cyfarthfa Castle Drainage Scheme

Document Reference -NFL/MCBC/CEMP-1

DOCUMENT INFORMATION

Project	Noel Fitzpatrick Ltd – Merthyr Tydfil County Borough Council		
	Cyfarthfa Castle Drainage Scheme		
Location	Cyfarthfa Castle Museum & Art Gallery		
	Cyfarthfa Park		
	Brecon Road		
	Merthyr Tydfil		
	CF47 8RE		
Title	Construction Environmental Management Plan (CEMP)		
Document Ref	NFL/MCBC/CEMP-1	Issue / Revision	A
File reference	NFL/MCBC/CEMP-1		
Start Date	27/10/2025		

	Name	Signature	Date
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Authorised by	Anna Fitzpatrick		20/10/2025

DOCUMENT CONTROL

Rev.	Date	Description
A	21/10/2025	ISSUE

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1 Introduction

This Construction Environmental Management Plan (CEMP) has been prepared for the management of Environmental / Ecological Impacts from the proposed New Drainage System within the grounds of Cyfarthfa Castle and also directly around the Castle including works within the basement areas on behalf of Merthyr Tydfil County borough Council

The works will broadly involve:

- ❖ Repair and replacement of existing drainage pipes / manholes
- ❖ Construction of a new underground drainage system and associated manholes
- ❖ Construction of a new Attenuation Tank System
- ❖ Construction of 1.8m Dia. Hydrobrake Waterflow Control Chamber
- ❖ Connection into existing Outlet Chamber approximately 4.5m in depth
- ❖ The works will also include a cut and fill exercise in some areas to lower and increase levels to create appropriate gradient drainage.
- ❖ The new drainage route construction will require the removal of trees, hedgerows, modified grassland, other neutral grassland and some scrub, the majority will be carried out by Merthyr Tydfil County Borough Council with Noel Fitzpatrick Ltd also removing localised Hedgerows.

The following Management Plan details how potentially polluting activities will be controlled to minimise possible environmental impact. This CEMP includes:

- ❖ A description of the scheme
- ❖ An outline construction methodology.
- ❖ A description of the site setting and existing status.
- ❖ A description of the sensitivity of the site, the communities around it and the potential effects of the project on these.
- ❖ Key staff and their roles – to be updated as the project moves from design / planning to construction phase.
- ❖ Consultees and liaison mechanisms.
- ❖ Monitoring and reporting procedures.
- ❖ Planning requirements for the project.
- ❖ Procedures to mitigate impacts.
- ❖ Incident response and reporting procedures.
- ❖ Environmental monitoring, audit, and reporting procedures.

This Construction Environment Management Plan is a Live Document subject to change throughout the Lifecycle of the Contract.

2 The Project

2.1 Project Objectives

The main aim of the CEMP for the scheme is to aid Noel Fitzpatrick Ltd with the management of the Installation of a New Drainage Scheme within Cyfarthfa Castle in an environmentally acceptable and sustainable way, with consideration to all the construction and environmental implications associated with the scheme. The works will require repair and replacement of existing drainage pipes / manholes together with the construction of a new underground drainage channel, associated manholes and a new attenuation tank. The new drainage route construction will require the removal of hedgerows,

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trees, modified grassland, other neutral grassland and some scrub. Phased sections of footpath and carpark will be closed during the works with diversions put in place for pedestrian's and vehicles.

2.2 Site Details

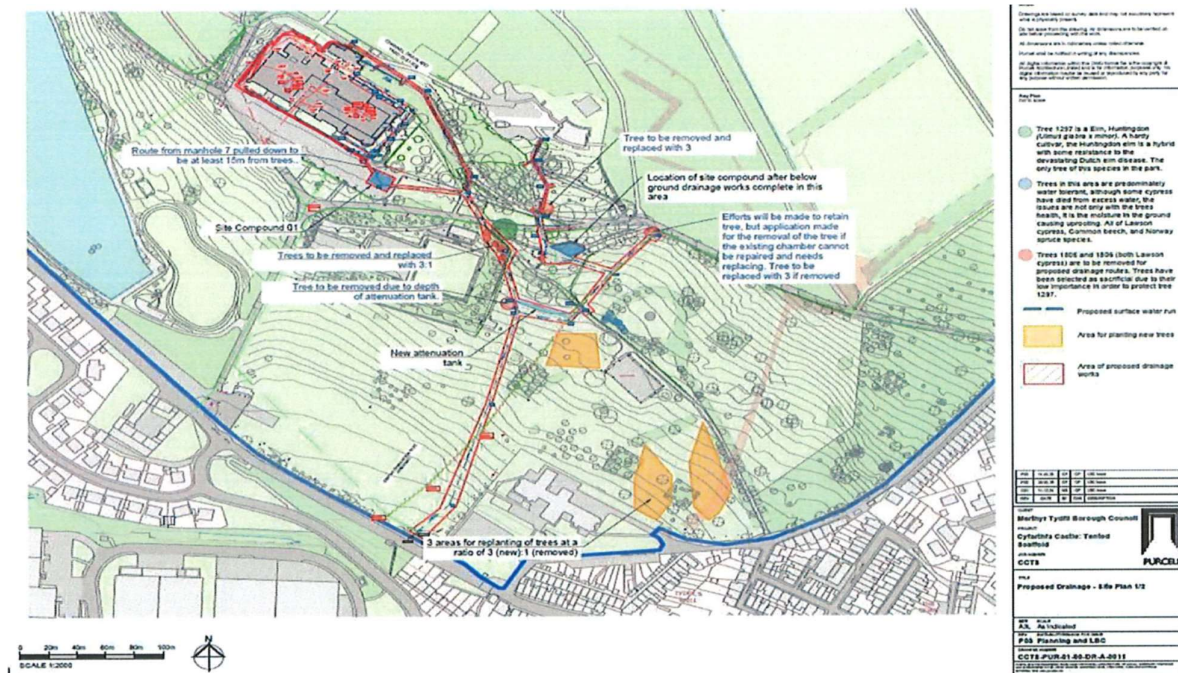
The site is located within the boundary of Cyfarthfa Castle, Merthyr Tydfil, with drainage works being installed to the perimeter of the Castle also from the North of the site running down through the park on the East side of the site terminating into an existing chamber at the South East corner of the site.

Live pedestrian and vehicle movement will be present throughout the contract; the works will be phased in a way to ensure no access is blocked to enter any of the Cyfarthfa Castle's operational facilities by means of diversions routes.

2.3 Access & Traffic Management

Access and Egress to the site and compound area will be via the Cyfarthfa Castle Exit Route Only, this due to the width allowing a wider turning circle to enter and leave Cyfarthfa Castle. All vehicle and plant movement entering, operating and leaving the site will be programmed and carried out with the guidance of a Banksman at all times to prevent conflicts with pedestrians, cyclists and vehicles. Advanced Warning signage will be installed and maintained daily, in accordance with Chapter 8 of the Traffic Signs Manual throughout all used traffic routes. The Initial Site compound is approximately 300m West from the Cyfarthfa Castle Exit gate.

The site Compound will initially be set up on the North West side of the Castle behind the existing black vehicle gate, the compound will be secured with the installation of Heras Fencing and vehicle gates. The Compound will include a Site welfare Unit, including Kitchen, seating area, Dry Storage area and WC, the Unit is self-contained and run of an internal generator. First Aid Facilities will be kept here. A material storage area will also be within the compound area.



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3 Noel Fitzpatrick Ltd Roles and Responsibilities

List of Roles and their Responsibilities within the Works.

Role / Personnel / Organisation	Contact	Responsibilities
Project Manager: Patrick Gallagher	E: pat@noelfitzpatrick.ltd.uk M: 07808 176873 T: 01633 290077	1) Responsible for the management of the project. 2) Responsibility for the development and implementation of the CEMP / CPP. 3) Will delegate other environmental duties to members of the project team as required.
Site Engineer: John Carroll	E: john@noelfitzpatrick.ltd.uk M: 07808 176873 T: 01633 290077	1) Responsible for the Setting Out of All Proposed Drainage Works 2) Responsible for the delivery of the infrastructure elements of the project including the Drainage System, Attenuation System and Surfacing Works 2) Responsible for the control of environmental impacts during construction and ensuring that the construction process follows sustainability best practice. 3) Responsible for ensuring that the requirements of the CEMP and PPC are delivered on site.
Site Supervisor: Craig Bedborough	M: 07572 868630	1) Responsible for the delivery of all on site works to Install the New drainage System 2) Responsible for the control of environmental impacts during construction and ensuring that the construction process follows sustainability best practice. 3) Responsible for ensuring that the requirements of the CEMP and PPC are delivered on site. 4) Programming of delivery Vehicles to and from site
Health & Safety Manager Laurence Owen	laurence@noelfitzpatrick.ltd.uk Mobile: 07794 046194 T: 01633 290077	1) Responsible for overseeing all are carried out in to high Health and Safety Standards and in accordance with the CPP.
Environmental Manager Anna Fitzpatrick	E: anna@noelfitzpatrick.ltd.uk M: 07808 176875 T: 01633 290077	1) Advise on Pollution Control, Waste Management, Environmental Site Management i.e. noise, dust, storage of wastes, housekeeping, etc. 2) Public Liaison

4 Consultations and Consents

Consultation has been undertaken with Merthyr Tydfil County Borough Council, the Cyfarthfa Castle Representatives, Purcell Architects, Abricon Ltd (Ecologists) and Cadw regarding the project. Planning permission has been applied for by Merthyr County Borough Council.

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5 Project Specific Environmental Risk Assessment & Mitigation

The following aspect register formulates the assessed risk by multiplying the likelihood of an event or encountering a species (L), by the severity implicated by that event/encounter (S). This quantified the assessed risk of the impact (R). (L) & (S) are measured between Negligible (1), moderate (2) & high (3) to create the final value.

Pollution Control

Potential Impact	Risk Assessment			Protective Measure	RA with Protection			Monitoring of Protection	Persons Responsible
	L	S	R		L	S	R		
Fuel, Oil Spillages during re-fuelling, use and storage of plant – Plant and equipment will be used on site which will require the use of diesel, petrol, and oils. There is potential for the spillage of fuels and oils during fuelling and servicing. Oils and fuels can also be leaked due to mechanical failure for plant and vehicles, such as burst hydraulic hoses. Fuel/ Oil spillages have the potential to cause major impacts on soils and watercourses.	2	3	6	Fuels for plant and equipment will be delivered to site using a towable bowser which will fill the plant and equipment directly from the bowser within the compound boundary area. No Fuels will be stored on site. Fuelling of plant and equipment will only be undertaken by trained operatives wearing suitable PPE. Filler guns will be used for fuelling from bowzers. If required, funnels will be used when fuelling plant and equipment with restricted access to the fuel filler. Plant nappies will be placed beneath fuel filling apertures during re-fuelling. All items of static plant will be placed on a drip tray, or preferably a plant nappy. If plant or equipment is found to be leaking hydrocarbons or other fluids it will be suitably environmentally isolated or removed from site until repaired. If any oils, fuels and leaks are present, these will be cleaned up immediately.	1	3	3	Environmental Site Inspections will be undertaken, which will include the status of plant and equipment with respect of Fuel and Oil spillages or leakage. If spills or leaks are identified, action will be taken in line with the Emergency Preparedness and Responses Plan (Section 9)	Noel Fitzpatrick Ltd (NFL)
COSHH Substances – Release to atmosphere of environmentally damaging COSHH Substances.	3	3	9	COSHH Assessment will be undertaken for all materials to be bought to site. COSHH Materials will be stored in a dedicated COSHH store which will be a secure, contained facility.	1	3	3	COSHH Data Sheets will be stored with and issued with any COSHH substances. COSHH Substances will be signed out and back in. The COSHH System will be audited as part of the daily environmental checks.	Noel Fitzpatrick Ltd (NFL)

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Potential Impact	Risk Assessment			Protective Measure	RA with Protection			Monitoring of Protection	Persons Responsible
	L	S	R		L	S	R		
Flooding – The area has been known to flood/ pond during high amounts of prolonged rain fall.	1	1	1	Care will be taken to ensure that along areas of concern the boundaries are maintained free from site material excavated and imported to ensure no additional water is retained.	0	1	1	NFL Site Supervisor	NFL

Wildlife and Ecology

Potential Impact	Risk Assessment			Protective Measure	RA with Protection			Monitoring of Protection	Persons Responsible
	L	S	R		L	S	R		
Tree Protection Orders of trees.	3	3	9	No trees will be felled by NFL, MTCBC will check with the Local Authority tree officer. All Trees required to be removed to install Drainage Lines will be carried out by MTCBC prior to NFL commencing drainage works on site	1	3	3	No Monitoring from NFL required	Merthyr Tydfil County Borough Council (MTCBC)
Birds – All nesting birds are protected by law. Vegetation around the site, has suitability for use by nesting birds.	3	3	9	Should vegetation clearance be undertaken within the bird breeding season, pre-works nesting bird surveys should be undertaken, and vegetation clearance works will be undertaken under Ecological Watch and Brief (ECOW)	1	3	3	Pre-vegetation nesting bird surveys and ECoW during vegetation clearance works.	NFL MTCBC Ecologist
Hedgerow	3	3	9	As hedgerows are priority habitats, Hedgerow removal within the Castle Park grounds will be undertaken by MTCBC & NFL, where possible, relocated.	1	3	3	NFL to Monitoring in advance excavation near pre-removed hedgerows. Areas of concern will be notified to the Ecologist by NFL Supervisor in advance to allow a watching brief.	NFL MTCBC Ecologist

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Potential Impact	Risk Assessment			Protective Measure	RA with Protection			Monitoring of Protection	Persons Responsible
	L	S	R		L	S	R		
Bats in Tree's on Proposed Drain line Bats in Cyfarthfa Castle Basements	3	3	9	The trees around the works areas have been assessed as having negligible potential to be used by roosting bats. If large trees are to be removed, they will be assessed for their potential to support roosting bats. Trees on proposed drain line will be removed in advance by MTCBC. Bats are present within the basement areas and precautions will need to be taken. Works within the basement will need to provide advanced notice to allow for an Ecology watching brief. Where external works are to commence, there will be minimal vibration with the breaking out of the Tarmac and compaction of the backfill, and limited noise from the excavators. If the proposed works are to be carried out during the time of year when bats are active (March to October inclusive), works should be carried out during daylight hours; commencing at least 30 minutes following sunrise and finishing at least 30 minutes before sunset, to avoid unnecessary disturbance to bats. There will be no night-time working.	1	3	3	NFL and Ecologist will monitor the Bats within the Basement as Contract work proceed and will make changes to the working process as and when deemed necessary.	NFL MTCBC Ecologist

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Potential Impact	Risk Assessment			Protective Measure	RA with Protection			Monitoring of Protection	Persons Responsible
	L	S	R		L	S	R		
Badgers, hedgehogs, Dormouse, Great Crested Newt, Reptiles and other small mammals.	2	3	6	There is minimal evidence of Badgers, hedgehogs, Dormouse, Great Crested Newt, Reptiles and other small mammals, but there are conditions suitable for habitat. MTCBC have attended site at an early stage and have removed many of the Trees and hedgerows which were expected to be within the construction works. As works proceed within sensitive areas, at the start of each shift, plant and equipment will be started and left to run for 15 minutes prior to works commencing, to allow any wildlife present to leave the area, NFL Supervisor will provide watch as works proceed for any wildlife activities, if anything is found, works will stop and the Ecologist will be called. In sensitive areas of works, temporary Heras fencing will have sand bags laid to the base to prevent any wildlife entering the working area during the day or night. The trenches will have the open end graded back to allow any wildlife to escape should it enter the excavation	1	3	3	NFL Supervisor will monitor the ongoing works, when approaching the next phase of works, where areas of concern are present, the Ecologist will be notified at an advanced stage to allow a site visit to be arranged if deemed necessary. Removal of Hedgerow by NFL will be carried out with the guidance of NFL Supervisor.	NFL
Invasive Species – Himalayan Balsam and Japanese Knotweed have been identified on site	2	3	6	Where Construction works are near areas of concern, MTCBC will treat/ remove the Invasive species in advance.	1	3	3	NFL Supervisor will carryout inspections in advance of each phase of works commencing, if anything is identified, Ecologist and MTCBC will be notified, no work will proceed in these areas.	NFL

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Nuisance

Potential Impact	Risk Assessment			Protective Measure	RA with Protection			Monitoring of Protection	Persons Responsible
	L	S	R		L	S	R		
Noise – The site is within the Cyfarthfa Castle Grounds so Nuisance to the Castle Visitors is possible.	2	2	4	Care will be taken to ensure no excessive noise is created as to not disturb visitors and wildlife within the castle boundary. Where possible, the breaking out of the Tarmac will be carried out during the morning hours at a quieter time. Working hours will be restricted to: Mon – Fri: 07:30 – 17:00 Sat: - 07:30 – 13:00	1	2	2	NFL Supervisor will plan the working day ahead to manage the noisy periods of work and will also consult with the Cyfarthfa Staff on any feedback from visitors.	NFL
Vibration – There is potential for vibration impacts (breaking out Tarmac/ Concrete Surfaces & Compaction) whilst working in the immediate vicinity of the Castle, which has the potential to impact on the Bats within the Basement area.	2	2	4	Low vibration equipment will be used where possible to ensure the minimum levels of vibration is generated by site activities. During the breaking out and compaction activities, methods of work will be reviewed in an attempt to reduce vibration impacts by dead compactor plates rolling.	1	2	2	NFL Supervisor will plan the working day ahead to manage the periods of concern and will also consult with the Cyfarthfa Staff on any feedback from visitors and staff.	NFL
Dust – There will be excavation and backfilling tasks which has potential to result in the generation of dust. There is potential for Tarmac & concrete cutting works to be required.	2	3	6	Dust mitigation will be required. Damping down will be required using a water supply and hose attachment which will be used to spray over the works creating a dust supply.	1	3	3	NFL Supervisor will plan the working day ahead to manage the dustier periods of work and ensure the dust suppression measures are in place.	NFL

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6 Fuel and Chemical Spillages and COSHH Materials

6.1 Brief

Plant and equipment to be used on site will use Diesel for fuel and will be refuelled on site throughout the lifecycle of the Contract, no Fuel will be stored on site.

A towable Double skinned Fuel Bowser will arrive on site and set up in the compound area, the plant and equipment will enter the compound area for refuelling. Fuelling of plant and equipment will only be undertaken by trained operatives wearing suitable PPE. Filler guns will be used for fuelling from bowzers. If required, funnels will be used when fuelling plant and equipment with restricted access to the fuel filler. Plant nappies will be placed beneath fuel filling apertures during re-fuelling. All items of static plant will be placed on a drip tray, or preferably a plant nappy. If plant or equipment is found to be leaking any fuels, oils or other fluids it will be suitably environmentally isolated or removed from site until repaired. All spillages will be cleaned up immediately.

The Towable Fuel Bowser is a double-skinned tank, which means it has an inner and outer layer to prevent leaks and environmental contamination. This double-walled design is essential for safety, road transport, and compliance with regulations, as the outer layer acts as a secondary containment in case of damage to the inner tank.

- Double-skinned construction: A fuel bowser consists of a tank within a tank. The inner tank holds the fuel, while the outer layer provides a failsafe containment barrier.
- Environmental safety: If the inner tank is damaged, the outer "bunded" layer captures any spills, preventing fuel from contaminating the ground.
- Regulatory compliance: For transport on public roads, fuel bowzers are required to be double-skinned and meet specific safety and roadworthiness standards.
- Enhanced durability: The double-skinned design adds strength and durability, making the tank more resilient in tough environments.

6.2 Risk

- ❖ Leakage of fuels and oils from plant and machinery.
- ❖ Leakage/spillage of fuels, oils and chemicals from containers.
- ❖ Spillage of fuel during refuelling.
- ❖ Wind blowing of COSHH materials.

6.3 Pathway

- ❖ Fuel, Oil and chemicals entering existing site drainage.
- ❖ Fuel, Oil and chemicals entering watercourses or groundwater.
- ❖ Fuel, Oil and chemicals escaping to ground.
- ❖ Wind blowing of fine powders.

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6.4 Controls

- ❖ COSHH assessments will be undertaken for all materials bought to site. These assessments will include environmental exposure information and instructions for dealing with accidental release of the materials including environmental impact from the materials. COSHH assessments are to be maintained in the COSHH file in the site offices and with the COSHH material.
- ❖ Plant, vehicles and equipment should be inspected for oil and fuel leaks prior to the start of each shift and following each break. Plant will be inspected for integrity of hydraulic pipes, fuel lines and oil systems. Any item found to be defective will be removed from site, until repaired.
- ❖ Fuelling is only to be carried out by appropriately trained personnel, issued with appropriate PPE.
- ❖ The re-fuelling of static and small items of plant shall be carried out by a suitably trained, designated person using fuel cans with spouts which can be inserted into re-fuelling apertures of the plant being re-fuelled.
- ❖ All static plant and containers of hydrocarbons or chemicals should be placed within a drip tray or Plant Nappy. Plant Nappies will be used in favour of drip trays as they do not accumulate rainwater. Drip trays should be fitted with integral oil traps to allow them to drain, or provision should be made for the removal of water during wet weather.
- ❖ All plant and equipment shall be removed from excavations at the end of each shift.

6.5 Re-fuelling Procedure

- ❖ Only trained designated personnel will undertake the re-fuelling of plant and equipment.
- ❖ Training will be given on the following:
 - Correct PPE – Personnel undertaking fuelling with wear hydrocarbon resistant overalls or apron, oil resistant boots, long oil resistant gloves and eye protection.
 - Use of re-fuelling guns, i.e., guns will be placed into the fuelling aperture, if the aperture is not accessible a suitable funnel will be used, full attention is to be paid during re-fuelling to ensure the fuelling gun is shut down prior to the tank overflowing.
 - Plant nappies will be placed beneath the equipment being re-fuelled or beneath the fuelling aperture.
 - Process for accessing fuelling apertures on items of plant.
 - Funnels will be used for the refuelling of static plant.

6.6 Monitoring

Fuel, oil and COSHH storage facilities will be inspected as part of Site Managers Weekly Site Inspections. Visual monitoring will be undertaken of site runoff during periods of wet weather. These will consider signs of Fuel/ Oil contamination including sheens on water and staining. This will inform requirements for further mitigation or maintenance of existing features.

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7 Control of Concrete Contamination

Concrete required to complete the Contracted works will mainly be of a semi-dry mix and will be delivered to site using a concrete specific lorry. The Concrete will be off loaded into a bunded area or skip lined with 1200g Polythene. The concrete will then be loaded into an awaiting skip lined dumper truck and transported to the specific area of work.

7.1 Risks:

- ❖ Spillage of Concrete tracking down to location of work
- ❖ Concrete delivery vehicles washing out at uncontrolled locations.

7.2 Pathways

- ❖ Cement contaminated water entering existing surface drainage.
- ❖ Cement contaminated water flowing directly into highway drainage.

7.3 Controls:

Prior to the Concrete lorry arriving on site, a washout pit will already have been constructed in the form of a bunded area or skip lined with 1220g Polythene to prevent any leakage. Upon arriving on site, the location of the washout pit will be explained to the driver along with designed transfer route. The Banksman will guide the lorry to the location on site and will supervise the concrete discharge and also the washout process. Any spillage will be cleaned immediately.

- ❖ Weather conditions will be monitored prior to concrete pours and concrete pours will not be undertaken during periods where water levels may rise.

7.4 Monitoring

Weekly Site Supervisor Site Inspections will be undertaken during which storage facilities will be inspected. Visual monitoring will be undertaken of site runoff during periods of wet weather. These will consider signs of cementitious contamination including discolouration and residues. This will inform requirements for further mitigation or maintenance of existing features.

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8 EMERGENCY PREPAREDNESS AND RESPONSE

8.1 Emergency Contact List.

Contact Type

Incident Manager
Onsite Supervisor
Natural Resources Wales

Environment Agency
National Contact Centre
PO Box 544
Rotherham
South Yorkshire
S60 1BY
Emergency Services

Contact Details

Patrick Gallagher – 07808 176873
Craig Bedborough -
0300 065 3000 - (to be informed in the
event of oil/chemical spill or fire).
National Helpline: 03708 506 506
Web: www.environment-agency.gov.uk
Email: enquiries@environment-agency.gov.uk
Incident Hotline: 0800 807060 (24 Hour)

999 - (Request service required)

8.2 Environmental Incident - *Environmental Incident Types and Examples.*

Incident/Issue Type

An inappropriately controlled emission to land, sea, air or water (e.g., spillage, fumes, dust, vibration, noise, disposal) that has potential to cause environmental harm if not controlled properly.

A substantiated complaint from a third party affected by the project

An event causing major quantifiable environmental harm

A breach of a consent licence that may lead to statutory intervention

A breach of Environmental Legislation

Issue of a statutory enforcement notice, Local Authority, Natural Resources Wales

Example

Dust emissions to neighbouring properties or onto agricultural land and areas of ecological significance.

Noise complaint from local resident.
Statutory intervention from MTCBC / NRW/ Cadw.

Damage to a site or archaeological significance. Injury or death to a Protected Species.

Breach of Planning Conditions

Failure to ensure the Duty of Care for waste has been complied with.

NRW prosecution or warning letter. Local authority abatement notice.

Other Examples:

- ❖ The discovery of contaminated land, where no contamination indicators were found in the SI or historical site documents.
- ❖ Discovery of protected species where there were no indicators.

Responsibilities

- ❖ In all cases responsibility for immediate action lies with the person discovering the incident. They should take whatever actions they can, to immediately stop the source and contain the pollution.

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- ❖ In all cases the incident shall be immediately reported to the general foreman who shall report it immediately to the site manager who will act as the incident controller. The Incident Controller shall coordinate resources to put the containment and mitigation plan in place.
- ❖ The Environmental Coordinator and Health and Safety Manager shall be informed immediately and shall assist in the supervision of the containment and mitigation plan as necessary.
- ❖ The Environmental Advisor shall assist in post incident training, incident reporting / monitoring and documentation for the CEMP.

Fuel or Oil entering a watercourse or drainage:

The response will depend on the amount of Fuel/ Oil spilt and the flow of the stream. As a general rule the following steps should be taken.

- Stop release of fuel by removing the source or by using plastic sheeting and bunding.
- Deploy an oil absorbent boom across the watercourse to contain the spill.
- Place oil absorbent mats on the water surface to absorb the oil. N.B. once used these are to be stored and disposed of as special waste. Impermeable gloves and boots and disposable overalls are to be worn.
- The above items can be found in the oil spill kit; these are located within all Plant vehicles and also in the Site Office and in the environmental emergency area.
- Contaminated water can also be pumped from the watercourse into a sealed container for disposal by a registered waste handler.
- Natural Resources Wales to be contacted: **0300 065 3000**.

Fuel or Oil spillage on land:

- Stop release of fuel by removing the source or by using plastic sheeting and bunding.
- Excavate oil contaminated soil and place in an oil tight container. This must be disposed of by a specialist waste handler as hazardous waste.
- If spillage is onto a hard surface, all drains and gullies must be sealed immediately. Absorbent materials such as sand, sawdust, straw or oil absorbent granules/mats are to be placed over the contaminated area to soak up the spill. These should then be removed and stored and disposed of as special waste. Impermeable gloves and boots and disposable overalls are to be worn.
- The above items can be found in the oil spill kit, these are located with foremen, environmental coordinator, store man and in the environmental emergency area in main stores.
- Natural Resources Wales to be contacted: **0300 065 3000**.

Spillage of chemicals:

- Where possible remove source of pollution.
- Obtain as much information on the chemical spilt as possible to evaluate the potential harm it could cause to staff and the environment.
- If it can be ascertained that there is no significant health and safety risk the chemicals should be dealt with as oil, above.
- If a potential health and safety risk is identified the area should be evacuated and the emergency services contacted.
- Natural Resources Wales to be contacted: **0300 065 3000**

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Other Environmental Incidents:

- Discovery of protected plants or wildlife, e.g., badgers, otters, newts, birds etc, cease work in area and contact Site Supervisor. A mitigation strategy will be developed.

Discovery of archaeological remains:

- Cease work in area and contact Site Manager.

Environmental Response Equipment

- Spill kits are available from Supervisors vehicles, site cabins, and the stores. Sandbags, straw bales, plastic sheeting, etc are available on request.

8.3 Incident Reporting

All environmental incidents shall be reported to the Environmental Manager and Project Manager immediately, they will then take the necessary action to ensure that the incident is dealt with and the responsible agencies (NRW, CADW, ENV Health, etc) are informed. The Environmental Manager and Project Manager must be informed so that they can take any measures required. The incident shall then be reported within 24 hours of the incident. The report shall include an explanation of the cause, the actions taken to mitigate the incident and proposals to prevent reoccurrence of the incident. The Report will include the following information;

- Date, Time and Location of Incident
- The root causes of the Incident
- Actions taken to remedy the incident
- Personnel involved and witnesses
- Third parties and statutory bodies involved
- Procedures put in place to ensure there is no re-occurrence

8.4 Reporting of Hazards

A hazard is a situation of occurrence which has potential to cause environmental damage. Hazards shall be reported to the section foreman or site agent immediately and corrective action shall be taken immediately. The Section Foreman / Site Agent shall complete a Hazard Removed Report which shall be returned to the Environmental Clerk of Works. This form records the name of the person reporting the hazard, the nature of the hazard and the corrective action taken. This is then signed off as complete by the Environmental Manager or Project Manager.

8.5 Near Miss Reporting

A near miss is an occurrence or situation where there has been a breach of environmental procedures resulting in loss but there has not been a major environmental impact. Near misses shall be reported to the section foreman or site agent immediately and corrective action shall be taken immediately. The Environmental manager or Site Supervisor shall complete form Near Miss Report which shall be returned to the Clients Environmental Manager for the Works.

This form records the name of the person reporting the hazard, the nature of the hazard and the corrective action taken.

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8.6 Site Cleanliness

The following measures will be employed to maintain site cleanliness during the contract period;

- ❖ Site access routes will remain free from all obstructions
- ❖ As and when required, access routes to be swept clean of any mess created by Noel Fitzpatrick Ltd during the Contract period.
- ❖ Where access to site will be through the Parks grass area, Track mats will be used to provide additional stability for plant and operatives and also reduce the transferring of soils.
- ❖ Machinery and equipment will be maintained and clean prior to entering and leaving each Phase of the Contract.

8.7 Monitoring

Daily Visual inspections of the site and surrounding site access routes will be undertaken by the Site Supervisor with the results used to direct further mitigation in the form of cleaning plant and vehicles as and when required. The frequency of this will be increased during periods of wet weather but inspections will continue during dry weather.

9 Biosecurity

9.1 Species Present on Site

Plants identified on site are Cats Ear *Hypochaeris Radicata*, Dogs Tail *Cynosurus Cristatus*, Black Knapweed *Centaurea Nigra*, Cocksfoot *Dactylis Glomerata*, Creeping Buttercup *Ranunculus Repens*, Yorkshire Fog *Holcus Lanatus*, Broad Leaved Dock *Rumex Obtusifolius*, Cow Parsley *Anthriscus Sylvestris*, Great Willow Herb *Epilobium Hirsutum*, Common Dandelion *Taraxacum Officinale*, Cranes-bill *Geranium sp.*, and Smooth Meadow Grass *Poa Pratensis*. Where possible, trench work will be installed on site to avoid these areas.

9.2 Japanese Knotweed &

Japanese knotweed is an invasive non-native perennial plant, which is spread through the spreading of rhizomes within the soil. Even though there are no signs/ reports of Japanese Knotweed on site, awareness of this plant will be maintained, if found on site, works will cease in this area and reported to the Ecologist if found.

9.3 Himalayan Balsam

Himalayan Balsam is an annual plant, spread through seeds, produced in pods in late July / August. The plant starts its growth cycle in May and reaches maturity in late June. It then flowers and the flower heads turn to seed pods, which uncoil to project seeds up to 5m from the plant. There is a small patch of Himalayan Balsam located on the Northern corner of the site which we do not envisage coming into contact with during this contract, on site, awareness of this plant will be maintained, if found in any other location on site this will be reported to the Ecologist. If found, the area of Himalayan Balsam sealed off using timber stakes and rope. Personnel leaving the contaminated area should check and clean, any site material from their boots. This can be done using a stiff brush or with a boot wash with brushes.

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10 Landscape & Ecology

10.1 Badger Mitigation

- ❖ It is recommended that, during construction, the use of external lighting should be kept to a minimum to reduce any potential disturbance to badgers which may be using the site.
- ❖ Night-time work will be avoided. Works should only be carried out during daylight hours (up to 30 minutes after sunrise and 30 minutes before sunset).
- ❖ Any excavations should be securely fenced off and covered over at the end of the working period, at weekends or when not in use to prevent badgers being trapped.
- ❖ If a Badger is subsequently found within 30m of the site during any of the works then work must stop and an ecologist notified.
- ❖ Any sightings of a Badger will be reported to the Ecologist. NFL will ensure that equipment stored near the works area are well secured and not in a fashion that could ensnare or trap the Badger (or any other animal).
- ❖ Regular Toolbox talks will be provided to the project team ahead of each Phase of Works

10.2 Nesting Birds

Tree and Vegetation removal is proposed on some of the routes of the proposed drainage scheme, which will be carried out by Merthyr Tydfil CBC in advance of NFL attending site to commence with the Contract works. These works are proposed to occur outside of the nesting season; however, disturbance to birds is still possible.

If active nests are discovered, a suitable buffer zone will be installed around the nest, this buffer zone will be decided by an ecologist taking species and vegetation density into consideration. A minimum 5m buffer zone should be established around the nest(s), and no de-vegetation or other heavy machinery work should be carried out within the buffer zone(s) until it is confirmed that the nest(s) is completed and that the young have fledged.

10.3 Bats

Merthyr Tydfil CBC to remove all trees & vegetation which are on the line of the proposed drainage scheme which have the potential roosting features (PRFs) identified in the Preliminary Ecological Survey; however, the presence of foraging and commuting bat species is considered likely, therefore works in these areas will be carried out with caution and awareness.

10.4 Small Mammals

Measures to ensure any burrowing or hibernating small mammals are not crushed or injured during works will also be incorporated into the works i.e., removal of active burrows using hand-shovels or hand-dismantlement of brash piles/stone walls.

10.5 Reptiles, Amphibians, Great Crested Newts and Small Mammals

The site has limited potential to support reptiles; however, there is potential for amphibians and small mammals to be encountered in areas of vegetation surrounding the site. To avoid adverse impacts to these species, the following measures should be implemented:

- Vegetation clearance should be undertaken as a two-stage cut, working from the site into areas of retained vegetation;

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- Vegetation should be cut to a height of 150mm above ground level under the supervision of the ecologist;
- The area should be thoroughly searched by the ecologist and then vegetation can be reduced to ground level
- Any amphibians encountered will be moved by the supervising ecologist to a suitable safe location;
- If amphibians are identified on site and there is any suspicion that these may be great crested newts, works will cease immediately, and a qualified ecologist contacted;
- Any features such as rubble / log piles, brash, sheet materials, etc, which could be used for shelter by reptiles or amphibians will be removed by hand under the supervision of the ecologist;
- If burrows are encountered, these will be investigated by an ecologist
- If active, burrows will be excavated by hand, by the ecologist, to the extent of the burrow.

11 Nuisance Effects on Neighbours

11.1 Sensitive receptor on Site

The works is located within the popular Cyfarthfa Castle grounds, therefore, nuisance to visitors is possible. There is potential for noise from the works to impact species within the park.

11.2 Noise & Vibration

Risks:

- Disturbance to visitors and staff of Cyfarthfa Castle from construction noise and vibration
- Disturbance to visitors and staff of Cyfarthfa Castle from dust and odours.
- Local authority enforcing a prohibition notice on the site or a particular activity due to excessive noise or vibration.
- Disturbance to the ecology of the surrounding area due to excessive noise, vibration, and dust.

The following construction activities have potential to generate excessive levels of noise:

- The movement of plant around the site, particularly excavators and dumpers.
- compaction activities.
- Excavation of materials across the site.
- The running of generators to power the site compound

11.3 Controls

Noel Fitzpatrick Ltd aim to ensure that the Visitors, Staff and the ecology of Cyfarthfa Castel are affected as minimally as possible throughout the works. The following control measures will be put in place with the aim of achieving this:

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11.4 Working Hours

A key method of limiting nuisance is the restriction of working hours. All works and ancillary operations, which are audible at the site boundary, shall be carried out only between the following hours:

Working Hours for the Site.

Day	Working Hours
Monday - Friday	07:30 – 18:00
Saturday	07:30 – 13:00.
Sundays and Public Holidays	At no time unless agreed with Merthyr Tydfil CBC

Deliveries to and removal of plant, equipment, machinery and materials to the site must also only take place within the permitted hours detailed above.

It is unlikely that night works will be required as part of the works. If it is required to continue construction works during night working hours (8 pm to 6 am), Noel Fitzpatrick Ltd will consult with Merthyr Tydfil County Borough Council.

11.5 Mitigation Measures for Noise and Vibration

- All equipment will be turned off when not in use.
- All significant noise sources will be enclosed using localised screens and hoardings. If this is not possible, consideration will be given to protecting the receptor using localised screening. Generators etc must be at least 15m away from sensitive receptors.
- Where possible loading and unloading shall be carried out away from noise sensitive areas and shall be limited to working hours
- Acoustic covers to engines shall be kept closed at all times during operation.
- Materials shall be lowered where possible and not dropped. The surfaces onto which the materials are being moved shall be covered by resilient material.
- Plant known to emit noise strongly in one direction shall be orientated so that the noise is directed away from noise sensitive receptors.
- It will be ensured that all plant is regularly maintained to ensure sound reduction is still effective.
- Where reasonably practicable, plant and/or methods of work causing significant levels of vibration at sensitive premises, shall be replaced by other less intrusive plant and/or methods of working.
- The use of vibrating compaction equipment shall be restricted in the vicinity of dwellings and other buildings where possible. The exact exclusion distance will be dependent on the equipment to be used, the geomorphology and topography of the area.
- Toolbox talks (TBTs) will be undertaken to advise all operatives of the potential issues of the generation of noise and vibration, as well as the mitigation measures outlined in this document. Records of these talks will be kept in the site office.

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11.6 Monitoring of Noise and Vibration

Monitoring will be carried as a reaction to complaints or concerns from the project team to ensure that the noise generated by the site falls within the agreed acceptable limits.

Noise measurements, if required, will be undertaken in accordance with BS 7445: 1991 – Description and Measurement of Environmental Noise. Monitoring shall be carried out using a minimum of a Type II noise meter. The meter used will have been serviced and calibrated by the manufacturer within the last 12 months. The meter will be set up at the receptor deemed most at risk during the activity being undertaken at the time. This is usually the receptor closest to the works, mainly the Castle area, however this may vary depending on the nature of the receptor. Noise meter set up typically involves positioning the meter on a stand of approximately 1.2m in height near the receptor. The meter is placed at least 2m from any reflective surface (such as a wall or fence) in order to prevent inaccurate readings from sound reflection. If noise levels are perceived as being unreasonable or if there are complaints regarding noise works will cease and alternative methods of works will be agreed with the Clients Representative before recommencing works.

The vibration meter, if required, will be set up at the same location as the noise meter, mainly around the Castle as work proceeds, neither device interferes with the other, so results for both are uninfluenced by this.

Vibration levels will likely be measured using the following equipment:

- M800 Seismograph, with real time monitoring via the web-service.
- Tri-axial orthogonal geophone pack.

As with the noise meter, the vibration meter used will have been serviced and calibrated by the manufacturer within the last 12 months. Installation requires the weighing down of the geophone pack using a weight such as a sandbag, ensuring that the pressure pads are all in contact with the ground below.

11.7 Site Lighting

Due to its potentially damaging effects, Noel Fitzpatrick Ltd are committed to prevent or reduce all forms of light pollution where possible. It is unlikely that night works will be required as part of the works. If it is required to continue construction works during night working hours (8 pm to 6 am), Merthyr Tydfil CBC will be contacted in advance.

The following measures will be implemented for site lighting:

- Safety lighting, if required, within pedestrian areas at site compounds – Low level, full cut-off lighting fixtures will be used. These will be PIR controlled and hence will only operate during periods when the site is operational.
- Task lighting at work sites, if required, (low level task lighting) – This will be localised and will be directed so that it is focused onto works areas, with minimal light spill:
- Vehicle Headlights – Vehicle use will be minimised after dark.

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11.8 Visual Intrusion

The site is within Cyfarthfa Castle grounds overlooked by many Visitors to the Park with many vantage points, hence there is little which can be done regarding visual intrusion. Site compounds will be located remote from the main Castle forecourt, where required, Heras Fencing will have Noel Fitzpatrick Ltd branded covers:

- Where appropriate, fencing will be utilised to screen the works from the general public.
- If required, dust control will be implemented, particularly during periods of prolonged dry weather.
- Machinery shall be parked away from Cyfarthfa Castles forecourt
- The site shall be kept litter free; all waste will be returned to the site compound for re-use or disposal, and materials shall be stored in a well-ordered manner.
- Roads will be kept clear of mud and other site material. This will be carried out manually with brushes. A road sweeper will be brought in as required.

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12 Control of Emissions to Air

12.1 Dust and Particles

Dust emitted from site can become a nuisance to surrounding visitors, staff and the facilities at Cyfarthfa Castle in general. In its simplest form it can cause additional cleaning work and reduce the visitors time spent at the castle, but in its most severe form it can have acute effects on people's health especially those suffering with respiratory conditions such as asthma. Dust can also carry contaminants which have great impacts on health.

Dust can have an impact on the ecology of the area, blanketing vegetation, preventing it from transpiring and reducing food sources for animals and invertebrates.

12.2 Risks:

- Dust emitted from earthworks operations.
- Dust emitted from vehicle movements.
- Dust emitted from cutting operations.
- Dust emitted from materials handling.
- Particulates emitted from vehicles and plant exhaust systems.

12.3 Controls for Handling Materials

- Fine, dry materials shall be stored within buildings or with adequate protection from the wind and dampened, shrouded, or screened in dry weather.
- Stockpiles shall be positioned as far as is reasonably practicable away from The Castle, mainline footpaths around the Castle's grounds or other sensitive receptors.
- Stockpiles shall be maintained with shallow slopes to prevent slippages where possible to prevent windblown dust.
- In handling areas, a sprinklers system will be installed to prevent dust.
- The location of temporary storage mounds must be agreed with the Clients Representative

12.4 Controls for Plant and Vehicle Movement

- Working area shall be dampened down in dry weather conditions, using water and a Hose and Sprinkler.
- General site traffic shall be restricted to watered or paved roads.
- All vehicles and plant on site shall be fully serviced and maintained, so that they do not emit smoke and particulates. If vehicles produce black smoke they will be removed from operation and sent for service.
- No machinery shall be left running when not in use.
- A Standard 5mph site Speed Limit will be set for all of Noel Fitzpatrick Ltd.'s Plant and Vehicles.

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12.5 Control of Site Operations

- Plant & Equipment likely to generate excessive quantities of dust shall be enclosed, shielded, fitted with dust extractors, filters, and scrubbers.
- Sheeting of vehicles: all HGVs carrying loose material capable of spillage or which has the potential to give rise to dusty emissions from the vehicles during transit shall be sheeted. This requirement shall be enforced by Noel Fitzpatrick Ltd, and any transgressions shall be recorded in a logbook with details of measures to be taken to prevent further occurrences.
- Drop heights shall be kept to a minimum during the movement of materials.
- Where necessary, dust suppression will be utilised. This will take the form of a towable water bowser fitted with a spray nozzle which will be driven around the site. Care will be taken to ensure the damping down will cover the haul roads and any area where earthworks are in operation.
- Prevention of wind-blown dust arising from storage mounds: storage mounds shall be profiled to reduce erosion where the nature of the material could lead to it being rain washed or windblown. Mound surfaces shall be kept sufficiently damp to prevent windblow unless and until the surface is spray sealed or stabilised by means of vegetation. Materials that have the potential to give rise to dust emissions shall be stored as far away from the boundaries of the site as is reasonably practicable.
- Equipment which produces excessive dust (concrete cutting and scabbling) will have a dust suppression system installed on the equipment.
- Visual monitoring for dust shall be undertaken daily during periods of dry weather by all NFL employees, observations made shall be actioned immediately.

12.6 Monitoring Emissions to Air

Visual inspections shall be undertaken for airborne dust during dry periods by all NFL Employees. Any complaints received will be recorded on site and include the following;

- Any complaint relating to emissions alleged to be due to construction activity received from a member of the public or a staff member from Cyfarthfa Castle, will be recorded and include date and nature of the complaint and any measures taken as a result of that complaint.
- The date and vehicle registration number of any construction vehicle that is observed carrying material that has the potential to release dust during transit and is not covered. Details of measures taken to prevent further occurrence shall be included.

13 Maintenance of Equipment on Site

- Daily checks will be undertaken by plant operators prior to using the equipment. This includes checks for fuel and oil leaks, fuel and coolant levels, hydraulics, and safety equipment. These checks will include a written check list which will be kept on file in the site office.
- All plant and equipment will be serviced as per the manufacturer's instructions, but at minimum annually. Service documentation will be kept on file in the site office.
- Certification will be maintained for any lifting equipment used on site and refreshed as required to ensure certification is current and valid. This documentation will be stored within the site office.
- All electronic equipment used on site, including within the site office, will undergo portable appliance testing (PAT) to ensure safety of use.

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- Any equipment brought into site will be inspected prior to its arrival to ensure that it is in good working order.
- A designated maintenance area will be set up and utilised for any work that needs to be undertaken on plant. This area will be equipped with spill kits and plant nappies to prevent ground and surface water contamination.

14 Training

All staff involved with the project shall be trained to a level to ensure that they are more than capable of carrying out their duties with minimal environmental impact. Training will be undertaken in the following forms:

14.1 Site Induction

- **ALL** personnel on the project shall undergo a site induction. This induction will include information on the environmental aspects of the works, as described within this document.
- Site Induction will include a briefing on the importance of the environmental / ecological features of the site

14.2 Formal Training

- Only personnel holding a recognised site safety certificate such as Construction Skills Certification Scheme (CSCS) will be allowed to work on the site.

14.3 Toolbox Talks

- Environmental Risk Assessments shall be carried out as part of the Method Statement process. The outcome of these risk assessments will be included within the Method Statement Toolbox Talk.