Environmental Management Plan (EMP)

Loudoun Road
London
NW8 0DJ

EMP developed by
Paul Shadbolt
Checked By
Ross Woods
Person accountable for on-going development of this plan
Paul Shadbolt

Contents

In addition to the regular risk reviews, the Environmental Management Plan must be reviewed at least every three months or at the start of major works package and the revision number updated.

Durkan will keep a controlled copy of this Environmental Management Plan on file at Durkan House office and a working copy issued to site.

A person nominated by the Contract Manager will amend the controlled copy in accordance with document control procedures

Only the controlled copy can be guaranteed to be the most up to date.

1 Review of EMP

Revisions to the content of this EMP, such as a change in the site management personnel or additions and amendments to the significant site risks register are noted below. Following planned formal reviews, either note the resulting amendments below, or note on the log when the review was held, and where the record of the review is held.

Section amended	Detail of amendment	Amended by	Date

2. Introduction

The Durkan Project Team at Loudoun Road aims to work in a manner that reduces negative environmental impact of the demolition, construction and fit out works in accordance with the business Policy Statement.

To do this, the Project Team and all trade contractors will comply with the requirements of this Environmental Management Plan (EMP) which details the environmental risks associated with the works at Loudoun Road.

The controls detailed within this plan are to be carried out in conjunction with the applicable Environmental Control Procedures detailed within the EMS and EMM.

All subcontractors or consultants providing a product or service are required to provide evidence, to show how they will control any environmental risks that may arise from their works, and this can be included within a Method Statement.

It is very important that our Environmental Management System requirements are communicated to our subcontractors and consultants at the earliest possibility, to enable potential environmental risks to be eliminated where possible or relevant controls put in place in order to minimise their effects.

3. Site Environmental Details

Project Name	Loudoun Road
Site Address	154 Loudoun Road London NW8 0DJ
Job No.	767
Contract Manager	Paul Shadbolt
Construction Start Date	TBC
Contract Duration (weeks)	TBC
Brief Project Description	The construction of an 8 storey RC frame and 4 storey traditional Bkwk & concrete frame with Bkwk and cladding the building designed to follow guide lines passivent.

4. Regulatory Agencies and Interested Parties

The following regulatory agencies and interested parties have interests in this site:

Regulator	Compliance Criteria
Client Requirements (Client EMP / Waste Recycling figures)	
Contractual Obligations (BREEAM / Code)	
Specific Legal Requirements (Permits / Consents / Licences)	
Studies / Reports (Soils / Asbestos)	

5. Environmental Roles and Responsibilities & Useful contacts

Details of the overall responsibilities for Environmental Management can be found in the EMS.

Project Roles

Title	Name / Telephone	Role
Contract Manager	Paul Shadbolt	Leads the development of strategy and implementation of environmental and sustainability issues for the project.
Project / Site Manager	TBC	Assists in the on-site implementation of the project environmental requirements and supports the Contract Manager to achieve best practice.
Environmental Incident Controller	Site Manager	Responsible for ensuring appropriate spill kits are available on the site and is the focal point of contact should an incident occur.
Sustainability Champion	Site Manager	Ensures that all waste is segregated appropriately and is disposed of in line with legislation and best practice.
Environment Agency	0845 933 3111 (general enquiries) 0800 807 060 (emergencies only)	

6. Project Environmental Aspect Register

At the Initial Health, Safety & Environmental Planning Meeting the Project Team should identify the environmental aspects appropriate to the project. Those elements identified as being significant must be controlled and the necessary control measures will be communicated to the relevant contractors at the pre-order meeting.

At the Initial Health, Safety & Environmental Planning Meeting;

- Does the tender commit us to any environmental or sustainability items?
- Review if there are any site specific environmental requirements
- Is there an opportunity on site to segregate waste to recycle and reduce costs?
- Complete the Site Waste Management Plan
- Identify the location of drains, water courses and other sensitive areas (community and ecological) and highlight on the site layout drawing
- Review each of the environmental aspects taking into consideration the specific project details.
- Determine which aspects are applicable to the contract – is the aspect is of concern to anyone who could be affected by our operations or could it be a cause of complaint?
- Appraise the findings and conclude as to whether the aspect is significant or not.

Method statement briefings will be held with operatives on site to ensure that the information is communicated to the work force.

6.1 Waste Management and Management

EMM Section 3.1

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
1.1	Excessive production of waste on site through inadequate material selection, storage and handling	Overuse of energy and raw materials. Air pollution from incineration of waste. Increased waste to landfill. Site health and safety compromised.	Y	N	Ensure careful selection of materials and educate workforce and promote good housekeeping. Also refer to section 3.1 of EMM- Waste management and minimisation.
1.2	General site housekeeping, disposal of/storage of general waste	Attracts vermin. Loss of visual amenity. Resources expanded in collection and transportation. Air pollution from waste degradation and incineration and increased landfill requirements.	Y	N	Educate workforce to minimise waste by workmanship and adequate storage. Make provision for good housekeeping. Adhere to the Big Tidy Up Campaign. Use licensed disposal contractor. Subcontractor responsible for removal of their waste/packaging. Obtain copies of waste transfer and disposal notes.
1.3	Disposal of/storage of hazardous waste	Poisoning of public and wildlife by contamination of water supply, watercourses, ground, and possibly the food chain. Attracts vermin.	N	N	Identify waste and approved means of disposal. Make provision for appropriate housekeeping and segregated disposal. Educate workforce.
1.4	Disposal/wash down of excess concrete, pumped screeds and mortars	Contamination of drains, watercourses, and land. Damage to watercourses and drainage. Loss of visual amenity.	Y	N	Subcontractor is responsible for removal of waste as hazardous waste, therefore obtain copies of waste transfer and disposal notes. Provide wash out areas for concrete wagons.

6.2 Water Pollution Prevention

EMM Section 3.2

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
2.1	Acute chemical water pollution (possibly from spills etc)	Poisoning of wildlife. Potentially toxic substances introduced into food chain. Contamination of water supply. Contamination of sediments.	Y	N	Back-up safety systems, personnel education and training, effective contingency plan, availability of spill kits, dispersants etc. Test emergency response plan. Identify site drainage as surface, foul or combined and colour code drain covers. Protect and cover all drains and ensure the correct connections are made with each type of drain.
2.2	Chronic chemical pollution from contaminated run-off, uncontrolled dumping of waste or disposal of waters	Poisoning of wildlife. Potentially toxic substances introduced into food chain. Contamination of water supply. Contamination of sediments. General breakdown of ecosystem.	Y	N	Personnel education, on-site waste reception facilities, drip trays, effective interception/collection system. Test emergency response plan. Identify site drainage as surface, foul or combined and colour code drain covers. Protect and cover all drains and ensure the correct connections are made with each type of drain.
2.3	Leaching of contaminated water, sediments and solids into waters containing flora and fauna	Algal blooms, death of aquatic flora and fauna. Poison aquatic life. Potential toxins into food chains. Release contaminants into water column for redistribution.	N	N	Pollution control procedures and contingency plans. Careful selection and control of techniques, careful drainage design, treatment or removal of containments, interceptors, bums etc.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
2.4	Visual amenity- visual surface pollution e.g. oil and litter	Reduced landscape quality and aesthetic deterioration.	Y	N	Follow Big Tidy Up initiative and clean up as you work.
2.5	Groundwater contamination from leaking storage tanks, accidental spills	Contaminated drinking water supply. Groundwater not suitable for irrigation purposes.	Y	N	Good site management for prevention, protection of aquifer, reactive spill clean-up procedure, adequate bunding of tanks.
2.6	Water demand during construction	Pressure on existing supply. Low flow.	N	N	

6.3 Land and Land Use

EMM Section 3.9

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
	Archaeology				
3.1	Disturbance of site of archaeological interest	Loss of historic information.	N	N	Check planning conditions for archaeological interest. Ensure methods of construction to avoid disturbance (as agreed with Archaeological Units). Inform Coroners Office immediately of any finds and leave surrounding area undisturbed until investigated.
3.2	Vibration from excavation, piling and blasting	Detrimental to integrity of remains preserved in situ.	Y	N	Re-route, pre-construction surveys, preservation/protection un situ, excavation and record.
3.3	Groundwater drawdown	Detrimental to integrity of waterlogged remains preserved in situ.	N	N	Re-route, pre-construction surveys, preservation/protection un situ, excavation and record.
3.4	Direct Damage from excavation and tunnelling	Disturbance, displacement and destruction of remains	N	N	Re-route, pre-construction surveys, preservation and protection un situ, excavation and record.
	Soil, Sediments and Geology				
3.5	Contamination of soil from leaking storage tanks, uncontrolled dumping of waste, spills etc.	Renders soil potentially toxic (e.g. to vegetation), chemically unstable and is a health risk.	Y	N	Personnel education, post-spill clean up, waste disposal program and adequate reception facilities, good site management.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
3.6	Disposal of contaminated soil/sediment from excavation, imported materials or incidents on site	Health risk. Possible consequences for ecology and water resources at disposal site.	N	N	Treatment of soil, education to ensure careful handling and reduce health risks, select minimum impact disposal site.
3.7	Disposal of clean soils/arisings	Smothering of habitat at disposal site.	Y	N	Habitat creation, other beneficial uses of material.
3.8	Structure stability	Structural cracking or failure of structures, land slip.	Y	Y	Careful predictive studies, monitoring during construction.
3.9	Soil structure (compaction and desegregation)	Vegetation growth affected. Unsuitable for agricultural use.	N	N	Prevention- use defined haulage routes, use of geotextile mattress, low ground pressure plant. Remedial measures- mechanical pre-working, soil treatment, correct soil handling procedures, maintain separation.
3.10	Destruction of geological site	Education/research value lost.	N	N	Design scheme to prevent long-term damage, careful instructions to contractor, expose face to alternative site, relocate works.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
	Contaminated Land and Landscape				
3.11	Works below existing contaminated ground level, including disposal of groundwater	Health and ecological risks from airborne exposure. Contamination of watercourses and ground.	N	N	Restrict access until remediated. Encapsulate area and contain groundwater for remediation/special disposal.
3.12	Proposed structures above contaminated land	Health and ecological risks from airborne exposure. Contamination of watercourses and ground.	N	N	Encapsulate promptly with sub bases and membranes. Temporarily ventilate gases to prevent harmful levels of build-up until permanent ventilation installed.
3.13	Offsite disposal of contaminated arisings	Health and ecological risks from airborne exposure. Contamination of watercourses and ground.	N	N	Identify waste and approved means of disposal. Use licensed disposal contractor. Subcontractor responsible for removal of own waste/packaging.
3.14	Surface water run off from spoil heaps arising from contaminated land	Health and ecological risks from airborne exposure. Contamination of watercourses and ground.	N	N	Minimise use/height of spoil heaps (cart away for disposal at earliest possibility). Ensure arising groundwater and surface water run off is encapsulated and stored for disposal. Subcontractor responsible for removal of their waste/packaging. Obtain copies of waste transfer and disposal notes for all waste.
3.15	Construction site-stockpiling, structures and site office	Visual impact and temporary loss of amenity/agricultural land. Focus of interest for local community and visitors.	N	N	Minimise area affected, screening, reinstate site after construction to status quo.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
3.16	Permanent visual intrusion	Long term effects on visual impact, temporary loss of amenity/agricultural land. Focus of interest for local community and visitors.	N	N	Landscaping- site optimisation, screening ,tree planting, careful selection of vegetation, colouring, design aesthetics.
3.17	Waste disposal (of excavated material, surplus construction materials, by-products and generated wastes	Smother vegetation. Loss of visual amenity. Soil contamination. Loss of previous land use. Land/Water contamination.	N	N	Good site management- impose controls on illegal/irresponsible dumping, promote waste reception facilities on site.
3.18	Permeability of surfaces/slopes	Increased surface run-off. Loss of habitat. Change in land use.	N	N	Vegetated slopes, porous surfaces, and adequate drainage with interceptors.
3.19	Medium term visual intrusion (e.g. hedge removal)	Primary residual visual effect	N	N	Rapid, appropriate reinstatement.

6.4 Air Pollution

EMM Section 3.4

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
4.1	Company vehicle use	Fuel consumption- use of non-renewable fossil fuels. Air pollution/poor air quality.	Y	Y	Have maintenance programs in place, consider travel arrangements and encourage the use of public transport where practicable.
4.2	Deliveries	Fuel consumption- use of non-renewable fossil fuels. Air pollution/poor air quality.	Y	Y	Improve delivery requirements- plan for less frequent deliveries if possible.
4.3	Localised air pollution from mechanical plant and equipment	Health concerns. Air pollution/poor air quality.	Y	N	Encourage best practice, ensure machinery and equipment is not left running when not in use.
4.4	Smoke emissions and fumes	Health concerns. Air pollution/poor air quality.	Y	N	No fires allowed on site.

6.5 Nuisance

EMM Section 3.4 (Control of noise, vibration and dust)

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
	Dust				
5.1	Breaking out/demolition of existing structures by percussion tools	Contamination of watercourses, smothering of vegetation. Loss of visual amenity.	N	N	Consider alternative methods, temporary screening and/or dust suppression systems.
5.2	Demolition of existing structures using grab plant	Contamination of watercourses, smothering of vegetation. Loss of visual amenity.	N	N	Consider temporary screening and/or dust suppression systems.
5.3	Crushing of demolition arisings for reuse on site	Contamination of watercourses, smothering of vegetation. Loss of visual amenity.	N	N	Consider location, temporary screening and/or dust suppression systems.
5.4	Breaking down of new structure (e.g. piles)/creation of structural keys by percussion tools	Contamination of watercourses, smothering of vegetation. Loss of visual amenity.	Y	N	Consider alternative methods e.g. Elliot Method, hydraulic key formation and/or temporary screening/dust suppression system.
5.5	Storage of and or formation works using materials/aggregates with high fines content	Contamination of watercourses, smothering of vegetation, dust. Loss of visual amenity.	Y	N	Consider covering heaps, tarmac capping of haul roads.
5.6	Drying out of un-capped existing strata including that spread by plant movement	Contamination of watercourses, smothering of vegetation. Loss of visual amenity.	N	N	Consider covering heaps, tarmac capping of haul roads etc. Sequence work to minimise exposure.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
5.7	Saw cutting operations using mechanical plant and tools. Predominantly on timber, masonry and concrete products	Contamination of watercourses, smothering of vegetation. Loss of visual amenity.	N	N	Consider location, temporary screening and/or dust suppression systems.
5.8	Wet applications such as mortar, plaster, render etc. The above dries out to dust especially on scaffolding.	Contamination of watercourses, smothering of vegetation. Loss of visual amenity.	Y	N	Enforce/make provision for good housekeeping/consider debris netting on external scaffold.
	Noise				
5.9	Working outside normal hours	Breach of planning condition. Disturbance of local community, public and wildlife.	Y	N	Ensure site hours are in line via preliminaries to sub-contract. Reinforce with indications.
5.10	Breaking out/demolition of existing structures by percussion tools	Disturbance of local community, public and wildlife.	N	N	Consider alternative methods, temporary screen, agree work hours and minimise duration.
5.11	Demolition of existing structures using grab plant	Disturbance of local community, public and wildlife.	N	N	Avoid uncontrolled collapse, temporary screen, agree work hours and minimise duration.
5.12	Breaking down of new structure/creation of structural keys by percussion tools	Disturbance of local community, public and wildlife.	N	N	Consider alternative methods e.g. Elliot Method, hydraulic key formation and/or temporary screening/dust suppression system.
5.13	Crushing of demolition arisings for reuse on site	Disturbance of local community, public and wildlife.	N	N	Consider location and/or temporary screening.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
5.14	Saw cutting operations using mechanical plant and tools	Disturbance of local community, public and wildlife.	N	N	Consider location and/or temporary screening.
5.15	Concrete pumping and vibro-tamping	Disturbance of local community, public and wildlife.	Y	Y	Consider location and/or temporary screening.
5.16	General site plant, equipment and transportation vehicles	Disturbance of local community, public and wildlife.	Y	Y	Ensure plant appropriately silenced/well maintained.
5.17	Commissioning of building plant and equipment	Disturbance of local community, public and wildlife.	Y	N	Minimise duration by optimising sequencing. Liase with local residents informing them of forthcoming works.
5.18	Work with unsociable hours such as power floating	Disturbance of local community, public and wildlife.	N	N	Minimise duration by optimising sequencing. Liase with local residents informing them of forthcoming works.
	Vibration				
5.19	Vibro stabilisation of existing ground	Disturbance of public and wildlife, stress, worry due to threat of structural cracking or failure and landslips.	N	N	Consider alternative methods/monitor temp. Stabilisation of existing building.
5.20	General site plant, equipment and transportation vehicles	Disturbance of public and wildlife, stress, worry due to threat of structural cracking or failure and landslips.	Y	N	Ensure plant appropriately specified and well maintained.
5.21	Breaking out/demolition of existing structures by percussion tools	Disturbance of public and wildlife, stress, worry due to threat of structural cracking or failure and landslips.	N	N	Consider alternative methods/monitor temp. Stabilisation of existing building.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
5.22	Breaking down of new structure/creation of new structure keys by percussion tools	Disturbance of public and wildlife, stress, worry due to threat of structural cracking or failure and landslips.	Y	N	Consider alternative methods/monitor temp. Stabilisation of existing building.
5.23	Demolition of existing structures using grab plant	Disturbance of public and wildlife, stress, worry due to threat of structural cracking or failure and landslips.	N	N	Avoid uncontrolled collapse.
5.24	Crushing of demolition arisings for reuse on site	Disturbance of public and wildlife, stress, worry due to threat of structural cracking or failure and landslips.	N	N	Ensure plant specified with vibration dampers or sited on absorbent standing.
5.25	Consolidation of formation impacting on existing adjacent structures	Disturbance of public and wildlife, stress, worry due to threat of structural cracking or failure and landslips.	Y	N	Consider alternative methods/monitor temp. Stabilisation of existing building.
	Traffic				
5.26	Fumes, noise and vibration discharged form transportation vehicles approaching site	Disturbance of local community, public and wildlife.	Y	N	Identify approved access and egress routes to subcontractors and suppliers.
5.27	Transportation vehicles waiting outside of site boundary prior to entering site or accessing via unsuitable routes	Congestion leading to concentration of pollution, noise, vibration, and socio-economic losses through reduced opportunity from lack of access.	Y	Y	Ensure large deliveries are pre-arranged with management. Restrict/prevent offsite parking. Identify approved access and egress routes to subcontractors and suppliers.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
5.28	Work within highways	Congestion leading to concentration of pollution, noise, vibration and socio-economic losses through reduced opportunity from lack of access.	TBC	TBC	Ensure authorities are consulted with, approve traffic management method statements.
5.29	Transportation vehicles and plant taking unauthorised route	Damage arising to local habitat, landscaping and infrastructure. Congestion and loss of visual amenity.	N	N	Identify approved access and egress routes to subcontractors and suppliers. Consider temporary protection.
5.30	Loss of existing car parking space during construction	Congestion leading to concentration of pollution, noise, vibration and socio-economic losses through reduced opportunity from lack of access.	Y	N	Optimise use of existing space usage by sequencing works and establishing sites sympathetically.
5.31	Dust and dirt deposited by transportation vehicle and plant travelling to and from site or around site perimeter to alterative access points	Dust, spillage, and loss of visual amenity.	Y	N	Consider wheel wash facilities and/or clean routes/areas for non-site vehicles. Plan site layout to minimise site traffic travelling outside of site boundary.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
	Light				
5.32	Light emitting from temporary site lighting systems	Disturbance of public and wildlife. Stress and loss of sleep.	Y	Y	Minimise lighting to that required for security and safety. Consider location/fit light shields if needed.
5.33	Light emitting from building lighting system during commissioning	Disturbance of public and wildlife. Stress and loss of sleep.	Y	N	Minimise lighting to that required for security and safety. Secure building preventing need to illuminate.
5.34	Loss of natural light to adjacent properties through temporary structures, offices, hoardings, signage, and material stock piling	Disturbance of public and wildlife. Stress and loss of sleep.	Y	N	Establish site accommodation/heaps storage sympathetically to local residents.
	Fumes				
5.35	General site plant, equipment and transportation vehicles	Health and ecological risks from inhalation/deposition of sulphates, including contamination of watercourses and ground.	Y	N	Ensure plant appropriately specified with exhaust systems and well maintained.
5.36	Disturbed existing contaminated land	Health and ecological risks from inhalation/deposition of sulphates, including contamination of watercourses and ground.	Y	N	Identify contaminated areas, restrict access until remediated. Encapsulate promptly with sub bases.

6.6 Fuel Storage and Spill Control

EMM Section 3.3

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
6.1	Leakages of oil from containers/tanks or uncontrolled disposal	Poisoning of public and wildlife by contamination of water supply, watercourses, ground, and possibly the food chain.	Y	N	Check storage facilities in good condition/adequately bunded etc. Subcontractor responsible for removal of their waste/packaging. Obtain copies of waste transfer and disposal notes.
6.2	Leakages of fuel from containers/tanks or uncontrolled disposal	Poisoning of public and wildlife by contamination of water supply, watercourses, ground, and possibly the food chain.	Y	N	Check storage facilities in good condition/adequately bunded etc. Subcontractor responsible for removal of their waste/packaging. Obtain copies of waste transfer and disposal notes.
6.3	Leakages of chemicals from containers/tanks or uncontrolled disposal	Poisoning of operatives, public and wildlife by contamination of water supply, watercourses, sediment, and possibly the food chain.	Y	N	Check storage facilities in good condition/adequately bunded etc. Subcontractor responsible for removal of their waste/packaging. Obtain copies of waste transfer and disposal notes.
6.4	Leakages of oil, fuel and fluids and during refuelling or through Inadequate maintenance of plant and equipment	Poisoning of public and wildlife by contamination of water supply, watercourses, ground, and possibly the food chain.	Y	N	Check storage facilities in good condition/bunded/used correctly. Ensure plant well maintained.
6.5	Application of chemical treatments and finishes leading to accidental spillage or uncontrolled disposal	Poisoning of public and wildlife by direct exposure, contamination of water supply, watercourses, ground, and possibly the food chain.	Y	N	Consider substitution/elimination. Follow precautions and waste disposal measures on hazard data sheet. Subcontractor responsible for removal of their waste/packaging. Obtain copies of waste transfer and disposal.

6.7 Socio-Economic

EMM Section 3.10

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
7.1	Closure/diversion of existing footpaths and roads, leading to congestion and/or loss of public access	Socio-economic losses through congestion/loss of access facilities which reduce opportunity for local businesses and create nuisance for local residents.	Y	N	Ensure alternative routes provided and clearly signed prior to commencing works. Carefully phase works to minimise impact.
7.2	Affect on local property prices from construction activities	Temporary cost reduction due to site presence.	N	N	Keep site tidy, regularly maintain hoardings, ensure roads and footpaths are kept clean and protected from damage. Liase with local residents regularly/involve community.
7.3	Litter and surface pollution by others	Loss of visual amenity, reduction in landscape quality/aesthetics.	N	N	Keep site tidy and regularly maintain hoardings.
7.4	Informing local community of project aims and contacts	Unnecessary complaints regarding environmental issues, possible intervention by enforcing agents.	Y	N	Display Considerate Contractors information. Inform local residents in writing about project, contacts, working hours. Consider regular meetings/updates with local residents especially prior to high impact works. Record complaints and deal out expediently.
7.5	Disturbance	Stress, worry, loss of sleep. Safety concerns.	Y	N	Daytime working; careful selection of piling techniques; screening; angled lighting; double glazing; routing of traffic to avoid sensitive areas.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
7.6	Employment opportunities	Local job creation, immigration, boost to local economy but large construction project may create non-sustainable boomtown economy.	Y	N	Provide skills training for local people.
7.8	Unemployment	Social problems, demoralisation, dereliction, vandalism, economic stagnation, emigration.	N	N	Local or central government employment initiatives.
7.9	Immigration	Pressure on existing short/long term accommodation.	N	N	Encourage use of local labour, provide skills training.

6.8 Fauna and Flora

EMM Section 3.11

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
8.1	Removal of communities	Loss of habitat from land clearance. Disturbance of species.	N	N	Routing, minimum disturbance approach, temporal constraints.
8.2	Turbidity- loss of light/colour of water due to the presence of suspended particles	Reduced light penetration leading to a reduction in photosynthesis. Feeding and respiration difficulties for fish.	N	N	Plan activities to avoid sensitive times of year (e.g. overwintering, breeding season).
8.3	Loss of habitats (terrestrial and bankside)	Loss of wildlife corridor during site preparation.	N	N	Minimise loss, habitat creation or restoration, phased works to facilitate re-colonisation.
8.4	Disruption from noise, lighting etc during the construction process	Disrupts bird feeding, breeding and roosting patterns. Disrupts wildlife.	N	N	Minimise night time working, careful timing of works, screen work if possible, angle lights away from sensitive sites.
8.5	Physical damage from unauthorised access routes, unnecessary vegetation removal, replacing natural vegetated slope with hard or vertical defences	Disturbance, habitat loss, loss of wildlife corridor.	N	N	Replanting, creation of new habitats, minimise disturbance, timing.
8.6	Vegetation damage from traffic, dust, exhaust fumes, weed cutting, stockpiling over tree routes	Damage to terrestrial vegetation. Disturbance to fauna. Removal of river bed/bank vegetation.	N	N	Pollution control procedures, pre-construction pruning.

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
8.7	New or improved habitats from landscape works	New or extended habitats.	N	N	Careful selection of appropriate seed mix, tree species, landscaping, planting etc.
8.8	Inundation (flood risk)	Habitat change/loss. Increased salinity.	N	N	Encourage beneficial inundation, habitat creation.
8.9	Movement of high sided vehicles/plant to damage of retained/protected existing shrubs and trees	Disturbance/damage of vegetation. Impacts on wildlife habitat. Loss of visual amenity.	N	N	ID protected trees on site plan and ensure vehicles are routed to avoid. Liase with Arboriculturalist regarding suitable protection methods/consider rising crowns using tree surgeon.
8.10	Movement of plant around site leading to damage of retained/protected existing shrubs and trees	Disturbance/damage of vegetation. Impacts on wildlife habitat. Loss of visual amenity.	N	N	ID protected trees on site plan and ensure vehicles are routed to avoid. Liase with Arboriculturalist regarding suitable protection methods/consider rising crowns using tree surgeon.
8.11	Work below ground leading to damage of retained/protected existing shrub and tree roots	Disturbance/damage of vegetation. Impacts on wildlife habitat. Loss of visual amenity.	N	N	ID protected trees on site plan and ensure vehicles are routed to avoid. Liase with Arboriculturalist regarding suitable protection methods/consider rising crowns using tree surgeon.
8.12	Storage of materials in vicinity of retained/protected existing shrubs and trees	Disturbance/damage of vegetation. Impacts on wildlife habitat. Loss of visual amenity.	N	N	ID protected trees on site plan and ensure vehicles are routed to avoid. Liase with Arboriculturalist regarding suitable protection methods/consider rising crowns using tree surgeon.
8.13	Disturbance of site of ecological interest	Loss of endangered/rare species.	N	N	Check planning conditions regarding DEFRA licences. Ensure agreed protection/enhancement methods are met with.

6.9 Leisure and Amenity

EMM Section 3.12

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
9.1	Access	Temporary closure of footpath or vehicular access and loss of public access. Requirement for diversion.	Y	N	Well signposted, well maintained diversion, reinstated footpath.
9.2	Construction traffic	Traffic congestion and exhaust emissions. Damage to roads, vibration and noise.	Y	N	Careful programming of works, careful choice of construction traffic route.
9.3	Land requirements for contractor (stockpiling, site works, offices, car parking)	Temporary loss of car parking/storage areas. Temporary or permanent loss of informal recreation area. Reduced tourism revenue.	Y	N	Consultation to ensure works take place outside peak season, provision of alternative parking area, cleaning up and reinstatement of site after use, planting and enhancement works.
9.4	Visitor attractions	Tourists/visitors observing construction works.	N	N	Public display boards/exhibition. Vision screens within hoarding.

6.10 Indirect Effects

EMM Section 3.13

	Aspect	Possible Impacts	Is it Applicable? (Y/N)	Is it Significant? (Y/N)	Method of Mitigation/Control
10.1	Use of raw materials	Increased traffic loading. Depletion of natural resources. Effects of production and processing e.g. air pollution, discharges to water, waste etc.	Y	N	Investigation of less harmful/costly alternatives. Minimisation of consumption and waste. Maximisation of reuse and recycling. Eliminate, substitute or minimise raw materials during specification of materials. Educate workforce in good workmanship, storage and housekeeping.
10.2	Use of energy	Effects of production and transportation e.g. air pollution. Depletion of natural resources.	N	N	Minimisation of consumption and waste. Investigation of less harmful/costly alternatives. Economise in use of energy e.g. lighting and power requirements minimised. Plant and water supplies turned off when not in use.

7. Training Requirements

All new Durkan employees, although not site based, but working on the project shall attend ½ day environmental training within 3 months of starting with Durkan.

In addition all Durkan employees shall attend 2-hour annual environmental update training. The HS&E Department shall organize environmental training and maintain records.

Environmental issues for the attention of subcontractors shall be communicated in a variety of methods, including:

- HS&E Working Group Meetings
- Environmental, Health and Safety Briefings and Toolbox Talks
- Site Notice Boards
- Progress Meetings / Package Managers

8. Compliance, Monitoring, Corrective Action and Auditing

The two main EMS procedures that will be used for compliance, monitoring, corrective actions and auditing are:

- Environmental Inspection, Monitoring and Measurement; and
- Corrective and Preventive Action and Audit

The above is to be recorded during routine Environmental Health & Safety Monitoring

9. Project Environmental Monitoring

Environmental monitoring is to be carried out daily to physically check the site activities, identify environmental risks and the implementation of management controls

10. Other Inspections

HS&E Adviser inspections are to be carried out with a frequency agreed with the Director for HS&E Management. As a minimum each site will be visited once every month. Completed inspection checklists will be held in the Site Safety Documents

The HS&E Adviser will record the results of the inspection, and the results of the inspection will be reported to the Site Manager and any person required to carry out corrective actions. Any corrective actions recorded during a site inspection must be closed out within a week using the corrective and preventive action procedures. Those items not closed out completely shall be carried forward to the next inspection until they are closed out.

If the deficiency persists or is a serious breach, then the Construction Director shall be notified directly by the Environmental Manager.

11. Documentation and Record Keeping

The Environmental Management Plan and the documentation arising from the procedures in the environment section of the EMS are to be kept in the Site Safety Documents.

12. Emergency Preparedness and Response

In the event of an Environmental Incident or Emergency the following basic steps should be employed:

- **STOP** work
- **REVIEW** the incident and consider - Safety first
  Nature of the incident
  Can it be easily controlled (block a drain / stop the noisy / vibration activity)
  Is additional assistance required?
- **ACT** to stop the environmental harm
- **REPORT** the incident to prevent re-occurrence

The Site Manager will take management control of the incident, and record the incident in accordance with SMS procedure 7.8 Adverse Event Reporting.

Public Relations and Complaints

Public relations will be managed using Durkan Communication, Public Relations and Complaints Procedure and referred to Durkan Directors directly

13. Minimum Site Environmental Requirements

This document summarises the minimum environmental requirements for all Durkan sites. For full details refer to the Environmental Management Manual and Site Waste Management Plan (SWMP)

Fuel Storage	Oils and chemicals **must** be stored in bunded tanks (110% of contents)
Drip Trays	Drip trays to be provided for all plant
Spill Kits	Provided by trade contractors if fuel/plant is stored on site Workers must be trained to use them
Concrete	All concrete washout to designated area / skip
Packaging	Trade Contractors have **sole** responsibility for the removal of **all** their packaging from site. *(pallets, cardboard, plastic wrapping. etc)* Duty of care certification must be provided to Durkan, along with waste figures in tonnes
Waste	All construction waste **must** be segregated into the designated bins provided in accordance with each sites SWMP. Trade contractors will be responsible for moving bins to the designated waste area on site. Please see SWMP for further details.
Litter / General Debris	No litter to be dropped on site Keep work area clean & tidy **at all** times
Contamination	No disposal of any material/substance to ground
Dust	Dusty activities must be controlled or damped down
Noise	Noisy activities must be controlled. Working Hours: 08.00 to 18.00 Monday to Friday 08.00 to 13.00 Saturday
Ecology	No access to areas with "Permit to Enter" If wildlife is identified in work area, all work to stop, and the HS&E Department is to be informed.
Timber	**Only** sustainable timber/plywood can be used on Durkan projects (FSC or PEFCplywood/timber products). Each trade contractor must provide chain of custody, certifying authenticity.

14. Site Sustainability Objectives

The Durkan Take Five sustainability issues neatly summarises some of our most pressing environmental concerns, and the circle of improvement shows that it will take a combination of all these environmental aspects and lifestyle changes to address these challenges successfully.

Refer to Section 4.3.3 and Appendix B of the ISO 14000 accredited Environmental Management System for our full Corporate Sustainability Objectives.

14. Site Sustainability Objectives

Durkan set company wide sustainability objectives and targets, available within the EMS pages. Project specific targets are shown below.

	Objective/Target	Programme	Planned Assessment Date	Owner
1	**Objective:** Actively minimise site construction wastes by improving site waste management. Improve recycling and maximise the amount of recyclable waste that is sent for recycling during the works. **Target:** Recycle 70% of all project waste produced on site.	- Implement revised SWMP on site - Use SWMP to identify recycling/reuse routes - Keep monthly waste report data up to date so it can be used to highlight areas of concern and make improvements. Review every 3 months - Educate workers on how to dispose of and segregate waste correctly, in accordance with the SWMP - Include conditions with sub-contractor order for waste minimisation - Aim to minimise packaging waste by getting suppliers and contractors to commit to minimise packaging, using re-usable packaging and taking back packaging - Consider reduction of waste throughout the project life including during design, ordering (avoiding over ordering), and handling (damage or spillage) - Monitor monthly with Waste Management Contractors (WMC) figures. Review every 3 months	Monitor monthly with Waste Management Contractors (WMC) figures. Review every 3 months.	HS&E Department Commercial Department Buying Department Site Managers

	Objective/Target	Programme	Planned Assessment Date	Owner
2	**Objective:** To reduce the site carbon footprint **Target:** To reduce the consumption of non-renewable energy through more efficient use of energy and water on site, and keeping travel/use of transport to a minimum.	- Use of PIR sensors in site welfare facilities and encourage workers to turn off power when not in use - Encourage the use of public transport by workers - Plan deliveries to minimise the number required to reduce fuel consumption and emissions to air - Improve staff awareness and promote best practice in electricity consumption - Assess site carbon from water, energy and transport (concentrating on the primary footprint) - Use carbon management tool to record all data and measure footprint. Review every 3 months	On-going. Review every 3 months	HS&E Department Directors Site Managers Contractors

	Objective/Target	Programme	Planned Assessment Date	Owner
3	**Objective:** To maintain community relations **Target:** Implement the 8-point code of practice from the Considerate Constructors Scheme and obtain score of at least 32 to maintain Associate status. All sites over 6 weeks long are to be registered.	- Ensure all 8 points covered including environment (noise, light, air pollution), safe operations (fuel storage and spill control), and consideration of local community. Establish an action plan for each area, including noise, dust, oil storage, adverse events, and management of watercourses - Ensure the site specific Environmental Management Plan is used to identify the site specific aspects and impacts that may effect the community throughout the project, and ensure these are addressed - Liase with local community and keep them informed of any activities that may affect them - Develop internal training approaches/programmes - Implement monitoring procedures where needed - Quality manager to collate reports and review every 3 months	Quality Manager to collate reports and review. Review every 3 months	HS&E Department Contracts Managers Site Managers Contractors

	Objective/Target	Programme	Planned Assessment Date	Owner
4	**Objective:** To ensure a competent workforce is used at all times. Enhance the knowledge and understanding of the environmental impacts of Durkan and deliver good practice throughout the construction works. **Target:** Brief all supervisors and workers at induction stage. Environmental Tool Box Talks will be carried out once every 2 months.	- Rolling programme with topics from Contractor or HS&E Department - Should be on-going and reviewed monthly	On-going. Review monthly	HS&E Department Contract Managers Site Managers Contractors

	Objective/Target	Programme	Planned Assessment Date	Owner
5	**Objective:** To prevent pollution on site at all times through carefully controlled emergency response plans **Target:** To maintain and operate effective emergency procedures so as to minimise/eliminate the harm caused by: - Fire pollution/damage to air, land, water, flora and fauna - Chemical spillage - Pollution to watercourses - Harmful emissions - Release of hazardous material - Damage to archaeological remains	- Develop and implement emergency plan to meet project specific needs - Maintain the environmental emergency response procedure and develop if necessary - Ensure oil spill equipment is available to enable effective response to emergency - Provide emergency procedures induction and refresher training - Install, maintain and check all necessary emergency response systems and equipment. Ensure monitoring procedures are in place and review - Maintain emergency test programme and ke ep records	Ongoing – 3 month review	HS&E Department Contract Managers Site Managers Contractors