The Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T))) Order

Updated CEMP

Planning Act 2008

Infrastructure Planning

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

PINS Reference Number: *TR010015*

Document Reference: *NCC/EX/82*

Author: *Norfolk County Council*

Version	Date	Status of Version
0	9th October 2014	Updated Revision for submission

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The Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T))) Order

6.2 Environmental Statement: Volume II: Chapter 19. Construction Environment Management Plan (CEMP)

Planning Act 2008

Infrastructure Planning

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

PINS Reference Number: *TR010015*

Document Reference: *6.2*

Regulation Number: *5(2)(a)*

Author: *Mott MacDonald*

Revision	Date	Description
0	8th January 2014	Revision For Submission
1	18 July 2014	Updated Revision For Submission
2	8 October 2014	Updated Revision For Submission

Mott MacDonald Internal Audit			
Revision	**Originator**	**Checked By**	**Approved By**
0	J Nichols	J Fookes	G Hewson
1	M Dance		G Kelly
2	S Allen	J Fookes	M Frith

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MM filing ref: 233906EN/BSE/NOR/046

This document is submitted in relation to the application for a proposed development by Norfolk County Council to the Planning Inspectorate, under the Planning Act 2008.

The application is for the Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T))) Order, to grant development consent for the construction of a new highway running west-east between the A1067 Fakenham Road and the A47 Trunk Road at Postwick, including improvements to the existing highway network to the north and north east of Norwich.

This document comprises part of the application documents and relates to Regulation 5(2)(a) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009.

Table of Contents

A. Draft Construction Environment Management Plan (CEMP)

A.1 Introduction

Background to the Project

Norfolk County Council (NCC) has made an application for a Development Consent Order (DCO) in accordance with the Planning Act 2008 as amended. This is for "The Scheme"; the Norwich Northern Distributor Road, (NDR) which is a dual carriageway all-purpose strategic distributor road. It will link the A1067 Fakenham Road, near Attlebridge to the A47 Trunk Road (T) at Postwick and will measure approximately 20.4km in length.

Purpose of the Construction Environmental Management Plan

This CEMP contains all the information required for the appropriate management of environmental effects during construction of the project. This CEMP has been prepared by the environmental coordinator in collaboration with the project contractor and designer. It will be used as the main reference document to ensure and record the successful completion of the previously identified Environmental Actions. The CEMP is intended to be a "live" document.

The CEMP builds upon the environmental actions identified in the Environmental Statement (ES). It updates existing, or identifies new actions in light of information available at the construction phase. This may include environmental commitments made during the construction phase, risks and other information such as time constraints. It describes the way this is to be controlled and dealt with to comply with legislation and policy requirements and how adverse effects will be mitigated and managed during construction.

An important section within the CEMP is the details of the project team roles and responsibilities along with induction and training procedures; this together with method statements to be used during the construction stage of the project will control the work undertaken and ensure that all the environmental actions are implemented and the risks managed.

Communication and training are key elements of success and the following elements are included in the CEMP:

- A programme for briefing all operatives on the information, and requirements of the CEMP

- A programme for induction and regulated tool box talks for all operatives on scheme specific environmental issues.

A procedure is set out to record changes during construction which may affect implementation of agreed actions, including a system to ensure relevant persons assessing the changes and propose or approve methods to complete actions, and a method for recording the outcome within a revision of the CEMP.

Other procedures are included for monitoring and reviewing compliance with the CEMP.

The CEMP sets out the following information:

- The introduction: background of the project and the purpose of the CEMP (A 1)
- Project team: roles and responsibilities (A 2);
- Induction, training and briefing: procedures for construction staff to ensure they receive an adequate introduction to the environmental aspects of the project, a site induction and training (A 3);
- Existing environmental permits and consents: held by NCC and the additional permits that will be required for the project (A 4);
- Environmental Actions and Communications Register (REAC) (A 5);
- Consents, commitments and permissions; this provides a record of the consents and permissions from the Planning Authority, Statutory Bodies and other stakeholders and any commitments made to them within the planning documents (A 6);
- Key environmental legislation (A 7);
- Protection of sensitive areas: detailing how these areas within, adjacent to, and part of the site are to be protected during the design, construction and maintenance of works (A 8);
- Environmental risk assessments: detailing the environmental risks associated with all activities on the project, the mitigation measures to remove or reduce the risks and assigned responsibilities for the risks (A 9);

- Environmental monitoring requirements; setting out what monitoring needs to be undertaken, by who and the associated reporting requirements (A 10);
- Procedures for monitoring and reviewing: compliance with the CEMP (A11);
- Summary of procedures to be followed in the event of an environmental emergency or breaching of EMP measures (A 12);

Appendices:

- Site Waste Management Plan, Landscape Management Plan etc. (Appendix 1);
- References to other relevant information (Appendix 2);
- Record of management actions undertaken during construction and implementation and the outcomes (Appendix 3);
- Environmental method statements (Appendix 4)
- Record of environmental monitoring undertaken during construction (Appendix 5)
- Record of environmental incidents (Appendix 6)

A.2 Team

Management Structure

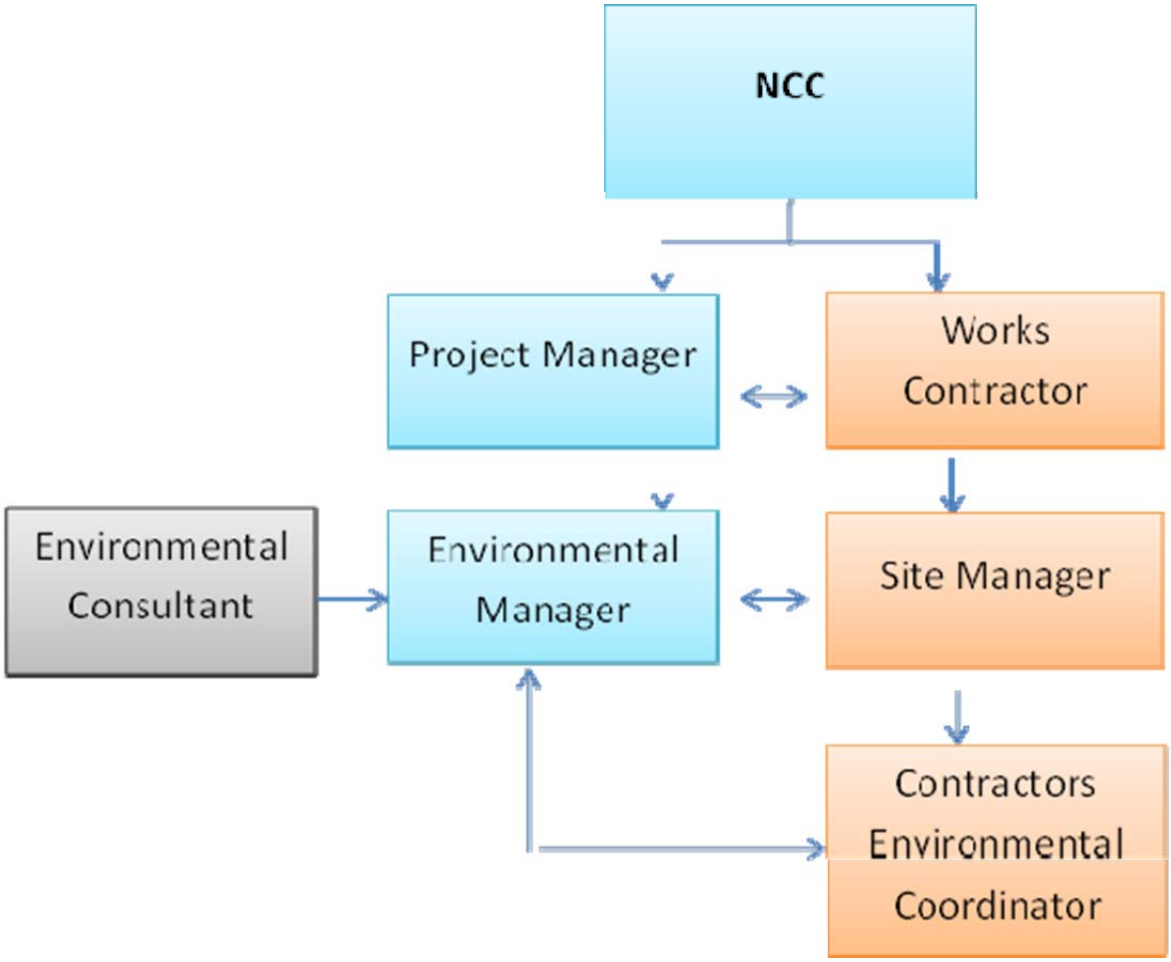
NCC will appoint an overall Project Manager for the NDR construction phase and an Environment Manager to coordinate and manage the environmental aspects of the project. They may also appoint environmental consultants to support the Environment Manager in their duties.

It is likely that several contractors will carry out works at various stages of the project, Birse has been appointed as the Principle contractor. The contractor will be responsible for ensuring provisions within the CEMP are complied with by all sub-contractors and their employees.

The contractor will be required to designate a Site Manager and to assign responsibilities for environmental matters to a senior member of their staff (Environmental Coordinator).

The management arrangement is set out in Figure A2.1.

Figure A2.1: Management Arrangement



Roles and Responsibilities

NCC

NCC is responsible for adherence of all project activities to the relevant permits and consents obtained for the project, and the discharge of planning conditions, including the implementation of mitigation measures set out in the Environmental Statement. The main mechanism to achieve this is through the implementation, by the contractors, of the detailed measures included in the CEMP.

The Project Manager has overall responsibility for implementation of the CEMP.

The NDR Environment Manager will support the Project Manager and is responsible for:

- Overall implementation of the CEMP;
- Liaising with relevant regulatory authorities and stakeholders on behalf of NCC;
- Ensuring all relevant consent conditions are satisfactorily discharged;
- Coordination with the various contractors, including providing advice on their environmental responsibilities; and
- Undertaking regular environmental inspections and audits to monitor and evaluate the compliance of the contractors and any subcontractors with the provisions of the CEMP.

The NCC Environment Manager will also be responsible for 'signing off' or recording actions in the individual contractor's environment management plans and reporting back to regulators bodies as appropriate.

NCC may appoint Environmental Consultants to assist the Environment Manager in their duties.

Contractors

The contractor shall prepare their own contractor's environment management plan in accordance with this CEMP. It shall contain method statements that provide details of how they will implement the requirements relevant to their activities. Each contractor's environment management plan shall be signed off by the NCC Environment Manager in advance of works commencing on site.

The Contractor's Site Manager will be responsible for the overall implementation, maintenance and auditing of their contractor's environment management plan. They will also be the key liaison point with the NCC Project Manager and the external bodies, including Natural England, and other statutory authorities.

The Contractor's Environmental Coordinator (CEC) will be responsible for the day to day environmental matters associated with the project including the implementation of the CEMP.

The CEC shall:

- Supervise and monitor on-site works in proximity to sensitive receptors;
- Carry out routine environmental monitoring, reporting and recording as specified in this CEMP and the contractor's environment management plan;
- Maintain and audit the contractor's environment management plan and its method statements and any other plans which underpin it;
- Liaise with the Environment Manager to carry out regular checks to assess compliance with the contractor's environment management plan, this CEMP and the Environmental Statement; and
- Assist the Contractor's Site Manager with liaison with external bodies, including its sub-contractors.
- The CEC will be responsible for immediately informing the NCC Environment Manager of any significant environmental issues that arise during the construction works, who will in turn inform the regulators/stakeholders, as required.

A.3 Training

The Site Manager will set up appropriate communication lines to

- Inform site workers and visitors of emergency procedures, assembly points, First Aid, Site rules and the location of welfare facilities upon arrival.
- Make construction workers aware of the overall aims and actions within the CEMP.

During construction, the contractors should maintain a notice board at the site entrance, indicating the name, telephone number and email address of the CEC, together with other mandatory information.

The CEC shall provide environmental training for on-site employees relevant to the implementation of the contractor's environment management plan. They will also inform the sub-contractors and construction workers of the sites sensitivities and advise on required good construction practice on site.

Training will be delivered through:

- A briefing programme;
- An induction and regular tool box talks on scheme specific environmental issues.

Site Inductions will include the requirements of the CEMP.

Method Statement briefings will include operational controls and emergency procedures.

Aspect and Impact Assessment briefings will include presence of protected species.

Project specific training will be identified within the 4-weekly Health and Safety Quality and Environment (HSQE) meetings.

All members of staff and operatives are made fully aware of the environmental implications that their operations may have.

Site management staff will have undertaken training into environmental management, and a number of the site team will be trained in emergency response for environmental incidents.

Each site will have an environmental emergency plans drawn up and regular checks will be made to ensure that the plan is effective by means of emergency drills.

A.4 Existing Environmental Permits and Consents currently held by NCC

Table A4.1 Existing Environmental Permits & Consents held by NCC

Permit/Consents	Issuing authority

License for abstraction of groundwater for industrial and commercial use	Environment Agency
Environment Permit	Environment Agency
Hazardous Substances Consent	Broadland DC & Norwich City Council

A.5 Environmental Actions and Commitments Register (REAC)

To be developed prior to construction.

A.6 Record of All Consents, Commitments and Permissions Required

Table A6.1 lists consents and permissions from Statutory Bodies and other stakeholders and any commitments made to them.

Table A6.1. Record of all Consents, Commitments and Permissions required

Consents/Commitments/Permissions	Issuing authority
Discharge Consents: Consent for discharge of water to the aquifer may be required under the Environmental Permitting (England and Wales) Regulations 2010.	Environment Agency
Protected Species Licences: Protected species licences will be required under regulation 53 of the Conservation of Habitats and Species Regulations 2010 in relation to the species identified below:- • Great Crested newt	Natural England

• Bats	
Land Drainage Consents: Consent to obstruct watercourses may be sought from the relevant local drainage board under the Land Drainage Act 1991 (section 23).	Broads Internal Drainage Board (Discussions between NCC, the Environment Agency and the Internal Drainage Board regarding this and other relevant aspects of the Scheme have already taken place)
Noise control: Prior consent for works on construction sites may be sought from the relevant local authority under section 61 of the Control of Pollution Act 1974. If applied for (the consent is not a requirement), then it would be sought by the construction contractor prior to relevant works commencing.	Relevant Local Authority
Traffic Controls: The Draft Development Consent Order (Document 3.1) provides powers for specific temporary restrictions as well as general powers for NCC to control traffic for the purposes of the construction of the NDR. In the event that any traffic controls are required that are outside the scope of the development consent order then they would be applied for by the contractor at the appropriate time.	Norfolk County Council, Highway Authority Highways Agency , Highway Authority

A.7 Key Environmental Legislation

The Contractors are required to comply with all relevant current environmental legislation and good practice throughout the duration of the works. The Key environmental legislation is:

- Environmental Protection Act 1990

- The Water Resources Act 1991

A.8 Protection of Sensitive Areas

This section describes how sensitive areas within, adjacent to, and of the site are to be protected during the design, construction and maintenance of works.

Environmental Statement

“It is anticipated that defined construction haul routes and time restriction for vehicle movements would be set out in a Construction Environmental Management Plan (CEMP) that would be secured under a planning condition at Reserved Matters stage. It is predicted at that stage that all traffic impacts arising during the construction phase could be mitigated through the application of the CEMP”.

Requirements

The preferred haul route to the site will be via the A47, and A1067. This route forms part of the Norfolk County Council recommended HGV route to the NDR Site and has no restrictions on the vehicle types that may use it.

Any abnormal loads associated with the construction phase must:

- Use the designated haul routes;
- Obtain licences as required;
- Schedule movements to minimise impacts on the surrounding road networks; and
- Avoid movements at peak hours and key school drop off and pick up times of between 0830 and 0900, and 1500 and 1530 (during school terms only).

Any deliveries (excludes vehicles less than 3.5 tonnes) to the site must avoid movements at peak hours and key school drop off and pick up times of between 0830 and 0900, and 1500 and 1530.

Staff and Visitor Access

Norwich Park and Ride sites, their location and capacity are detailed in table 19.2:

Table 19.2: Norwich Park and Ride Sites

Park & Ride Site name	Location	Parking spaces available
Airport	Buck Courtney Crescent	620
Sprowston	Wroxham Road	792
Postwick	Yarmouth Road	552

Local labour will be used wherever possible and any site personnel sourced from outside the immediate locality, who will temporarily reside in Norwich, must use the provided bus service or public transport.

Staff residing in the local area will use the park and ride service and associated bus services.

Workers employed by contractors must use the Park and Ride facilities if appropriate.

The arrangements will be as follows:

- The Park and Ride facilities will be permanently operational unless stated otherwise;
- A direct bus from the Park and Ride site will run, in advance of the morning shift;
- A further bus or mini bus will provide further runs as required, a minimum of two at each end of the day;
- There will be an additional run at lunchtime;
- Buses will stop at intermediate locations to pick up individuals using accommodation between the Park and Ride sites and NDR Site;
- These arrangements will be reversed for the return trips at the end of the shift; and
- Pick up/drop off areas for the Park and Ride services will be located inside the contractor's compound and accessed via the internal access road.

Traffic Management

The construction compound will be secured within a continuous high security chain link fence, with separate vehicle and pedestrian gates and emergency exits installed around the perimeter. All deliveries, operatives and visitors to the site will be required to:

- Report to a new security office
- All contractors will be informed of procedures in advance of work commencing at the site;
- All staff, operatives and visitors must be informed of emergency procedures, assembly points, First Aid, site rules, and the location of welfare facilities upon arrival at the security office;
- All personnel will be required to sign in and out at the security office each day;
- Personal Protective Equipment (PPE) appropriate to the tasks being undertaken will be checked prior to signing in;
- Identification will be checked upon signing in;
- Pedestrians will use the new security office

Delivery Vehicle Controls

Deliveries will be scheduled to arrive as and when the materials are required, in line with the construction programme. The following requirements will apply:

- Vehicles shall only be on the site for the time that is required to load/unload;
- No night time deliveries will be permitted without prior notification and approval from the relevant authorities;
- Delivery vehicles (greater than 3.5 tonnes) must avoid the key school drop off and pick up times of between 0830 and 0900, and 1500 and 1530;
- All contractors will conform to noise control measures detailed in chapter 8.
- Contractors must ensure that any detritus is cleared from vehicles prior to departure from the site;

- Contractors must undertake highway cleaning operations as required;
- Contractors must provide a wheel wash facility adjacent to the site access; and
- Vehicles must not lay-up in surrounding roads.

Responsibilities

This Construction Traffic Management Plan describes the anticipated construction traffic volumes that will be generated as well as the vehicle movements associated with construction works at the NDR development site.

The Plan shall be provided to all contractors by the NCC Project Manager in advance of working on site. Each contractor shall prepare a specific traffic management plan consistent with the requirements set out above to cover their own activities during the construction phase. The plan shall be provided to the NCC Project Manager for approval and include provisions for the monitoring the implementation of all its measures.

The Environment Manager shall regularly audit the implementation of the contractor's plan to confirm minimal disruption to the highway network and to verify that vehicle operators are complying with site regulations.

A.9 Environmental Risk Assessments

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
Air Quality	The following mitigation measures will be required, with regard to site planning, to avoid or reduce dust-raising activities associated with earthworks, construction and include: • Machinery and dust causing activities should be located away from sensitive receptors; • All site personnel to be fully trained; and • Trained and responsible manager on site during working times to maintain and carry out site inspections.	Throughout construction.
	The following mitigation measures will be required, with regard to construction traffic, to reduce potential adverse impacts on air quality during construction: • All loads entering and leaving site to be covered; • All vehicles switch off engines when stationary – no idling vehicles; • Effective vehicle cleaning and specific fixed wheel washing on leaving site and damping down of haul routes; • No site runoff of water or mud; • On-road vehicles to comply to set emission standards; • All non-road mobile machinery (NRMM) to use ultra-low sulphur tax exempt diesel (ULSD) where available and be fitted with appropriate exhaust after-treatment from the approved list; • Minimise movement of construction traffic around site; and	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	• Hard surfacing and effective cleaning of haul routes and appropriate speed limit around site.	
	The following mitigation measures will be required, with regard to site activities, to reduce potential adverse impacts on air quality during construction: • Minimise dust-generating activities; • Use water as dust suppressant where applicable; • Cover, seed or fence stockpiles to prevent wind whipping; • Re-vegetate earthworks and exposed areas; and • Ensure concrete crusher or concrete batcher has permit to operate.	Throughout construction.
Carbon	The following mitigation measures will be required, to reduce the production of carbon emissions during construction: • Achieve a neutral cut and fill balance, to remove the need for transporting bulk fill materials from or to site. All excavated materials will be utilised within the site; • Once the volume of contaminated materials is known there will be remediation and burial under landscape areas; • Cement stabilised granular material to be used to reduce the import of quarried materials; • Recycled crushed glass filter material to be used as an alternative to sand; • Ensure that the engines of all vehicles and plant on site are not left running unnecessarily;	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	• Ensure that plant will be well maintained, with routine servicing of plant and vehicles to be completed in accordance with the manufacturer's recommendations and records maintained for the work undertaken; • Avoid the use of diesel or petrol powered generators and using mains electricity or battery powered equipment; • Maximise energy efficiency (this may include maximising vehicle utilisation by ensuring full loading and efficient routing); • Drivers of vehicles, while on the public highway, will be required to switch off their vehicle's engines when stationary to prevent exhaust emissions; and • Develop a Site Waste Management Plan, to identify materials that can be reused and recycled.	
Cultural Heritage	Archaeological mitigation will include: • The provision of a Written Scheme of Investigation to be produced, and approved by the County Archaeologist; • Completion of Geophysical and other surveys in those areas not covered to date; • Targeted trial trenching in areas of archaeological significance already identified and those identified during subsequent investigations; and • Production and execution of a programme of archaeological mitigation. This is likely to involve excavation of archaeological	Prior to construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	remains in advance of, and during the construction of the new road. Archaeological remains to be lost should be preserved by record, in accordance with professional standards and guidance.	
	Historic Building and Landscape mitigation will include: • The examination and recording of the unlisted historic farm buildings and WWII buildings within Rackheath Park. All historic fabric recovered from the site for re-use; and • Those mitigation measures referred to in the Landscape section, to minimise visual intrusion.	Prior to construction.
	Archaeological mitigation will include: • Provision of a Written Scheme of Investigation to be produced, and approved by the County Archaeologist; • Completion of Geophysical surveys in those areas not covered to date; • Targeted trial trenching in areas of archaeological significance already identified and those identified during subsequent investigations; and • Production and execution of a programme of archaeological mitigation. This is likely to involve excavation of archaeological remains in advance of, and during the construction of the new road. Archaeological remains to be lost should be preserved by record, in accordance with professional standards and guidance.	Prior to construction.
	Historic Building and Landscape mitigation will include:	Prior to and during

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	• The examination and recording of the unlisted historic farm buildings and WWII buildings within Rackheath Park. All historic fabric recovered from the site for re-use; and • Those mitigation measures referred to in the Landscape section, to minimise visual intrusion.	construction.
Landscape	Effective site management will ensure that waste materials and debris are controlled to avoid items from blowing off site. Careful planning and management of the construction process will minimise the loss of existing trees and shrubs.	Throughout Construction
	Temporary earth bunds or screening will be required to minimise the impacts of night time working and lighting at those locations where this is likely to take place. These include the Cromer Road and the Rackheath Rail bridges. The measures will be required to reduce impacts on sensitive receptors in the vicinity.	Throughout Construction
Nature Conservation	Measures would centre on good construction practice to ensure that disturbance in all its forms were minimised: • Effective, well thought-out measures to eliminate potential pollution events would be installed. Refuelling of vehicles and plant would be allowed only in specific areas away from sensitive locations, over bunded trays. Fuel would be stored in double-bunded bowsers and tanks. Spill kits would be readily available at these locations; • Measures to prevent silt run-off from site operations (such as construction of temporary settlement lagoons) should be constructed	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	as early as possible in the works programme; • Dust suppression measures would be put in place, and drainage would be carefully addressed to eliminate the potential for pollution of the rivers, other watercourses and groundwater; • Timing of works would be carefully considered, so that disturbance at sensitive times would be avoided as far as possible; • Lighting would be directional, with hoods wherever possible, to reduce light spill; • Containers of open liquid would be sealed when not in use, to ensure that birds and other species were not subject to the risk of drowning; • Any pest control measures will be carried out whilst ensuring that no risk of accidental poisoning to barn owls (that might predate on poisoned mice, rats etc.) would occur; and • Chemicals and other potentially harmful products would be carefully stored such that no harm could be caused.	
	Habitat clearance will take place over winter, outside of the bird nesting season, to ensure that no breeding birds are affected.	Winter 2015/16.
	The temporary loss of habitats, where site compounds, materials storage, batching plants, topsoil storage etc. are required, has been minimised by careful design. Wherever possible they would be positioned on arable land, avoiding habitat features of value;	Throughout construction.
	All remaining trees, adjacent to the proposed works, would be protected in line with the requirements details in the Tree Protection Plans in the	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	Arboricultural Impact Assessment, itself located in the Chapter 20 of Volume 2 of the Environmental Statement.	
	A temporary combined ditch/bund and lagoon will be installed adjacent to the proposed Scheme at the western end to ensure that no storm water, sediment, contaminants or pollutants are allowed to enter the River Wensum. Sediment will also be prevented from entering The Springs County Wildlife Site and associated watercourses.	To be installed at commencement of, and remain in place throughout, construction.
	The construction of Marriott's Way bridge will be phased to reduce the overall impact on Marriott's Way County Wildlife Site (and the protected species - mostly bats - that use it). The bridge deck and the approach ramps will be constructed during two separate winter seasons, in order that the length of habitat to be removed at any one time is minimised.	Winter 2015/16 and winter 2016/17.
	Fakenham Road Roadside Nature Reserve would be subject to a seed harvesting process at the appropriate time of year, so that seeds of the valuable species here could be stored during construction. The topsoil of the verge would then be carefully stripped and carefully stored away from other areas of topsoil. These would be used to recreate the habitat towards the end of the construction period.	Seed harvesting to take place late summer 2015. Topsoil removed and reinstated as per construction programme. Seeds planted once soil reinstated.
	All mitigation accounting for the presence of bats will be in accordance with the bat EPS Licence documents. All work should take place under the supervision of the named ecologist in the licence documents.	Throughout construction.
	The bat gantries will be installed early in the construction phase, ideally over	Winter 2015/16

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	the first winter period, in order that bats can use them throughout the remainder of the construction period, thereby reducing the impact of severance and fragmentation, and allowing habituation to begin as early as possible.	
	The buildings containing known bat roosts will be demolished to the methodology included in the bat EPS licence documents; this is likely to include demolishing by hand in some locations, after a detailed inspection by, and under the direct supervision of, the named ecologist in the EPS Licence documents a suitably qualified ecologist.	Gazebo Farm Nov 2015/Feb 2016. Hall Farm Mar/Apr 2016.
	Demolition of other buildings around Hall and Gazebo Farms will be carried out after a detailed inspection by, and under the direct supervision of, the named ecologist in the EPS Licence documents a suitably qualified ecologist.	Nov 2015/Feb 2016.
	During the Construction phase, the bat mitigation guidelines set out in DMRB Volume 10, Section 1, Part 8 (HA 80/99 Nature Conservation Advice in Relation to Bats) would be strictly adhered to. Any lighting along the route and within site compounds would be bat friendly. The lighting would, wherever possible, be low level and directional, oriented away from areas used by bats. This is especially important near roost areas or important flight routes. The use of hoods or cowls would further minimise light spill. These issues are addressed in the CEMP.	Throughout construction.
	Badger fencing would be installed early in the construction phase, to reduce the likelihood of badgers straying onto the construction site.	Winter 2015/16.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	Open trenches would be covered at the end of each working day, or include a means of escape for any animal falling in (this would be a ramp at 45 degrees every 20m along the trench and can be either dug into the edge or a plank to act as a ramp).	Throughout construction.
	Any temporarily exposed open pipe system would be capped in such a way as to prevent badgers gaining access.	Throughout construction.
	All mitigation accounting for the presence of great crested newts will be in accordance with the GCN EPS Licence documents. All work should take place under the supervision of the named ecologist in the licence documents.	Throughout construction.
	Temporary fencing will be installed to the edges of the site extents close to each of the three meta-populations. It will be installed at the very earliest suitable stage during construction, at the following locations: • Dog Lane, Horsford; • Quaker Lane, Spixworth; and • Newman's Road, Rackheath. Fencing will also be installed across the construction zone to create closed blocks of habitat to aid the trapping and relocation process, at Newman's Road, Rackheath. The edge fencing at all locations will remain in place for the duration of the construction period, although those lengths across the construction area at Newman's Road Rackheath will be removed once trapping and relocation has finished, allowing construction to take place.	Feb 2016
	A period of trapping and relocation will take place, over at least 60 suitable	Apr/Jun 2016

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	days, and any trapped great crested newts (and other species) relocated to the new ponds/habitat. This process, once complete, will ensure that the construction area is free from newts etc. so the removal of habitat and the existing breeding pond can take place.	
	The known barn owl nesting site that is to be directly affected by the proposed Scheme would need to be removed, by a suitably experienced, licensed ecologist, at a time outside of the nesting season.	Winter 2015/16.
	Where barn owl nesting, roosting and rest sites occur within 150m of construction activities appropriate screening with fine mesh will be installed under the supervision of a suitably qualified ecologist, to the edge of the proposed Scheme.	Throughout construction.
	If there is any indication that barn owls are nesting within 150m of construction activities at any time, work would stop within 150m of the site until the matter can be fully investigated and appropriate mitigation measures implemented. This should take place outside the nesting season.	Throughout construction.
	Where reptiles have been recorded, phased vegetation removal, whereby vegetation is first strimmed to a height of 150mm, and then on subsequent days strimmed to ground level, will be employed.	Winter 2015/16.
Geology and Soils	To minimise impacts on soil structure and quality, the topsoil will be sequentially stripped from the working areas. Topsoil and subsoil will be stockpiled separately so that they can be replaced in the same sequential layers, in-keeping with the existing soil profile. Soil stockpiles will be clearly defined. Tracked equipment will be used where possible, and traffic will be	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	confined to designated routes to minimise compaction.	
	Soils will be stripped, handled, stored and reinstated using best practice procedures, in accordance with appropriate guidelines, such as DEFRA's 2009 'Code of Practice for the Sustainable Use of Soils on Construction Sites'. Best practice procedures include topsoil and subsoil stripping, stockpiling and placing.	Throughout construction.
	Hazardous substances, including contaminated land, fuels, chemicals, waste and construction material, will be stored, handled, transported and disposed of in accordance with relevant legislation and best practice guidance for mitigation of spillages and leaks. Measures to be applied include the appropriate use of storage containers, labelling of containers, the secure storage of containers and regular checks for leaks.	Throughout construction.
	The stockpiling of contaminated land will be avoided as far as possible. Where stockpiling is necessary, the contaminated material will be segregated and stockpiled on appropriately contained hardstanding and covered to prevent spreading.	Throughout construction.
	Procedures will be put in place should contaminated land be encountered including contact details of the relevant consultees and regulators. Should any unexpected contamination be encountered during the construction works, all works will cease whilst an assessment of the level and extent of contamination is undertaken. In all cases where contamination is identified, risk assessment will be undertaken to determine if remediation is required. Any clean-up will be conducted as part of the construction works.	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	Emergency procedures will be in place to respond to potential accidental spillages and leaks. Particular consideration will be given to works around and displacement of the buried utilities.	Throughout construction.
	Construction workers will be provided with appropriate personal protective equipment and direct contact with soil will be limited.	Throughout construction.
	Dust will be suppressed using best practice methods to prevent spread of potentially contaminated windblown material. Dust suppression measures will include wheel washing for vehicles leaving the site and re-vegetation of earthworks and exposed areas.	Throughout construction.
	A Site Waste Management Plan (SWMP) has been developed for this Scheme and will be incorporated within the CEMP. This document outlines the procedures for storage and disposal of waste, including hazardous and potentially contaminated wastes, to ensure appropriate disposal and minimal associated environmental impacts.	Throughout construction.
	Where piling or penetrative ground improvement is required through contaminated ground, especially in the vicinity of source protection zones, works will be carried out in accordance with the EA “Piling into contaminated sites” guidance and “Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention” and a Foundation Works Risk Assessment will be undertaken.	Throughout construction.
Materials	The project design aims to reduce the waste produced by maximising the use of materials available within the Schemes footprint, such as a cut and fill policy for soil, sands and gravels.	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	A preliminary draft Site Waste Management Plan (SWMP) has been prepared. The SWMP aims to ensure that the waste produced in the construction phase, and other phases of the project is dealt with in accordance with the Duty of Care Provisions under the EPA and the duty of care provisions, the Waste Strategy (2007) and principles outlined within the Waste Hierarchy.	Throughout construction.
Noise and Vibration	Limits for normal working hours and levels of noise at properties near to the proposed Scheme will be agreed in advance with the Local Authority and incorporated into the contract specification for the Scheme.	Throughout construction.
	The contract will also include a clause requiring that the best practicable means for noise control (BPM) be applied at all times. These would include the selection of the most appropriate method and plant for the job, adequate maintenance of plant, optimum siting of stationary plant, local screening and the education of the workforce. Restrictions may also be placed on the off-site haul routes and early/late delivery times. Potentially affected residents would be kept informed in advance of the works and a telephone complaint hotline be provided.	Throughout construction.
	The effects of potential noise and vibration impacts on affected communities can also be mitigated by effective communication between the Promoter, contractors and the public. The Construction Methodology describes specific measures for the management of community relations that contractors must apply including the establishing of local liaison groups, information and complaints hotline, information centre and website, weekly newsletter.	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	Specific provisions for the notification of affected residents ahead of noisy works and the arrangements for the investigation and remediation of noise issues that may arise during construction are also required.	
	Where potentially significant construction noise and vibration effects have been predicted, the Contractor will be required to minimise the impacts to levels lower than those classed as significant impacts. Amongst others, this may include the erection of temporary noise barriers around working areas or alternative methods of working. The Contractor will additionally be required to seek prior consent under Section 61 of the Control of Pollution Act 1974 for its works in advance of commencing works, which will require 'best practicable means' to be adopted at all times.	Throughout construction.
	Temporary noise barriers or earth bunds will be required to control night time noise impact in the vicinity of the proposed Cromer Road and the Rackheath Rail bridges and the main compound (between chainage 7250 and 7750). The details of these measures will be agreed with the Local Authority as part of the Section 61 consent process for these sites. The measures will be required to reduce impacts on sensitive receptors in the vicinity.	Throughout construction as appropriate.
Effects on all Travellers	During construction, all diversion routes for Public Rights of Way (PRoW) and road closures will be sign posted clearly, with the intention of minimising construction delays and driver frustration. The majority of the route will be built offline with no interference to existing roads, reducing the disruption and consequent driver stress caused during construction. In addition, the	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	construction programme will be developed to ensure that disruption to motorised and non-motorised users is minimised wherever possible.	
	The following route-specific measures will also take place: • Breck Farm Way will remain open until the new Marriott's Way structure is completed. • A new roundabout is created where the NDR crosses Reepham Road. This will be constructed in phases using traffic signals to control the traffic. • A new roundabout is created where the NDR crosses Drayton Lane. This will be constructed in phases using traffic signals to control the traffic. • The construction of the new roundabout on Holt Road will be constructed in phases using traffic signals. This will be constructed before the permanent diversion of Drayton Lane is undertaken. • A new roundabout is created where the NDR crosses Reepham Road. This will be constructed in phases using traffic signals to control the traffic. • A new roundabout is created where the NDR crosses Drayton Lane. This will be constructed in phases using traffic signals to control the traffic. • A new interchange is created where the NDR crosses Cromer Road. This will be constructed in multiple phases using traffic signals to control the traffic. As part of these works Holt Road, Hall Lane (Holly	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	Lane) and New Home Lane will all be stopped up at the interchange. No closure will be applied for on this important county road. • The emergency access to the airport from Old Norwich Road will be closed. Alternative emergency access through the site compound will be discussed with the Airport Authority. • A new roundabout is created where the NDR crosses North Walsham Road. This will be constructed in phases using traffic signals to control the traffic. • The construction of the tie-ins at Buxton Road will be undertaken in phases using traffic signals to control the traffic. • A new roundabout is created where the NDR crosses North Walsham Road. This will be constructed in phases using traffic signals to control the traffic. • A new roundabout is created where the NDR crosses Wroxham Road. This will be constructed in phases using traffic signals to control the traffic. • A new roundabout is created where the NDR crosses Salhouse Road. This will be constructed in phases using traffic signals to control the traffic in order to construct the tie-ins. • At Newman Road access to the park will be maintained at all times necessitating the use of traffic signals to construct the tie-ins. • Plumstead Road will only be closed off peak to facilitate the delivery and placing of the bridge beams. At other times traffic will be	

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	controlled with signals to allow the abutments to be constructed.	
Community and Private Assets	To mitigate for potential adverse impacts on agricultural practices and businesses, access to agricultural land will be maintained wherever possible, or new accesses provided.	Throughout construction.
	Water pipes used for irrigation purposes will be maintained wherever possible during the construction and operational phases of the scheme according to land users' wishes.	Throughout construction.
	Impacts on local communities would be mitigated for with the following general measures: • Communication and public liaison, including with Broadland District Council, Natural England, Environment Agency, English Heritage, landowners and their agents, the general public; • Air quality: including management and minimisation of the effects of dust during the process; • Noise control and monitoring: including use of 'best practicable means' for noise control and appropriate construction noise management in accordance with the Code of Practice BS 5228 • Lighting: In order to prevent excessive disruption, measures will be taken including: using downward directed lighting; avoiding excessive additional lighting; and directing lighting to where it is needed to avoid light spillage. • Traffic disruption: construction movements and deliveries are subject to controls regarding routing, time of day, and point of access.	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	• Other aspects of construction: Including: construction compound layout and reinstatement; ecological management; pollution control; air quality management plan; and construction waste management.	
	An alternative assess will be provided for the Mid Norfolk Shooting School to address the issue of severance during construction.	Throughout construction.
Road Drainage and the Water Environment	The following mitigation measures will be in place during construction to reduce or eliminate potential adverse impacts on the water environment during construction: • Works will be undertaken in accordance with any conditions imposed in consents for temporary discharges and abstractions (e.g. dewatering excavations) obtained from the Environment Agency; • Measures to control discharge of surface water run-off from construction compounds will be implemented; • All fuel and oils will be stored in accordance with the Control of Pollution (Oil Storage) Regulations 2001. Storage areas will be located away from surface water drainage, and will be within bunds with sealed bases. Refuelling would always be undertaken remote from drainage and surface water features and using automatic shut-off fuel delivery systems. Similar measures will be implemented for the storage of chemicals; • Pumps, generators and other small items of plant will be provided with drip trays to collect any oil/fuel spills; • Where wheel washes are installed adjacent to site	Throughout construction.

Environmental Discipline	Construction Phase Mitigation Measures	Indicative Timing
	accesses/egresses, these will be self-contained, will recycle wash water where possible and will not discharge directly to the environment; • Where practicable, topsoil (with vegetation) will be replaced on earthworks areas to limit scouring and the generation of silt-laden runoff; • Drainage from existing roads will not be impeded during construction of road crossings; • Emergency response procedures will be developed and implemented to cover any incidents that might lead to release of pollutants to the aquatic environment (including spillages to ground).	
	A temporary ditch/bund and associated lagoon will be installed at the western end of the proposed Scheme, to ensure that no overland flow, and associated sediment, contaminants or pollutants enter the River Wensum.	To be installed in advance of, and remain in place throughout, construction.

A.10 Environmental Monitoring Requirements

Environmental Inspections and Audit

A schedule of regular audits shall be undertaken by each of the contractor's CEC. These audits should consist of formal inspections and predetermined reporting procedures to provide a record of site conditions and activities and a mechanism by which the effectiveness of the contractor's environmental management plan can be established.

The inspection checklists and reports shall be kept at each site office and shall be updated and used to identify where improvements are required in the day to day operation of the site.

Daily Inspections

THE CEC shall carry out daily inspections of the work site to check compliance with the contractor's environmental management plan. The checklist for daily observations is included in Annexe E.

Weekly Audits

The CEC shall carry out weekly audits of the procedures in the contractor's environmental management plan. Note that more frequent monitoring may be required by individual method statements/ records of observations.

Reporting

Amendments to the CEMP

Minor amendments to this CEMP shall be made to a Controlled Copy held on site by the Environment Manager by hand in red ink and dated. Details of minor amendments shall be summarised in weekly audit reports to the Project Manager. The CEMP will be updated and re-issued to the NCC Project Manager at least every three months.

Each contractor shall establish a procedure to update and control copies of their contractor's environmental management plan.

Weekly Environmental Report

The CEC shall prepare a weekly environmental report summarising the findings of the weekly audits, other regular monitoring and inspections, and detailing the actions taken to rectify any breaches of the contractor's environmental management plan and action taken in response to incidents or complaints. The report shall be submitted by the CEC to the NCC Environment Supervisor.

Complaints Procedure

Complaints received from third parties shall be recorded by the CEC. The overall complaints procedures for the NCC shall apply to all environmental related complaints.

Incident reporting

The CEC shall submit a report to the NCC Project Manager within 24 hours of any serious environmental incident such as a breach of, or serious risk of breach of, lease, licenses, consents, agreements, regulations, bylaws or DCO conditions. At

the same time, the relevant department at Broadland District Council, Norwich City Council or statutory authority shall also be informed.

A.11 Procedures for Monitoring and Reviewing the CEMP

Monitoring is required to establish the Scheme's performance against the requirements, objectives and targets set out in this CEMP and each contractor's environmental management plan as well as the policies of NCC. Reporting on the outcomes of monitoring provides a record of compliance and facilitates the communication of findings to relevant stakeholders.

Monitoring Requirements

Monitoring of this CEMP is essential to ensure that the contractors audit and evaluate how successful the implementation of mitigation measures has been in managing environment impacts. The aims of monitoring are as follows:

- This CEMP will form the key mechanism for ensuring compliance with the Planning Conditions and other consenting requirements. Systematic monitoring and recording of how and when CEMP actions have been implemented will provide an essential internal check for compliance with regulatory requirements;
- Auditing compliance with the CEMP is an important mechanism to ensure contractual obligations are met by the various contractors. It will also ensure the delivery of NCC's environmental policies; and
- Monitoring may form part of post-project appraisal processes to consider the effectiveness of the CEMP and its implementation to improve processes in future.

  Each Contractor shall prepare an appropriate monitoring schedule to be included in their contractor's environmental management plan. The monitoring schedule shall include the monitoring requirements set out in A10 of this CEMP.

Non-Compliance

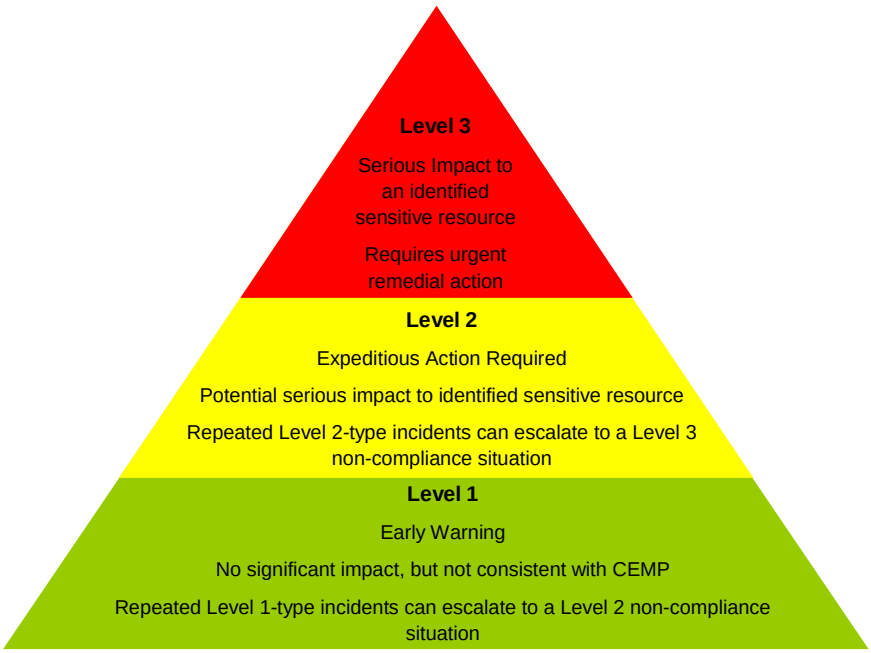
If mitigation requirements set out in the Environment Statement or this CEMP are not fulfilled and appropriate action is not taken, a non-conformance should

be raised by the Environment Manager. Examples of circumstances where this may arise include:

- Receipt of a complaint regarding pollution or other environmental impacts caused by project activities;
- Departure from approved or agreed environmental procedures; and/or
- Non-conformance with the CEMP identified as a consequence of any self-assessment, formal audit, or any other environmental survey or inspection.

The Contactors shall adopt a system for classifying CEMP non-compliance situations based on the framework shown in Figure 3.1:

Figure 3.1: System for classifying CEMP non-compliance



Audit and review of the effectiveness of this CEMP procedures and their implementation, should lead to continual improvement and effective implementation of environmental mitigation actions. The requirements for monitoring, reporting and review are set out in the sections below.

This non-compliance system will provide for early identification of non-compliance situations and allow for appropriate action to be taken.

All non-conformances will be reviewed by the Environment Manager and the CEC and shall be included as an item in all regular meeting agendas. Corrective action reports shall be issued to contractors by NCC. The contractor should immediately initiate corrective actions and, once completed, provide details of the actions undertaken on the non-conformance/corrective action report and return it signed to the Environment Manager within an agreed timeframe. If the non-conformance is considered to breach legislative requirements, the breach should be reported to the appropriate public authority.

CEMP Review

The Environmental Manager shall review the CEMP every six months and shall include a review of the following:

- Results of the internal monitoring/ environmental audits;
- Non-conformance audits;
- Achievements of environmental objectives and targets;
- Records of complaints and concerns of relevant external agencies and parties; and
- Means for improving performance

The conclusions and recommendations from the management review will be communicated to the Environment Manager and shall identify areas that require corrective action and improvements to the CEMP. Any changes/revisions to the CEMP that impact on contractors shall be communicated immediately to the Site Manager and CEC. The CEC shall make amendments to their contractors environmental management plan as appropriate.

A.12 Environmental Emergency Procedure

An environmental incident is any undesired, unplanned, abnormal and sudden event which in addition to disruption of work, causes damage to the environment, property, plant or equipment, or loss of productivity (e.g. unplanned shutdown), without involving persons in terms of injury, ill health or death.

Incident response plans shall be developed for all phases of the Scheme. The following response plans shall be developed by NCC at an early stage:

- Project wide Emergency Response Plans; and
- Detailed work/site specific Incident Response Plans to be developed by the relevant contractors.

The main purpose of the Incident Response Plans is to establish and prescribe procedures to respond to environmental incidents and emergencies during the various construction phases of the Scheme. The incident response plans should include, but are not limited to:

- List of key external and internal contacts: the contractor shall provide clear contact details for their work sites. The contractor should develop a list of contact information for all internal and external resources and personnel. The list should include the name, description, location, and contact details (telephone, email) for each of the resources/personnel, and be maintained bi-monthly;
- Reporting procedures: The contractor should develop appropriate reporting procedures (Section 3.20) and documentation within the frameworks of their respective contractor's CEMP;
- Site plan including drainage and location of storage/refuelling areas;
- List of stored materials;
- Details of local environmental sensitivities;
- Location of spill equipment; and
- Procedures for spill containment and remediation.

External Authorities

The contractor will regularly engage with the community regarding proposed activities along the route of the Scheme.

The developer will liaise regularly with the following regarding aspects covered by the construction.

- Broadland District Council
- The Environment Agency
- Natural England
- Anglian Water
- Norwich International Airport
- Network Rail
- Emergency Services
- National Grid
- British Telecom

This list is not exhaustive and will be updated prior to and during construction.

A.13 References

AT Coombes Associates (2010) NDR Project, Arboricultural Implications Assessment,

British Standards Institution BS 5228 Noise and Vibration Control on Construction and Open Sites. 1997.

British Standards Institution BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise. 2009.

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Department for Environment Food and Rural Affairs (March 1997). The United Kingdom National Air Quality Strategy, Cm 3587, Department for Environment Food and Rural Affairs.

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Mott MacDonald, NDR Project, Environmental Statement Volume 2, Document Reference 6.2, dated January 2014

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Mott MacDonald (XXXX) NDR Project, Site Waste Management Plan. Report Ref 326244/EVT/EES/PR/4, dated Nov 2013.

Office of the Deputy Prime Minister (2004). Planning Policy Statement 23: Planning and Pollution Control.

Planning Policy Guidance PPG24: Planning and Noise. Department of the Environment, Transport and the Regions. 1994.

B. Appendix A. Site Waste Management Plan

Northern Distributor Road

Outline Site Waste Management Plan

November 2013

Norfolk County Council

Mott MacDonald

Northern Distributor Road

Outline Site Waste Management Plan

November 2013

Norfolk County Council

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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description	Standard
0	30/09/2013	N. Agbasiere	A. Manns	D. Dray	Outline	

Contents

Figures

No table of figures entries found.

1 Administration and planning

1.1 Introduction

This Site Waste Management Plan (SWMP) has been developed for the NDR Development in accordance with the Site Waste Management Plans (SWMP) Regulations 2008 and the "Non-statutory guidance for site waste management plans", April 2008, DEFRA, to ensure that all construction waste is managed, stored and disposed of in an appropriate manner by appropriate contractors in accordance with all relevant legislation. The SWMP has been produced using the information currently available at the time of issue.

This document is a live document and requires updating regularly as the project progresses.

The project scope is subject to change and the SWMP will be updated to reflect any changes as necessary.

The purpose of this SWMP is to enable the issue of waste production to be dealt with in a structured and auditable manner from the commencement of the project through to construction and post construction.

Waste minimisation should be emphasised from the outset, during all design phases, commencing at outline design, through to construction. This is to ensure that the waste produced during the construction phase is dealt with in accordance with the relevant Duty of Care legislation and principles outlined within the Waste Hierarchy (reduction, reuse, recovery and recycling).

Best practice suggests that the SWMP approach should be applied from the very early design stages through the concept of Designing out Waste and carried forward and revised throughout the project delivery process. This ensures cost savings are maximised by considering waste minimisation initiatives and identifying opportunities to reduce, reuse or recycle waste materials in the scheme and improve resource efficiency during the design stage on into construction.

There are a number of works associated with the construction Northern Distributor Road (NDR) that are a direct consequence of the project. These encompass works to the existing roads, footpaths, cycleways, bridleways and private access tracks that are crossed by the NDR, including alterations to these as well as the provision of new facilities to link with the existing access network. The NDR will also necessitate the diversion of a number of existing private access tracks, in addition to the provision of new tracks in some locations along its route. These 'associated works' are described within this report.

The NDR will require modifications to some local utilities and services where these cross the footprint of the development. Discussions are underway with the relevant service/utility providers in accordance with the New Roads and Streetworks Act 1991 (NRSWA). The final design of these diversion works has yet to be finalised and agreement also needs to be reached with each provider as to who will be responsible for carrying out the works. This report therefore describes typical construction methods for the utility works and these have been assessed in the Environmental Statement (ES) supporting the planning application.

1.2 Site location

The Scheme (the Norwich Northern Distributor Road, known as the NDR) is a dual carriageway all-purpose strategic distributor road, which would link the A1067 Fakenham Road, near Attlebridge to the A47 Trunk Road (T) at Postwick. This will be over a length of approximately 20.4km. See General Arrangement Plans included in Chapter 2 of The Scheme Description, which also provides a full description of the NDR.

The NDR consists of a dual two-lane carriageway with intermediate junctions connecting it to existing radial roads, running east to west across principally open agricultural land to the north of Norwich, from the Broadland Gate roundabout at Postwick , where it connects with the A47, to the A1067 Fakenham Road..

The alignment includes 8 at-grade roundabout junctions, 2 grade-separated junctions and 7 bridge crossings.

1.3 Surrounding area

The geology along the NDR proposed route has been determined through a comprehensive site investigation which was undertaken by May Gurney between August 2006 and June 2008. The works comprise an analysis of the information identified through borehole and machine excavated trial pits. Soils samples were collected and tested for contamination.

Across the NDR route, the ground stratigraphy consists of alluvium, brickearth, glacial sands/gravel, crag and upper chalk. The main composition of the brickearth is fine grained sand, with subordinate gravel, with a sandy clay or till at the bottom.

The current use of land along the proposed NDR route is predominantly agricultural. A Phase 1 investigation on A47 Longwater Junction, New Costessey was completed by Mott MacDonald in June 2008 which showed that there are no apparent historical sources of contamination within the site boundary. However, contamination has been associated with the movement of vehicles along the A47. Contaminants present on-site include oils, hydrocarbons and heavy metals from fuel spillages. These may have run-off during wet periods and also may have been dispersed through the highway drainage system.

Potentially contaminated land along the route includes a former airline crash, of which the extent and nature of contamination is unknown. Norwich airport is designated as a potentially polluted area and the route crosses the disused runways and passes around the northern boundaries of the airport. There is an active and an inactive railway, which will be crossed by the route. These are both potentially contaminated. An inactive waste site, which received up to 75,000 tonnes per annum of inert waste between 1980-1985, is adjacent to the route and hence is a potential source of contamination.

1.4 Development description

The Scheme (the Norwich Northern Distributor Road, known as the NDR) is a dual carriageway all-purpose strategic distributor road, to be classified as the A1270 Principal Road, which would link the A1067 Fakenham Road, near Attlebridge to the A47 Trunk Road (T) at Postwick,. This will be over a length of approximately 20.4km. Refer to the General Arrangement Plans in document number 2.6.

General Description: Scheme Route (This may be subject to minor revisions)

From west to east, the NDR is proposes to start at a new at-grade roundabout junction on the A1067 Fakenham Road, located to the west of Taverham. It would then continue eastwards as a dual carriageway to its new at-grade roundabout junction with the C262 Fir Covert Road. From this roundabout, the NDR would then cross the Marriott's Way (a permissive path providing a pedestrian, cycling and horse riding facility along the route of a disused railway) which will be taken across the NDR via a new bridge), to a new at-grade roundabout junction with the C261 Reepham Road. The NDR would then continue south-eastwards, crossing Bell Farm Track/Horsford Restricted Byway No. 5 (which will be taken up over the NDR via a new Restricted Byway and private access accommodation bridge) before connecting with a new at-grade roundabout junction, just west of the existing C282 Drayton Lane, and which new roundabout will have two new link road connections, one with the C261 Reepham Road and one with the B1149 Holt Road, to replace the existing Drayton Lane.

From here, the NDR would then continue south-eastwards to a new grade-separated junction (provision of a bridge over the NDR with slip roads to/from the NDR) with the A140 Cromer Road, located close to and just northwest of Norwich International Airport. The provision of this grade-separated junction will require the stopping up of lengths of the B1149 Holt Road and Holly Lane (U57142), as well as a length of the A140 Cromer Road, which will be replaced by a new highway west of its existing position, which will betaken over the NDR and provide the connection for its four connecting slip roads. East of the A140, the NDR would continue as a dual carriageway, turning north-eastwards around the northern boundary of the airport to a further new at-grade roundabout junction at the northern tip of the airport. The primary purpose of this roundabout is to allow the NDR to undertake a roughly 90 degree change of direction around the Airport site. From this roundabout, the NDR would continue south-eastwards, skirting the north east boundary of the airport, before turning eastwards and passing under a new highway, which be carried by bridge over the NDR, immediately to the east of the existing C246 Buxton Road, and which would provide the new connection for its realignment sections north and south of the NDR. The route of the dual carriageway NDR would then continue eastwards through the north of Beeston Park. It would then connect with both the B1150 North Walsham Road and the A1151 Wroxham Road via a new at-grade roundabout at each location, before turning south eastwards and entering the north eastern section of Rackheath Park approximately 250 metres from the western end of Sir Edward Stracey Road (U57538). It would then continue south eastwards, passing under a new bridleway and access bridge across the NDR, some 200 metres south west of the junction of Newman Road (U57490) with Long's Crescent (U57852).

The NDR would then connect with the C283 Salhouse Road via a new at-grade roundabout, before rising up on an embankment (maximum height approximately 8.5 metres), to cross both the Norwich to Cromer &

Sheringham rail line and the C874 Plumstead Road on individual bridges in close proximity, prior to a new at-grade roundabout on the NDR, which would connect it via a new link road to a further small at-grade roundabout on the C874 Plumstead Road.

The NDR route would then continue southwards, crossing under the C442 Middle Road (which would be raised to pass over the NDR, on its existing alignment, via a new bridge) before connecting with a new at-grade roundabout known as the Business Park Roundabout.

At this point a single carriageway link is provided westwards to the existing C829/C830 Broadland Way/C831 Peachman Way roundabout and includes an at-grade roundabout on the link road to the proposed Broadland Gate Business Park.

From the Business Park roundabout the NDR proceeds southwards as a dual carriageway to a new Postwick north east at-grade roundabout immediately north of the A47(T) Norwich Southern Bypass. This roundabout has links from a new A47(T) eastbound diverge slip road and a new A47(T) eastbound merge slip road. The NDR continues over the A47(T) as a four lane carriageway, one lane north and three south, on a new bridge and terminates at its southernmost point at a signalised junction, which replaces the existing Park and Ride roundabout with the A1042 Yarmouth Road.

This signalised junction provides further links:

- Directly to and from the park and ride site for buses;
- West to the existing Postwick North West roundabout, via the existing Postwick bridge over the A47(T);
- East to the proposed park and ride site entrance at the proposed Oak's Lane roundabout and further east to the Brundall Low Road junction with the A1042 Yarmouth Road to Postwick village; and
- West to the A47(T) via an existing westbound merge slip road.

The works at Postwick Junction, will include modifications to the existing Postwick north west roundabout (as a result of closing the existing eastbound diverge slip road) and to the existing A1042 Yarmouth Road overbridge of the A47(T), to provide revised traffic lanes and the provision of a shared use cycle/footway.

The route of the NDR that has been described above is, for the majority of its length, within Broadland District. It does, however, for a short stretch close to Norwich International Airport, fall within the administrative area of Norwich City Council. A very small part of the works at Postwick falls within the administrative area of The Broads Authority. The new road from west to east runs through the following parishes:

Attlebridge;

- Taverham;
- Drayton;
- Horsford;

- Horsham St. Faith and Newton St.Faith;
- Spixworth;
- Beeston St. Andrew;
- Sprowston;
- Rackheath;
- Great and Little Plumstead; and
- Postwick with Witton.
- Overview of scheme features

As described above, the scheme consists of a number of different features which are detailed further below. The location of the proposed Scheme features is measured by reference to the “chainage”, which is the distance from the start of the scheme, at its junction with the A1067 Fakenham Road, in metres.

There will be ten new highway structures, which consist of six overbridges and four underbridges carrying the following existing routes, or new routes as necessary, either under or over the NDR.

Overbridges:

Overbridge	Chainage
Marriott's Way – permissive path providing a pedestrian, cycling and horse riding facility along the route of disused railway	2390
Bell Farm Track – Horsford Restricted Byway No. 5 and private means of access	3980
New A140 Cromer Road	6800
New road - C246 Buxton Road replacement	10940
Private means of access and new bridleway leading from Newman Road (U57490)	15500
C442 Middle Road	18060

Underbridges:

Underbridge	Chainage
Norwich to Cromer & Sheringham railway line	16920
C874 Plumstead Road	17010
New flood culvert/bat underpass which will be located to the west of Rackheath	14810
A47 Trunk Road at Postwick	20220

Grade separated junctions:

Junction	Chainage

A140 Cromer Road (to include eastbound and westbound merge and diverge slip roads)	6800
A47 Trunk Road at Postwick (to include new roundabout east of the existing roundabout with provision of new eastbound diverge and eastbound merge slip roads to/from the A47(T))	19450 - 20400

At-grade roundabout junctions:

Junction	Chainage
A1067 Fakenham Road	510
C262 Fir Covert Road	1750
C261 Reepham Road	2910
New Highway links just west of C282 Drayton Lane	5330
B1150 North Walsham Road	12100
A1151 Wroxham Road	14240
C283 Salhouse Road	16100
C874 Plumstead Road (South)	17300

On-line access roundabouts:

Access roundabouts	Chainage
Northernmost point of Norwich Airport to include a new highway access to the Petans offshore training facilities and secure access to Norwich International Airport	9120
At the proposed Broadland Gate Business Park location to link theNDR to the proposed Broadland Gate Link Road	19450 – 20400

Off-line roundabouts

Off-line roundabouts	Chainage
C282 Drayton Lane/B1149 Holt Road junction	Off-line
C874 Plumstead Road (North)	Off-line
Proposed site of the Broadland Gate Business Park, off the Broadland Gate Link Road	Off-line

Major/minor priority junction:

Junction	Chainage
C282 Drayton Lane/C621 Reepham Road	Off-line

Bat gantries:

Bat gantry	Chainage
Along the line of Attlebridge Restricted Byway No.3	760
Along the line of track to Glebe Farm	5780
Approximately 150 metres south west of Quaker Farm	10020
Approximately 150 metres north east of North Park Cottage	12650
Along the line of track approximately 400 metres east of Park Farm	13140

Along the line of track approximately 250 metres north west of Oak's Farm	17730
Parallel with Smee Lane (U59400)	19000

To convey natural runoff under the NDR, a number of culverts will be provided.

Road closures:

Road closures	Chainage
Breck Farm Lane (U57168) to the south of the NDR	2525
Furze Lane (U57168) to the north of the NDR	2525
C282 Drayton Lane – a 892 metres length from its junction with the C261 Reepham Road	5350
B1149 Holt Road to north of the NDR	6600
Holly Lane (U57142) to the South of the NDR	6600
C251 Bullock Hill to the North of the NDR	8900
Road closure	**Chainage**
Quaker Lane (U57188) to the North of the NDR	9820
C251 St Faiths Road to the South of the NDR	9990
C258 Broad Lane at its junction with C874 Plumstead Road/Norwich Road	17010
Low Road (U59392) to the east and west of the NDR	18380
Smee Lane (U59400) to the east and west of the NDR	19000
A length of the existing A47(T) eastbound diverge slip road, from the A47(T) connection point with the new eastbound diverge slip road, eastwards to the existing Postwick North West roundabout	19500

A length of the existing A47(T) eastbound merge slip road, from its junction with Postwick North West roundabout, eastwards to the connection point with the new A47(T) eastbound merge slip road	19500

Public and private Rights of Way to be stopped up/diverted

Tracks and Rights of Way	Chainage
Private: Access Track running north-south between the A1067 Fakenham Road and Attlebridge Restricted Byway No.3 ,to the north aof the NDR)	700
Public: A 386 metre length of Attlebridge Restricted Byway No. 3, north westwards from its junction with the A1067 Fakenham Road (a diverted route from the northern side of the A1067 Fakenham Road Roundabout to be provided)	760
Private: A length of Access Track running along a co-existent route with Attlebridge Restricted Byway No.3, to the north of the NDR	760
Private: Track running from the C261 Reepham Road to Glebe Farm on B1149 Holt Road, to the north and south of the NDR	5150
Public: Horsford Restricted Byway No.7 – a 60 metre length from its junction with the C282 Drayton Lane	5300
Private: Track at the southern termination point of C250 Old Norwich Road, to Norwich International Airport Control Tower and Airport curtilage, to the north of the NDR	7900
Public: Spixworth Bridleway No.1, to the east of the NDR	9800
Public: Horsham St. Faith and the Newton St. Faith Bridleway No.6, to the west of the NDR	8900
Private: Track leading north of Red Hall Farm, Beeston Lane (U57186), to the north and south of the NDR	11730
Private: Track leading north off Beeston Lane (U57186), approximately 400 metres east of Park Farm, to the north and south of the NDR	13150

Private: Track leading south west from the C258 Green Lane West, to the pumping station , to the north and south of the NDR	14800
Private: Track leading from the existing Newman Track west of Gazebo Farm in the northerly direction for approximately 250m.	15200
Private: Track leading from the realigned Newman Track on the east of overbridge leading northwards for approximately 80m.	15500
Private: Track leading southwards from Newman Road (U57490)/Long's Crescent (U57852) junction, over its length to the circulatory track around March Farm, Park Gardens etc.	15500
Private: Track leading fromC258 Green Lane West to Hall Farm, west of the NDR	15800
Public: Great and Little Plumstead Footpath No.5, to the north and south of the NDR	18750
Public: PostwickFootpath No.2 – a 700 metre lenth from its junction with the A1042 Yarmouth Road.	19000

Private Rights of Way Closures:

Tracks and Rights of Way	Chainage
Private: Access Track leading from the C261 Reepham Road, opposite Long Dale (U51249), to Dog Lane (U57176), to the north and south of the NDR	3750

Diversions of Tracks and Rights of Way

Track and Rights of Way diversions	Chainage

Public: Attlebridge Restricted Byway No. 3 (to the North of the NDR) diverted alongside the NDR to join the Fakenham Road roundabout.	750
Public: Drayton Restricted Byway No. 6 diverted north of Reepham Road roundabout to join the roundabout.	3000
Public: Horsford Restricted Byway No. 5 diverted over the new Bell Farm Overbridge.	3950

New links

Approximately 25 kilometres of new links suitable for use by pedestrians, cyclists and equestrians where permitted would be provided alongside, over, and connecting with, in places, the NDR route, together with improved surfacing provided on some existing rights of way.

The new links provided for use by pedestrians, cyclists and equestrians would be provided alongside the NDR route within the landscape strip. These would link to existing facilities and be screened from the NDR carriageway by a combination of low mounds and/or hedge and tree planting.

Where individual or joint access to premises will be severed by the NDR, new accesses will be provided to link these to the NDR or to other existing roads, other than where the premises are already served by another reasonably convenient means of access

Statutory undertakers

Utility works:

Utility company	Number of diversions
EDF	22
Government pipelines	1
National Grid Gas	9
National Grid Gas (High P)	1
Utility company	Number of diversions
British Telecom	16
Anglian Water (potable)	16
Anglian Water (Sewers)	7

Biffa	1
Virgin Media	1

Complementary works

It is proposed to carry out the following off-line complimentary works:

- Relocation of the C258 Green Lane West junction with the A1151 Wroxham Road , by provision of a new highway connection from the C258 Green Lane West to the A1151 Wroxham Road, 75 metres to the south west of its existing junction, together with closure of the existing junction and turning the remaining C258 Green Lane West into a residential cul-de-sac;
- Closure of the C249 Rackheath Lane at its junction with the B1150 North Walsham Road, together with widening of the C249 Crostwick Lane arm of the junction;
- Highway improvements measures on the C874 Plumstead Road through Thorpe End; and
- The provision of a shared use footway/cycleway, within the northern highway verge of the C261 Reepham Road , between its junction with Horsford Restricted Byway No.5 and Long Dale (U51249)

Lighting

The majority of the proposed scheme will not be lit. The exception to this is the Postwick Junction area of the scheme which will provide lighting as follows:

Illumination	Chainage
From the Business Park roundabout westwards to the C829 Broadland Way/C831 Peachman Way roundabout.	19450 - 20400
From the Business Park roundabout southwards to and including the Postwick North East roundabout.	19450 - 20400
South from the Postwick North East roundabout across the new NDR overbridge of the A47(T) to the signalised junction on the A1042 Yarmouth Road.	19450 - 20400
The A1042 Yarmouth Road signalised junction.	19450 - 20400
On the existing A1042 Yarmouth Road bridge over the A47(T).	19450 - 20400

From the existing A1042 Yarmouth Road bridge over the A47(T) to and including Postwick North West roundabout.	19450 - 20400

Proposed Traffic Regulation Orders

In addition to the above scheme features, it is proposed that the following Permanent Traffic Regulation Orders will be brought into effect:

- Clearway for the entire length of the NDR between and including the A1067 Fakenham Road roundabout and A47(T) at Postwick and roads forming the Postwick Hub junction and Broadland Gate link;
- Amendment to speed limits on existing routes where these are bisected on the NDR;
- Extension of the existing 30 mph speed limit on C442 Middle Road westward to a point immediately west of the proposed bridge over the NDR, to include the built-up extents of Toad Lane closest to Middle Road;
- 40mph speed limit to roads forming the Postwick Junction, South of and including the proposed Broadland Gate link.Prohibition of entry on diverge Slip Roads at the A140 Cromer Road junction and Postwick North East Roundabout;
- 30 mph, 40mph and 50mph speed limits on the Drayton Lane Link Road.
- Extension of 30 mph speed limit on the B1149 Holt Road to include the new roundabout.
- Extension of 30 mph speed limit on the C283 Salhouse Road.
- Extension of 40 mph speed limit on the C874 Plumstead Road/Norwich Road.
- 40 mph speed limit on new Plumstead Road Link Road.
- Amendments to existing 7.5T weight restrictions on the U59400 Smee Lane, the U59393 Low Road, the U57188 Quaker Lane and the C251 Saint Faiths Road.
- Prohibition of Motor Vehicles on the C282 Drayton Lane at its junction with the C261 Reepham Road.
- Prohibition of Motor Vehicles on the C249 Rackheath Lane at its junction with the B1150 North Walsham Road.
- Prohibition of Motor Vehicles on the C258 Green Lane West at its junction with the A1151 Wroxham Road.
- Prohibition of Motor Vehicles on the C258 Broad Lane (north-western leg) at its junction with the C874 Norwich Road.
- Prohibition of Motor Vehicles (except for buses) at the western entrance to the Postwick Park and Ride site.

1.4.1 Temporary Works

A site compound will be located on the Airport land north of the NDR, which will have welfare facilities and parking for staff and operatives. A plant storage and maintenance compound will also be provided at this location as well as a recycling yard for storing recycled materials. Two satellite compounds will be constructed to provide office, parking and plant storage facilities to the North West of Drayton Lane and also at Postwick which will be retained for the construction of the NDR. Smaller compounds will also be established at each of the bridge sites to provide welfare facilities, parking and material storage associated with their construction. These will be reinstated after the construction is completed.

1.5 Project information

Client	Norfolk County Council					
Principal Contractor	Birse					
Name of person in charge of project	TBC					
Author of SWMP	Nnenna Agbasiere					
Project title/ reference	Northern Distribution Road (NDR)					
Project location	The 20.4km NDR links the A1067, Fakenham Road at Attlebridge to the A47 at Postwick					
Project cost (estimated)	TBC					
Footprint (ha)	TBC					
Start date	Day	X	Month	X	Year	X
Completion date	Day	X	Month	X	Year	X
Description of project scope	TBC					
Waste Management Champion	TBC					
Person responsible for SWMP	TBC					
Document Controller	TBC					
Version number and date	Version 1 – 14/11/2013					
Location of SWMP	Site office					

1.6 Responsibilities

1.6.1 Client and Principal Contractor

The Client has initiated the production of the SWMP, which has been undertaken by the project designers and consultants. This will assist in steering the direction of the SWMP and influence the waste management options to be adopted by the Principal Contractor.

As this project is at the planning stage, a Principal Contractor has not yet been appointed. Once this has occurred the Principal Contractor should take on the responsibility for adopting the SWMP and updating it as the project progresses.

1.6.2 Construction Manager

The Construction Manager is responsible for instructing workers, overseeing and documenting results of the SWMP and will monitor the effectiveness and accuracy of the documentation during the routine site visits. Copies of the plan will be distributed to the CDM coordinator, Client, Site Manager and each contractor. This will be undertaken every time the plan is updated.

1.6.3 Waste Co-ordinator and Waste Champion

Although the proposed scheme is currently at the planning stage and has not appointed a Principal Contractor, it is important that someone is assigned responsibility for waste issues at an early stage. This could be implemented in the form of a Waste Co-ordinator within the project team, in order to oversee the integration of the SWMP into other aspects of the project and to liaise with the Principal Contractor once appointed, who will then appoint a site Waste Champion.

2 Proposals for minimisation, reuse and recycling waste

2.1 General measures

The SWMP should be used to record any early decisions, design changes, construction methods or material specifications which have helped to minimise waste arisings on site in order that the Principal Contractor knows the measures taken to reach the decisions and how the project is expected to be undertaken.

Waste minimisation is at the top of the waste hierarchy and this should be considered to be a priority throughout the project.

Waste from the project will arise mainly from site clearance, excavation and any unavoidable construction waste. The proposed scheme will require specific construction materials (such as asphalt, concrete, and cabling etc.) to be imported to the site. The Bill of Quantities has been used to identify the potential types and quantities of materials produced from this project.

The person responsible for purchasing shall ensure that materials are ordered so that the timing of the delivery, the quantity delivered and the storage is not conducive to the creation of unnecessary waste.

Waste for recycling, recovery and disposal, where it cannot be reused back in the scheme should be sent to appropriately permitted facilities. A non-exhaustive list can be found in Tables 3.3 and 3.4. However, it is recommended that the sites are contacted prior to construction to ensure they are able to accept the waste types being removed.

A cut and fill balance will be achieved for the earthworks associated with the NDR. Excavated material will be used to form the structural embankments, landscape areas and bunds and granular material will be used to form the sub-base for the main carriageway where it will be stabilised with cement.

The road surfacing will be constructed with bituminous material delivered from Tarmac's coating plant in both Norfolk and Suffolk. The delivery of this material will be made by road vehicles.

Materials storage areas will be identified at the main construction compound adjacent to Norwich Airport and within the planning application site boundary adjacent to the bridge locations. Materials will be transported around the site by road vehicles.

Actions to be taken to facilitate resource efficiency throughout the project, and therefore minimise waste produced, are detailed below:

Demolition materials

Material arising from the demolition of any existing build on site shall be carefully stored in segregated piles for reuse on site, if possible. If any material deemed acceptable from the enabling works is produced e.g. good quality topsoil, this should be stored and re-laid, within the project or if this is not possible should be sent for composting or reuse elsewhere.

Excavated materials

The NDR scheme has been designed with a cut/fill balance such that all excavated materials will be transported to fills, bunds, landscape areas or for use in the manufacture of the sub base materials. Therefore it is anticipated that no excavated material will need to be disposed of offsite. Any contaminated material encountered will be reviewed as to whether it can be incorporated into the scheme.

Excavated soils and clay should be carefully stored in segregated piles on chosen areas along the NDR route for subsequent reuse along the route. The soils and clay will be reused as deposition material for infilling other areas along the route (e.g. junctions, balancing and bunding) or landscaping. In addition the soils and clay will be used to infill the excavated borrow pits that have been highlighted for use during construction. Any surplus soils and clay will be removed from site for direct beneficial use elsewhere (such as land remediation projects) or for recycling or recovery at an appropriately permitted off-site facility. If the material is contaminated then it should be kept separate from the clean material and sent for either recycling or recovery, where appropriate, or disposal at appropriately permitted facilities.

The project will examine the potential re-use and disposal options for excavated material produced as part of the scheme and in particular re-use options for glacial sand and gravel. Where re-use is not possible there will be a requirement to dispose of excavated material, by licensed carriers, to permitted landfill sites and handled in accordance with the Environmental Permitting Regulations 2010 as amended.

Unacceptable material

Other unusable Construction, Demolition and Excavation (C,D&E) waste materials will be collected in receptacles with mixed C&D waste materials, for subsequent separation and disposal at an off-site facility.

Concrete

Concrete will be taken up and should be source segregated, for recycling either as fill/capping on site and/or removed to an off-site facility. All existing concrete will be broken up and stored in the main compound prior to crushing for reuse as sub base on the side roads or roundabouts. Similarly all existing paved areas within the works will be planed out for similar reuse.

Tarmac

Tarmac will be taken up and reused on site for either tarmac hardstanding, capping or for sub base. The provision of storage facilities at the main compound to accept road planings from other highway schemes within the County is being considered.

Metal

Where metal material items e.g. signage, supporting structures or fencing, arise they will, where considered possible, be reclaimed and utilised within the scheme. Any metal that cannot be utilised will be sent off-site for recycling at an appropriate site.

Vegetation

In order for construction to take place, areas of vegetation comprising mainly of grassland, some mature trees and hedges will require clearance. Any vegetation removed will be sent for composting. If landscaping is part of the scheme then any vegetation could be turned into mulch or compost to be reused back in the scheme.

If any material deemed acceptable from the enabling works is produced e.g. good quality topsoil, this should be stored and re-laid within the project, or if this is not possible, should be sent for composting.

Hazardous waste

Hazardous wastes including any contaminated soil materials will be identified, removed and kept separate from other C&D waste materials in order to avoid further contamination and will be disposed of in accordance with the Hazardous Waste (England and Wales) Regulations 2005.

Asbestos based materials and other contaminants are not believed to be present, however, should asbestos be suspected or encountered, it will be managed by an appropriately qualified contractor.

All asbestos will be removed off site in accordance with legislation and disposed of in an appropriately permitted site by a licensed contractor in accordance with all appropriate regulations.

Imported material

Surplus or waste materials arise from either the materials imported to site or those generated on site.

Where possible, consideration will be made for the reuse of material back into the project however the proposed scheme will require specific materials to be imported to the site.

Any waste produced through the importation of materials will be monitored and included in the SWMP under construction works. Where possible, consideration should be given to the use of recycled imported material such as concrete with a high recycled content. However, due to the integrity of the material required for the structure this may not be considered a suitable method.

Waste from imported material is likely to come from the packaging and spillages but these cannot be quantified at this stage..

Packaging

Any packaging waste should be source segregated for recycling or returned to suppliers. If feasible the use of pre-fabricated material should be used and imported to site. In certain circumstances this will reduce the amount of packaging required. Standardisation/use of modular sizes is also recommended in order to reduce off cuts.

New build waste

Final fit out of the infrastructure should be done in conjunction with the client and not to an assumed design specification in order to reduce wastage of materials. New build waste can be defined as:

- Vegetation waste which will be shredded and mulched for reuse in the re-soiling operation;
- Concrete waste, which will be collected for crushing; and
- Timber and steel waste, which will be collected and disposed of offsite for reuse/recycling in the appropriate skips.

2.2 Materials resource efficiency

Waste Minimisation statement	**The purpose of the Site Waste Management Plan is to facilitate the principles of the waste hierarchy and to minimise the production of waste from the outset of the project. Such measures are to be incorporated into the design and implemented in the construction stages of the project. This is in addition to ensuring correct waste disposal procedures in accordance with the Waste Duty of Care provisions. This will be achieved by ensuring that wherever possible existing materials excavated at the Northern distribution Road site are reused. Where waste cannot be re-used or recycled, it shall be disposed of in accordance with the Landfill Directive (1999/31/EC) and Waste Acceptance Criteria procedures.**

Table 2.1 highlights the various objectives for minimising waste during the site works. It demonstrates the components and decisions involved in ensuring a reduction in the amount of waste and surplus materials being produced during any works on site. This has the effect of minimising the amount of material which would traditionally be sent to landfill and to ensure a cradle to cradle approach[1].

1 Products and systems that eliminate the concept of waste.

Table 2.1: General material resource efficiency measures to be considered for the proposed Northern Distributor Road development

Planning waste minimisation during construction	Waste minimisation decisions taken	Resource saving	Responsibility	Start date
Nature of project	See Waste Minimisation Statement	[2]See footnote	Project Manager	
Design	Enabling the purchase of materials in shape/dimension and form that minimises the creation of off-cuts/waste. Consideration should be given to the use of pre-fabricated units where possible. Specifying materials and producing the resulting Bills of Quantities that allow wastage to be minimised. Due to potential contamination, chemical testing would need to be undertaken to determine composition of the material and subsequent opportunities for re-use or remediation.	Minimal waste will be produced.	Project Manager	From the design outset
Construction methods	The works consist of material excavation, laying of foundations and construction of a highway and associated works. Sequencing the works such that re-use of materials can be undertaken. Consider whether previous or subsequent phases produce or require material considered not to be required for that phase that can be reused in later phases.	Minimal waste produced.	Project Manager/ Site Manager	During design and planning stages and implemented during the construction.

2 The above table demonstrates the components and decisions involved in ensuring a reduction in the amount of waste and surplus materials being produced during the works at the Northern Distributor Road site. This has the effect of minimising the amount of material which traditionally would be sent to landfill and to ensure a cradle to cradle approach.

Planning waste minimisation during construction	Waste minimisation decisions taken	Resource saving	Responsibility	Start date
Materials	Consider whether previous or subsequent phases produce or require material considered not to be required for that phase that can be reused in later phases. Ordering of material and equipment should be done in line with the Bill of Quantities. Assess the quantities of materials required on site. Just in time delivery (as needed basis) to prevent over supply Secure storage to minimise the generation of damaged materials/ theft. Keeping deliveries packaged until they are ready to be used. Inspection of deliveries on arrival Increase the use of recycled content; this could include traditional use of recovered material such as crushed concrete demolition waste and by procuring mainstream manufactured products with higher recycled content than their peers. Quick win areas of the project in which to implement this for could be concrete frames, flooring and brick/block work.	Prevents lost time in re-ordering of damaged equipment, reduces need for storage if over ordering takes place. An increase in the demand for such products would reduce the quantity of waste going to landfill. Recycled material use results in a reduction in demand for extraction of virgin materials and subsequently a reduction in the projects carbon and environmental footprint.	Project Manager/ Site Manager	During construction planning and throughout the project construction. During design and throughout the procurement/ construction stages of the project
Other	Decommissioning of any existing structures containing electrical or electronic equipment.	Reduction in waste sent to landfill as in conjunction with the Waste Electric and Electronic Equipment (WEEE) Regulations, possible financial benefits	Project Manager	

The suggested waste minimisation measures outlined above are limited to best practice with regard to material ordering and storage. Further benefits could be made through material reuse, which should be incorporated into the project design. It is anticipated that the contractor(s) (once appointed) will endeavour to reuse or recycle materials on the project where possible.

Table 2.2 shows a summary of proposed and recommended minimisation measures that can be taken to appropriately reuse or recycle waste produced on site during the excavation and construction of the development.

Table 2.2: Summary of proposed and recommended minimisation measures

Summary of proposed and recommended minimisation measures		
Use of prefabricated elements	Recommended	It is recommended that as much of the construction as possible will be carried out off site, with prefabricated Some elements such as kerb stones/access ramps, and drainage pipes can be pre-fabricated offsite to minimise on-site waste arisings and associated vehicle movements. These units will generate less on-site waste through off-cuts and storage damage. Units should be sourced from a supplier that recycles off-cuts and materials at the pre-fabrication site, otherwise, this measure simply shifts the waste problem from one location to another.
Excavation	Proposed	Excavation is likely to be for roads (and the laying of the porous car parking) and foundations. It is anticipated that any waste produced through the construction of the roads and foundations will be cut and fill and be reused elsewhere on site. Surplus excavated materials including soils, gravels and man-made fill can potentially generate the largest quantities of all the waste streams with significant implications on disposal costs if it cannot be reused on site. Where material is required to be excavated; it is proposed that this material, where appropriate, will be stored for re-use as landscaping material or infilling.
Minimisation of vegetation clearance at the design phase	Recommended	Clearance of vegetation has the potential to be insignificant due to the nature of the area. Identify, during the design phase, ways to minimise the loss of vegetation on site. Where minimisation is not possible, composting or mulching the vegetation should be considered for reuse in landscaping within the scheme.
Minimisation of contaminated land arisings	Recommended	Where possible, contaminated land should be remediated and reused on site, or, if found to pose no risk to receptors (e.g. groundwater and human health) should be left undisturbed. The latter can minimise potential transport and disposal costs. This approach should be standard practice among designers and contractors.
Contractor targets	Recommended	The Principal Contractor should consider setting off-cut/surplus targets for sub-contractors with a positive incentive scheme for on-site waste champions. Good practice suggests that 3% wastage rate based on the total amount of construction material handled on site is achievable.
Avoiding over-purchasing and accurate delivery times	Recommended	Over-purchasing can lead to significant wastage and should be avoided in the first place. Ensuring materials are ordered for delivery shortly before they are used on the project would also avoid possible damage and therefore wastage.
Use of take back schemes	Recommended	Some suppliers offer a take back scheme, which should be utilised where practicable, particularly for packaging and pallets.

Summary of proposed and recommended minimisation measures		
Monitoring and review	Recommended	The Principal Contractor should use the waste data provided from the waste removed from the project and the periodic review process (required as part of the SWMP) to their advantage to assess whether the waste objectives are being met, and if not to review procedures to steer the project towards achieving them. This will require clear responsibilities to be identified, supported with authority and incentives to act on any deviations from the SWMP.
Education and awareness	Recommended	Waste minimisation must be underpinned by education and awareness throughout all levels of the project team, from the design team to site contractors who handle the construction materials via site inductions and monthly toolbox talks which all contractors and site workers will be expected to attend.
Consideration of End of Life materials	Recommended	Consideration should be given to what will happen to the materials specified, when they reach the end of their useful life. Where possible, elements should be designed for repair, modular repair, recycling at the end of life or safe disposal. The use of hazardous materials, in particular, should be minimised.

2.3 Initial review of anticipated waste arisings

An initial review of the Bill of Quantities is required to identify potential and expected waste arisings required for this project. The aim of this review is to identify the waste streams anticipated to be encountered during the project, and consider the possible management options for these materials (which would include identification of suitable local waste management or disposal sites that can accept the waste).

This initial waste review considers the recycling and reuse potential of each waste stream anticipated and identifies some indicative benchmark recycling targets which could be used to steer the detailed SWMP as the project develops. It is intended that the Principal Contractor summarises the current estimates of the waste arisings and reuse or disposal quantities for these arisings in Section 5 of this SWMP.

Table 2.3: Initial review of anticipated waste arisings

Activity	Anticipated waste stream	Anticipated volume	Recovery potential	Overall priority for recovery	Indicative recovery target	Management options
Site clearance	Green waste	High	High	High	50%	Some green waste is likely to arise from the excavation and removal of the grass covering the abandoned areas. The removal of some mature trees and hedges may also be required in order to commence the construction of the development. Arisings removed from the scheme should be collected in skips and stockpiled on site. If it cannot be reused in the project it will need to be sent off-site for processing. A local merchant composting facility would be the most practicable treatment solution, but consideration could also be given to the use of council owned composting facilities if there is one available and it has sufficient capacity available to accept the waste. Timber arisings from any trees or hedges removed could be reused on site by chipping the material down for landscaping.
	Metal	Medium	Low	Low	100%	Any metal produced from site clearance including lighting columns, pedestrian barriers, piling etc, have the potential to be recycled off site. Lighting columns are to be replaced with new more efficient ones but the whole column has the potential to be sent for recycling.
Earthworks	Topsoil	High	High	High	75%	Undisturbed topsoil has excellent potential for reuse. Opportunities for reuse in landscaping should be identified
	Excavated natural ground	Medium	Medium	High	50%	Opportunities for the reuse of material as infill or as a base for any access routes should be explored. If the material is low grade subsoil there is potential to reuse this as a landscaping or infill material prior to the laying of topsoil.
	Excavated made ground	Low	Low	Low	5%	Due to the properties of made fill, opportunities to reuse the material compared to natural or topsoil are more limited. As the proposed development is on an existing site, the opportunities to recycle or reuse some of the excavated fill may be possible if permitted.
	Contaminated soil	Low	Low	Low	0%	A contaminated land site investigation will need to be carried out but it is not anticipated that any significant amounts of contamination will arise. Soil extracted will be subject to contamination testing (totals and leachability testing) for a suite of contaminants to assess levels of contamination present in the soil and suitability for reuse. Hazwaste online software can be used to determine whether the soil would be classified as hazardous, potentially hazardous and non-hazardous and further WAC testing (compliance testing) undertaken on those samples that indicate that the soils would require landfilling, to determine the appropriate landfill. All soil extracted (whether contaminated or not) will need to be stockpiled at the site.

Activity	Anticipated waste stream	Anticipated volume	Recovery potential	Overall priority for recovery	Indicative recovery target	Management options
Construction General Site Waste	Concrete, bricks and mortar, slates	Low	High	High	100%	It is planned that much of the construction will be carried out off site, but there will be elements that need to be done on site such as foundations. This could potentially create waste through damage to bricks and paving slates and spillages of cement. Any arisings should be contained in an appropriate skip to be sent for off-site reprocessing.
	Bitumen road surface	Low	High	High	80%	Through careful ordering of materials it is likely that there will be very little (if any) waste generated from road surfacing activities. Any excess road-surfacing material can be reworked into a reusable form to enable use on future highway construction projects.
	Concrete drainage, kerbs and walls	Low	High	High	100%	Small quantities may arise, although pre-casting of the components prior to arrival on the site would reduce wastage in the first place. Any arisings should be placed in the skips and sent to a local recycling facility for crushing down and subsequent reuse on other projects.
	Hazardous waste (paints, resins etc)	Low	Medium	Medium	50%	These waste streams should be segregated from other waste streams in secure and bunded storage cupboards for subsequent identification and removal for treatment off-site at a hazardous waste facility.
	Packaging waste (plastics, wood, film, metal and cardboard	Low	Low	Medium	50%	This waste will predominantly consist of plastic sheeting, shrink-wrap, wooden pallets, metal strips (binding). Segregate each waste stream into colour-coded skips and remove off-site to an appropriate local facility for recycling. Opportunities should be explored for supplier packaging take back schemes.
	Mess waste (comprising of food waste but also mixed waste)	Medium	Medium	Medium	50%	Likely to comprise food waste and non-recyclable materials. Consideration should be given for providing separate bins for the collection of food waste, newspapers and non-recyclable materials. Food waste can be sent to an in-vessel composting facility, whilst non-recyclable (residual) waste will require landfilling. Another opportunity to be explored is to send the non-recyclable waste to an energy-from-waste facility.
	Office waste (comprising of paper, cardboard, plastics and non-recyclable mixed waste)	Medium	Medium	Medium	50%	Likely to comprise paper, cardboard, metal cans and plastic bottles. All materials can be recycled. Offices should be equipped with bins to segregate each waste stream for collection and future recycling off-site. Consideration should be given for the use of a local material recycling facility, which would recover those waste streams for onward recycling.
	Welfare facilities waste (sewage sludge)	Medium	Low	Low	0%	Limited options to recover waste arising from on-site welfare facilities. Sewage sludge from the toilet facilities will be pumped out and sent to an appropriately licensed treatment plant. Other wastes such as paper towels, etc. are likely to require landfilling.

3 Waste management

3.1 Waste segregation

All construction related activities will be carried out closely with the waste management contractors, in order to determine the best techniques for managing waste and ensure a high level of recovery of materials for recycling.

A specific area shall be laid out and labelled to facilitate the separation of materials, where possible, for potential recycling, salvage, reuse and return.

Earthworks material (excavated soils and clay) including topsoil will be source segregated and stored to suit the method of construction. Where possible, the soils and clay will be stockpiled within the new fenced lines along the highway corridor. They may also be stored temporarily at the borrow pits, landscaping areas and balancing pond locations with the possibility of acting as temporary screening.

Recycling and waste bins are to be kept clean and clearly marked in order to avoid contamination of materials. Skips for segregation of waste identified currently are:

- Mixed inert (e.g. inert plastics, concrete and rubble);
- Green (e.g. mature trees, shrubs, grass);
- Hazardous (e.g., or heavily contaminated soils);
- Mixed non-hazardous (biodegradable waste, welfare waste, general waste);
- Metal (e.g. copper and iron);
- Wood (e.g. fencing/hoarding);
- Food (canteen waste);
- Paper and cardboard (office waste); and
- WEEE: Waste Electronic and Electrical Equipment (e.g. cables, lighting).

Successful recycling relies upon early planning, educating teams, clear responsibility and space within a compound for segregation and storage. Shelter may be needed to prevent some materials such as cardboard and paper from deteriorating while being sorted or awaiting collection.

Discussions will be required between the Client and the Principal Contractor to identify space requirements within the compound to accommodate skips and storage of reusable materials. Details of site compound locations can be found in the section 1.4.1 - Temporary Works.

For all waste management options, consideration will need to be given for identifying whether waste exemptions or permits are required to enable the storage and treatment of waste materials.

Waste management options will be supported by the identification of appropriately permitted waste management and recycling facilities in close proximity to the site.

3.1.1 Classification of skips

Use sufficiently clear signage to ensure that construction workers are clear about where to put each type of waste. This reduces the levels of contamination in the skips and increases the likelihood that a load will not subsequently be rejected once the waste stream has been sent off-site for reprocessing. In cases where the load is rejected, the likely destination would be landfill (which would increase the costs of the project).

3.2 Contaminated land

The cost of hazardous waste treatment and disposal is significantly higher than treatment or disposal of non-hazardous or inert waste. Through identifying areas of contamination early on, the project layout and construction methods to be adopted could be amended to minimise the handling of such materials, potentially reducing the project costs. Contaminated land site investigations have been undertaken to identify any areas that could potentially comprise of contaminated soils and gravels. Details of the investigations can be found in Volume 2 Chapter 9 of the environmental statement. Any soils unsuitable for reuse and destined for landfill will be subject to a WAC (Waste Acceptance Criteria) test to determine the type of landfill.

3.3 Reuse of construction materials

Uncontaminated material will be reused, where possible, within the proposed improvement works for site levelling and fill. It is likely that there will be a requirement for importation of additional bulk fill materials for the project.

Any contaminated materials, which will not be re-used on-site, will be treated in accordance with all relevant legislation and best practice guidelines or at an alternative suitable site prior to disposal.

If applicable, surplus inert excavated materials with some engineering strength (e.g. stone, bricks, clay, rubble, rock) can be suitable for reuse in land reclamation projects, if one were proceeding at the same time as the proposed scheme. This would require compliance with the criteria and thresholds for an exemption (U1 or U11 may be applicable) or it may require a permit under the Environmental Permitting Regulations 2010 as amended. The CL:AIRE Code of Practice (CoP) may also be applicable for the reuse of this material. The material could be reused in other phases of the project or other schemes in the surrounding area, if one were proceeding at the same time, to avoid disposal at landfill and its associated impacts and costs, but would need to meet current legislative requirements.

3.4 Waste disposal characterisation

Under the Landfill (England and Wales) Regulations 2002 (as amended), waste is classified as Inert, Non-Hazardous and Hazardous. In order to determine the suitability of the landfill for the waste material being sent to it a Waste Acceptance Criteria (WAC) test will be required.

Hazardous waste cannot be re-used on site and may require additional treatment prior to disposal. There is a statutory requirement under the Landfill Directive (1999/31/EC as amended) to pre-treat any waste (including hazardous waste) prior to disposal off-site. Pre-treatment may reduce the costs of disposal by rendering the waste non-hazardous. Responsibility for the basic classification of waste rests with the Producer and Landfill Operator.

3.5 Forecasting and planning the reduction, reuse and recycling of waste

This section details expected waste arisings from the NDR.

Table 3.1 and Table 3.2 details the waste expected to arise from the enabling/demolition and construction works (respectively) and segregates the approximate amounts of waste into different waste streams. The overall aim is to prevent cross-contamination of waste types and to maximise reuse and recycling opportunities.

Material quantities are an approximate guide for efficient waste management best practice; the contractor should independently verify the quantities of waste materials likely to be produced during the works. Waste quantities specified within the SWMP are also subject to programme and design change. The current estimated wastes arising during excavation and demolition have been taken from the Bill of Quantities; a summary of which can be found in Appendix A.

Table 3.1: Estimated quantities of enabling/demolition waste

NDR Area	Material type	Estimated Volumes (m3)	Trade Contractor Package	Waste Minimisation Opportunities	On-site Reuse/ recycling	Off-site reuse/ recycling	Recovery	Disposal
Fakenham – Fir Covert	Vegetation, topsoil, subsoils, sand & gravel, clay	28,579	TBC	TBC	Y	Y	TBC	TBC
Fir Cover Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	3,129	TBC	TBC	Y	Y	TBC	TBC
Fir Covert – Reepham	Vegetation, topsoil, subsoils, sand and & gravel, clay	66,553	TBC	TBC	Y	Y	TBC	TBC
Reepham Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	2,488	TBC	TBC	Y	Y	TBC	TBC
Reepham – Drayton	Vegetation, topsoil, subsoils, sand and & gravel, clay	77,461	TBC	TBC	Y	Y	TBC	TBC
Drayton Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	57,459	TBC	TBC	Y	Y	TBC	TBC
Drayton - Cromer	Vegetation, topsoil, subsoils, sand and & gravel, clay	87,791	TBC	TBC	Y	Y	TBC	TBC
Cromer Junction West	Vegetation, topsoil, subsoils, sand and & gravel, clay	30,214	TBC	TBC	Y	Y	TBC	TBC
Cromer Junction East	Vegetation, topsoil, subsoils, sand and & gravel, clay	9,077	TBC	TBC	Y	Y	TBC	TBC
Cromer – Airport	Vegetation, topsoil, subsoils, sand and & gravel, clay	140,312	TBC	TBC	Y	Y	TBC	TBC
Airport Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	9,993	TBC	TBC	Y	Y	TBC	TBC
Airport - Buxton	Vegetation, topsoil, subsoils, sand and & gravel, clay	152,931	TBC	TBC	Y	Y	TBC	TBC
Buxton Road	Vegetation, topsoil, subsoils, sand and & gravel, clay	5,466	TBC	TBC	Y	Y	TBC	TBC
Buxton – N. Walsham	Vegetation, topsoil, subsoils, sand and & gravel, clay	46,645	TBC	TBC	Y	Y	TBC	TBC
N,Walsham Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	140	TBC	TBC	Y	Y	TBC	TBC
N. Walsham – Wroxham	Vegetation, topsoil, subsoils, sand and & gravel, clay	84,363	TBC	TBC	Y	Y	TBC	TBC

NDR Area	Material type	Estimated Volumes (m3)	Trade Contractor Package	Waste Minimisation Opportunities	On-site Reuse/ recycling	Off-site reuse/ recycling	Recovery	Disposal
Wroxham Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	4,081	TBC	TBC	Y	Y	TBC	TBC
Wroxham – Salhouse	Vegetation, topsoil, subsoils, sand and & gravel, clay	213,908	TBC	TBC	Y	Y	TBC	TBC
Salhous Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	1,239	TBC	TBC	Y	Y	TBC	TBC
Salhouse – Railway	Vegetation, topsoil, subsoils, sand and & gravel, clay	8,629	TBC	TBC	Y	Y	TBC	TBC
Railway - Plumstead	Vegetation, topsoil, subsoils, sand and & gravel, clay	8,070			Y	Y		
Plumstead Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	3,031			Y	Y		
Plumstead - Business Park	Vegetation, topsoil, subsoils, sand and & gravel, clay	50,970			Y	Y		
Business Park Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	23,866			Y	Y		
Business Park – Postwick NE	Vegetation, topsoil, subsoils, sand and & gravel, clay	42,325			Y	Y		
Postwick NE Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	16,797			Y	Y		
Postwick NE – A47	Vegetation, topsoil, subsoils, sand and & gravel, clay	0			Y	Y		
A47 – Park & Ride	Vegetation, topsoil, subsoils, sand and & gravel, clay	0			Y	Y		
Park & Ride Junction	Vegetation, topsoil, subsoils, sand and & gravel, clay	600			Y	Y		
TOTAL Excavated Material		1,175,517						
TOTAL Reused on Site		1,105,955						
TOTAL Residual Waste		69,562						
GRAND TOTAL		118,255	(69,562 m3 x1.7 bulking factor)					

Table 3.2: Estimated quantities of construction works

NDR Area	Material type	Forecast Estimated Quantities (m3)	Trade Contractor Package	Waste Minimisation Opportunities	On-site Reuse/ recycling	Off-site reuse/ recycling	Recovery	Disposal
Fakenham – Fir Covert	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Fir Cover Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Fir Covert – Reepham	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Reepham Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Reepham – Drayton	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Drayton Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Drayton - Cromer	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Cromer Junction West	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Cromer Junction East	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Cromer – Airport	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Airport Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Airport - Buxton	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Buxton Road	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Buxton – N. Walsham	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
N,Walsham Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
N. Walsham – Wroxham	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Wroxham Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Wroxham – Salhouse	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Salhouse Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Salhouse – Railway	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Railway - Plumstead	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Plumstead Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC

NDR Area	Material type	Forecast Estimated Quantities (m3)	Trade Contractor Package	Waste Minimisation Opportunities	On-site Reuse/ recycling	Off-site reuse/ recycling	Recovery	Disposal
Plumstead - Business Park	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Business Park Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Business Park – Postwick NE	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Postwick NE Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Postwick NE – A47	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
A47 – Park & Ride	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Park & Ride Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
TOTAL [xxxx] Material		TBC						
TOTAL [xxxx] Material		TBC						
TOTAL [xxxx] Material		TBC						

3.6 Disposal and treatment options

Table 3.2 highlights a number of treatment and recycling facilities within a reasonable proximity of the NDR site. However, this is a guide and the appointed waste contractor for the site should contact the Environment Agency directly to determine the most appropriate waste transfer station to handle the waste material being produced. The transfer station will then send it off for final disposal at an appropriate landfill site.

As described in Section 3.4 the Landfill (England and Wales) Regulations 2002 require that disposal sites are classified into one of three categories dependent on the chemical composition of the material; these are hazardous, non-hazardous and inert. Prior to disposal, if material does not meet the hazardous landfill WAC criteria it must be treated. Further actions required within the Landfill Regulations are as follows:

- Higher engineering and operating standards to be followed.
- Hazardous liquids, flammable, corrosive, explosive, oxidising and infectious wastes have been banned from landfill since July 2002.
- Non-hazardous liquids have been banned since 2007.
- Co-disposal has been banned since 16 July 2004.
- Whole tyres were banned from 2003, and shredded tyres have been banned since 2006.
- Waste will be required to be pre-treated prior to landfilling.
- Operators must demonstrate that they and their staff are technically competent to manage the site, and have made adequate financial provision to cover the maintenance and aftercare requirements.

Table 3.3: Waste treatment sites

Site name	Site address	Material Handled		Distance from Site[3] (miles)
Hyde P L	The Old Airfield, Frans Green, East Tuddenham, Dereham, Norfolk, NR20 3JG Tel: 01603 882100	Cardboard	Wood	8
		Metal	Paper	
		General office paper	Mixed plastics	
		Cardboard	Textiles / clothing	
		Confidential	Green waste	
		Printers and fax cartridges	Clay	
		Cans	Hardcore	
		Fluorescent tubes	Inert waste	
		Food	Rubble	
		Furniture	Subsoil	
		Coloured / container	Topsoil	
		Plate or flat	Carpeting	
Baldwin Skip Hire Ltd	Walnut Tree Farm, Silver Street, Besthorpe, Attleborough, Norfolk, NR17 2LF Tel: 01953 453625	Cardboard	Pallets	14
		Plastic	Wood	
		Glass	Plastic film	
		Metal	Fertiliser sacks	
		General office paper	Paper	
		Cardboard	Mixed plastics	
		Confidential	Green waste	
		Cans	Clay	
		Drums / containers	Hardcore	
		Food	Inert waste	
		Furniture	Rubble	
		Gas cylinders	Subsoil	
		Ferrous	Topsoil	
		Non-ferrous		

3 The distance has been calculated from Norwich International Airport, Amsterdam Way Norwich NR6 6JA; which is along the NDR route

Site name	Site address	Material Handled		Distance from Site[3] (miles)
Drurys Skip Hire & Waste Recycling Services	Folgate Road, Lyngate Industrial Estate North Walsham, Norfolk, NR28 0AJ Tel: 01692 405820	Cardboard	Gas cylinders	12
		Plastic	Ferrous	
		Glass	Non-ferrous	
		Bale twin and netwrap	Precious	
		Cores	Pallets	
		Tree guards	Tyres	
		Other plastics	Wood	
		Metal	Plastic film	
		Lead acid	Paper	
		Dry cell	Mixed plastics	
		NiCad	Textiles / clothing	
		Alkaline	Green waste	
		Zinc chloride	Fridges	
		Button	Clay	
		General office paper	Hardcore	
		Cardboard	Inert waste	
		Printers and fax cartridges	Rubble	
		Cans	Subsoil	
		Drums / containers	Topsoil	
		Electrical & electronic equipment	Carpeting	
		Furniture		
Localfast Co Ltd	Folgate Road, Lyngate Industrial Estate North Walsham, Norfolk, NR28 0AJ Tel: 01508 548543 Email: localfast@localfast.co.uk	Metal	Clay	16
		Lead acid	Hardcore	
		Photographic and printing inks	Inert waste	
		Drums / containers	Rubble	
		Coloured / container	Subsoil	
		Wood	Topsoil	
		Textiles / clothing	Carpeting	
		Green waste		

Site name	Site address	Material Handled		Distance from Site[3] (miles)
O R M North Norfolk	Shrubbs Farm, Edgefield, Norwich, Norfolk, NR24 2AT Tel: 01227 860901 Email: paul@cjclee.co.uk	Cardboard General office paper Cardboard Pallets Wood Paper Green waste	Clay Hardcore Inert waste Rubble Subsoil Topsoil	14
Raymond Mcleod (farms) Ltd	Raymond Mcleod (farms) Ltd, Longham Quarry, Reed Lane, Bittering, Dereham, Norfolk, NR19 2RJ Tel: 01362 687240 Email: mcleod@mcleodfarms.co.uk	Clay Hardcore Inert waste	Rubble Subsoil Topsoil	18
Thurtle Walter	Lindgreat Yard, Harfreys Road, Great Yarmouth, Norfolk, NR31 0LS Tel: 01493 668118 Email: wtwaste@googlemail.com	Cardboard Plastic Glass Bale twin and netwrap Other plastics Metal General office paper Cardboard Cans Drums / containers Furniture Coloured / container Plate or flat Ferrous Non-ferrous	Precious Pallets Wood Plastic film Paper Mixed plastics Textiles / clothing Green waste Clay Hardcore Inert waste Rubble Subsoil Topsoil Carpeting	20

Site name	Site address	Material Handled		Distance from Site[3] (miles)
W T Waste	Hafrey's Road, Great Yarmouth, NR31 0LS,, NR31 0LS Tel: 01493 668118	Cardboard	Wood	20
		Plastic	Fertiliser sacks	
		Glass	Paper	
		Other plastics	Mixed plastics	
		Metal	Textiles / clothing	
		General office paper	Green waste	
		Cardboard	Clay	
		Cans	Hardcore	
		Drums / containers	Inert waste	
		Furniture	Rubble	
		Coloured / container	Subsoil	
		Ferrous	Topsoil	
		Non-ferrous	Carpeting	
		Pallets		

Site name	Site address	Material Handled		Distance from Site[3] (miles)
Docwra Mike	Land / Premises At, High Mill Link Road, Cobholm, Great Yarmouth, Norfolk, NR31 0DL Tel: 01493 658504 Email: leondocwra@hotmail.co.uk	Cardboard Plastic Silage films Horticultural films Bale twin and netwrap Cores Tree guards Other plastics Machinery / parts Metal Lead acid Dry cell NiCad Alkaline Zinc chloride Button General office paper Cardboard Confidential Cans Drums / containers	Electrical & electronic equipment Furniture Ferrous Non-ferrous Precious Pallets Tyres Wood Plastic film Fertiliser sacks Paper Mixed plastics Vehicles Clay Hardcore Inert waste Rubble Subsoil Topsoil	19

Site name	Site address	Material Handled		Distance from Site[3] (miles)
East Coast Waste Ltd	East Coast, Hafreys Road, Hafreys Industrial Estate, Great Yarmouth, Norfolk, NR31 0LS Tel: 01493 653600	Cardboard	Food	20
		Plastic	Furniture	
		Silage films	Gas cylinders	
		Horticultural films	Ferrous	
		Bale twin and netwrap	Non-ferrous	
		Cores	Precious	
		Tree guards	Tyres	
		Other plastics	Wood	
		Machinery / parts	Plastic film	
		Metal	Fertiliser sacks	
		Dry cell	Paper	
		Alkaline	Mixed plastics	
		Button	Textiles / clothing	
		General office paper	Fridges	
		Cardboard	Clay	
		Confidential	Hardcore	
		Printers and fax cartridges	Inert waste	
		Cans	Rubble	
		Drums / containers	Subsoil	
		Electrical & electronic equipment	Topsoil	
		Fluorescent tubes	Carpeting	

Source: the Waste Directory[4]

NB. The ability for materials to be deposited at these sites will be dependent on the conditions imposed on the sites through the relevant licence/permit. This list is not exhaustive and there may be other facilities in the vicinity of the site that can be used.

4 http://www.wastedirectory.org.uk/

For excavated soils, where soil testing and analysis has determined that the soil does not contain elevated concentrations of contaminants in accordance with comparison against human health screening values such as the EA Soil Guideline Values (SGVs) then there are a number of reuse and recycling opportunities. The SGVs assess the risk to human health in relation to residential (with and without home grown produce) and commercial end use. The excavated soils may then be suitable for use as infill, bunding and landscaping (as long as the soil contamination testing does not exceed the residential SGVs) on the site.

Further uses for excavated materials could be for construction or maintenance of pavements, footings for fencing, etc. Materials produced could also be used in the laying of roads around the site or stored for later use, providing there are adequate storage areas and the material is adequately managed to minimise dust and run off.

If reuse or recycling on site is not possible, Table 3.4 highlights a number of possible waste disposal facilities within a reasonable proximity to the site and that also run a waste collection service.

Table 3.4: Waste disposal sites

Site name	Site address	Landfill class	Distance from Site[5] (miles)
Attlebridge Landfill Site	Reepham Road, Attlebridge, Norwich, Norfolk, NR5 5TD	Hazardous and Non-Hazardous	2.3
Costessey	Longwater Industrial Estate, Longwater Lane, Costessey, Norwich, Norfolk, NR5 0TL	Non- Hazardous	3.9
Hainford	The Poultry Farm, Spixworth Road, Hainford, Norfolk, NR10 3BX	Non- Hazardous	2.9
Rackheath	Salhouse Road, Rackheath, Norwich, Norfolk, NR13 6LA	Non- Hazardous	3.4

Source: The Environment Agency – 'What's in your backyard'[6]

NB. The ability for materials to be deposited at these sites will be dependent on the availability of void space and the conditions imposed on the sites through the relevant licence/permit. This list is not exhaustive and there may be other facilities in the vicinity of the site that can be used.

5 The distance has been calculated from Norwich International Airport, Amsterdam Way Norwich NR6 6JA; which is along the NDR route

6 http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=waste

3.7 Waste controls and handling

3.7.1 Duty of care compliance

One aim of the SWMP is to reduce the levels of fly-tipping generated from construction projects.

One requirement is to incorporate an auditable system that identifies:

- The person responsible for removing the waste from site; and
- Keeping copies of all duty of care documentation (waste transfer notes and hazardous waste consignment notes).

All reputable waste contractors will have systems in place to ensure that all the duty of care requirements are met prior to the waste being collected.

Various information sources are available to enable the Principal Contractor to identify local waste management facilities for both recycling, recovery and disposal.

3.7.2 Declaration

The client and principal contractor will take all reasonable steps to ensure that:

all waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) regulations 1991 as amended; and materials will be handled efficiently and waste managed appropriately.		
Signatures	Client	Principal Contractor
Date		

3.7.3 Responsibility for waste management

Table 3.5 identifies the primary waste streams that will arise from the activities at the site and whose responsibility it is to control and monitor the amounts of waste produced.

Table 3.5: Waste management responsibility

Site Activity/ Sub-contractor Work Package	Primary Waste Stream	Who is responsible for waste management
Excavation and site clearance	Soils, subsoils, clay	TBC
Groundworks/Foundations	TBC	TBC
Road construction	TBC	TBC
Landscaping	Soils	TBC
Mechanical Electrical	Cables, WEEE	TBC
Removal of Site Offices, Temporary Works & Final Clear Away	TBC	TBC

3.7.4 Site security

Both Client and Principal Contractor will take reasonable steps to ensure site security measures are in place to prevent illegal disposal of waste at the site.

4 Implementation of the SWMP

4.1 Register of waste carrier licences and permits

Table 4.1 below assists with the information required to meet the duty of care requirements (see Section 3.7.1). It is intended to be used to provide and record information on the waste management contractors, their Environmental Permit details, waste carrier licenses and exemptions that have been checked and verified for use on this project.

The Landfill (England and Wales) Regulations 2002 also require that waste is described by European Waste Catalogue (EWC) codes on Transfer Notes required under the Duty of Care Regulations. The EWC categorises wastes into 20 main groups and approximately 900 codes. The EWC also identifies hazardous wastes, and these are dealt with by the Hazardous Waste Regulations.

Table 4.1: Register of waste licences and permits

			Waste carrier			Disposal site	
EWC Waste description*	EWC7	Origin	Name	Licence number	Expiry date	Name	Licence number/ exemption ref.
Soils and stones	17 05 04	Excavation /Earthworks	TBC	TBC	TBC	TBC	TBC
Soil and stones containing dangerous substances)	17 05 03	Historical contamination possibly from railway/airport based activities at the site	TBC	TBC	TBC	TBC	TBC
Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing dangerous substances	17 01 06	From excavation of Made Ground and potential historical contamination	TBC	TBC	TBC	TBC	TBC
Concrete	17 01 01	From excavation of Made Ground	TBC	TBC	TBC	TBC	TBC
Mixed construction & demolition waste	17 09 04		TBC	TBC	TBC	TBC	TBC
Wood	17 02 01		TBC	TBC	TBC	TBC	TBC
Other, as applicable							
Other, as applicable							
Other, as applicable							

*This is not an exhaustive list and may be required to be extended to include wastes not mentioned that are produced on site.

[7] EWC code categorised from the Lists of Wastes pursuant to Article 1(a) of Directive 75/442/EEC on waste and Article 1 (4) of Directive 91/689/EEC on hazardous wastes

4.2 Training and communication

The intention is to develop a culture of promoting best practice and increasing knowledge and awareness through education on waste management issues at the site and to maximise the opportunities available for the management of waste in an appropriate (and compliant) manner.

The waste management plan as well as the procedures to be followed will be given to all contractors and subcontractors at site induction and key measures reinforced through the use of ”tool box” talks. “Tool box” talks will be carried out every month on waste issues and all subcontractors should be expected to attend. It is hoped that these values can be transferred from this site to the next, promoting adoption of sustainable waste management practices on a wider scale.

This decision will ultimately need to be made between discussions between the Client and Principal Contractor.

4.3 Monitoring and waste records

The Principal Contractor will receive a waste transfer note (or consignment note if the waste is hazardous) from the waste disposal company showing the exact amount of waste materials removed from site. This sheet also identifies how much material went to landfill and how much went for recycling.

Whenever waste is removed from the site, the Principal Contractor must record the actions in Table 4.2 to ensure compliance with the Duty of Care requirements, which includes documenting the name of the company removing the waste and details of the site where the waste is being transferred to for each waste type.

All skips need to be monitored to ensure that cross-contamination of segregated skips does not occur. The “tool box” talks shall focus on how the waste management system is working and identify the extra costs associated with contamination.

The Principal Contractor shall continually review the type of surplus materials being produced and change the site set up to maximise on site reuse or recycling; landfill should be the last option.

This plan should be included as an agenda item at the weekly construction meetings. In addition, the plan will be communicated to the whole team (including the client) at the monthly meetings. This shall include any updates from the last version.

Table 4.2: Waste management records

Date removed	Waste type	Identity of the person removing the waste	Site the waste is being taken to and whether licensed or exempt	Waste carrier and registration number*	Confirmation of delivery*	Waste management route (reuse on/offsite, recycled on/offsite, recovery, landfill, other
TBC	TBC	TBC	TBC	TBC	TBC	TBC

4.4 SWMP implementation checklist

Table 4.3 is a checklist, which is to be filled out by the principal contractor to ensure the SWMP is fully implemented from the outset of the project. Further actions required to accompany the checklist should be identified in Table 4.4.

Table 4.3: SWMP checklist

Checks (please tick)	Y	N
Have terms and commercial rates been agreed with the waste management contractor(s)?		
Have data reporting procedures been agreed with waste management contractor(s)?		
For offsite waste management or disposal- Are all the waste destination details correct?		
Has a waste segregation/ collection area been prepared?		
Has the waste management area been adequately sign posted?		
Has the SWMP planning meeting been set?		
Has the waste management document control/ filing system been set up?		
Have all necessary staff and contractors read and signed the SWMP?		
Have all the SWMP training/ briefing requirements for staff been met?		
Have all the SWMP training/ briefing requirements for contractor(s) been met?		
Have all the waste management targets been set?		
Has the SWMP been approved by the Project Manager?		

Table 4.4: Further actions required

Comments/ Further Actions:
1. Excavated material to be tested for contamination prior to reuse and/or disposal
2. Waste Contractor to be assigned
3. Storage areas for waste to be decided upon
4. Frequency of waste removal from the site to external storage areas or waste transfer station to be decided upon
5. TBC
6. TBC

4.5 Updating the SWMP

The plan must be updated as often as necessary, to provide accurate information on progress, or at least every six months if there is little change during the project.

Updates to the plan will give a current picture of how work is progressing against the waste estimates contained in the plan. Therefore, for waste that is re-used or recycled on site, the SWMP should be updated to describe how much of the estimated volume or tonnage has been processed. For waste that is removed from the site the SWMP must be updated to record the identity of the person removing the waste, the type (and quantity) of waste and the site to which it has been taken.

Whenever waste is removed from the site the Principal Contractor must record the actions in Table 4.2 above. Revisions of the SWMP are recorded in Table 4.5.

Table 4.5: SWMP revisions

Nature of revision	Date of revision	Author of revision
[waste records updated]	TBC	TBC

The latest version of the SWMP must be kept in the site office and be available for viewing by the Environment Agency or other interested parties.

5 Review and audit of SWMP

5.1 Post-construction review

This section of the SWMP is a post construction review and is designed to ensure the SWMP is monitored throughout the lifetime of the project and then signed off at its closure (see Table 5.1). The aim is to:

- highlight the benefits of completing a SWMP; and
- identify the amounts of waste reduction and resource efficiency achieved.

This is achieved by adhering to the principles outlined at the beginning of the SWMP, in addition to realising the cost benefits associated with the SWMP if it has been carried out correctly.

At the end of the project, both the Client and Principal Contractor are responsible for reviewing, revising and refining the SWMP as necessary within three months of completion to identify if lessons could be learned for the next time a similar project is undertaken. This review will identify and conclude the following:

- Confirmation that the SWMP has been monitored and updated within the defined timescales;
- An explanation of any deviation from the original plan;
- A comparison of the estimated quantities of each waste type against the actual quantities generated;
- An action plan to address the lessons that have been learnt from the project that could be implemented for the next project; and
- An estimation of the cost savings (if any) that have been achieved through the measures undertaken to minimise, reuse, recycle or recover waste arisings rather than just sending it to landfill.

Table 5.1: Post construction review declaration

This plan has been monitored on a regular basis to ensure that work is progressing according to the plan and has been updated to record details of the actual waste management actions and waste transfers that have taken place.		
Signatures	Client	Principal Contractor
Date		

5.2 Estimated versus actual waste quantities

Section 5 summarises the current estimates of the waste arisings and reuse or disposal quantities for these arisings. The data is taken from the bill of quantities and where unclear, assumptions have been made as to the waste minimisation option applied.

Table 5.2: Actual waste quantities for all excavation, deposition, filing and demolition activities on the NDR route

NDR Area	Material type	Forecast Estimated Quantities (m3)	Trade Contractor Package	Waste Minimisation Opportunities	On-site Reuse/ recycling	Off-site reuse/ recycling	Recovery	Disposal
Fakenham – Fir Covert	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Fir Cover Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Fir Covert – Reepham	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Reepham Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Reepham – Drayton	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Drayton Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Drayton - Cromer	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Cromer Junction West	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Cromer Junction East	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Cromer – Airport	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Airport Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Airport - Buxton	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Buxton Road	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Buxton – N. Walsham	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
N,Walsham Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
N. Walsham – Wroxham	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Wroxham Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Wroxham – Salhouse	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Salhous Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Salhouse – Railway	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Railway - Plumstead	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Plumstead Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC

NDR Area	Material type	Forecast Estimated Quantities (m3)	Trade Contractor Package	Waste Minimisation Opportunities	On-site Reuse/ recycling	Off-site reuse/ recycling	Recovery	Disposal
Plumstead - Business Park	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Business Park Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Business Park – Postwick NE	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Postwick NE Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Postwick NE – A47	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
A47 – Park & Ride	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Park & Ride Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
TOTAL [xxxx] Material		TBC						
TOTAL [xxxx] Material		TBC						
TOTAL [xxxx] Material		TBC						

Table 5.3: Actual waste quantities for construction works

NDR Area	Material type	Forecast Estimated Quantities (m3)	Trade Contractor Package	Waste Minimisation Opportunities	On-site Reuse/ recycling	Off-site reuse/ recycling	Recovery	Disposal
Fakenham – Fir Covert	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Fir Cover Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Fir Covert – Reepham	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Reepham Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Reepham – Drayton	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Drayton Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Drayton - Cromer	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Cromer Junction West	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Cromer Junction East	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Cromer – Airport	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Airport Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Airport - Buxton	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Buxton Road	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Buxton – N. Walsham	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
N,Walsham Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
N. Walsham – Wroxham	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Wroxham Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Wroxham – Salhouse	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Salhous Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Salhouse – Railway	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Railway - Plumstead	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Plumstead Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC

NDR Area	Material type	Forecast Estimated Quantities (m3)	Trade Contractor Package	Waste Minimisation Opportunities	On-site Reuse/ recycling	Off-site reuse/ recycling	Recovery	Disposal
Plumstead - Business Park	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Business Park Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Business Park – Postwick NE	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Postwick NE Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Postwick NE – A47	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
A47 – Park & Ride	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
Park & Ride Junction	TBC [Asphalt, concrete etc…..]	TBC	TBC	TBC	Y	Y	TBC	TBC
TOTAL [xxxx] Material		TBC						
TOTAL [xxxx] Material		TBC						
TOTAL [xxxx] Material		TBC						

5.3 Record of deviations from SWMP

Table 5.4: Record of deviations

Issue	Details
[waste forecasts- exceeded]	TBC reasons
[waste forecasts- not met]	TBC reasons

5.4 Estimate of cost savings

[Enter text here]

5.5 Relevant signatures

Table 5.5: Insert Table Title here

Principal Contractor:		Date:
Client:		Date:
SWMP Author:	Nnenna Agbasiere	Date: 16/10/2013

Appendices

Appendix A. Waste arisings from Bill of Quantities

Table A.1: Identified waste arisings from the BoQ

NDR Location	Activity type	Activity description	Quantity of arisings	Units	On-site Reuse/ recycling 8	Disposal	Assumptions
Newman Road OverBridge	Cast-in-place Piles	Trim and prepare pile heads	36	Nr			
Rackheath Railway Bridge	Cast-in-place Piles	Trim and prepare pile heads	117	Nr			
Total Arisings Cast-in-place Piles			153	Nr			
General	Earthworks – Excavation and disposal	Excavation and disposal of acceptable material excluding Class 5A in new watercourses	1,200	m3		1,200	
General	Earthworks – Excavation and disposal	Excavation and disposal of acceptable material excluding Class 5A in new watercourses (Ditches - Linear measurement given only)	14,501	m		14,501	may be a duplication
General	Earthworks – Excavation and disposal	Excavation and disposal of class U1B	2,000	m3		2,000	
General	Earthworks – Excavation and disposal	Excavation of unacceptable material (Japanese Knotweed)	1,500	m3		1,500	
		Excavation of class U2					
		Disposal of unacceptable material class U2 (inc Jap Knotweed)					
Buxton Road OverBridge	Earthworks – Excavation and disposal	Excavation and on-site disposal of acceptable material class excluding Class 5A in structural foundations 0 to 3 metres in depth intermediate support	3,468	m3	3,468		onsite disposal/ reuse
Newman Road OverBridge	Earthworks – Excavation and disposal	Excavation of acceptable material class excluding Class 5A in structural foundations 0 to 3 metres in depth intermediate support and on-site disposal	3,143	m3	3,143		onsite disposal/ reuse
Middle Road OverBridge	Earthworks – Excavation and disposal	Excavation of acceptable material class excluding Class 5A in structural foundations 0 to 3 metres in depth intermediate support and on-site disposal	1,779	m3	1,779		onsite disposal/ reuse
Rackheath Bat Underpass	Earthworks – Excavation and disposal	Excavation of acceptable material class excluding Class 5A in structural foundations 0 to 3 metres in depth intermediate support and on-site disposal	643	m3	643		onsite disposal/ reuse
Marriots Way Overbridge	Earthworks – Excavation and disposal	Excavation of acceptable material class excluding Class 5A in structural foundations 0 to 3 metres in depth intermediate support and on-site disposal	2,986	m3	2,986		onsite disposal/ reuse

8 Note that there was no recorded quantities of materials for off-site reuse/recycling or for recovery. Columns have been deleted

NDR Location	Activity type	Activity description	Quantity of arisings	Units	On-site Reuse/ recycling 8	Disposal	Assumptions
Cromer Road OverBridge	Earthworks – Excavation and disposal	Excavation of acceptable material class excluding Class 5A in structural foundations 0 to 3 metres in depth intermediate support and on-site disposal	3,247	m3	3,247		onsite disposal/ reuse
Bell Farm Overbridge	Earthworks – Excavation and disposal	Excavation of acceptable material class excluding Class 5A in structural foundations 0 to 3 metres in depth intermediate support and on-site disposal	1,581	m3	1,581		onsite disposal/ reuse
Rackheath Railway Bridge	Earthworks – Excavation and disposal	Excavation of acceptable material class excluding Class 5A in structural foundations 0 to 3 metres in depth intermediate support and on-site disposal	860	m3	860		onsite disposal/ reuse
Rackheath Rd Bridge inc Ret Wall	Earthworks – Excavation and disposal	Excavation of acceptable material class excluding Class 5A in structural foundations 0 to 3 metres in depth intermediate support and on-site disposal	982	m3	982		onsite disposal/ reuse
Bat Gantry 1 - 54m long	Earthworks – Excavation and disposal	Excavation and disposal of acceptable materials excluding class 5A	14	m3	14		
Bat Gantry 2 - 69m long	Earthworks – Excavation and disposal	Excavation and disposal of acceptable materials excluding class 5A	14	m3	14		
Bat Gantry 3 - 120m long	Earthworks – Excavation and disposal	Excavation and disposal of acceptable materials excluding class 5A	14	m3	14		
Bat Gantry 4 - 64m long	Earthworks – Excavation and disposal	Excavation and disposal of acceptable materials excluding class 5A	14	m3	14		
Bat Gantry 5 - 64m long	Earthworks – Excavation and disposal	Excavation and disposal of acceptable materials excluding class 5A	14	m3	14		
Bat Gantry 6 - 65m long	Earthworks – Excavation and disposal	Excavation and disposal of acceptable materials excluding class 5A	14	m3	14		
Bat Gantry 7 - 72m long	Earthworks – Excavation and disposal	Excavation and disposal of acceptable materials excluding class 5A	14	m3	14		
General	Earthworks – Excavation in Hard Material	Provisional quantities for extra over any item of drainage for excavation in hard material	200	m3	200		generated and used or stock-piled onsite
Total Arisings from Excavation and Disposal of Earthworks onsite or to landfill			38,188	m3	18,987	19,201	19,201
General	Earthworks – NNDR: Excavation	EO for Excavation in hard material	3,500	m3			brought onto site
General	Earthworks – NNDR: Excavation and deposition	Excavation of acceptable material class 5A and Deposition in landscape areas and bunds	493,083	m3	164,396	328,687	the rest disposed
General	Earthworks – NNDR:	Excavation of acceptable material excluding class 5A	1,395,028	m3	1,395,027		

NDR Location	Activity type	Activity description	Quantity of arisings	Units	On-site Reuse/ recycling 8	Disposal	Assumptions
	Excavation, deposition, disposal and filling	Deposition of acceptable material in embankments and other areas of fill					
		Deposition of acceptable material in landscape areas and bunds					
		Deposition of acceptable material excluding class 5A in landscape areas and bunds					
		Reuse of acceptable excavated material as class 6C starter layer					
General	Earthworks – NNDR: Filing	Excavation of soft spots (arisings disposed on site) and filling with site won granular material	12,500	m3	12,500		
Total Arisings from NNDR Excavation, Deposition, Filling and Disposal of Earthworks onsite or to landfill			1,904,111	m3	1,571,923	328,687	332,188
General	Earthworks – NNDR: Filing	Compaction of acceptable material	1,494,346	m3			brought onto site
General	Earthworks – NNDR: Filing	Soil stabilisation of existing material in situ to form capping 250mm thick	133,810	m2			brought onto site
General	Earthworks – NNDR: Filing	Geogrid Tensar 40RE or similar	130,154	m2			brought onto site
General	Earthworks – NNDR: Filing	Geotextile Terram 1000 or similar	130,154	m2			brought onto site
General	Earthworks – NNDR: Filing	Topsoiling 50mm thick horizontal and sloping	67,530	m2	64,862		
General	Earthworks – NNDR: Filing	Topsoiling 150mm thick horizontal and sloping	230,608	m2	222,165		
General	Earthworks – NNDR: Filing	Topsoiling 300mm thick horizontal and sloping	176,143	m2	176,068		
General	Earthworks – NNDR: Filing	Topsoiling 600mm thick horizontal	34,213	m2			
General	Earthworks – NNDR: Filing	Topsoiling 600mm thick	213,267	m2			
General	Earthworks – NNDR: Filing	Completion of Formation	455,731	m2		455,731	assume material disposed
Total Arisings from NNDR Excavation, Deposition, Filling and Disposal of Earthworks onsite or to landfill			3,065,956	m3	463,095	455,731	2,602,861
General	Earthworks – NNDR: Filing	Clearing of existing ditches	5,000	m		5,000	assume cleared and disposed

NDR Location	Activity type	Activity description	Quantity of arisings	Units	On-site Reuse/ recycling 8	Disposal	Assumptions
General	Earthworks – NNDR: Filing	Backfilling disused drains of 150mm diam with concrete	1,200	m	1,200		
General	Earthworks – NNDR: Filing	Backfilling disused gullies and chambers with concrete	70	Nr	70		
Other Arisings from NNDR Excavation, Deposition, Filling and Disposal of Earthworks onsite or to landfill							
Middle Road OverBridge	Footways and Paved Areas	Footway comprising ST1 concrete infill with 20mm asphalt surface	209	m2			
Marriots Way Overbridge	Footways and Paved Areas	Footway comprising ST1 concrete infill with 20mm asphalt surface	66	m2			
Rackheath Railway Bridge	Footways and Paved Areas	Footway comprising ST1 concrete infill with 20mm asphalt surface	225	m2			
Total Arisings from infill of Footways and Paved Areas			500	m2			
Buxton Road OverBridge	Imported Fill	Imported acceptable material Class 6N granular infill around structural foundations	1,804	m3			
Buxton Road OverBridge	Imported Fill	Imported acceptable material class 6I / 6J as infill to reinforced earth embankment	3,704	m3			
Newman Road OverBridge	Imported Fill	Imported acceptable material Class 6N granular infill around structural foundations	1,269	m3			
Newman Road OverBridge	Imported Fill	Imported acceptable material class 6I / 6J as infill to reinforced earth embankment	3,153	m3			
Middle Road OverBridge	Imported Fill	Imported acceptable material Class 6N granular infill around structural foundations	2,072	m3			
Middle Road OverBridge	Imported Fill	Imported acceptable material class 6I / 6J as infill to reinforced earth embankment	3,979	m3			
Marriots Way Overbridge	Imported Fill	Imported acceptable material Class 6N granular in fill around structural foundations	1,536	m3			
Marriots Way Overbridge	Imported Fill	Imported acceptable material class 6I / 6Jas fill to reinforced earth embankment	3,428	m3			
Cromer Road OverBridge	Imported Fill	Imported acceptable material Class 6N granular in fill around structural foundations	2,875	m3			
Cromer Road OverBridge	Imported Fill	Imported acceptable material class 6I / 6Jas fill to reinforced earth embankment	4,804	m3			
Bell Farm Overbridge	Imported Fill	Imported acceptable material Class 6N granular in fill around structural foundations	1,269	m3			

NDR Location	Activity type	Activity description	Quantity of arisings	Units	On-site Reuse/ recycling 8	Disposal	Assumptions
Bell Farm Overbridge	Imported Fill	Imported acceptable material class 6I / 6Jas fill to reinforced earth embankment	3,153	m3			
Rackheath Bat Underpass	Imported Fill	Imported acceptable material sand bedding to PCC culvert units	11	m3			
Rackheath Railway Bridge	Imported Fill	Imported acceptable material Class 6N granular infill around structural foundations	3,321	m3			
Rackheath Rd Bridge inc Ret Wall	Imported Fill	Imported acceptable material Class 6N granular infill around structural foundations	1,261	m3			
Coltishall Aggregate	Imported Fill	Imported Class 6F2 Fill	440	m3	440		assume imported for use onsite
Coltishall Aggregate	Imported Fill	Imported Filter Media	23,297	m3	23,297		assume imported for use onsite
Coltishall Aggregate	Imported Fill	Imported Graded Pipe Bedding	15,969	m3	15,969		assume imported for use onsite
Coltishall Aggregate	Imported Fill	Recycled Planings	1,370	m3	1,370		assume imported for use onsite
Coltishall Aggregate	Imported Fill	Imported Type 1	28,535	m3	28,535		assume imported for use onsite
Total Arisings from Imported material for infills			107,249	m3	69,610		37,639
Buxton Road OverBridge	Waterproofing	Waterproofing with two coats bituminous paint more than 300mm wide	510	m2			
Buxton Road OverBridge	Waterproofing	Waterproofing with proprietary waterproofing system 300mm wide or less at any inclination; using 25mm thick red tinted sand asphalt protection	55	m2	512		inconsistent arisings and reuse figures
Newman Road OverBridge	Waterproofing	Waterproofing with two coats bituminous paint more than 300mm wide	359	m2			
Newman Road OverBridge	Waterproofing	Waterproofing with proprietary waterproofing system 300mm wide or less at any inclination; using 25mm thick red tinted sand asphalt protection	300	m2	280		
Middle Road OverBridge	Waterproofing	Waterproofing with two coats bituminous paint more than 300mm wide	586	m2			
Middle Road OverBridge	Waterproofing	Waterproofing with proprietary waterproofing system 300mm wide or less at any inclination; using 25mm thick red tinted sand asphalt protection	656	m2	656		

NDR Location	Activity type	Activity description	Quantity of arisings	Units	On-site Reuse/ recycling 8	Disposal	Assumptions
Rackheath Bat Underpass	Waterproofing	Waterproofing with two coats bituminous paint more than 300mm wide	205	m2			
Marriots Way Overbridge	Waterproofing	Waterproofing with two coats bituminous paint more than 300mm wide	434	m2			
Marriots Way Overbridge	Waterproofing	Waterproofing with proprietary waterproofing system 300mm wide or less at any inclination; using 25mm thick red tinted sand asphalt protection	402	m2	402		
Cromer Road OverBridge	Waterproofing	Waterproofing with two coats bituminous paint more than 300mm wide	814	m2			
Cromer Road OverBridge	Waterproofing	Waterproofing with proprietary waterproofing system 300mm wide or less at any inclination; using 25mm thick red tinted sand asphalt protection	684	m2	684		
Bell Farm Overbridge	Waterproofing	Waterproofing with two coats bituminous paint more than 300mm wide	359	m2			
Bell Farm Overbridge	Waterproofing	Waterproofing with proprietary waterproofing system 300mm wide or less at any inclination; using 25mm thick red tinted sand asphalt protection	214	m2	214		
Rackheath Railway Bridge	Waterproofing	Waterproofing with two coats bituminous paint more than 300mm wide	1,624	m2			
Rackheath Railway Bridge	Waterproofing	Waterproofing with proprietary waterproofing system 300mm wide or less at any inclination; using 25mm thick red tinted sand asphalt protection	1,395	m2	923		
Rackheath Rd Bridge inc Ret Wall	Waterproofing	Waterproofing with two coats bituminous paint more than 300mm wide	2,170	m2			
Rackheath Rd Bridge inc Ret Wall	Waterproofing	Waterproofing with proprietary waterproofing system 300mm wide or less at any inclination; using 25mm thick red tinted sand asphalt protection	858	m2	858		
Total Arisings from Waterproofing			11,625	m2	4,529	0	7,096
General	Site Clearance	General site clearance	327	HA		327	
General	Cleaning existing drainage systems	Cleaning piped drainage system	8	Sum		8	number of systems
Type 1 Main Carriageway	Management of Established Waterbodies	Inspection of existing waterbodies and removal of debris / silt where required	1	Sum			inspection and removal done but no quantities recorded.

NDR Location	Activity type	Activity description	Quantity of arisings	Units	On-site Reuse/ recycling 8	Disposal	Assumptions
Type 1 Main Carriageway	Pavements surfacing	Extra over for increased PSV to surface course (68psv) to side roads if required	1	Sum			One pavement surfaced?
Type 1 Main Carriageway	Ground Preparation and Cultivation	Vegetation clearance, Subsoil treatment and Final preparation of soils	1,421,926	m2	1,421,926		soild treated and reused
General	Headwalls and outfall works	Provisional quantities for excavation and filing of soft spots and other voids in bottom of trenches, chambers and gullies	400	m3	400		
Newman Road OverBridge	Surface Impregnation of Concrete	Surface impregnation to plain concrete surfaces with silane or pavix	209	m2			
OTHER SITE ACTIVITIES							

C. Appendix B. Relevant information: construction programme, project completion report, design drawings, details of consultation and communication, meeting minutes, reports, and technical notes.

D. Appendix C. Record of management actions undertaken during construction and implementation and the outcomes

E. Appendix D. Environmental Method Statements

F. Appendix E. Record of Environmental Monitoring Undertaken during Construction

Date Completed by Weather Conditions (Including Wind Speed, Direction and Ground Conditions)				
Issue	Achieved			Comments/Actions
	Yes	No	Part	
Have any visible dust incidents been noted?				
Are site accesses/egresses free from mud and debris?				
Are wheel wash facilities functional and in use?				
Are dry/friable materials all adequately stored (in a container, sheeted or damped down)?				
Is there any evidence of spillage or leakage from fuel stores/bowsers?				
Are bowsers/fuel stores adequately				

locked?				
Are appropriate and agreed noise reduction measures in place?				
Do all stationary plant have drip trays?				
Have all deliveries been appropriately logged?				
Have bunds been inspected and emptied of excessive water?				
Have all soil stripping/storage activities been undertaken?				
Are vehicles being appropriately sheeted as they leave the site?				
Are segregated waste facilities available, in use and in good condition?				
Are skips covered (where appropriate)?				

Are hazardous waste stores being used and in good condition?				
Have all waste consignment notes been completed for the day?				
Are relevant drains sealed?				
Have visual inspections been undertaken for ecological pollution?				

G. Appendix F. Record of Environmental Incidents