MWDA: Gillmoss Materials Recovery Facility

Environmental Appraisal

11 December 2008

Produced for
Merseyside Waste Disposal Authority

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Abbreviations

AADT	Annual Average Daily Traffic
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AOD	Above Ordnance Datum
BAP	Biodiversity Action Plan
bgl	Below Ground Level
CEMP	Construction Environmental Management Plan
dB(A)	A-weighted decibel
DMRB	Design Manual for Roads and Bridges
DPD	Development Planning Document
EHD	Environmental Health Department
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
FRA	Flood Risk Assessment
ha	Hectares
HGV	Heavy Goods Vehicle
IEEM	Institute of Ecology and Environmental Management
IPS	Interim Position Statement
JMWMS	Joint Municipal Waste Management Strategy
LA	Local Authority
LCC	Liverpool City Council
LGV	Light Goods Vehicle
LSOA	Layer Super Output Area

MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
MWDA	Merseyside Waste Disposal Authority
NO_2	Nitrogen Dioxide
ONS	Office of National Statistics
PCB	Polychlorinated Biphenyl
PM_{10}	Particulate Matter
PPG	Planning Policy Guidance
PPS	Planning Policy Strategy
SNCV	Site of Nature Conservation Value
SPZ	Source Protection Zone
SU	Soiling Unit
SUDS	Sustainable Urban Drainage System
TA	Transport Assessment
tpa	Tonnes Per Annum
UDP	Unitary Development Plan
WCA	Waste Collection Authority
WTS	Waste Transfer Station

1 Introduction

This document presents the results of an Environmental Appraisal undertaken for the proposed Gillmoss Materials Recovery Facility (MRF) in Liverpool. This Environmental Appraisal has taken into consideration the effects of the proposed development on the surrounding environment and local community. The proposed Gillmoss Recycling Park will incorporate a MRF and construction of an internal visitor/education centre and administration building for the staff of the MRF. The facility will be located on land owned by MWDA, to the south west of the existing waste transfer station (WTS) on the Gillmoss Industrial Estate.

1.1 Background

MWDA is responsible for managing, recycling and disposing of municipal waste arisings within the following five metropolitan councils:

- Knowsley Metropolitan Borough Council;
- Liverpool City Council;
- St Helens Metropolitan Borough Council;
- Sefton Metropolitan Borough Council; and
- Wirral Metropolitan Borough Council.

MWDA works with the individual Councils which are known as Waste Collection Authorities (WCAs). WCAs collect household waste at the kerbside; MWDA is then responsible for the disposal of this waste. Currently this waste is mainly disposed of at various landfill locations across the North West and North Wales Regions.

In addition, MWDA works with Halton Borough Council as part of the overall procurement of new waste contracts and facilities. This is part of its role as a member of the Merseyside Waste Partnership.

The Merseyside region produced 849,105 tonnes of domestic waste in 2006/07. Of this 75% (636,828 tonnes) was sent to landfill. If waste is not managed in a more sustainable manner, MWDA (and indirectly the Merseyside Waste Partnership) could face financial penalties under UK and European legislation, potentially an additional £35 million every year.

The proposed Gillmoss MRF is part of an overall strategy within the Merseyside sub-region to develop sustainable waste management facilities for handling domestic waste and diverting proportions of it away from landfill. This strategy is driven by the Joint Municipal Waste Management Strategy (JMWMS) for Merseyside, which sets out how waste will be managed across Merseyside in the future in order to protect the stock of natural resources, prevent both local and global damage and divert more waste from landfill.

1.2 Study Area

The proposed site is situated in Gillmoss Industrial Estate in the Gillmoss area of Liverpool. The site is located approximately 7.5 km north east of Liverpool City centre in an industrial area to the north of the A580 East Lancashire Road. The overall site is rectangular in shape and has a total area of approximately 8.8 ha. The area within the red line boundary, the area of the site outlined for the proposed MRF, is approximately 1.8 ha.

The approximate centre point of the site is located at grid reference 339757,396596. The site location and boundary is shown in Figure 1.1. The overall site is indicated by a blue line boundary, whilst the area considered by the planning application for the development of the MRF is within the red line boundary.

The site is a brownfield site; in the northern corner of the site there is an existing Waste Transfer Station (WTS) owned by MWDA which has a permitted capacity of 500,000 tonnes per annum for Municipal Solid Waste (MSW) and trade waste. Adjacent to the WTS there is also an administration building and weighbridge. The remainder of the site is vacant but is often used for the ad hoc storage of empty skips.

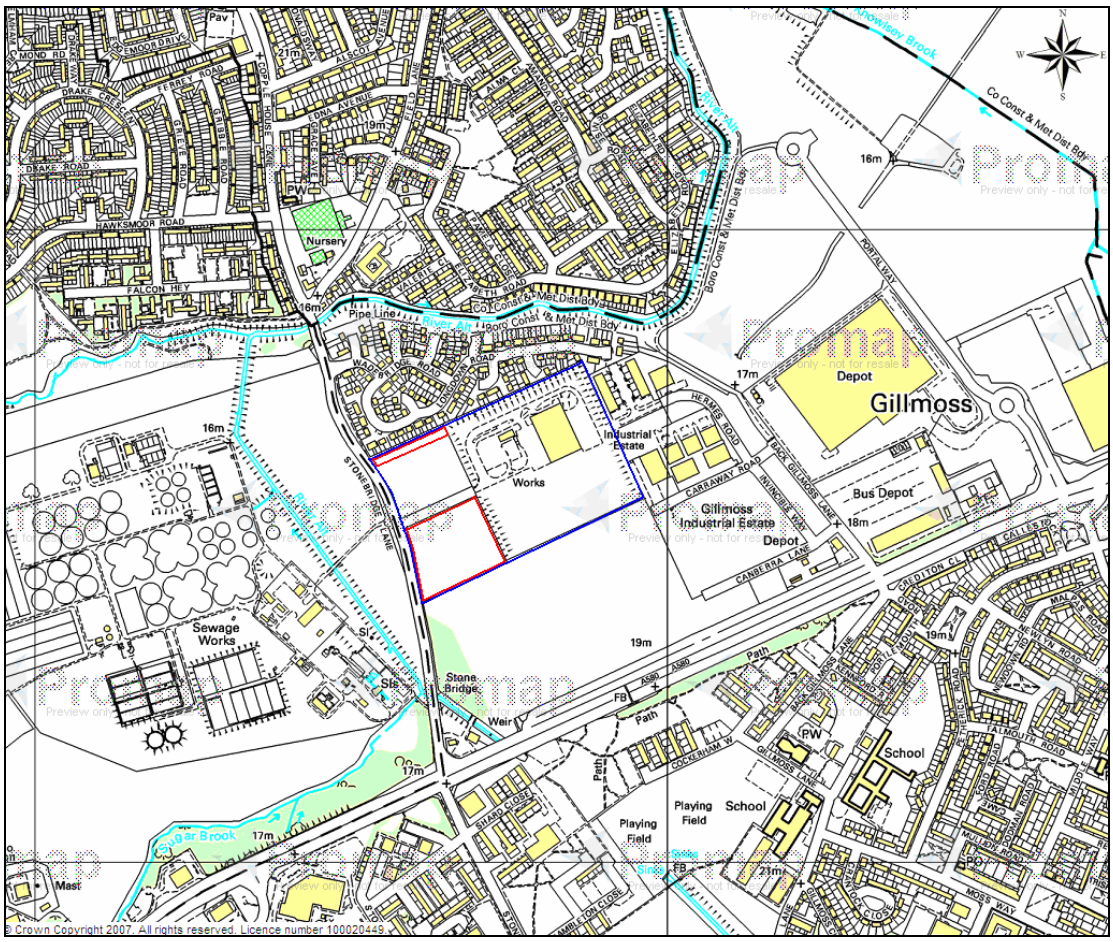

Figure 1.1 – Gillmoss Site Location and Boundary[1]

The properties of Longdown Road line the northern boundary of the site. At present, in the eastern part of the site a 25 m woodland buffer strip separates these properties from the existing WTS. The planning application includes the extension of this landscaping bund westwards along the northern boundary of the site to screen the development to views from the north. Immediately north of Longdown Road is the District border with Knowsley Borough Council.

The western border of the site is Stonebridge Lane, on the opposite side of this road is an effluent treatment works operated by United Utilities.

To the south is vacant brownfield land which is currently included in the development plans of the Stonebridge Business Park. The A580 East Lancashire Road runs east-west beyond this development land.

To the east lies Gillmoss Industrial Estate which is designated for industrial use as far as the District boundary.

1.3 Structure of This Report

Section 1 introduces the background to the proposed scheme and its geographical context.

The role of this environmental appraisal within the statutory planning application process is described in Section 2.

A description of the proposed scheme including key development components and construction activities, the need for the scheme and the planning context are presented in Section 3.

Section 4 reviews potential environmental issues associated with the proposed scheme. The environmental aspects considered are as follows:

- Air Quality and Odour;
- Noise and Vibration;
- Transport;
- Townscape and Visual;
- Geology, Soils and Contamination;
- Water Resources and Flood Risk;
- Ecology and Biodiversity;
- Socio-Economic; and
- Archaeology and Cultural Heritage.

The consideration given to each of these aspects includes:

- An overview of relevant legislation and guidance;
- A description of the existing conditions and features of note;
- Identification of any potential key environmental issues;
- A summary of mitigation measures suggested to alleviate any negative effects of the proposed development; and
- A summary of the residual effects of the development on the identified environmental component.

The findings of this environmental appraisal are summarised in Section 5.

The Environmental Effects Sections for: Air Quality and Odour; Noise and Vibration; Transport; Townscape and Visual; Geology, Soils and Contamination; Water Resources and Flood Risk; and Ecology and Biodiversity represent summaries of individual technical reports undertaken for the proposed development. The full reports for each of these aspects are provided in Appendices A to G.

2 Level of Environmental Assessment Required

2.1 Legislation: The Requirement for an Environmental Impact Assessment

Under EC Directive 85/337 (as amended by Directive 97/11EC), and the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (The Regulations), the proposed MRF (installation for the disposal of waste) is classified as a Schedule 2 development. For Schedule 2 projects, where Environmental Impact Assessment (EIA) is not mandatory, the government has issued indicative thresholds to assist the planning authorities in assessing whether a development is likely to have a significant effect on the environment and hence require an EIA. For waste disposal installations this threshold is reached if:

- The disposal is by incineration;
- The area of the development exceeds 0.5 ha; or
- The installation is to be sited within 100 m of any controlled waters.

2.2 Screening Opinion

As a result of the MRF development being classed as a Schedule 2 development, MWDA applied to the Local Planning Authority (Liverpool City Council (LCC)) for a Screening Opinion as to whether the development requires an EIA.

A Screening Opinion Request Letter was sent to LCC on 22nd July 2008, this included:

- A plan sufficient to identify the land;
- A brief description of the nature and purpose of the proposed development and of its possible effects on the environment; and
- Such other information or representations as the person making the request may wish to provide or make.

The Council returned their Screening Opinion on 19th August 2008, which was to confirm that it is the Council's opinion that the need for an Environmental Impact Assessment would not be required for this development. The reasoning for this opinion was that the City Council considers that the characteristics of the proposed development would not give rise to environmental issues which are of more than local significance. It would not give rise to a significant increase in the production of waste, pollution and nuisance. Nor would it increase the risk of accidents.

2.3 Environmental Appraisal

Considering MWDA's commitment to transparency and the environment they have decided that the correct way to approach the proposed development of the Gillmoss Recycling Park is by submitting an Environmental Appraisal to support the planning application. The appraisal has been undertaken to ensure that any potential effects of the MRF are properly considered.

3 Proposed Development

3.1 Description of the Proposed Development

The proposed Gillmoss Recycling Park will incorporate a 100,000 tonnes per annum (tpa) Materials Recovery Facility (MRF) with associated access; and construction of an internal Visitor and Education Centre and administration building for the staff of the MRF. As these facilities will be incorporated into the design of the MRF building no other buildings will be required.

The planning application includes the extension of the landscaping bund to the north of the facility along the northern boundary of the site.

The MRF building will measure 90 m (length) by 80 m (width). The height of the building varies due to the use of a curving roof; the highest point of this roof will be 16.86 m at the peak of the roof lights. The area of the building is 7,200 m². A site layout is included in Figure 3 of the Planning Application.

The facility will be located on land owned by MWDA, to the south west of the existing waste transfer station (WTS) that is presently licensed to handle 500,000 tpa of residual municipal waste.

3.1.1 Construction Activities

The key construction activities required will include site preparation and construction of buildings.

3.1.1.1 Site Preparation

Vegetation clearance and earthworks will be undertaken. This will include reshaping of the ground to suit the layout of the proposed buildings, involving excavation plant and potential truck movements around the site and to and from the site.

3.1.1.2 Construction of the Facility

The construction phase will involve various activities including the following:

- Excavation for foundations;
- Generators to provide lighting and run machines;
- Mobile cranes are most likely to be required to lift the steel work into place for the buildings; and
- Delivery of materials and specialist plant (such as concrete pumps to support the construction activities).

3.1.2 Operational Activities

The MRF facility will be staffed 24 hours per day, 7 days per week and the hours of delivery and collection of material will be 8:00 – 18:00 in the summer and 8:00 – 17:00 in the winter. From Monday to Friday the facility will be operational 24 hours a day (the facility will have periods of downtime for cleaning and maintenance). Recyclable material will be processed on Saturday until 18:00, with the remainder of

the weekend scheduled for maintenance and cleaning until the start of processing on Monday. During exceptional circumstances it may be necessary to process material during the maintenance period to clear any backlog that may have arisen.

The facility will employ approximately 100 operational staff and 5 office staff. Visitor numbers will be limited to a maximum of 30 at any one time. For the purposes of the technical assessments undertaken to appraise the effects of the proposed development, a worst case scenario of 120 operational staff has been used to reflect potential maximum staff numbers.

The MRF will process dry recyclable material that is collected from the kerbside. This will principally be comprised of paper, card, plastic bottles, steel and aluminium cans and glass bottles. The recyclable material will be brought to site in either conventional collection vehicles or in bulk haulage vehicles. The vehicles will weigh-in at the existing site weighbridge before unloading within the MRF building. The material will be predominately dry and of low odour.

All material will be handled within the MRF building and there will be no external storage of material. All doors to the facility will operate on a fast open and close operation to ensure that they are open for the shortest possible time.

The sorting system within the building will separate co-mingled dry recyclable materials into individual streams whilst also removing reject material that has been incorrectly placed into bins by householders. This reject material will be taken off site to a licensed disposal facility. Recyclable material will be processed using a variety of screens, magnets, electronic and manual separation systems, before being bulked and loaded for transport to third party recycling processors.

3.2 Project Proponents

MWDA and the six Councils working in partnership with them are the principal proponents in this scheme.

Mouchel is advising MWDA on site selection, engineering and environmental issues.

3.3 Project Programme

Assuming successful approval of the planning application, the expected start date for construction is June 2009. The duration of the construction period is likely to be 12 months; with an expected opening date of June 2010.

3.4 Need for the Scheme

MWDA have been tasked through the requirements of the Waste and Emissions Trading Act (2003) and the Waste Strategy 2007 to progressively reduce the amount of biodegradable waste that is landfilled whilst simultaneously increasing the percentages of the municipal waste stream that are recycled and composted. Further information on these policies and specific targets is provided in Section 5 of the Planning Statement.

The proposed MRF facility will be able to assist in meeting both of these key objectives by providing a facility to manage and process kerbside collected recyclable materials arising within Merseyside, prior to further processing at specialist waste recycling plants.

3.5 Consideration of Alternatives

MWDA is responsible for the disposal of municipal waste that arises in the Merseyside region whilst meeting government targets for the amount of waste that is recycled, composted and diverted from landfill.

MWDA is therefore planning the facilities that are required to meet these targets and has examined a range of sites throughout Merseyside with each site being evaluated to determine its suitability for waste management operations. Detailed methodology on the site selection process is provided in Section 6 of the Planning Statement; this outlines why the Gillmoss site was chosen and why it is considered as a suitable site for waste management development.

3.6 Planning Policy Context

The main legislation and policies against which the proposed development is required to be in line with include:

- *National Level*
  - National Waste Strategy 2007
  - Planning Policy Statement 1 (PPS1) – Delivering Sustainable Development
  - Planning Policy Statement 9 (PPS9) – Biodiversity and Geological Conservation
  - Planning Policy Statement 10 (PPS10) – Planning for Sustainable Waste Management
  - Planning Policy Guidance 13 (PPG13) – Transport
  - Planning Policy Statement 22 (PPS22) – Renewable Energy
  - Planning Policy Statement 23 (PPS23) – Planning and Pollution Control (PPC)
  - Planning Policy Guidance 24 (PPG24) – Planning and Noise
  - Planning Policy Statement 25 (PPS25) – Development and Flood Risk
- *Regional Level*
  - North West Regional Spatial Strategy
  - North West Regional Waste Strategy
- *Sub-Regional Level*
  - Interim Position Statement (IPS) from the Joint Merseyside Waste Development Plan Document (DPD) Steering Group
  - JMWMS for Merseyside
- *Local Level*
  - Liverpool City Council Unitary Development Plan (UDP)

The proposed development area comprises the south western section of the site and is designated as a Site for Industrial or Business Development within the Liverpool City Council Unitary Development Plan. The WTS towards the northeast of the site is designated as a Primarily Industrial Area (Figure 7 of the Planning Application).

4 Environmental Effects

4.1 Air Quality

4.1.1 Introduction

This Section of the Environmental Appraisal represents a summary of the air quality and odour assessment undertaken for the proposed development. The full report is provided in Appendix A.

4.1.2 Methodology and Consultation

The scope of the assessment has been determined in consultation with Environmental Health Officers (EHOs) at Liverpool City Council (LCC). The consultation included LCC representatives visiting a similar MRF facility at Bidston, Birkenhead. Following this visit LCC confirmed that they have no objection to the proposed development at Gillmoss with regard to air quality, and in particular odour (email from Paul Farrell 01.10.08 see Appendix A). Nevertheless the assessment has considered potential impacts to air quality and odour related to the following:

- Construction phase activities;
- Construction traffic;
- Operational phase activities; and
- Operational traffic.

For the traffic assessments the assessment adopts Design Manual for Roads and Bridges (DMRB) HA207/07[2] Guidance. For construction phase activities Best Practice Guidance issued by the Mayor of London and London Councils has been followed.

4.1.3 Baseline Conditions

4.1.3.1 Air Quality Management Areas

There are two Air Quality Management Areas (AQMA) in Liverpool; these are located approximately 8.7 km southwest and 6.4 km south of the proposed development site.

4.1.3.2 National Air Quality Information Archive (NAQIA) Background

Table 4.1 shows the estimated background pollution concentrations surrounding the proposed development site. Background concentrations in the vicinity of the proposed site are below the national air quality objectives (AQOs) (Annual Mean of 40 µg/m^3 for both nitrogen dioxide, NO_2, and particulate material, PM_{10}).

Table 4.1 – NAQIA Estimated Annual Mean Background Pollution Concentrations in the Vicinity of the Site

Year	Pollution Concentration – Annual Mean (µg/m^3)		
	NO_2	NO_X	PM_{10}
2009	18.96	26.11	18.04
2010	18.70	25.20	17.70

4.1.3.3 Monitoring Undertaken by Mouchel

Surveys were undertaken by Mouchel for pollutants including dust, odour and NO_2. These were carried out between 23rd November 2006 and 11th June 2007 for approximately six months at five locations surrounding the proposed development site (for further details see Appendix A).

4.1.3.4 Baseline Dust Monitoring

Average weekly dust soiling levels in the vicinity of the proposed development were monitored across the 6 month period. Overall, the data capture rates were very good for the survey.

Acceptance criteria in terms of soiling units (SU) have been established following social surveys. A soiling rate of greater than about 25 SU/week is likely to cause complaints. The results of the baseline survey show that the largest dust soiling rate in the vicinity of the proposed development is 10.6 SU/week monitored at Site 5 during Period 6; this is well below the criterion.

4.1.3.5 Bias Adjusted NO_2 Monitoring Results

NO_2 diffusion tube monitoring was carried out for six months from 23rd November 2006 to 11th June 2007 at the five receptor sites. At the same time, a NO_2 diffusion tube was deployed co-locating with the Manchester Piccadilly continuous monitoring site, in order to undertake bias-adjustment.

The results of this monitoring show no exceedence of the Annual Mean Objective for NO_2 (40 µg/m^3) at any of the monitored locations in 2007. No locations are predicted to exceed the NO_2 1 Hour Mean Annual Mean Equivalent (60 µg/m^3), which means that there are not likely to be exceedences of the 1 Hour Mean Objective (200 µg/m^3 not to be exceeded more than 18 times a year) in 2007.

4.1.3.6 Baseline Odour Monitoring

The proposed site was visited by Mouchel staff twice in November 2006 to identify any existing odour sources in the vicinity of the proposed development. Tests were undertaken at the five receptor locations.

The results of the sniff test on 23rd November 2006 show that Sites 1, 2 and 3 did not experience odour during the survey period. Sites 4 and 5 experienced moderate odour, but with different probable causes due to their different smells. For Site 4, the likely cause might be related to the nearby effluent treatment works as the smell was

foul drain sewage. For Site 5, the smell was considered to be similar to marzipan and damp hospital waste and was likely caused by the WTS with wind direction being southwest.

The results of the sniff test on 28th November 2006 show that Site 4 experienced a strong odour which was likely caused by the effluent treatment works, as it was upwind during the sniff test.

4.1.4 Potential Effects Without Mitigation

4.1.4.1 Construction Phase Activities and Plant

Given the size of the proposed development (approximately 18,500 m^2) there is potential for significant effects on sensitive receptors.

Some potential for dust nuisance is possible. As the greatest potential for nuisance problems associated with dust deposition / soiling is likely to be within 100 m of the construction site perimeter, the main effects on sensitive receptors along the northern boundary may result from construction of the extension to the earth bunding along the north site boundary. The construction of the proposed MRF may cause limited incidences of increased dust deposited on those receptor locations.

During the construction phase, the development has the potential to impact on local air pollution concentrations, specifically nitrogen dioxide (NO_2) from construction vehicles and plant, and PM_{10} as a result of construction and fabrication activities undertaken onsite and emissions from construction vehicles and plant. Potential impacts on levels of dust deposition / soiling are also associated with construction activities, such as dust generation from earthworks and re-suspension caused by vehicle movements in the vicinity of the development.

4.1.4.2 Construction Traffic

The number of vehicles in the construction phase is closely associated with the scale of construction. Given the form of the proposed development, it is unlikely that the impact of traffic during the construction phase on local air quality will be significant. The effects of construction traffic on air quality will be re-considered when detailed construction traffic data are available, and if the construction period is greater than six months.

4.1.4.3 Operational Phase Activities

Once the proposed development is in operation it may have the potential to cause dust / PM_{10} and odour nuisance to local sensitive receptors. As the proposed development does not involve the chemical or biological treatment of any waste, it is not anticipated that there will be any associated MRF process emissions other than natural ventilation of the buildings.

The proposed development is not likely to give rise to significant amounts of dust. It is possible that dust could be generated when recyclable material is tipped, moved or sorted and dust may be generated from the yard surface during dry and windy weather. However this is considered be insignificant. To minimise any potential dust

issues a dust suppression system will be installed, and fast cycle opening/closing doors will prevent significant fugitive releases from the MRF building.

As all recyclate material should be odourless and non-putrescible it is considered that the proposed MRF at Gillmoss is not likely to give rise to significant amounts of odour. All recyclable material will be handled within the proposed MRF building and there will be no external storage of recyclates. As noted above, all doors to the facility will operate on a fast open and close operation, to prevent fugitive releases.

4.1.4.4 Operational Traffic

Following the application of DMRB scoping level criteria; the number of heavy goods vehicles (HGV) and light duty vehicles (staff cars) are below the respective HGV criteria threshold of 200 annual average daily traffic (AADT) and the total traffic flow criteria threshold of 1000 AADT. Because the predicted increase in total traffic is less than the DMRB scoping level criteria, the effect of traffic associated with the proposed development is considered as insignificant with respect to local air quality.

4.1.5 Mitigation Measures

4.1.5.1 Construction Phase

In order to minimise potential construction phase impacts, a number of 'best practice' mitigation methods will be implemented throughout the duration of the construction phase as appropriate. These are detailed in Appendix A and summarised in Table 5.1.

Monitoring of emissions during the construction phase will also be considered to ensure that, with the application of 'best practice' mitigation methods, the dust deposition levels do not exceed twice that of the baseline deposition.

Detailed mitigation measures to control construction traffic will be discussed with LCC to establish the most suitable access route for the site traffic.

It is recommended that liaison with LCC be maintained throughout the construction process, and any reported incidents of dust deposition / soiling and / or PM_{10} concentrations at nearby residential properties are reported to the Environmental Health Department (EHD) of LCC. If complaints are received from local residents, these will be documented in a diary or log held on site by the Site Manager. Any complaints or comments received will also be forwarded to MWDA.

A nominated member of the construction team (e.g. Site Manager) will also act as a point of contact for residents who may be concerned about elevated deposition of dust. The contact details for this nominated team member will be forwarded to the LCC EHD before the construction phase begins.

These measures will be incorporated in to a Construction Environmental Management Plan (CEMP) once the contractor has been appointed.

4.1.5.2 Operational Phase

The doors of the proposed development will remain closed at all times except for the entry and exit of vehicles.

In the event that odours are detected inside the MRF building, sniff tests shall be undertaken at the boundaries of the site for any smells from the development when odour emissions are likely. If any materials are causing noticeable smells at the site boundaries they shall be contained or removed from the site as soon as practicable.

All storage and sorting of recyclates will be carried out inside the MRF building.

Incorporation of the above measures will ensure that dust and odour nuisance at receptor locations is unlikely.

4.1.6 Residual Effects and Conclusion

4.1.6.1 Construction Phase

As the size of proposed development is 18,500 m^2, it is anticipated that without mitigation the construction phase for the proposed development could present a high risk of dust deposition / soiling. With the mitigation measures recommended, the level of risk will be reduced to a temporary minor adverse level.

The impact of traffic on local air quality during the construction phase is likely to be insignificant.

4.1.6.2 Operational Phase

The proposed development at Gillmoss will not give rise to significant amounts of dust and odours. The impact of the proposed development on air quality is likely to be insignificant.

The traffic impact on air quality associated with the proposed development is likely to be insignificant.

In the event that odours are detected inside the MRF building, sniff tests shall be undertaken at the boundaries of the site for any smells from the development when odour emissions are likely. If the origin of the odour is identified as being from the proposed development, appropriate measures will be identified to eliminate or contain the odour.

4.2 Noise and Vibration

4.2.1 Introduction

This Section of the Environmental Appraisal represents a summary of the Noise Assessment undertaken for the proposed development. The full report can be found in Appendix B.

4.2.2 Methodology

The potential impact of noise during the construction and operational phases of the proposed MRF has been considered. The assessment has been undertaken in

accordance with industry best practice and applicable British Standards; it considers the following tasks:

- Consultation with EHOs at LCC to determine the type of noise assessment to be undertaken, taking into account the presence of existing noise levels and any existing noise nuisance;
- Desk-based study to identify the proximity of nearest sensitive receptors;
- A review of development proposals, including noise data of plant associated with the proposed MRF;
- Identification of background noise levels within the vicinity of the proposed development by undertaking an attended short-term noise monitoring survey;
- Computer-based model predictions to quantify the noise impact associated with the operational phase of the development; and
- Qualitative assessment of potential noise and vibration impacts associated with the construction phase of the development.

4.2.3 Baseline Conditions

4.2.3.1 Background Noise Levels at the Gillmoss Site

A noise monitoring exercise was undertaken in the vicinity of the proposed MRF site. The purpose of this monitoring exercise was to establish ambient noise levels to represent the noise climate for a typical week day, night-time and weekend with the existing traffic network, and to ascertain the influence of noise from adjacent roads and other sources (non-traffic) in the area.

Between 8th August 2007 and 4th September 2008, attended noise measurements and frequency data were taken at 3 locations for a period of up to 3 hours.

During the day-time monitoring, at all measurement positions, road traffic from the A580 and industrial noise from Gillmoss Industrial Estate and the WTS were deemed to be the predominant noise sources. Road traffic represents a relatively constant source of noise. Industrial noise is more intermittent and could be characterised by screeches, bangs and clatters.

During the night-time monitoring periods, road traffic was the dominant noise source at all the locations. In the periods of low traffic flow, industrial noise from a premise on Back Gillmoss Lane was audible. In the housing estate to the north of the site, noise levels were low. Here local, sporadic noise contributed significantly to the background noise levels. These included cars on Longdown Road and a helicopter overhead. The WTS was not operational during the night-time monitoring periods.

During the weekend monitoring periods, road traffic from the A50 and M57 was a constant steady noise source at all the monitoring locations. The WTS was operational during the monitoring periods and industrial clangs, bangs and reversing sirens were clearly audible. Within the housing estate local noise sources, such as

local cars, dogs barking and lawn mowers, contributed sporadically but significantly to the background noise levels.

4.2.3.2 Existing Noise Levels from an Operational MRF – Bidston

In order to establish the likely noise level from the proposed MRF, a noise level survey was undertaken at an existing MRF (owned by MWDA), similar to the facility proposed at Gillmoss. The existing MRF is located at Bidston, Wirral.

On 16th and 17/18th March 2008, attended noise measurements and frequency data were taken at six locations inside the MRF for a period of 1 hour. Measurements were also taken at four external locations. Noise measurements were taken outside the MRF building at night-time when contribution from other sources (road traffic, industrial) is at its lowest.

Noise within the enclosed MRF building is characterised by distinct impulses (e.g. industrial clangs, bangs and sirens). The process creates a mechanical whirring noise forming a distinguishable, discrete, continuous note. Specific parts of the process were clearly audible from outside the building such as;

- JCB bucket scraping along the concrete floor; and
- Emergency / warning sirens.

During 'downtime', the running of the conveyor belts was audible from outside the building.

At the monitoring locations to the south of the MRF, the noise climate was influenced by the configuration of the doors. At the start of the measurement period, two of the delivery bays were open. One was closed during the monitoring period which reduced noise transmitted from within the building to the measurement position. At these locations the noise level was also influenced by movements of forklift trucks, JCBs and HGVs collecting material. This comprised of reversing sirens, clanging and tipping of materials

It should be noted that during the external measurement periods, the MRF was not receiving deliveries from collection vehicles.

4.2.3.3 Vibration

There were no major sources of vibration in the vicinity of the proposed MRF. At the existing MRF, vibration was detectable by acousticians on the suspended walkways inside the building. However, vibration was not observed on the concrete hard-standing or at locations outside the MRF building. Therefore, due to observations made at the existing Bidston MRF, it has been concluded that vibration monitoring or assessment is not required for the proposed MRF at Gillmoss as the potential for vibration impact is deemed to be insignificant.

4.2.4 Potential Effects and Proposed Mitigation

4.2.4.1 Construction Phase

A detailed assessment of the area subject to construction noise impact will be undertaken by the Contractor as part of their Construction Environmental Management Plan (CEMP).

It is anticipated that the noise and vibration impact during construction would be restricted to the residents and users of areas, for example on footpaths, in the immediate vicinity of the proposed development. The impact due to construction activities would be temporary in nature. The areas with the potential to be affected by the construction of the proposed MRF are residential properties on Longdown Road and adjoining roads, and commercial offices on Gillmoss Industrial Estate.

Specific noise and vibration abatement measures will be incorporated into the Contractors CEMP.

It is considered that with the appropriate mitigation measures implemented, the potential for adverse noise impacts from the construction phase of the proposed MRF is not significant.

4.2.4.2 Operation Phase

The predicted noise level increase is greatest during the day-time period. This is due to the presence of delivery vehicles and the opening of the 5 doors on the eastern façade. A worst case scenario, of 17 delivery vehicles per hour and the doors being left open throughout the day-time period, was modelled.

The maximum contribution of the MRF to the ambient noise level without mitigation is 3.8 dB(A) at Gillmoss Industrial Estate during the day-time period.

In order to reduce this noise level at the receptor, the existing barrier (overplanted earth bund) at the eastern site boundary will be increased in height from 2 m to 6 m with a suitable barrier. This would provide a reduction in noise level of 1.6 dB(A). This would result in an increase in noise level of 2.2 dB(A) as a result of the proposed development, a level which is not usually perceptible to the general public.

It is not considered necessary to provide additional mitigation measures to that stated above as the noise level increase is less than 3 dB(A). A change in noise level of 3 dB(A) is considered to be not usually perceptible by the general public.

4.2.5 Residual Effects and Conclusion

Any impact associated with the construction phase of the proposed development will be considered to be minor if best practice is followed and the mitigation measures deemed to be appropriate are implemented.

It is considered that with the installation of the proposed noise barrier to provide appropriate mitigation, the potential impact of noise during the operation of the proposed MRF is not significant at any sensitive receptors. Using the conservative

assessment methodology adopted for the purposes of this study, the predicted 2.2 dB(A) increase at the Gillmoss Industrial Estate is considered to be 'slight adverse', although is unlikely to be perceptible by the general public.

4.3 Transport Assessment

4.3.1 Introduction

This Section of the Environmental Appraisal represents a summary of the Transport Assessment (TA) undertaken for the proposed development. The full report is provided in Appendix C.

4.3.2 Methodology

The TA considers the impact of the proposed development in access and transportation terms and follows the recommended procedures outlined in the 'Guidelines for Transport Assessment' published by the Department for Transport, 2007.

4.3.3 Baseline Conditions

The site currently houses a Waste Transfer Station (WTS) in its north east corner. This is connected to the local network via an access road that forms a priority junction on Stonebridge Lane. All waste transfer vehicles arrive from and depart towards the south via the junction of Stonebridge Lane and East Lancashire Road.

All vehicles use the access road but are separated into staff / visitor cars and waste vehicle movements upon reaching the centre of the site where staff and visitors are provided with a large surface car park to the west of the WTS and delivery / collection vehicles are directed onto a gyratory around this car park and into the WTS area itself.

The Gillmoss site is strategically located in terms of the local highway network close to the A580 East Lancashire Road. Access to the strategic road network is possible from the site within 1 mile (1.6 km).

There are good pedestrian routes between the existing access and the surrounding residential areas. However, between the East Lancashire Road and Wadebridge Road, footways are only provided on the east side of Stonebridge Lane. The standard of pedestrian routes nearby is generally good; wide footways and street lights are provided within proximity of the site.

The highway network surrounding the proposed development offers no restriction to cycling; wide carriageways and flat topography provide a suitable platform upon which to encourage cycling.

The site is accessible by bus with a number of bus stops located within a 5 minute walk of the site.

4.3.4 *Potential Effects*

It is proposed that all traffic will access the development site from Stonebridge Lane, via the existing priority junction. The vehicles will weigh-in at the existing site weighbridge before unloading within the MRF building (See Figure 6 of the Planning Application).

Following consultation with Liverpool City Council Highways officers, it has been agreed that any heavy commercial traffic leaving the proposed MRF (both during construction and operation) will be subject to the existing restrictions enforcing a left only turn towards the A 580 East Lancashire Road. Heavy vehicles travelling to the site will therefore approach from the East Lancashire Road, to avoid travelling through the residential area around Copple House Lane to the north. No such restriction will apply to other vehicle movements such as commuters or visitors.

Predicted average weekday movements to and from the proposed MRF for HGVs are provided in Table 4.2. A total of 6 HGV movements are predicted for the AM peak hour of 08:00-09:00, whilst no movements are predicted for the PM peak hour of 17:00-18:00. At times in between it is likely that the predicted hourly flows will be evenly distributed.

Table 4.2 – Movements to and from the Proposed Materials Recovery Facility

Time	08:00 - 09:00	09:00 - 10:00	10:00 - 11:00	11:00 - 12:00	12:00 - 13:00	13:00 - 14:00	14:00 - 15:00	15:00 - 16:00	16:00 - 17:00	17:00 - 18:00
In	4	11	11	12	13	14	10	4	1	0
Out	2	5	3	5	1	3	4	3	5	0
Total	6	15	14	17	14	17	14	7	6	0

It is assumed that there will be a decrease in waste vehicles to the WTS as waste shifts from residual to recyclate collections. When the increase in trips due to the proposed MRF is combined with the reduced WTS movements, there are approximately 53 extra HGV movements per day, over a 10 hour period (08.00-18.00).

Vehicle trips will be distributed onto the network in various ways. The MRF delivery vehicle trips have been assigned to the local highway network based upon the existing WTS trip distribution. All vehicles removing sorted recyclables from the site will travel south to the East Lancashire Road and from there the distribution will depend upon the destination of the cargo. In order to gauge worst case impact levels, two scenarios have been devised whereby 100% of the outgoing sorted recyclables trips are directed either east or west at the junction with East Lancashire Road.

It is assumed that all delivery and collection vehicles must make the opposite, related, reverse trip un-laden. These trips have been assigned onto the network following the same distribution as the opposite, fully loaded, trips.

The transport assessment shows that the greatest increase in the AM peak was 2.33 % on the East Lancashire Road eastbound right-turn movement. In the PM peak the greatest increase was 0.54 % on the Stonebridge Lane left-turn movement. Neither of these increases is significant enough to warrant a detailed junction assessment and as such the MRF development traffic has not been assessed further.

There are no safety or capacity implications as a result of the proposed MRF, therefore the proposed site access is considered adequate for the proposed development.

Analysis of the relevant accident data for vicinity of the proposed development site shows that the increase in traffic should not cause any significant safety implications. Therefore no mitigation measures are required.

A new car park is proposed adjacent to the MRF. This will comprise 30 car parking spaces with 2 disabled spaces. This is less than LCC's maximum parking provision. It is considered that, due to the nature of the proposed development, a higher level of parking provision would not be appropriate.

Covered, secure cycle parking is to be provided close to the main office building access, in locations overlooked by workers. Within the development, shower and changing facilities will also be provided and lockers are proposed for the storage of clothing and other items.

The proposed development is well served by bus services for the majority of staff shifts.

4.3.5 Conclusions

The proposed development is situated within a well established industrial area that has co-existed with the surrounding community for a significant amount of time.

The assessment of the transport impact of the proposed development recognises that the trips generated by the development are relatively low and that distribution patterns will not alter from those currently associated with the existing WTS. Consequently, the assessment demonstrates that the additional trips occurring as a result of the proposed MRF will not result in any significant change to local highway conditions.

The majority of vehicle movements avoid the network peak periods. For most of the day, the proposed development will generate very low numbers of movements and will not impact significantly on local conditions.

In conclusion, this assessment has demonstrated that the site is accessible by all modes of transport and that the overall transport impact of the proposals would be minimal.

4.4 Townscape and Visual

4.4.1 Introduction

This Section of the Environmental Appraisal represents a summary of the Townscape and Visual Appraisal undertaken for the proposed development. The full report is provided in Appendix D.

The Townscape and Visual Appraisal outlines the findings of the assessment of predicted effects on townscape character and sensitive visual receptors that the construction and operation of the proposed Material Recovery Facility (MRF) may have.

4.4.2 Methodology

The broad principles of the landscape character assessment process outlined in other methodologies such as GLVIA[3] and DMRB[4] have been applied to the subject of Townscape.

The assessment of visual effects has involved identification of visual receptors, completion of a site survey to verify receptors and determine potential impacts, and identification of proposed mitigation measures.

4.4.3 Baseline Conditions

The development site is located within the Merseyside conurbation. The area is characterised by urban sprawl that has developed as a result of the establishment of Liverpool as a major trading port.

At a local level the study area can be sub divided into a number of smaller local character areas that can be defined by their key features, sense of enclosure and general appearance. These spaces generally retain some awareness and commonality of features with the immediately adjacent character areas, but retain sufficient differences to be considered as definable areas.

The study area has been split into six local character areas:

- Effluent Treatment Works;
- Copple House Housing Estate;
- Industrial Estate;
- Croxteth Housing Estate;
- Transport Corridors; and
- The Ecology Park.

The visual context of the site is broadly contained by residential development to the north and the structure planting associated with the sewage farm to the west.

Several residential properties have direct rear elevation views towards the development site becoming increasingly filtered by planting to the northern boundary towards the east.

To the east and south there is recent development in the form of several new and large warehouse style buildings, beyond are the rooflines of the residential properties that extend southwards.

4.4.4 Potential Effects Without Mitigation

4.4.4.1 Development Proposals

The proposed development will be finished to a high standard of design, using quality materials and a co-ordinated design theme to the massing arrangement, colour coding and siting of the development within the wider context of the expanding business development to the south.

The current disused open space of poor landscape quality would be replaced with the development. There would be no loss of townscape or landscape components of good quality within any of the local character zones, with only minor loss of existing self sown semi mature trees and shrubs within the development site itself.

4.4.4.2 Landscape Character

The resultant effects of the proposed development on the local character areas is considered to be neutral due to the fact that the development would not create a discernable change to the fabric of the existing baseline conditions.

4.4.4.3 Visual Impact

The development will have its most significant impacts on those properties along Longsdown Road with rear elevations that have direct views of the development site, particularly those that do not benefit from existing boundary planting and earth bunding along the northern boundary of the development site.

Views from the effluent treatment works are greatly limited by the dense screen planting along the west boundary. Earth mounding around the perimeter of the treatment works and the north perimeter of the ecology park with existing tree planting restricts views further to limited or no views of the proposed development.

Views from the Gillmoss Industrial Estate will be limited to partial or no views by the existing warehouse towards the west of Gillmoss Industrial Estate. Any potential views will be similar to current surrounding and will fit well with the surroundings.

The East Lancashire road will have limited to no views of the proposed development because of existing tree planting along its perimeter and further earth mounding and tree planting between the development site and the road boundary. Any potential view will be transient and be in the order of low to none. Furthermore the newly developing Stonebridge Lane Business Park has further restricted direct views of the proposed development.

Motorway users between junctions 4 and 6 will have no distance views of the proposed development. The recent erection of large warehouse style buildings and earth bunding have obscured any potential views

The views from the Croxteth Estate towards the south of the development site will be reduced to some elevated views from upper floors of the north facing properties and Croxteth School.

It is considered that the proposed development will fit well into its surroundings and any remaining effects could be mitigated with further planting and earth modelling.

4.4.5 Mitigation Measures

The townscape and visual assessment has highlighted a small number of potentially significant effects. In order that these can be reduced to an acceptable level a number of mitigation measures have been identified:

- As part of the design process, consideration has been given to architectural design features for the main building that will provide interest and contribute to the local townscape; these have been incorporated into the design;
- Use of native shrub and tree planting appropriate to the location will provide screening to visual receptors, in particular to those properties to the north of the site to bolster existing boundary planting;
- Development of a strong landscape design for the site, to provide a setting for the building and interrupt views of the main building; and
- The extension of earth screen mounding along the northern boundary and new mounding adjacent to Stonebridge Lane will, in combination with the proposed boundary planting serve to screen views from residential properties.

The incorporation of appropriate mitigation measures would in the medium to long term reduce the overall effect of the proposed development on local townscape and sensitive visual receptors.

4.4.6 Residual Effects Following Mitigation

Even with implementation of the mitigation measures outlined above the development site would remain a new component resulting in some residual effects:

- Change to existing open ground as viewed from the rear of properties to the north and Stonebridge Lane;
- Permanent loss of medium distance views from the rear of several properties to the north; and
- Increased sense of urbanisation along Stonebridge Lane.

The residual effect of the development has been assessed and is considered to be in the order of slight adverse.

4.5 Geology, Soils and Contamination

4.5.1 Introduction

This Section of the Environmental Appraisal represents a summary of the Geology Soils and Contamination Report undertaken for the proposed development. The full report is provided in Appendix E.

4.5.2 Methodology

The Geology Soils and Contamination Report draws together the findings of a previous Mouchel ground investigation (undertaken in January 2007) and the findings of two intrusive investigations undertaken during December 2005 and in September 2007, both independent of any input from Mouchel.

The assessment has been undertaken in accordance with industry best practice and applicable British Standards; it covers the following:

- Desk based assessment;
- Intrusive ground investigations; and
- A risk assessment covering:
  - Human health;
  - Groundwater; and
  - Ground gas.

4.5.3 Baseline Conditions

4.5.3.1 Site History

Historical maps show that the site was in agricultural use until around 1955 when it was developed as part of a larger Electrical and Mechanical Engineering Works that occupied the land to the north, south and east of the site. On the 1989 map these works had been demolished.

4.5.3.2 Geology, Hydrogeology and Hydrology

Desk based research of the local geology, hydrogeology and hydrology was carried out in order to establish the potential for migration of contamination, if present, onto or away from the site, and to assess the surface water and groundwater sensitivity of the site area.

Geological survey maps indicate that that the site is directly underlain by recent drift deposits comprising the Shirdley Hill Sands, further underlain by Glacial Till deposits. Shirdley Hill Sands are a Minor Aquifer. This is further underlain at depth by Sherwood Sandstone, which is a Major Aquifer.

The Environment Agency website shows that the site does not lie within a source protection zone (SPZ); however, a total catchment SPZ (zone II) is located approximately 100 m to the south of the site.

Information from the Environment Agency indicates the site to contain soils where the leaching potential is unknown, due to being an urban area. A worse case

vulnerability is therefore assumed: high leaching potential. These are soils which readily transmit liquid discharges.

The Coal Authority has no record of the area of the site being subject to any known working of coal by either underground or opencast methods. As such a Coal Mining Report was not considered necessary.

Guidance on Protective Measures for New Dwellings indicates that the site lies within an area where less than 1% of homes are above the Radon Action Level, and as such indicates that no radon protection measures within buildings are required.

The closest surface water feature is the River Alt approximately 100 m west.

The Envirocheck report records there are no licensed water abstractions attributed to the site or within 500 m. This report records there are 36 discharge consents within a 250 m radius of the site. Two of these refer to Merseyside Waste Disposal Authority and the remainder refer to United Utilities. Also recorded was one Water Industry Act referral within 250 m of the site. The Envirocheck report records 13 pollution incidents to controlled waters within 250 m of the site. Two relate to the adjacent waste transfer station site and are category 3 – minor incidents. The remainder are either category 3 – minor incidents or category 2 – significant incidents.

4.5.3.3 Contamination Potential and Geotechnical Issues

The site has been previously developed as an electrical and mechanical engineering works. As a result possible contaminants are likely to include: metals and metalloids, inorganic compounds, acids, alkalis, asbestos, polychlorinated biphenyls, organic solvents, halogenated compounds, solvents, oils and lubricants, mineral oils and effluent treatment chemicals / sludges. All these contaminants have potential to pose a risk to human health and controlled waters.

The former site usage indicates that made ground is likely to be present including buried structures such as foundations, basements, etc. The presence of these could affect development works and should be considered when planning the works.

4.5.3.4 Ground Conditions

Made ground was encountered in each exploratory hole at depths between 0.3 m and at least 2.6 m below ground level (bgl). The made ground generally comprised brown, slightly clayey gravelly sand or sandy gravel. The gravel component generally comprised brick, concrete, sandstone, metal, plastic, wood, ceramic, clinker, mudstone, burnt shale, glass, slate and ash.

Bedrock was encountered in a number of locations. Various obstructions were also encountered. Groundwater was encountered at a number of locations.

The only visual or olfactory evidence of contamination was observed during the December 2005 investigation. Organic material with a slight organic odour was noted in the shallowest made ground strata.

Asbestos was identified at two locations during the September 2007 investigation. PCB's were tested for during the September 2007 investigation and were detected above the limit of detection in three trial pits. Trichloroethene was identified in one trial pit during the January 2007 investigation.

4.5.4 Potential Effects Without Mitigation

4.5.4.1 Geotechnical Issues

The made ground is not considered to represent a suitable bearing stratum. Consequently, the advice of specialist contractors should be sought to formulate the most appropriate and cost effective design.

4.5.4.2 Gas Risk Assessment

In accordance with CIRIA document C665[i], and based on the levels of ground gas recorded during the surveys, no special precautions are considered necessary.

4.5.4.3 Human Health Risk Assessment

A human health short-term exposure assessment has been undertaken to identify potential risks to site workers and longer term maintenance workers due to ground contamination. The identified concentration of trichloroethene – 9.3 µg/kg is not considered to be significant. Therefore the only contaminants considered to represent a possible risk to construction workers and site maintenance workers, in the absence of appropriate mitigation, are PCBs and asbestos.

4.5.4.4 Controlled Waters Risk Assessment

Chemical test results indicate exceedences of the screening values for arsenic, cis-1-2-dichloroethene and trichloroethene. It is therefore considered that the made ground is having a slight impact on the underlying aquifer. The assessment has identified no significant risk to surface waters.

4.5.5 Mitigation Measures

4.5.5.1 PCB and Asbestos Contamination

Mitigation measures for the asbestos and PCB contamination could include capping with inert soil or excavation and offsite disposal, depending upon the location of the building and hard standing. Inert trench fill should be considered for service runs to protect maintenance workers. Discussion with regulatory authorities would be prudent to ascertain the most pragmatic and cost effective route to dealing with the asbestos and PCB contamination.

The developer / ground engineering contractor should assess the risks posed by these contaminants to their staff prior to commencement on site. As a minimum, it is

[i] Assessing Risks Posed by Hazardous Ground Gases to Buildings

recommended that a full Health and Safety plan should be produced prior to work commencing, that good site practice is maintained, and that dust is kept to a minimum by damping down to prevent incidental inhalation. Other good site hygiene practices such as washing hands before eating should be strictly followed.

4.5.5.2 Controlled Waters

Chemical test results indicate that the made ground is impacting slightly on the underlying aquifer. It is therefore recommended that discussions are undertaken with the Environment Agency at the earliest opportunity to determine a suitable course of action (if any is required). Redevelopment of the site predominantly with hard standing may reduce the infiltration of rainwater and in turn may minimise leaching of contaminants into the groundwater.

4.5.5.3 Geotechnical Issues

Buried former structures may require excavation and/or removal during the redevelopment works. A discharge consent from United Utilities may be required to dispose of water pumped from any excavations. Depending upon the final building design and loading requirements, advice from specialist consultants may need to be sought.

4.6 Water Resources and Flood Risk

4.6.1 Introduction

This Section of the Environmental Appraisal represents a summary of the Flood Risk Assessment (FRA) undertaken for the proposed development. The full report is provided in Appendix F.

The FRA undertaken for the proposed Gillmoss MRF highlights the issues to be considered with regard to flood risk.

4.6.2 Baseline Conditions

The proposed site falls within the 248 km^2 Alt catchment. The majority of surface water runoff within the catchment is pumped into the Irish Sea from Altmouth Pumping Station. The Alt catchment is made up of two main areas, namely the Upper and Lower Alt. The proposed site is situated within the Upper Alt which is characterised by low risk of flooding due to higher ground elevations and good planning.

The River Alt flows north and west of the proposed site. There are five brooks (all tributaries of the River Alt) within 1 km of the site, and their approximate distances to the site are as follows:

- Fazakerley Brook, 250 m north-west of site;
- Knowsley Brook, 650 m west of site;
- Sugar Brook, 150 m south of site;
- Kirby Brook, 700 m north; and
- Croxteth Brook, 800 m west.

The groundwater vulnerability map indicates that the proposed site and surrounding land sit directly above a major aquifer and a soil class of high vulnerability. There are no Source Protection Zones (SPZs) on the site.

4.6.3 Flood Risk Assessment

The Environment Agency Indicative Flood Maps provide an indication of the sensitivity of the site to the incidence of flooding. The proposed site falls outside the 1:1000 fluvial flood plain of the River Alt and thus has an associated flood risk of less than 0.1% (land assessed as having less than a 1 in 1000 annual probability of flooding from the river).

The Environment Agency 1 in 100 flood level closest to the site is of 14.79 m Above Ordnance Datum (AOD). The lowest point of the access road within the Gillmoss site is at a level of 17.40 m AOD and therefore will be elevated above the 1:100 flood level and remain dry in all but the most extreme events.

A topographical survey was undertaken for the proposed site. This shows ground levels within the boundary of the entire Gillmoss site to vary between 12.99 and 18.00 m AOD as follows:

- Approximately 97% or 8.9 ha of the site is above the 1:100 year flood level
- Approximately 3% or 0.3 ha of the site falls below the 1:100 flood level, but it is well protected from overland flood flow by earth bunds.

The site topographical survey shows the lowest point at the proposed MRF site to be at a level of approximately 16.99 m AOD. The proposed MRF site is located in an area that is slightly elevated in relation to its surroundings and is all located above the 1:100 year flood level.

Consultation with the Environment Agency commenced on 2nd April 2008 and after evaluation, the Environment Agency confirmed the location of the site to fall outside the 1:1000 fluvial flood plain. Modelling data obtained from the Environment Agency shows the 1:100 flood level nearest the site to be 13.72 m AOD.

4.6.4 Potential Effects and Proposed Mitigation

4.6.4.1 Fluvial

It is considered that the risk associated with fluvial flooding is low due to:

- The site falling outside the 1:1000 year return period event fluvial flood plain of the River Alt;
- The elevation of the site in relation to the surrounding area; and
- Previous planning and investment in the flood defence infrastructure in this locality.

4.6.4.2 Site Run-Off

An additional 1.3 ha of impermeable surface area will be established as a result of the construction of the new MRF. This will result in additional runoff into the surface water sewer of approximately 176 l/s for a 1 in 100 year (M100-D60 + 20%) design storm. Surface water runoff from the paved area of the proposed MRF will be treated as trade effluent and returned to the combined or foul sewer.

Sustainable Urban Drainage Systems (SUDS) best practice should be employed to:

- Limit the discharge to the surface water sewer to the current discharge rate;
- Maintain the existing Greenfield runoff rate for this area (8.6 ℓ/s/ha – IH 124 Report for a 100 year return period), in compliance with the DMRB. Attenuation ponds, silt traps, petrol interceptors and trapped gullies could be provided to control flows and to prevent risk of pollution to the river;

SUDS measures such as attenuation ponds should be designed for a 1 in 100 year flood event flow retention with due consideration to climate change effects. These are recommended to be used to attenuate for both uncontaminated surface runoff and trade effluent.

4.6.4.3 Groundwater

The major aquifer underlying the proposed development site mainly contains highly permeable formations usually with a known or probable presence of significant fracturing. The proposed development will increase the runoff coefficient; discharge consents will therefore be necessary for the implementation of the scheme and will need to be agreed with the Environment Agency.

4.6.5 Conclusion

Provided the recommended mitigation is undertaken taken and best practice is employed, the flood risk associated with the surface drainage system will not be increased by the proposed development.

It is believed that the proposed development will not create additional flood risk and will be exposed to an acceptable level of flood risk.

4.7 Ecology and Biodiversity

4.7.1 Introduction

This Section of the Environmental Appraisal represents a summary of the Ecological Appraisal undertaken for the proposed development. The full report is provided in Appendix G.

The Ecological Assessment describes and evaluates the current nature conservation value of the site and the immediate surrounding area, both in terms of habitats and species. It assesses the potential effects of the proposed development on identified receptors and describes mitigation measures as appropriate.

4.7.2 Methodology

The assessment has been based on the Guidelines for Ecological Impact Assessment in the United Kingdom[5].

Baseline ecological conditions for the site were established through a combination of desk based review, consultation and field surveys.

A Phase 1 Habitat Survey was carried out on 2nd June 2006 and covered the entire site following the standard Phase 1 Habitat Survey methodology[6].

Further species specific surveys were undertaken for:

- Invertebrates;
- Reptiles;
- Birds; and
- Bats.

4.7.3 Baseline Conditions

4.7.3.1 Protected Sites

There are no statutorily designated sites within 1 km of the survey area. The proposals map of the LCC UDP shows one Site of Nature Conservation Value (SNCV) within 1 km of the site. This SNCV, which is not named on the proposals map, is located ~20 m west of the survey area at its nearest point, i.e. immediately west of Stonebridge Lane. The SNCV is principally a grassland site. Urban grasslands are local (North Merseyside) Biodiversity Action Plan (BAP) habitat.

4.7.3.2 Botanical Survey

The following habitats were identified during the field survey:

- Semi-natural broad-leaved woodland;
- Broad-leaved plantation woodland;
- Marshy grassland;
- Tall ruderal;
- Scrub;
- Species-poor semi-improved grassland; and
- Buildings, bare ground and amenity grassland.

These are shown in the Phase 1 Habitat Map (Figure 7.2 in Appendix G) target notes from the survey are described in Appendix G-A.

4.7.3.3 Japanese Knotweed

Japanese knotweed was found to be present on site. This was mapped so as to inform eradication plans (see Figure 7.2 in Appendix G).

4.7.3.4 Invertebrates

The survey of the proposed development site produced very few invertebrates; none of which were scarce. Consequently, this site appears to be of low entomological interest.

4.7.3.5 Reptiles

No reptiles were recorded during the surveys; indicating the likely absence of reptiles from the survey area.

4.7.3.6 Birds

The breeding bird surveys conducted at the site in 2007 revealed a rather poor assemblage of birds breeding within the survey area. No rare, scarce or specially protected birds were recorded breeding within the survey area. Two Red List species of conservation concern[7] were recorded and four Amber List species were recorded, although only one of these species nested within the survey area.

Given the relatively low abundance and diversity of species recorded, the survey area is assessed as being of value for breeding birds within the immediate zone of influence only. Similarly, outside the breeding season, the site is considered likely to be of value for birds within the immediate zone of influence of the development only.

4.7.3.7 Bats

The nocturnal bat surveys did not identify any bat roosts within or near to the site. Levels of bat activity recorded were low (no bats were recorded during first visit, and only two pipistrelle bats *Pipistrelle sp*. were recorded during the second visit), indicating that the site is of negligible value for bats. In terms of bat foraging and commuting, the habitats on the site are considered to be of value within the immediate zone of influence only.

4.7.4 Potential Effects and Proposed Mitigation

4.7.4.1 Protected Sites

Given the location and nature of the proposals, no direct or indirect impacts on the SNCV immediately west of the site are predicted.

4.7.4.2 Flora

Given the relatively low value of the habitats affected, the potential effects on habitats are assessed as not significant. However, it is recommended that the grassland to be created at the margins of the development site is sown with a wildflower mix comprising native species of local provenance if possible. Similarly, tree planting at the site should comprise native species of local provenance.

If Japanese knotweed was to be left untreated, this species could spread within and outside the site, potentially leading to the degradation of other habitat types. However, a programme of Japanese knotweed eradication has taken place and a guarantee of eradication has been issued for the development site (dated 22nd September 2008).

4.7.4.3 Fauna

If undertaken during the bird nesting season (March to August inclusive), clearance of trees and shrubs could potentially result in damage or destruction of active bird nests.

In order to ensure legal compliance, clearance of potential bird nesting habitat, i.e. trees and shrubs, should be undertaken outside the main bird nesting season if possible. If this is not possible, works affecting potential bird nesting habitat should be checked by a suitably experienced ornithologist. If bird nests are found, work should be postponed until the young birds have fledged.

In order to assist with the local Biodiversity Action Plan targets for urban birds, it is recommended that nesting boxes for house sparrows, starlings and/or swifts should be installed at the site if possible.

Given the absence of other protected/notable species, no effects on these species are considered to be significant.

4.7.5 Conclusion

The habitats and fauna found on this site are considered to be of low value.

Given the implementation of the mitigation and compensation measures outlined in this report, it is anticipated that there will be an overall neutral impact on nature conservation.

4.8 Socio-Economic

4.8.1 Introduction

This Section of the Environmental Appraisal presents baseline social and economic conditions within the vicinity of the site and considers potential impacts related to the proposed development.

4.8.2 Methodology

Data from the Office of National Statistics (ONS) have been reviewed in order to determine the socio-economic baseline for the area surrounding the development site. The proposed development site is in the ward of Gillmoss in Liverpool.

4.8.3 Baseline Conditions

4.8.3.1 Population

The population of Liverpool in June 2005 was 447,500[8], this population has been increasing in recent years. However in the years from 1981 to 2004 Liverpool saw a 14 % decrease in population[9] (See Table 4.3), while England as a whole saw an increase of 6.2 %.

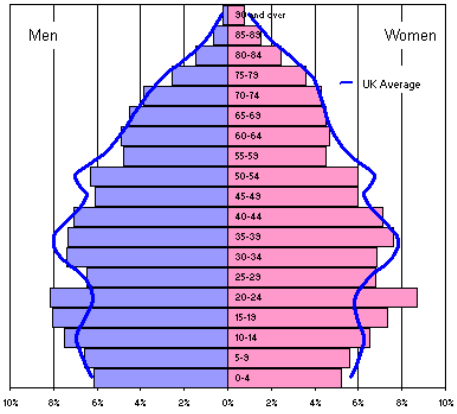

Figure 4.1 – Population Distribution by Age for Liverpool

Table 4.3 – Percentage Population Change from 1981 to 2004

Area	Total population percentage change 1981 - 2004
Liverpool	-14 %
North West	-1.6 %
England	+6.2 %

4.8.3.2 Employment and Earnings

Liverpool has the highest rate of unemployment within Merseyside, at 6.04 %. This is much higher than the regional and national averages. This is further exaggerated in the ward of Gillmoss where unemployment stands at 6.2 %.

Liverpool also has the highest rate of long-term unemployed people in the whole of England and Wales at 2.4 % of the population[10].

Table 4.4 – Unemployment Rates 2001[11]

Area	Unemployment Rate
Liverpool	6.04 %
North West	3.63 %
England	3.35 %

Merseyside average gross weekly earnings are lower than both the North West and UK at £322.90. However earnings in Merseyside have increased by 2.1 % over the past year. This is a larger increase than in the North West and the UK, showing that the gap between earnings in Merseyside and the rest of the UK is closing[12].

4.8.3.3 Social Deprivation

Liverpool experiences high levels of social deprivation. In 2004 Liverpool was ranked as the most deprived local authority area in the whole of England and Wales.

The Indices of Deprivation 2004 were produced as a means of comparing different measures of deprivation in different parts of England. They are based on 2001/02 data and are calculated for both local authorities (LAs) and Lower Layer Super Output Areas (LSOAs) commonly called wards. In both cases the data were ranked such that a lower score indicates greater deprivation. The most deprived local authority is ranked as 1 and the least deprived is ranked as 354. The Index of Deprivation is made up of seven distinct dimensions of deprivation which relate to:

- Income;
- Employment;
- Health and disability;
- Education, skills and training;
- Barriers to housing and services;
- Living environment; and
- Crime.

4.8.3.4 Crime

Crime levels in Merseyside are lower than those in many other metropolitan areas of England, but recorded crime incidents for 2005 showed a marginal increase on 2004, in contrast to a fall in other areas. Most types of crime, with the exception of violent crime have declined across Merseyside[13]. However, crime rates for Liverpool are significantly higher than national averages (See Figure 4.2).

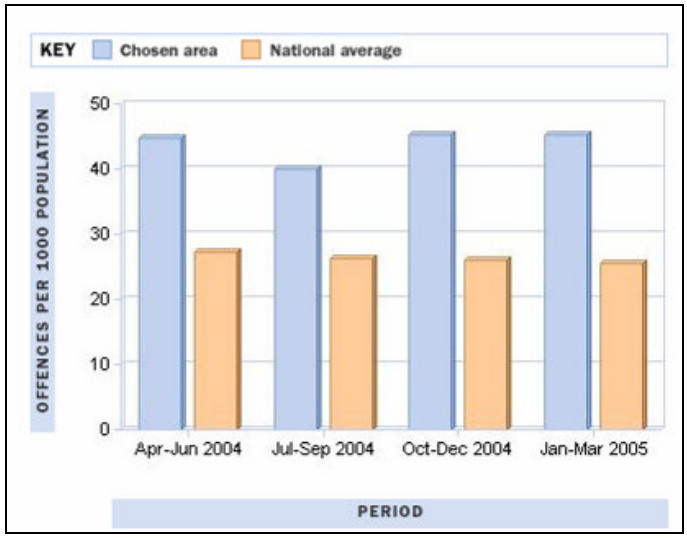

Figure 4.2 – Crime Statistics for Liverpool[14]

4.8.3.5 Community

The following community facilities and amenities are located within 1 km of the proposed development site:

- Five Schools;
  - 1 approximately 560 m south east,

  - 1 approximately 570 m south east,
  - 1 approximately 680 m south,
  - 1 approximately 850 m north west,
  - 1 approximately 1000 m south west.
- One footpath – approximately 750 m north east;
- One place of worship – approximately 450 m south east;
- One recreation ground – approximately 530 m north west;
- One playing field – approximately 950 m west; and
- One hospital – approximately 1000 m north west.

4.8.4 Potential Effects

The construction phase of the development will result in the creation of new jobs at skilled, semi-skilled and unskilled levels; these jobs will be temporary. In the operation phase the proposed development will employ approximately 105 full time permanent staff, comprising 100 operational staff and 5 office staff.

The Visitor and Education Centre, that will be an integrated part of the proposed facility, will promote environmental education and sustainability within the community.

Mitigation measures outlined within the air quality and odour and noise and vibration assessments will minimise nuisance to local residents during the construction and operation phases.

The Transport Assessment undertaken for the proposed development shows that the minimal increase in traffic is unlikely to cause any significant safety implications.

4.8.5 Conclusion

Overall, the socio-economic effects of the proposed MRF will be beneficial and permanent.

4.9 Archaeology and Cultural Heritage

This Section of the Environmental Appraisal presents the baseline archaeological and cultural heritage conditions within the vicinity of the site and considers potential impacts.

4.9.1 Legislation

The following legislation and guidance has been consulted and adhered to in the planning of the Gillmoss Recycling Park and will be adhered to in the carrying out of works associated with the proposed development:

- Planning Policy Guidance 15 – Planning and the Historic Environment (PPG15); and
- Planning and Policy Guidance 16 – Archaeology and Planning (PPG16).

4.9.2 Methodology

In order to assess the potential impact of the proposed development on the archaeology and cultural heritage of the site and its surrounding area the National Monument Record (NMR) has been searched for 1 km radius around the centre point of the site. The search of the NMR was conducted by English Heritage. Two separate searches of the NMR were conducted, one for archaeological records and one for listed buildings. A review of historical maps of the site has also been undertaken.

4.9.3 Baseline Conditions

4.9.3.1 Archaeological Records

The search of archaeological records returned one record within 1 km of the site. This site was Sugar Brook Brownfield site (Unique identifier: 1331321).

Sugar Brook Brownfield Site is located around 650 m south west from the site. The OSGB Grid Reference is SJ 3920 9600 (centre / point). The site at Sugar Brook is currently a 3.8 ha area of former allotment land. Much of the area was imposed upon by a growing sewage works by the mid 1970's. Since that time, the land has been subject to a large growth of heavy willow and bramble scrub as well as some grassland.

There are no scheduled or unscheduled monuments within the study area.

4.9.3.2 Listed Buildings

The search of listed buildings records indicated that there is one recorded listed building within a 1 km radius of the site. This is Gillmoss Lodge (NMR number: SJ 49 NW) a Grade II listed building. The Site of Gillmoss Lodge lies approximately 700 m south east from the site. It is the only site considered to have special architecture or historic interest. The OSGB Grid Reference is SJ 40217 905947.

Gillmoss Lodge was built in the 1860's most likely by J. Douglas. The building is one storey high, constructed of brick with stone dressings and a slate roof with tile cresting. There are two bays present, the second of which has a canted bay window with cornice and a hipped lead clad roof, also with a stone beam and a sill band. There is a red stone walkway and the entrance has bracketed timber gable on a stone base.

Figure H-1 in Appendix H shows the location of the archaeological records and listed buildings described above.

4.9.3.3 Historical Maps

Table 4.5 summarises the historical land use of the site and the surrounding area as recorded by historical maps of the site.

4.9.4 Potential Effects

From the English Heritage search of the NMR there are no scheduled or unscheduled monuments within a 1 km radius of NGR 339804,396621. Sugar Brook

Brownfield site is documented by the NMR as an archaeological site, which is marginally located in the same Ordnance Survey grid square as the proposed development. It is considered highly unlikely that the proposed development would impact upon this site.

One listed building has been identified within a 1 km radius of the centre point of the proposed site. Gillmoss Lodge lies south east of the site, located in a different Ordnance Survey grid square from the proposed development. There is no suggested evidence of the current use of Gillmoss Lodge.

Historically the majority of the site has been open land, up until more recent years. The centre of the site appears to have been farmland until the 1950's. The only major developments were two sewage farms, which expanded in the early 1900's. Large increases in residential and commercial developments were observed in the mid 1950s.

From the available evidence it is considered unlikely that development of the proposed site will disturb any known archaeological/cultural features or listed buildings.

4.9.5 Conclusion

A full archaeological investigation is not recommended for this development, based on the information gathered and the improbability of finding any sites of archaeological potential on or near to the development site.

Table 4.5 – Historical Land Use of the Site and Surrounding Area

Year	Land Use on Site	Land Use on Adjacent Land
1850 – 1851	Area of marsh and farmland with Lownde's Lane and Gillmoss Lane crossing through.	Agricultural. Stone Bridge Lane runs west of the specified area. Lownde's Farm is to the north east of the site. Clockhouse bridge and Warrell's House Farm are to the north west and a pumping station is south west from the site. Gillmoss farm surrounds a large area to the south east and Stone Bridge farm is to the south. Directly north of the area is the River Alt.
1893	No change since 1850	Agricultural
1894	No change since 1850	Agricultural to the north and south and directly surrounding the site. Further to the south west of the site is West Derby Cemetery. Walton Sewage Farm is now to the far north east.
1908	No change since 1850	Agricultural to the north and south and directly surrounding the site. A storage tank has been added to the pumping station to the south west of the area.
1909	No change since 1850	Agricultural to the north and south and directly surrounding the site. Walton Sewage and West Derby Sewage Farms have both increased in size.
1927	No change since 1850	Agricultural to the north and south and directly surrounding the site. Pumping station to the south west has expanded.
1928	No change since 1850	Surrounding the area is agricultural land. There are still farms to the north and south of the site. Further developments on Gillmoss Farm to the south east. About 1000 m south west, Sparrow Hall Hospital has been built.
1955 – 1956	Electrical and Mechanical Engineering Works	Sports ground immediately north. There has been a huge increase in the development surrounding the site. The A580 has been built to the south of the area, separating the electrical works on site from the building developments approximately 250 m south. Major residential developments 500m north east. A Royal Air Force Centre is now north of the site, approximately 380 m away. Roads to the west have been expanded.
1955 – 1957	Electrical and Mechanical Engineering Works	Increase in building developments directly surrounding the site.
1962 – 1974	Electrical and Mechanical Engineering Works	Particular increase in building to the north of the site on the sports ground.
1966 – 1967	No change in land use since 1955. The Electrical and Mechanical Engineering Works has expanded.	In particular a large increase in residential building developments to the south east of the area. More road developments. Sewage Disposal Works to the west have expanded. The hospital 1000 m south west has been replaced with housing developments. Recreational grounds and allotments have appeared to the north west of the specified area. General developments to the north surrounding the River Alt have also increased. Several schools are located to the south.
1973 – 1983	Further developments on site.	Gillmoss Industrial Estate is adjacent to the site.
1974 – 1978	No change since 1973	More schools are located to the south. Surrounding the Sewage Disposal Works to the east, which has itself increased in size, more tanks have been built to support the expansion. Further housing developments on the allotments located north east of the site. Increased vegetation on West Derby Cemetery.
1977	Further expansion on site.	A car park is north of the site adjacent to the sports ground.
1988	The Electrical Works has been demolished and the site is now shown as bare ground.	Effluent Treatment works has replaced the Sewage Disposal Works to the west of the site. The latter has also expanded. Walton Sewage Farm no longer exists to the east of Gillmoss Industrial Estate. Huge residential building works have been added to the housing estates north and north east of the site.
1989	A Waste Disposal Works now occupies the north eastern portion of the site. The rest of the site is shown as bare ground.	No change since 1988
1993	No change since 1989	No change since 1988
1995	No change since 1989	Building developments on the sports ground directly north of the site.
2004	No change since 1989	The housing development north of the River Alt has now expanded to the south of the River and now lies directly north of the site. The sewage works west of the site has continued to expand. In West Derby, south of the site, there have been more building developments. West Derby Cemetery has decreased in size. A retail park has been built on this land. Gillmoss Industrial Estate has also grown. There have been road developments to the east of the site. Also in this direction is a large depot.

5 Recommendations and Conclusions

The assessments undertaken to date indicate that, with appropriate mitigation, the proposed development will not result in any significant adverse environmental effects.

To alleviate any adverse effects of the proposed MRF development and enhance any potential beneficial effects a number of mitigation and improvement measures have been proposed. These are summarised in Table 5.1.

It is anticipated that these measures will be accomplished through Planning Application conditions including, for construction, development and agreement of a Construction Environmental Management Plan to be implemented by the selected contractor. Those measures relating to operation can be accomplished through site operating procedures and agreed mechanisms for post construction monitoring. All measures will ensure that any residual effects can be considered as minor adverse.

Table 5.1 – Schedule of Mitigation

Section	Potential Effect	Proposed Mitigation	Residual Effect	Responsibility
Air Quality	Construction Phase – Dust deposition / soiling within 100 m of the construction site perimeter, mainly effecting sensitive receptors along the northern boundary as a result of construction of the extension to the earth bunding along the north site boundary. Impact on local air pollution concentrations, specifically nitrogen dioxide (NO_2) from construction vehicles and plant, and PM_{10} as a result of construction and fabrication activities undertaken onsite and emissions from construction vehicles and plant.	'Best practice' mitigation methods implemented throughout the duration of the construction phase as appropriate: <u>Site Planning</u> • Erect solid barriers to site boundary; • No bonfires; • Plan site layout – machinery and dust causing activities should be located away from sensitive receptors; • All site personnel to be fully trained; • Trained and responsible manager on site during working times to maintain logbook and carry out site inspections; and • Hard surface site haul routes. <u>Construction traffic</u> • All vehicles to switch off engines – no idling vehicles; • Effective vehicle cleaning and specific fixed wheel washing on leaving site and damping down of haul routes; • All loads entering and leaving site to be covered; • 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 • Hard surfacing and effective cleaning of haul routes and appropriate speed limit around site. <u>Site Activities</u> • 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 • If applicable, ensure concrete crusher or concrete batcher has the permit to operate. Emissions monitoring during the construction period, to ensure that the dust deposition levels do not exceed twice that of the baseline deposition. Detailed mitigation measures to control construction traffic should be discussed with LCC. It is recommended that liaison with LCC be maintained throughout the construction process. If complaints are received from local residents, these	With the implementation of the mitigation measures, the impact of the proposed development on local air quality will be reduced to a short term temporary minor adverse level.	Preferred Contractors MWDA

Section	Potential Effect	Proposed Mitigation	Residual Effect	Responsibility
		will be documented in a diary or log held on site by the Site Manager. A nominated member of the construction team (e.g. Site Manager) will also act as a point of contact for residents who may be concerned about elevated deposition of dust. These measures will be incorporated in to a Construction Environmental Management Plan (CEMP) once the contractor has been appointed. The effects of construction traffic on air quality will be re-considered when detailed construction traffic data are available, and if the construction period is greater than six months.		
	Operation Phase – The proposed development is not likely to give rise to significant amounts of dust. It is possible that dust could be generated when recyclable material is tipped, moved or sorted and dust may be generated from the yard surface (through vehicle movements) during dry and windy weather. However, this is considered to be insignificant.	To minimise any potential dust issues a dust suppression system will be installed within the MRF building, and fast cycle opening/closing doors will prevent significant fugitive emissions from the MRF building. In the event that odours are detected inside the MRF building, sniff tests shall be undertaken at the boundaries of the site for any smells from the development when odour emissions are likely. If any materials are causing noticeable smells at the site boundaries they shall be contained or removed from the site as soon as practicable. All storage and sorting of recyclates shall be carried out inside the MRF building and there will be no external storage of recyclable material.	Incorporation of the mitigation measures will ensure that dust and odour nuisance at receptor locations is unlikely. The impact of the proposed development on air quality is likely to be insignificant.	Preferred Operator MWDA
Noise and Vibration	Construction Phase – It is anticipated that the noise and vibration impact during construction would be restricted to the residents and users of areas, for example on footpaths, in the immediate vicinity of the proposed development. The impact due to construction activities would be temporary in nature. The areas with the potential to be affected by the construction of the proposed MRF are residential properties on Longdown Road and adjoining roads, and commercial offices on Gillmoss Industrial Estate.	A detailed assessment of the area subject to construction noise impact will be undertaken by the Contractor as part of their Construction Environmental Management Plan (CEMP). Specific noise and vibration abatement measures will be incorporated into the Contractors CEMP, such as: • Best practicable means, including maintenance of plant, would minimise the noise produced by operations on site; • All vehicles and mechanical plant to be fitted with effective exhaust silencers and maintained in good working order; • Machinery that is used intermittently would be shut down or throttled back to a minimum during periods when not in use; • Static plant known to generate significant vibration levels to be fitted with acoustic dampening; • Construction vehicles to only access and exit the site from the A580, south of the site; • Noise and vibration levels at the nearest sensitive receptor to be checked through a regular monitoring programme; • In agreement with the local EHO, working hours	Any impact associated with the construction phase of the proposed development will be considered to be minor if best practice is followed and the mitigation measures deemed to be appropriate are implemented.	Preferred Contractors MWDA

Section	Potential Effect	Proposed Mitigation	Residual Effect	Responsibility
		limited to the hours of 07:00 – 19:00 weekdays, and 07:00 – 16:00 on weekends and bank holidays. • In agreement with the local EHO, any plant, such as generators or pumps that are required to operate before 07:00, after 19:00 or at weekends are surrounded by an acoustic enclosure or portable screen.		
	Operation Phase – The maximum contribution of the MRF to the ambient noise level is 3.8 dB(A) at Gillmoss Industrial Estate during the day-time period.	In order to reduce this noise level at the Gillmoss Industrial Estate, the existing barrier at the eastern site boundary will be increased in height from 2 m to 6 m. This would provide a reduction in noise level of 1.6 dB(A).	Mitigation measures outlined for the operation phase are considered sufficient as they would reduce the noise level increase to less than 3 dB(A), which is considered to be not usually perceptible by the general public.	Preferred Operator MWDA
Transport Assessment	Construction and Operation Phases – The proposed MRF will not result in any significant change to local highway conditions. The majority of vehicle movements avoid the network peak periods and for most of the day, the development will generate very low numbers of movements and will not impact significantly on local conditions. The development will not adversely impact on road accident rates or severity on local roads. Access to and from the development for pedestrians, cyclists and public transport users is good.	HGV movements will be restricted, as per current arrangements, to the East Lancs Road only, thereby minimising the impact on local roads.	In summary, the transport impact of the Gillmoss Recycling Park is low. Access to public transport is good, local walking and cycling provision is good and the site is well located in relation to the strategic road network.	Preferred Contractors MWDA
Townscape and Visual	Construction and Operation Phases – There will be visual impacts to the properties of Longsdown Road with rear elevations that have direct views of the development site. Particularly those that do not benefit from existing boundary planting and earth bunding along the northern boundary of the development site. The effect of the development on the surrounding townscape will be in the order of low.	As part of the design process consideration of architectural design features to the main building will provide interest and contribute to the local townscape has been given and subsequently incorporated into the design; Use of native shrub and tree planting appropriate to the location will provide screening to visual receptors, in particular to those properties to the north of the site to bolster existing boundary planting; Development of a strong landscape design for the site, to provide a setting for the building and interrupt views of the main building; and The extension of earth screen mounding along the northern boundary and new mounding adjacent to Stonebridge Lane will, in combination with the proposed boundary planting serve to screen views from residential properties.	The proposed mitigation measures would go some way to reduce the effects that the development would have on local townscape and those sensitive receptors identified as part of the assessment. Despite these measures the development site would remain a new component resulting in some residual effects such as: • Change to existing open ground as viewed from the rear of properties to the north and Stonebridge Lane; • Permanent loss of medium distance views from the rear of several properties to the north; • Increased sense of urbanisation along Stonebridge Lane; and The residual effect of the development has been assessed and is considered to be in the order of slight adverse.	Studio E Architects MWDA Preferred Contractors Preferred Operator (responsible for maintenance of landscape features).
Geology Soils and Contamination	Construction Phase – Asbestos and polychlorinated biphenyls have been identified that pose a potential risk to future site users and construction/maintenance workers in the absence of appropriate mitigation. The made ground found on site is not considered to	Discussion with regulatory authorities would be prudent to ascertain the most pragmatic route to dealing with the PCB and asbestos contamination. Depending upon the final building design and loading requirements, advice from specialist piling / ground improvement may need to be sought to provide the	To be reconsidered following discussions with regulatory authorities.	Preferred Contractors MWDA

Section	Potential Effect	Proposed Mitigation	Residual Effect	Responsibility
	represent a suitable bearing stratum. There is a possibility that ground water may be encountered during excavation that requires pumping to keep the excavation dry.	most appropriate and cost effective design. If groundwater pumping is required, it is likely that a discharge consent from United Utilities prior to disposal to foul sewer will be required.		
	Operation Phase – Arsenic, cis-1-2-dichloroethene and trichloroethene are considered to be slightly impacting the underlying aquifer.	Discussions should be undertaken with the Environment Agency at the earliest opportunity to determine a suitable course of action.	To be reconsidered following discussions with the Environment Agency.	Preferred Operator MWDA
Water Resources and Flood Risk Assessment	Fluvial – It is considered that the risk associated with fluvial flooding is low.	N/A	Provided the recommended mitigation is undertaken taken and best practice is employed, the flood risk associated with the surface drainage system will not be increased by the proposed development. In addition it is believed that the proposed development will be exposed to an acceptable level of flood risk.	MWDA Preferred Contractor Preferred Operator
	Site Run-Off – The proposed development will result in additional runoff into the surface water sewer.	Sustainable Urban Drainage Systems best practice should be employed to limit the discharge to the surface water sewer to the current discharge rate and maintain the existing Greenfield runoff rate. SUDS measures such as attenuation ponds should be designed for a 1 in 100 year flood event flow retention with due consideration to climate change effects.		
	Ground Water – The major aquifer underlying the proposed development site mainly contains highly permeable formations usually with a known or probable presence of significant fracturing. The proposed development will increase the runoff coefficient.	Discharge consents will be necessary for the implementation of the scheme and will need to be agreed with the Environment Agency.		
Ecology and Biodiversity	Protected Sites – Given the location and nature of the proposals, no direct or indirect impacts on the SNCV immediately west of the site are predicted.	N/A	Following implementation of mitigation and compensation measures, it is anticipated that there will be an overall neutral impact on nature conservation.	MWDA Preferred Contractor Preferred Operator
	Flora – The potential effects on habitats are assessed as not significant. If Japanese knotweed was to be left untreated, this species could spread within and outside the site, potentially leading to the degradation of other habitat types.	Enhancement – It is recommended that the grassland to be created at the margins of the development site is sown with a wildflower mix comprising native species of local provenance if possible. Similarly, tree planting at the site should comprise native species of local provenance. A programme of Japanese knotweed eradication has taken place and a guarantee of eradication has been issued for the development site (dated 22nd September 2008).		
	Fauna – If undertaken during the bird nesting season (March to August inclusive), clearance of trees and shrubs could potentially result in damage or destruction of active bird nests. Given the absence of other protected/notable species, no effects on these species are considered to be significant.	Clearance of potential bird nesting habitat, i.e. trees and shrubs, should be undertaken outside the main bird nesting season if possible. If this is not possible, works affecting potential bird nesting habitat should be checked by a suitably experienced ornithologist. If bird nests are found, work should be postponed until the young birds have fledged. In order to assist with the local Biodiversity Action Plan targets for urban birds, it is recommended that nesting boxes for house sparrows, starlings and/or		

Section	Potential Effect	Proposed Mitigation	Residual Effect	Responsibility
		swifts should be installed at the site if possible.		
Socio – Economic	Construction Phase – Potential beneficial effects in terms of creation of new jobs at skilled, semi-skilled and unskilled levels.	Mitigation measures outlined within the air quality and odour and noise and vibration assessments will minimise nuisance to local residents during the construction and operation phases.	The socio-economic effects of the proposed MRF will be beneficial and permanent.	N/A
	Operation Phase – Potential beneficial effects in terms of job creation. Beneficial effects to the local community as a result of the Visitor and Education Centre that will be an integrated part of the proposed facility, promoting environmental education and sustainability. The Transport Assessment undertaken for the proposed development shows that the minimal increase in traffic is unlikely to cause any significant safety implications.			
Archaeology and Cultural Heritage	None Anticipated	N/A	N/A	N/A

6 References

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