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**GLENCORSE WATER TREATMENT WORKS  
NON TECHNICAL SUMMARY**

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**1 INTRODUCTION**

**1.1 ABOUT THIS DOCUMENT**

In order to obtain the necessary permission to develop the proposed Glencorse Water Treatment Works Project, Scottish Water is applying to Midlothian Council and City of Edinburgh Council, as local planning authorities, for planning consent. Two planning applications have been submitted to Midlothian Council, one covering the proposed water treatment works (WTW) and treated water storage facility and a second for associated underground pipelines located within Midlothian Council's administrative area. A third, separate planning application has been submitted to City of Edinburgh Council for the construction of pipelines and associated infrastructure within its administrative area.

As part of this application process, Scottish Water is required to provide both councils with an Environmental Statement (ES) setting out the environmental effects of the project. This will enable Midlothian Council to make a decision about the treatment works, storage tank and pipelines in its area, and the City of Edinburgh Council on the pipelines in its area, based on a full understanding of any effects that the project may have on the environment.

This document is the Non-Technical Summary of the ES. Its purpose is to provide an overview, in non-technical language, of the main findings of the ES. The ES and this Non-Technical Summary have been prepared by Environmental Resources Management (ERM) on behalf of Scottish Water.

**1.2 THE GLENCORSE WATER TREATMENT WORKS PROJECT**

The project is being promoted by Scottish Water, the statutory authority with responsibility for supplying drinking water in Scotland, to ensure that customers receive water supplies that meet the requirements of European Union Directives on the quality of drinking water <sup>(1)</sup>. Scottish Water is also required to ensure that it has the necessary facilities to serve the growing demands of the City of Edinburgh and part of Midlothian. Scottish Water has given an undertaking to the Scottish Government that it will meet these requirements by 2010.

(1) Implemented in Scotland through the Water Supply (Water Quality) (Scotland) Regulations 2001.

The project includes a new water treatment works, treated water storage tank and pipeline connections into the existing drinking water distribution system for the City of Edinburgh and part of Midlothian. The new treatment works and water storage will replace existing facilities at Fairmilehead and Alnwickhill, built in 1879 and 1909 respectively, which currently provide the majority of Edinburgh's drinking water. These works are reaching the end of their useful life and need to be replaced by modern facilities to ensure water quality standards continue to be met. The new works will provide up to 175 million litres of drinking water a day to Edinburgh (approximately 70% of current demand).

The total capital cost of the Glencorse Water Treatment Works scheme is estimated to be approximately £80 million, with operating costs of about £1.2 million per annum at 2008 prices.

An ES has been prepared under the *Environmental Impact Assessment (Scotland) Regulations 1999* <sup>(1)</sup> which covers all these elements of the overall project. The ES forms part of the applications for planning permission, for which three separate planning applications have been made.

The ES has followed current best practice in EIA and follows the guidance from the Scottish Executive set out in PAN 58 <sup>(2)</sup> and Circular 15/99 <sup>(3)</sup>. The EIA Regulations requires the ES to describe potential environmental impacts that are considered likely to be significant. The purpose of identifying the significant impacts of a project is to provide information to the regulators so that an informed decision on the proposals can be reached.

This Non-Technical Summary has been prepared for the non-specialist reader to assist in understanding the project and the main environmental issues associated with it. It provides a summary of the information in the full ES, in particular describing:

- the project, including its design and the way it will be constructed and operated over the long term;
- its impacts on the environment; and
- the measures that will be taken to minimise these impacts.

This Non-Technical Summary forms part of the ES and is also available as a separate document.

If you have received the Non-Technical Summary and would like to see the full ES, it is available for inspection during normal working hours at the offices of Midlothian Council, City of Edinburgh Council and Scottish Water, as listed below:

(1) Statutory Instrument 1999 No. 1.

(2) Scottish Executive (1999) Planning Advice Note 58 *Environmental Impact Assessment*.

(3) Scottish Executive Circular 15/99. *The Environmental Impact Assessment (Scotland) Regulations 1999*.

Copies of the ES are available on request from ERM at the address below, for which a charge of £75 will be made as a contribution towards the cost of reproduction. Copies of this Non-Technical Summary are available free of charge. Electronic copies of the full planning applications on CD ROM are available for a charge of £5 plus VAT. The planning applications are also available for viewing or downloading on the Glencorse Water Treatment Works project webpage ([www.scottishwater.co.uk/glencorse](http://www.scottishwater.co.uk/glencorse)).

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|---|--|
| Midlothian Council<br>Fairfield House<br>8 Lothian Road<br>Dalkeith<br>EH22 3ZP | City of Edinburgh Council<br>4 East Market Street<br>Edinburgh<br>EH8 8BG              |
| Penicuik Library<br>Bellmans Road<br>Penicuik<br>EH26 0AB                       | Scottish Water<br>Fairmilehead Office<br>55 Buckstone Terrace<br>Edinburgh<br>EH10 6XH |
| Loanhead Library<br>George Avenue<br>Loanhead<br>EH20 9HD                       | Pentland Hills Regional Park<br>Boghall Farm<br>Biggar Road<br>Edinburgh<br>EH10 7DX   |

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Copies of the ES and NTS can be obtained from:

ERM  
Norloch House  
36 King's Stables Road  
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If you wish to comment to the planning authorities on the planning applications or the ES, so that your views can be considered by the planning authorities in reaching its decision on the applications, please write as soon as possible to the Planning Manager at Midlothian Council or the City of Edinburgh Council at the above Council addresses.

## 2.1

## INTRODUCTION

The proposed site for the new works is located at Glencorse, to the north-west of Penicuik and adjacent to the A702 (see *Figure 1*). The project comprises the following main elements:

- a new 175 million litre per day (Ml/d) WTW using Dissolved Air Flotation and Rapid Gravity Filtration technology, housed in two separate buildings;
- a 90 Ml treated water storage tank;
- an access road from Mauricewood Road leading to the site; and
- new pipelines connecting the existing raw water supply to the WTW and the treated water tank to the existing pipeline network in Edinburgh.

The water storage tank will be located to the south-east of the WTW plant building to provide storage for treated water from the works. This will include an upstream chlorination tank in which water will be disinfected with chlorine before being passed into the storage water tank via an inlet chamber. A site plan is provided in *Figure 2*.

The following new pipelines will be required for the scheme.

- New pipes will be required to transfer raw water from the existing water mains to the northern end of the WTW. In total, six raw water pipes will be routed into the works from the existing mains from Talla/Fruid, Megget and Glencorse reservoirs and a new raw water pipe from Crawley Springs.
- The longest stretch of pipeline will be the twin treated water mains that will transfer drinking water from the WTW to the existing distribution system at Fairmilehead and Alnwickhill.
- A new sewage pipe, running between the WTW and an existing sewer near the City of Edinburgh Bypass, will be required for disposal of wastes from both the water filtration process and domestic waste.
- An overflow pipe will be required from the WTW to the Glencorse Burn. This is a required safety feature that would only be used in the event of an emergency to prevent the works from flooding.

The majority of the pipelines will be made of polyethylene, a strong synthetic plastic, and laid underground in the same trench. The pipeline routes are shown in *Figure 1*.

It will also be necessary to construct a small kiosk at Hillend which will house the electrical equipment needed to pump treated water to this area. A small kiosk and an upgraded access road are also required at the existing Crawley Springs pump house to pump raw water from this source to the WTW for treatment.

Scottish Water also proposes to construct two hydro turbines to generate electricity; one within the WTW buildings at Glencorse and one near Alnwickhill which will be housed in a new building. These will provide the equivalent of up to 65% of the new works energy consumption requirements.

## 2.2

### *DESIGN AND LANDSCAPING*

The architectural and landscape design for the WTW has been developed alongside the design of the water treatment process so that the treatment stages within the WTW are arranged so that water flows through the works by gravity. The overall design strategy has been to orientate the buildings within the surrounding topography to minimise the relative height of the structures and to integrate the new structures into the landscape so that they are largely obscured at ground level when viewed from nearby residents and other people who use the area. As it has not been possible to accommodate the entire structure works below ground the buildings will be finished in materials which are sympathetic to the existing surroundings. An elevation drawing of the main WTW building is shown in *Figure 3*.

The orientation of the building has also allowed for the preservation of Roman archaeological remains to the west of the WTW building.

The roofs of both the treatment and chemical buildings will have edge canopies of zinc or similar finish which will also form the gutters at the border of the green roofs. The south-west gable elevations of both buildings will comprise larch timber claddings. The north-east gables will be finished in fair faced concrete.

The longest elevations of the buildings will be mostly hidden from view. The south eastern façade of the WTW building will be significantly screened behind a large landscape bund and hidden beneath the large overhanging eaves. The north western elevation of the treatment building faces the chemical and turbine building across a linear courtyard. Both of these elevations are hidden from the public but will be respectfully treated with a mixture of materials. The south-west gable walls façades will be addressed with untreated local timber from a sustainable source. The south-eastern elevation of the chemical building will also be finished with layers of Kalwall – a translucent walling system to allow natural light into the building. The most western elevation of the chemical building will be underground.

The clear water tank and chlorination tank will be constructed primarily below the existing ground level. The walls of the tanks will be surrounded by grassed earth embankments, shaped to follow the slope of the existing ground

levels. The surface of the clear water tank will be overlain with topsoil planted with grass.

The proposed landscaping around the WTW and clear water tank will reflect the existing landform to integrate into the existing landscape as far as possible. The landscape design is also intended to minimise the visual impact of the works by keeping the existing site character of open fields and perimeter woodlands and using the landscape to hide the building. New planting will be confined to the boundaries of the site.

The planting design will improve upon the existing site biodiversity by replacing agricultural grassland with species rich grassland and meadows. The currently unmanaged woodland will be maintained and improved with the introduction of a native low level planting. In addition, drainage ditches (swales) and a wetland will be created to contain surface water drainage.

The new planting includes a belt of native woodland running along the southern boundary of the site. Planting to screen views will also be introduced at low level to the existing woodland in the north and west of the site.

A hawthorn and beech hedge will be planted along the roadside to tie in with the adjacent hedging style on the east side of the A702.

## 2.3

### *CONSTRUCTION PROGRAMMING AND ACTIVITIES*

Construction of the new WTW is expected to take approximately 2 years, with commissioning works continuing beyond this period for around 6 months. Site finishes, landscaping and some of the pipeline works will take place during this commissioning phase.

An area of approximately 5.1 hectares (ha) <sup>(1)</sup> to the west of the WTW site will be used for the temporary construction compound, housing the site office and providing storage areas for construction materials, temporary soil storage and car parking for up to 150 vehicles (see *Figure 2*). Excavated soil will be temporarily stored to the north of the site.

The first activities will include the construction of access junctions and roads into the site from Mauricewood Road. Once the site access has been established, construction of the main WTW will commence. Since the two largest elements of the works will be partially buried below ground, there will be a considerable amount of ground work required to accommodate the buildings. Around 60% of the excavated soil from these excavations will be transported to a temporary storage area for reuse during the landscaping works at the end of the construction phase. The remaining 40% will be removed off-site and disposed of appropriately (re-used in other development

(1) 1 hectare = 10,000 m<sup>2</sup>

projects or land filled). The volume of this is expected to be approximately 180,000 cubic metres and will be moved off site in two three month periods over two years.

Once sufficient excavations have been carried out, the concreting work will commence to establish building foundations, create walls and other retaining structures. This will be followed by construction of the building superstructure (steel works, cladding and roofing), the installation of treatment equipment and finally, site finishing, road completion and landscaping.

Pipeline construction will take place over a working width of around 40 m with a pipeline trench width of up to 5 m. These works will be served by a number of temporary construction compounds, the main ones being located at the Glencorse site, directly to the south of the City of Edinburgh Bypass, Fairmilehead WTW and the Alnwickhill WTW.

At the Glencorse site a range of materials will be required including ready mixed concrete, cladding, reinforcing steel, structural steelwork, road surfacing materials (bitumen Macadam), heavy mechanical and electrical plant, large pipework and fittings. All these materials will be delivered to the site by heavy goods vehicle (HGV).

Normal working hours during construction will be 0800 to 1700 hours Monday to Saturday. In most cases, Saturday working will be for a half day only. Quiet work (eg internal fit out, plant maintenance or commissioning tests) may take place outside these hours. In the summer working hours may be extended for some operations, such as spoil removal. Some Sunday working may also be required during pipeline construction where access across roads is required, in order to minimise impacts on traffic. This would be subject to discussions with the relevant local authority. There may be a small number of occasions where 24 hour working will be required at the WTW site to carry out particular operations (eg commissioning tests).

An Environmental Management Plan (EMP) will be developed and implemented by the Glencorse WTW Project team to ensure that any adverse impacts to the natural environment, cultural heritage and people are minimised throughout the construction period. The EMP will be integrated with the construction quality and health and safety management systems.

Depending on the status of the construction of a new roundabout on the A702(T) which may be built by others, site access during construction may come from the A702(T) via a temporary road junction. On completion of the roundabout access will be via the realigned Mauricewood Road.

## 2.4 OPERATIONS

The WTW will be electrically powered and designed to run continuously for 24 hours a day, seven days a week. Although the treatment process will be monitored and controlled automatically, six staff will be on site during the week with fewer staff at the weekends.

On average, up to seven deliveries of chemicals are expected to be required each week, made by contractors using specialised vehicles and equipment. Wastewater from the water treatment process and domestic waste from the workforce will be piped to the existing sewer network via a waste water pipe.

## 2.5 DEVELOPMENT OF THE PROJECT AND CONSIDERATION OF ALTERNATIVES

The development process has included the identification and consideration of many alternatives for the location, design and technology for the Glencorse Water Treatment Works Project. Throughout the process, all decisions have been informed by consideration of environmental, social, engineering, operational and financial costs and benefits of different options. This included consideration of the use of existing infrastructure, options for the siting of various elements of the project and design options within selected sites.

In locating a preferred site for the project, Scottish Water considered its existing sites at Alnwickhill and Fairmilehead, and the possibility of using a new development site in the Midlothian area. The use of the existing Alnwickhill site was rejected at an early stage, due to limitations on land availability, leaving the use of Fairmilehead or a new site to be considered. An overall search area for new development site options was established based on the elevation required for gravity supply to the existing network and proximity to the existing raw water mains which will supply the new works. This was an important consideration since locating the treatment works in an area which benefits from gravity feed will significantly reduce both the financial costs and the environmental effects of the WTW during operation.

In total, 26 potential new sites were identified within this overall search area. Following a series of studies and workshops the site at Glencorse was selected as the most suitable site. One key advantage of this site was the ability to design a works that integrate into the existing landscape.

## 2.6 CONSULTATION

Consultation with regulatory bodies and the general public formed a key part of the project development process. The City of Edinburgh and Midlothian councils were consulted on Scottish Water's proposals at an early stage, and throughout project development, along with Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA) and Historic Scotland.

Scottish Water also conducted a 13 week public consultation exercise between August and November 2006 during which members of the public were asked to express their views on the potential location of the proposed new WTW.

Consultation was also undertaken in October 2007 to identify which environmental issues were relevant and to determine whether any environmental issues might be omitted from the Environmental Impact Assessment on the grounds that they were unlikely to give rise to significant environmental effects.

### **3 THE IMPACTS OF THE PROJECT**

#### **3.1 INTRODUCTION**

The environmental impacts of the Glencorse Water Treatment Works project can be considered in two main categories:

- short-term impacts that will arise during construction works; and
- permanent impacts, including impacts created by the development which will remain after completion of the construction phase, and impacts that will arise on a day-to-day basis as a result of the operation of the new water treatment works.

Many of these impacts have been reduced as a result of measures to be implemented to reduce impacts (known as 'mitigation measures'). For example, noise controls during construction will reduce impacts on nearby residents, and landscaping, planting and management of existing and newly created habitats will reduce the permanent impacts of the development on the landscape and conservation interests of the proposed site. A list of all the planned environmental mitigation measures is provided in the Environmental Statement and the description of the impacts in the following sections takes into account the effect of these measures.

#### **3.2 SHORT-TERM CONSTRUCTION IMPACTS**

##### **3.2.1 General**

There will be a number of short-term impacts caused by the construction and commissioning of the development. These will affect various parts of the surrounding area at different times over a period of about 30 months <sup>(1)</sup>. An average of 150 people will be employed over the main construction period.

(1) Assuming a 2 year construction programme followed by 6 months for commissioning.

Potential sources of impact for neighbours will include noise from construction plant and traffic, increase traffic movements, site run-off and accidental spills and releases and the supply and removal of materials to and from the site. The construction works will also cause visual intrusion and effects on agricultural and natural heritage resources.

These impacts will be managed through a construction Environmental Management Plan (EMP) which will set out the minimum requirements for environmental protection which construction contractors and sub-contractors will be required to meet when constructing the proposed works. Some impacts will be inevitable for a project of this scale but the aim of the EMP will be to keep these to the minimum practicable whilst allowing construction work to progress in a reasonable manner. Agricultural and other land used temporarily during the construction of the main site and along pipeline routes will be restored after the works are completed.

### 3.2.2 *Landscape and Visual*

The works will be constructed along the Landscape Character Area known as the North Esk Lowland River Valley between the Glencorse site and the City of Edinburgh. Pipeline construction will temporarily affect Green Belt land and will pass through the Mortonhall/Braid Hills Area of Great Landscape Value and Non Inventory Designed Landscape, a tree belt at Morton Hall which is protected by a Tree Preservation Order, comprising Long Established Woodland of Plantation Origin (LEWPO). It will pass through five belts of LEWPO in total. At Alnwickhill it will pass through Liberton House Non Inventory Designed Landscape. It will pass adjacent to the Bush Estate Conditioned Landscape, Hillend Country Park, Morton House Conservation Area and several Listed Buildings,

The pipeline construction will temporarily displace pasture and arable fields and will cross through belts of woodland or trees, in corridors approximately 10 m wide. Tree loss will be minimised as the route of the pipeline has been designed to pass through existing thinnings within tree belts. New trees and shrubs will be planted to fill gaps along the length of the pipeline route once construction is complete.

Impacts relating to construction will be in the most part temporary, but the gaps in tree belts and hedgerows will give rise to longer term residual impacts, until the new planting has grown to maturity which for trees is likely to extend to a period of at least 10 years. Disturbed areas of fields will quickly tie back into adjacent areas, and associated built infrastructure will be small components in the landscape. Construction activity will be visible by residents and other users of the areas for a two year period, particularly areas stripped of top soil and earthworks for WTW site and the pipeline route, large items of plant and vehicles such as cranes and HGVs. The significance of construction impacts to the limited number of residents with direct views of the work areas is judged to be moderate to major. The significance of

construction impacts on recreation users of the area is judged to be minor to moderate.

### 3.2.3 *Ecology and Nature Conservation*

Much of the habitat to be temporarily lost during construction of the pipeline is of low nature conservation value and is predominantly either arable land or grassland that has been subject to extensive improvements in enrichment. Approximately 14 ha of these habitats will be lost during construction but will be restored after completion of the works. Similarly approximately 7.7 ha of semi improved grassland will be temporarily lost during construction of the pipeline but will be restored on completion of construction. The impact of both of these losses is temporary, and not considered significant.

Signs of otter, bats and badger were recorded along the pipeline route during protected species surveys. Surveys for protected species will be carried out prior to any construction work taking place along at the WTW site and along the pipeline route to check for signs of protected species.

Impacts to fish in the burns which the pipeline crosses will be reduced by controlling run-off from construction areas. Fish passage will be maintained during pipeline construction by the use of temporary piped diversions designed to allow fish passage whilst the pipeline is laid under the watercourse. It is predicted that there will be a temporary minor significant impact on fish as a result of pipeline construction.

### 3.2.4 *Water Resources*

Surface run-off from the WTW site during construction will be discharged to an unnamed burn to the south-east of the site, or to a field drain which runs to the north-east of the site then into the unnamed burn after approximately 500 m. Drainage from top-soil and sub-soil storage areas to the north-east of the site will be routed to the Glencorse Burn following retention and settlement of suspended solids. The contractor will be required to implement best management practices in accordance with the SEPA Pollution Prevention Guidelines. With these measures in place, it is likely that there will only be a minor impact on surface waters for the duration of the construction works.

The proposed pipelines will cross under three burns, the Glencorse Burn, the Boghall Burn and the Swanston Burn, in addition to three un-named tributaries (to the Glencorse Burn, Boghall Burn and Pentland Burn). A pipeline will also be tunnelled under the Lothian Burn. Minor, short-term impacts will occur to all of these watercourses during pipeline construction. No impacts on groundwater or on flooding are expected to occur.

### 3.2.5 *Geology, Soils and Land Use*

The development site for the WTW and for the pipeline routes do not occupy or cross any sites where existing or previous land uses are known or expected

to have resulted in the potential for ground contamination. There should therefore be no risk of mobilising hazardous substances during construction.

The majority of land which will be excavated for the pipeline and used for construction compounds is of Land Capability for Agriculture (LCA) Class 3.1 or lower. A small area of LCA Class 2 agricultural land, approximately 2 ha, will be used temporarily during construction of the pipeline. There will be some medium term loss of this agricultural land as it will not be useable during the construction phase and may not return to its full agricultural potential for several years following the replacement of the top soil and reinstatement of the site. These minor impacts will be temporary and the land will return to agricultural land use once soil has been reinstated.

### 3.2.6 *Cultural Heritage*

Construction works will result in temporary indirect impacts on the settings of receptors designated for their cultural heritage importance within the landscape surrounding the works. The receptors most likely to receive temporary construction phase impacts resulting from the construction of the main WTW and the pipeline are Castlclaw Hillfort and settlement and Castle Knowe palisaded settlement. The works will be visible in the middle-distance from these sites, resulting in a temporary visual impact on their setting.

An archaeological evaluation of the site has been undertaken and areas of known archaeological interest have been avoided where possible. A Roman archaeological feature close to the WTW site, confirmed during the survey works, will be avoided. Archaeologists will be on site during top soil stripping in other areas of potential interest to record any other features and advise on additional mitigation measures.

### 3.2.7 *Traffic and Access*

Traffic activity over the construction period has the potential to impact upon other road users (eg drivers, cyclists and pedestrians), people living and working close to the roads and construction sites, and walkers and other recreational users of the area. It should be noted that construction is a temporary activity and that construction movements will vary over the construction period, depending on the phases of work. The majority of access to the Glencorse site will be taken from the north, via the bypass and then the A702(T) with a number of the workforce arriving in private cars from more local areas.

The peak traffic movements are predicted to occur in the three month period from month 13 to 15 of the construction period. This period is where a number of construction activities overlap (spoil removal, concrete works, building works and installation works). This three month phase requires a total of 752 vehicle movements per 10 hour day broken down as follows.

- 322 heavy goods vehicle (HGV) movements per day (161 lorries);

- 100 light goods vehicle (LGV) movements per day (50 vans);
- 330 car movements per day (165 cars);

Most of the cars would arrive on site between 0700 and 0800 and leave between 1700 and 1800. HGVs and LGVs movements would be spread through the day.

For the peak construction period the overall increase in traffic on the A702 would not be greater than 20%, however, for HGVs there will be an increase of 70% in the 0700 to 0800 peak hour (an increase of 14 HGVs and an increase of 200% (an increase of 26 HGV) in the 1700 to 1800 peak hour. On Mauricewood Road the overall vehicle increases would be approximately 50% in the morning peak hour and 65% in the evening peak hour. This would only be for a 100 m stretch of Mauricewood Road, however, it is likely to add to existing queuing times at the junction with the A702 during peak periods. Temporary impacts on traffic are considered to be of moderate significance.

The pipeline route is also planned as a construction haul route during the construction phase, the use of this will affect nearby receptors and impact on existing Rights of Way and candidate Core Paths. During the construction of the pipeline seven of the surrounding formal Rights of Ways and proposed Core Paths will be crossed. Public crossing points will be kept open or alternative routes provided. If alternatives are not achievable, temporary closures will be undertaken through the appropriate legal channels and will be advertised through local media and community groups. Core Paths, Rights of Way and other paths will only be closed in the interest of safety but such actions are only for periods of less than 48 hours. Temporary impacts on access are considered to be of minor significance.

### 3.2.8 *Noise and Vibration*

No significant construction noise impacts are expected to occur at noise sensitive properties adjacent to the WTW provided a good standard of on site noise control is applied during construction works. Significant but short term noise impacts are likely to occur at properties on Alnwickhill Road and at Liberton Gardens during pipeline construction. Noise impacts are also expected at Crawley Cottage during the construction of the access road to the Crawley Springs cistern building and kiosk. These impacts will occur for a short period only, when the works are at their closest point to this property. All contractors will be required to use best practicable means <sup>(1)</sup> to reduce noise levels.

Traffic associated with the construction of the WTW will result in an increase in local traffic volumes during the busiest times of the day, however, the increase in noise levels are not considered significant except during the three month period during which earthworks are required when there will be a significant noise impact on Mauricewood Road.

(1) Defined in Section 72 of the Control of Pollution Act 1974.

Vibration impacts may occur where road breaking is required immediately adjacent to properties. Whilst the level of vibration will be perceptible, this will occur intermittently over a very short period of a few days.

### 3.2.9 *Air Quality and Dust*

Experience from similar construction projects demonstrates that air quality and dust impacts from temporary construction activities are unlikely to be significant. Only in the event of windy conditions after a prolonged dry period would impacts from dust deposition be likely. Such impacts would be short term and localised. With the implementation of mitigation measures such as the use of a Driver Code of Practice and wheel washing facilities, no significant impacts on air quality or residential properties are predicted.

No impacts on air quality are predicted to occur as a result of traffic movements, even at the peak construction activity.

## 3.3 *PERMANENT AND LONG-TERM OPERATIONAL IMPACTS*

### 3.3.1 *Landscape and Visual*

The WTW will occupy a site which is currently improved pasture/grazing. Approximately 36 mature trees (mainly hawthorn and beech) will be removed predominantly from part of a broken line of trees and overgrown hedge which divides the site. None of the trees that need to be removed are protected.

New trees and shrubs will be planted around the landscaped WTW site, the buildings and reservoir will be low lying and will have grass roofs, therefore reducing landscape and visual impacts to a minimum. However, visual impacts will occur at properties which immediately surround the site including House O' Muir Cottage and Whitegate House, Glencorse Mains Farmhouse, Glencorse Mill and Steading, Glencorse Mains Cottages, Pennyfield, Glencorse Kennels and Stadlestons. The development will also be seen from the A702 and the south east facing slopes of the Pentlands. A photomontage of the predicted view from the A702 can be seen in *Figure 4*.

The WTW will not affect any Nationally designated sites, but will be located in Green Belt. The Pentland Hills Regional Park and Area of Great Landscape Value lies adjacent to the site to the west, but outwith it. It will be affected indirectly, but long term impacts will be no greater than of *minor* significance.

### 3.3.2 *Nature Conservation*

Development of the WTW at Glencorse, including the access road, will lead to the loss of approximately 17 ha of the existing habitat, which is made up predominantly of improved grassland of low nature conservation value. As a result of mitigation measures approximately 6 ha of the species poor grasslands on the site will be replaced by a mosaic of habitats with greater

species richness which will lead to an increase in habitat value of the site. Four ha of species rich grassland, 1 ha of damp meadow and 1 ha of woodland will be created. A green roof will be constructed on the main treatment works building which will provide an additional 2.6 ha of species rich grassland.

The majority of the pipeline route runs through improved grassland, semi-improved grassland and arable land. The pipeline route pass through Glencorse Valley, Logan Burn Wildlife Site and the Bush Estate Local Wildlife Site, in addition to a number of tree belts which are designated under the Ancient Woodland Inventory, some of which are subject to Tree Protection Orders. In total approximately 120 m of linear tree belt will be lost along the length of the pipeline along 12 tree belts, assuming a working corridor through tree belts of 10 m. Due to the need for maintenance access and because of the potential for root damage to the pipeline, it will not be possible to replant trees within the 10 m gap to close the tree belts. All of these tree belts are of plantation origin and of low conservation significance. The majority are mature trees and a number are damaged. Areas of native woodland will be planted on the site to mitigate the loss of trees.

The route also crosses a number of hedgerows and travels under the Glencorse Burn, Boghall Burn, Lothian Burn and the Swanston Burn in addition to three unnamed tributaries.

There will be no long term operation impacts on ecology and nature conservation and the landscaping and planting proposals will result in a positive impact on habitats at a local level in the long term. The trees that are to be lost will be replaced by a greater number of new trees.

### 3.3.3

#### *Water Resources*

The WTW design includes grass roofs and an integrated sustainable urban drainage system (SUDS) to reduce and manage water run-off rates from the site. This will incorporate swales <sup>(1)</sup> and a wetland pond which will be managed to provide wildlife habitat as well as providing some treatment to the run-off before discharging to the un-named drainage ditch to the east of the site, which then feeds into the Glencorse Burn. These works will be constructed to adhere the requirements of SEPA.

The wastewater from the water treatment process, internal drainage and drainage from wash-down areas will be discharged to sewer. Any spills and leaks of diesel, chemicals and other hazardous materials in storage areas will be collected in special underground tanks and taken off-site by licensed contractors. All fuel tanks will be protected by concrete tanks to collect any spillages in accordance with regulatory requirements.

No long term or permanent impacts on surface or ground waters are expected as a result of the operation of the WTW.

(1) Shallow natural ditch like features that will channel any surface water to the low lying wetland retention area.

### 3.3.4 *Geology, Soils and Land Use*

No ground features of significance for their geological importance have been identified and there are no sites designated as geological Sites of Special Scientific Interest in the area of the proposed works.

The removal of top soil and sub soil at the treatment works will have a permanent localised impact on the land. The area has a thin covering of top soil overlying predominantly boulder clay which is common in the area. The area to be permanently changed has been kept to a practicable minimum by using the excavated material for landscaping the site and utilising green roofs over the main built structures. Approximately 180,000 cubic meters of soil will be removed off site to landfill or other development projects.

Permanent land take will include approximately 4.32 ha of Land Capability for Agriculture (LCA) Class 3.2 - agricultural land that is currently used for grazing. No prime quality agricultural land will be permanently lost other than 0.2 ha of LCA 3.1 land at the turbine site near Alwnwickhill. There will be no loss of residential or commercial property.

### 3.3.5 *Cultural Heritage*

Three cultural heritage sites and features have been identified within the proposed new WTW site, two of which are predicted to receive direct impacts from the construction of the proposed WTW, as described below.

The remains of a Roman installation, possibly a Roman fortlet or camp near Glencorse Mains, were located during the archaeological field evaluation, and the WTW design has been developed to ensure that there will be no direct construction impacts on this archaeological site, although the immediate topographic context of the site will be altered substantially through the construction of the new buildings adjacent to it.

The surviving remains of a series of field boundaries are present within the proposed WTW site. These will be substantially removed during site preparation works. In addition, the remains of an enclosure ditch associated with the Category B listed House O' Muir, located during the field evaluation, will be substantially disturbed as a result of the construction of the WTW. House o' Muir is considered to be of local importance, but the impact of the proposals on this site as a whole would be of low magnitude since the feature that would be disturbed forms only one minor element of a larger farm.

The construction of a new access road to the proposed pumping station at Crawley Springs will lead to the partial disturbance of an area of surviving rig and furrow. The works will cut through this site of local importance, leading to an impact of minor significance. A minor impact is expected to occur as a result of pipeline works which will cross the remains of a World War II army camp at Mortonhall, considered to be of local importance. Surviving remains

include the bases of now demolished buildings, some of which would be affected by the passage of the pipeline works.

The operation of the WTW will give rise to adverse impacts of minor significance on the settings of two Scheduled Ancient Monuments (SAMs), Castlelaw Hillfort and settlement and Castle Knowe palisaded settlement, and on the Category B listed Martyr's Tomb at Rullion Green.

The operation of the pumping stations at Crawley Springs and Hillend, and the hydro-turbine at Alnwickhill, will not result in any significant impacts.

### 3.3.6 *Traffic and Access*

During operation there will be minimal requirement for vehicular activity to and from the WTW site. Operation of the new works is likely to be carried out with a workforce of six personnel, who will arrive at the site daily. In addition, there will be various maintenance staff who will visit the site occasionally in works vehicles. There will be an average of seven deliveries of chemicals per week, delivered in specialised heavy goods vehicles. There will be no significant environmental impacts during the operational phase.

### 3.3.7 *Noise and Vibration*

The WTW will be designed to ensure that the total noise levels at the nearest residential property will not exceed 30 decibels <sup>(1)</sup> at night to ensure no noise impacts at the closest noise sensitive receptors. These standards will be achieved through the design of the plant and mitigation measures such as enclosing noisy equipment, using low noise plant where this is sited externally and the design of the external fabric of the building to contain noise. This will take into account areas such as ventilation louvres, doors and windows to ensure these do not compromise the noise mitigation offered by the building which house the WTW.

Ground vibration from the plant is unlikely to be perceptible at the nearest residential receptors, but the acoustic design process will review experience from other similar installations and, if necessary, suitable vibration isolation equipment will be included on relevant plant to ensure this is the case.

The turbine building at Alnwickhill will be designed to ensure that there will be no noise impacts at the properties located on Netherbank. No noise impacts will occur as a result of the operation of the pumping stations at Crawley Springs and Hillend, which are both located underground and at distance from noise sensitive properties. There will be no traffic noise impacts arising from the operation of the WTW.

(1) Measured as a free field level away from the building facade and as a 5 minute A-weighted equivalent sound level.

There are a number of other consented development and proposals in the area that could result in cumulative impacts with the proposed WTW developments. The development projects which may contribute to cumulative effect have been identified as:

- Edinburgh Technopole Centre at the Bush Research Park;
- A702 and Mauricewood Road junction improvement and roundabout;
- a number of housing developments and associated development to the south the WTW site; and
- a Park and Ride scheme at Hillend.

Short term impacts would largely depend on timing, for example construction noise and traffic impacts. For the planned roundabout at Mauricewood Road a traffic management scheme would be agreed between Scottish Water and the developers if construction is to take place at the same time. In the longer term significant cumulative impacts are not predicted as the pipeline route will be reinstated and the WTW site will be largely hidden by the proposed landscaping and planting.

The construction of the new WTW and pipelines and associated infrastructure will result in significant impacts on the environment. In the most part these will be temporary impacts during the 2 year construction period and will vary depending on the phase of the construction work. For example noise, traffic and visual impacts from construction activities. In the longer term the main impacts will be on the landscape and visual amenity. The impacts from the WTW have been mitigated as far as practicable by the design of the building and the landscaping, including partially burying the building and covering the main buildings and storage tanks with grass. The landscaping at the WTW site will also provide a greater variety of habitats. There will also be three permanent above ground structures along the pipeline route associated with the two pumping stations and the hydro-turbine. New planting will be undertaken to provide screening for the hydro-turbine building. It is recognised that reinstated ground, and new hedge and tree planting will take a number of years to become fully established.