

Introduction

Augean PLC is seeking planning permission for its East Northants Resource Management Facility (RMF) in Northamptonshire as shown on Figure NTS 1 to allow the disposal of wastes such as soils and construction materials that arise from sources that include hospitals and the decommissioning of nuclear power stations. These wastes have small amounts of low level radioactivity which means that they must be sent to specially authorised landfill sites. The site is an active hazardous waste landfill and has an Environmental Permit issued by the Environment Agency.

The site is located approximately 2.2km south east of Duddington and 2.5km north of King's Cliffe and is accessed via Stamford Road which runs north to the A47 and south to King's Cliffe.

A planning application to allow Augean PLC to dispose of certain types of Low Level Radioactive Waste referred to as LLW has been made to Northamptonshire County Council. The planning application is accompanied by an Environmental Statement in which the findings of the environmental impact assessment are presented. This document summarises the findings of the Environmental Statement in non-technical language.



The East Northants Resource Management Facility

For the disposal of LLW at the East Northants RMF the site must obtain planning permission as well as an Authorisation under the Radioactive Substances Act 1993 which is issued by the Environment Agency. An application for an Authorisation has been submitted at the same time as this planning application.

The Environment Agency is the regulator with responsibility for ensuring the safety of the public and the environment and the protection of workers as a result of the proposed development, the Health and Safety Executive is responsible for ensuring the safety of the site workers and the Department for Transport is responsible for safety during transportation.

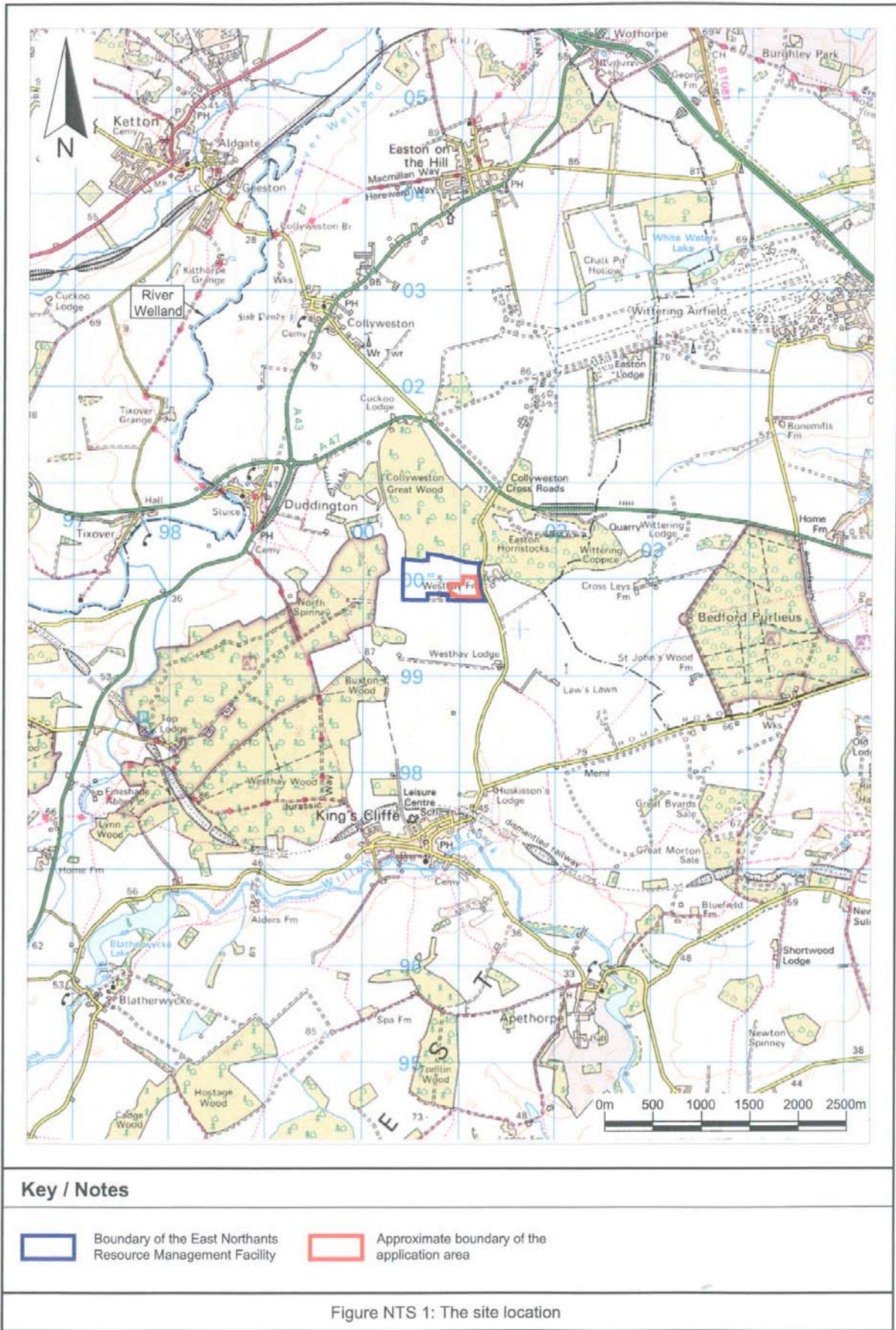
About the developer

Augean PLC is a market leader in the safe treatment and disposal of hazardous waste. The company is listed on the Alternative Investment Market of the London Stock Exchange. They have ten operational sites in the UK and Augean staff have specialised experience in managing wastes which are difficult to handle. The company is a sector leader in establishing modern technology for recycling, recovery and treatment of hazardous wastes.

The proposals

It is proposed that the wastes permitted for disposal at the East Northants RMF are extended to include wastes at the lower activity end of LLW. The radioactivity of the wastes that will be accepted at the site is low and the site will be operated in a way that means that exposures resulting from the disposal of the waste are significantly less than the exposure of the average person to naturally occurring radiation in the UK.

The waste will be disposed of in three cells (4B, 5A and 5B) of the landfill site which cover approximately 6 hectares as shown



on Figure NTS 2.

Current operations at the site will continue and there will be no changes to the volume of waste imported to the site or the physical features of the site. There will be no change to the traffic movements and noise associated with the current operations at the site. The containment engineering at the site will continue to be constructed as it is currently and the measures for the control and management of leachate, gas, groundwater and surface water will remain the same.

In accordance with the current permissions landfill operations at the site will stop in 2013 and the site will be restored consistent with the currently approved restoration scheme. These proposals will not result in any change to the operational lifetime of the site or to the restoration and aftercare proposals for the site.

Management and monitoring of the site will continue well beyond the closure of the site in accordance with the current Environmental Permit and the proposed Authorisation. A sum of money has been put aside by Augean which is available to the Environment Agency in the event that Augean no longer exists.

Public consultation

Extensive consultation has been carried out with local communities and key stakeholders as part of the development of the application proposals.

A public exhibition and surgery were held in King's Cliffe where members of the public talked to representatives from Augean, the Environment Agency, the Health Protection Agency and Research Sites Restoration Ltd, a subsidiary of the United Kingdom Atomic Energy Authority.

The local community, elected representatives and others were informed about the proposed development using a number of different means of

communication. An information pack and public information leaflets were distributed to elected representatives, local residents, journalists and relevant organisations such as the Primary Care Trust and local doctors' surgeries. Presentations of the proposal were given to the local Parish Councils.



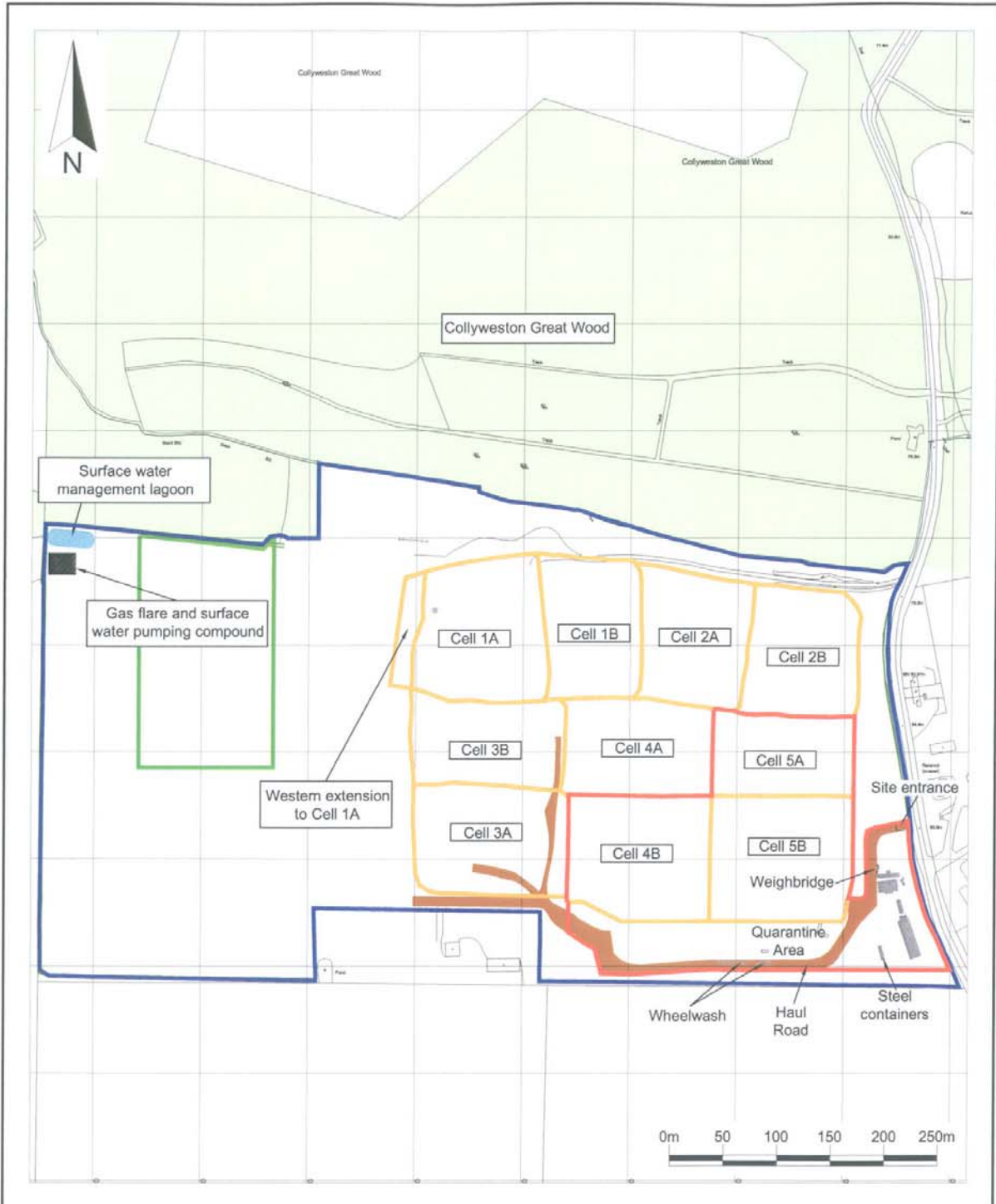
The public exhibition

Augean will continue to engage with all those with an interest in the proposals during and after the determination of the application.

Need for the proposals

The decommissioning and clean up of the UK's nuclear power stations will create large amounts of waste with low levels of radioactivity. The waste typically is construction and demolition waste such as rubble, soils, crushed concrete, bricks and metals. LLW comprises approximately 90 per cent of future radioactive waste arisings by volume but it contains less than 0.0003 per cent of the total radioactivity. Wastes with low levels of radioactivity are also produced from hospitals and science and research facilities.

There is currently only one facility in the UK engineered specifically to accept LLW from the nuclear industry and there are a few other sites which accept very low levels of radioactive waste. The main facility is known as the Low Level Waste Repository (LLWR) and is situated near Sellafield in Cumbria. The LLWR does not



Key / Notes

	Boundary of the East Northants Resource Management Facility (planning permission reference EN/05/1264C)		Boundary of the soil treatment facility (planning permission reference 07/00048/WAS and 07/01838/NCC)		Fence
	Boundary of the application area		Current haul roads		Gate
	Approximate location of the cell boundaries		Site buildings		Hedgerow
					Trees

Figure NTS 2: The site layout and the application boundary

have the capacity to dispose of all the LLW which will be produced in the future from the decommissioning of the nuclear industry and it is over-engineered for the lower activity LLW which it is proposed is deposited at the East Northants RMF. The available capacity in the LLWR should be reserved for the higher activity LLW which it is designed to accommodate.

The East Northants RMF is located in Northamptonshire and is centrally located for the producers of LLW which are situated in central and southern England as shown on Figure NTS 3.

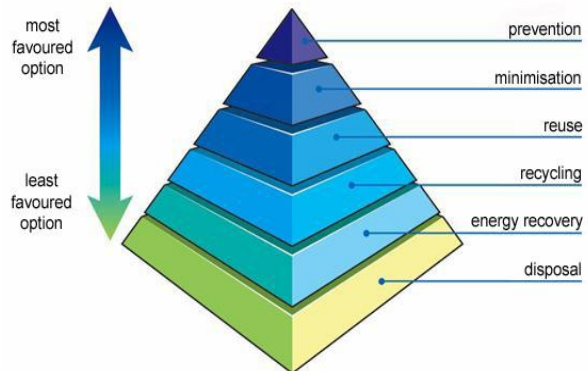
Alternatives

Alternative options to the proposals have been assessed including alternative management methods for LLW, the disposal of LLW at sites other than East Northants RMF, the development of other Augean sites other than the East Northants RMF for LLW disposal and the alternatives to the disposal of this type of low level radioactive waste at the site.

Producers of LLW are required to manage their waste according to the Waste Hierarchy. This means they must find ways to avoid creating the waste in the first instance, then minimise, re-use, recycle or treat the waste which cannot be avoided. Every nuclear industry site which wishes to consign radioactive waste to landfill first has to demonstrate to the regulatory authorities that landfill is the Best Practicable Environmental Option. The option of disposal of the material at the site where it is generated will have to be considered. Even after the application of the hierarchy there still will be large volumes of residual waste which have to be disposed of to landfill.

The site is the most suitable site available to Augean to accept waste with low levels of radioactivity because it already has a high degree of engineered environmental protection. The application is only for wastes at the lower activity end of LLW as the current engineering containment

measures are suitable for this type of waste without the need for additional containment measures.



The Waste Hierarchy

Augean PLC have a good record and culture of health and safety and environmental protection and staff at the site are already experienced in handling hazardous wastes under the existing operations, which have higher concentrations of chemical emissions than wastes with low levels of radioactivity.

Planning context

In 2007 the Government set out its policy on the management of Low Level Radioactive Waste which includes the disposal of LLW by landfill to appropriately engineered facilities.

The proposal is in full conformance with national, regional and local planning policies regarding the management of solid low level radioactive waste and sustainable waste management.

Environmental issues

An Environmental Impact Assessment of the effects of the development has been conducted by qualified specialists. A summary of the findings is presented below.

As part of the application to the



Environment Agency for the Authorisation quantitative risk assessments have been carried out using approved, conservative predictive models.

The risk assessments submitted as part of the Authorisation application will be scrutinised robustly by the Environment Agency and the other regulators during the Authorisation application process. An Authorisation for the site will be issued only if the regulators are satisfied that the site can be operated in the short, medium and long term without an unacceptable impact on human health and the environment.

Risk assessments have been carried out for scenarios which cover the operational and post operational period of the site together with the period in the long term when management of the site may no longer be in place. The scenarios which are assessed include expected events as well as events and accidents which it is considered are unlikely to occur.

The potential routes for exposure to radioactivity have been assessed for workers at the site, residents living at the boundary of the site, members of the public exposed indirectly through using water resources and people who may live on the site after its closure. The effects of exposure on plants and animals are also assessed.

A summary of the possible exposure routes that have been assessed for workers, the public, the general environment and wildlife is shown below.

Operational phase

Scenarios expected to occur

- Direct exposure to waste
- Gas emissions
- Leachate treatment
- Drilling through waste to install wells or boreholes

Scenarios unlikely to occur

- Spillage of waste
- Contamination as a result of waste entering an open wound
- Failure of the containment barrier
- Site remediation activities
- Fire at the site
- Failure of the leachate collection system
- Aerosol generation
- Aircraft impact
- Exposure of wildlife

After closure of the site

Scenarios expected to occur

- Direct exposure through cover materials
- Gas emissions
- Leachate treatment
- Use of groundwater at the nearest abstraction point

Scenarios unlikely to occur

- Failure of the containment barrier
- Inadvertent excavation
- Exposure of people as a result of houses built directly on the site
- Use of groundwater from a borehole installed at the site boundary

Transportation of the waste

Scenarios expected to occur

Normal transport scenarios are controlled by transportation regulations.

Scenarios unlikely to occur

- Spillage of waste during transportation
- Spillage of leachate during transportation

The amount of radiation a person is exposed to is known as the dose. Legal dose limits which are protective of health have been set for workers and members of

the public. Dose levels below the legal limits have been established from guidance and good practice. Augean have designed the site to achieve the lowest of these limits. These lower levels are known as 'criteria' and have been applied in the risk assessments. Dose limits and dose criteria compared with natural radiation and more familiar exposure routes are shown below.

Exposure to radiation is measured in milliSieverts per year (mSv/yr).

Exposure Limits	
Legal dose limit for workers	20 mSv/yr
Dose guidance level for exposure from uncertain intrusion events	3 mSv/yr - 20 mSv/yr
Legal dose limit for the Public	1 mSv/yr
Dose criterion for workers for this application	<1 mSv/yr
Dose constraint for the public from a single source	0.3 mSv/yr
Design dose criterion for the public for this application	<0.02 mSv/yr

Natural Radiation	
Average annual exposure of the UK population from natural sources	2.2 mSv/yr
Average annual exposure in the site area from natural sources	3.6 mSv/yr
Average annual exposure in Cornwall from natural sources	7.4 mSv/yr

From an analysis of the environmental context and from views and information from Northamptonshire County Council, the Environment Agency, Natural England and other appropriate organisations it was agreed that the environmental assessment should examine the effects of the

Comparative Doses	
Drinking bottled water (2l/day)	0.002 – 0.484 mSv/yr
Food; for example 100g of Brazil nuts	0.004 mSv
Dental x-ray	0.005 mSv
Chest x-ray	0.02 mSv
London to Los Angeles return flight	0.16 mSv
Medical Abdominal CT Examination	10 mSv
UK action level for Radon in homes	200Bqm ⁻³ (equivalent to 10mSv/yr)

proposals with respect to the following issues:

- Population
- Ecology
- Water resources
- Air quality
- Transport

Population

Risk assessments have been undertaken for site workers and members of the public based on unlikely situations such as standing next to the waste for many hours, installing a drinking water borehole at the landfill boundary and members of the public living on the landfill after closure of the site and with no controls in place. Risk assessments have also been undertaken for the off site leachate treatment facility. Leachate is the liquid which forms as rain which seeps into the site drains to the base and is pumped out for treatment.

Even with such conservative assumptions for each exposure scenario it is shown that the doses of radiation to which the workers and members of the public may be

exposed are below the relevant assessment criteria.

The potential effect on the local economy and community was assessed by reference to a Strategic Environmental Assessment of the LLW waste management strategy of the Nuclear Decommissioning Authority. It is concluded that there is no evidence that there will be significant adverse effects on local economies or local communities as a result of the proposed development.

Ecology

Ecological surveys were carried out for previous planning and Environmental Permit applications. No significant habitats or protected species were found in the proposed development site. Badger setts were found outside the site and Great Crested Newts were found in four ponds in the western side of the facility but outside the landfill area. The Great Crested Newts have since been moved. To the north and north east of the site is the Collyweston Great Wood and an area of woodland known as Easton Hornstocks. Part of the Collyweston Great Wood and Easton Hornstocks comprise a Site of Special Scientific Interest and a National Nature Reserve.

The potential radiological effects of the disposal of waste with low levels of radioactivity at the site on non-human species have been assessed. A range of organisms and wildlife groups including lichen, plants, insects, fish, amphibians reptiles and mammals were considered. Based on the conservative risk assessment it is concluded that the risk to the wildlife and biodiversity at and in the vicinity of the site is not significant as the estimated radiation dose to wildlife is significantly below the screening criterion at which the need for more detailed assessment should be considered.

Water resources

The current site engineered containment has been designed based on site specific risk assessments that are protective of surface water and groundwater quality at the site.

Based on the design of the engineered containment the potential impacts with respect to contamination by radioactive material on groundwater and surface water quality and the subsequent use of the water resources by people and animals have been assessed. Based on conservative assumptions including the spillage of a tank of leachate directly into a fishing lake it is concluded that the doses of radiation to which members of the public may be exposed as a result of contamination via the groundwater and/or surface water pathways are below the relevant assessment criteria.

The site is not located in an area which is subject to flooding even taking into account the predicted effects of climate change. Predicted changes in the volume and intensity of rainfall events are considered under the current Environmental Permit. It is concluded that it is highly unlikely that the proposed development will be affected by the predicted effects of climate change.

Air quality

The LLW deposited at the site will have very limited degradable material and a low potential for the generation of carbon based gases or odour. The gas management and control systems at the site will continue to be operated as currently. As all LLW will be in sealed packages the risk of dust generation will be negligible.

A risk assessment was carried out of the potential for exposure to gas emitted through the surface of the site and from the flare stack. In the conservative risk assessment it is concluded that the doses of radiation to which the workers and

members of the public even if stood at the boundary for long periods will be exposed as a result of gas emissions from the site are below the relevant assessment criteria.

Transport

The consented amount of waste entering the site in a year will not change as a result of the proposal. The traffic associated with the proposals will access the site along Stamford Road from the A47 consistent with current waste inputs.



Transportation checks

The transportation of waste with low levels of radioactivity is regulated by the Department of Transport. It is the responsibility of the carrier of the waste to ensure that the waste is transported in accordance with the relevant transport regulations. However Augean will oblige waste producers to deliver wastes in containers that ensure a protective external dose criteria is met 1m away from the package.

Even through the transportation of the waste is regulated by the Department of Transport a risk assessment of the potential exposure to waste following a vehicle accident was carried out. In the

conservative risk assessments it is concluded that the doses of radiation to which the transport workers and members of the public would be exposed as a result of a transport accident are below the relevant assessment criteria.

The waste producers are obliged to assess and determine the most appropriate location for the disposal of residual LLW waste produced at their facilities taking into account a number of issues including distance to the disposal location. An environmental assessment of the Nuclear Decommissioning Authority strategy for managing LLW concluded that the environmental impacts of transportation are not a significant contributor to the carbon emissions of the nuclear sector.

Cumulative effects

In accordance with international protocols the risk assessments of radiation exposure that have been carried out take into account cumulative effects. The potential for adverse chemical reactions between the LLW and the hazardous waste that is deposited at the site is negligible. As the waste deposited at the site currently does not comprise radioactive waste there is no cumulative effect with respect to radiation doses at the site. The risk assessments of radiation exposure that have been carried out take into account the cumulative effect of radiation exposure from radiation doses of different sizes, delivered at different rates to different parts of the body, by different pathways from different radioactive elements. The current UK public dose limit is 1mSv/yr which is additional to background or other sources. In the risk assessments carried out for the Authorisation application exposures which persons may receive under a wide variety of different normal and accident scenarios are estimated and summed hence comprise an assessment of cumulative effects.

Conclusions

It is concluded that the proposed development can be undertaken without significant adverse impacts on workers, local residents and the environment.

It is concluded that there is no evidence that there will be significant adverse effects on local economies or local

communities as a result of the proposed development.

The provision of new, fit-for-purpose disposal capacity for LLW will provide a significant positive effect in the contribution it will make to safe decommissioning of the national legacy from the energy enjoyed by the nation for the last 50 years.

Availability of Planning Application and Environmental Statement

Electronic copies of the Non-Technical Summary, the Planning Application, the Environmental Statement and the Authorisation application are available through the Augean website at:

www.augeanplc.com

Hard copies of the Environmental Statement are available at a price of £150 from MJCA. Contact:

MJCA
Baddesley Colliery Offices
Main Road
Baxterley
Atherstone
Warwickshire
CV9 2LE

E-mail: **mikemordue@mjca.co.uk**

The Planning Application and Environmental Statement can be viewed by appointment at:

Northamptonshire County Council
County Hall,
Northampton,
NN1 1DN.

Telephone: **01604 236 236**

East Northants Resource Management Facility
Stamford Road
King's Cliffe
Peterborough
PE8 6XX

Telephone: **01780 444900**

A copy is also available to view in Oundle Library at:

Oundle Library
Glaphorn Road
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Northamptonshire
PE8 4JA

Telephone: **01832272584**