# NORTH WEST cambridge

Pollution Control Strategy

Condition 33

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URS

# North West Cambridge – Pollution Control Strategy

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# TABLE OF CONTENTS

# 1 INTRODUCTION

## 1.1 Commission

The University of Cambridge has commissioned URS to prepare a Pollution Control Strategy in response to Condition 33 for the planning consent for the North West Cambridge (NWC) development ("the Development") (reference 11/1114/OUT and S/1886/11).

## 1.1 Background

In August 2012 planning consent was granted for the Development.

The Local Planning Authorities of Cambridge City Council and South Cambridgeshire District Council have conditioned the consent with Condition 33 which relates to flood risk and sustainable drainage systems in terms of pollution control for the water environment.

## 1.2 Proposed Development

The boundary of the Application Site for the Development comprises approximately 160 ha of which 97.7 ha will be available for development; the remainder will consist of large public open space and the new highway junctions on Madingley Road and Huntingdon Road.

Given the nature of the site, predominantly greenfield at present, pollution risk from surface water to the receiving watercourse, the Washpit Brook, and to ground water is low.

Both during construction and following occupancy of the Development, both sources of pollution and the risk for entry into the Washpit Brook and the ground will increase.

## 1.3 Aims & Objectives

This Pollution Control Strategy has been prepared to discharge Condition 33 of the Consent for the Development and considers the sources of and methods for mitigating against the risk of pollutants affecting the water environment.

Furthermore it is intended that this strategy will complement the philosophy of the NWC Surface Water Drainage Strategy (prepared in response to Condition 26) in removing contaminants while draining the site effectively through sustainable urban drainage systems (SUDS) and the NWC Construction Environmental Management Plan (CEMP) (prepared in response to Condition 52) with respect to protection of SUDS features during building works.

## 1.4 Planning Condition

The following Planning Conditions & Informatives have been considered in the preparation of this Pollution Control Strategy.

**CONDITIONS**

**Flood Risk and Sustainable Drainage Systems**

**Condition 33**

Prior to the commencement of any development, a scheme for the provision and implementation of pollution control of the water environment, shall be submitted and agreed in writing with the Local Authority. The works/scheme shall be constructed and completed in accordance with the approved plans.

**REASON** To prevent the increased risk of pollution to the water environment. North West Cambridge Area Action Plan Policies NW25, NW26 and NW27.

**Informatives**

There are no specific Informatives related to this Condition.

## 1.5 Planning Policy

Planning Policy requirements can be found in **Appendix A**.

# 2 WATER RECEPTORS AND HAZARD IDENTIFICATION

## 2.1 Areas at risk of pollution

The topography of the Development generally falls towards the Washpit Brook with the exception of a plateau within the eastern area at Storey's Field. All water at the current undeveloped site therefore either flows overland or via drainage ditches to the Washpit Brook or infiltrates into the ground.

The NWC Surface Water Drainage Strategy proposes the drainage of the entire Development towards the Washpit Brook via a system of below ground drainage and SUDS features. These SUDS features assist in removing contaminants suspended in water through processes such as filtration and bio-retention.

It will therefore be necessary to consider the protection of the following from pollution:

- Washpit Brook and its tributaries
- Groundwater
- Proposed drainage and SUDS features

Pollution reaching groundwaters or entering the Washpit Brook will not only be a failure to comply with Planning Condition 33 but will also cause damage to the ecology of the local area.

SUDS features require protection to ensure that they are established and can operate effectively.

## 2.2 Potential sources of pollution

Ciria publications C698 "*Site handbook for the construction of SUDS*" and C609 "*Sustainable drainage systems; hydraulic structural and water quality advice*" highlight potential sources of pollution that could affect the previously mentioned water receptor. This strategy considers these sources and identifies other areas which may be applicable to the NWC Development.

### 2.2.1 *Excavated and exposed ground*

The effect of having no vegetation and being recently disturbed allows for relatively low velocity run-off to erode any exposed surface leading to higher amounts of sediment suspended in the water. The resultant silty discharge can affect sensitive ecosystems with receiving waters.

### 2.2.2 *Stockpiles and material storage*

The effects of erosion on a stockpile will depend on the type of material being stored. Fine sand and topsoil stockpiles will be eroded far more readily than heavy granular materials and will ultimately have a similar effect to exposed ground. In addition, stockpiles may be contaminated which could increase the risk of damage to local ecology and water quality.

Material storage and construction waste areas can include hazardous substances and other contaminants that pose a pollution risk if not adequately managed. Large volumes of oils and other hydrocarbons may be present at such locations.

### 2.2.3 *Haul roads*

The runoff from haul roads contains large amounts of suspended solids as well as hydrocarbons due to the nature of the area they serve and the vehicles using them.

Hydrocarbons that enter the Washpit Brook from haul roads could have a negative effect on local ecosystems and could pollute groundwater.

### 2.2.4 *Plant and wheel washing*

While plant and wheel washing is necessary for site traffic exiting the Development to reduce debris falling on public highways and to mitigate against pollutants entering highway drains, these facilities in themselves present a contamination risk if water is allowed to escape.

### 2.2.5 *Disturbance of riverbeds or banks*

Excavation of riverbanks or beds can generate silty water as the excavated and exposed material is washed downstream. Furthermore, oils and other lubricants and fuels used by construction machinery could enter the water course while excavation takes place.

The prior written consent of the Lead Local Flood Authority will be required for any works to a watercourse, whether temporary or permanent.

### 2.2.6 *Dewatering operations*

Groundwater discharge from dewatering operations is likely to be heavily polluted with suspended solids and poses a contamination hazard should this water enter the Washpit Brook.

### 2.2.7 *Concrete washout areas*

Construction with concrete requires cleaning of equipment and, if not managed appropriately, can lead to deposition of this material, or sediments, within areas susceptible to pollution. Furthermore, concrete can block drainage systems causing flood risks.

**Figure 1 Example of a concrete washout facility**

# 3 POLLUTION PREVENTION AND MITIGATION

## 3.1 General Water Management Plan

The objectives of the Water Management Plan are to implement working methods to protect surface and groundwater from pollution and other adverse impacts including change to flow volume, water levels and quality.

Generally, the plan proposes that to capture any overland flows during the construction phases of the Development and prior to the establishment of the below ground drainage network, a series of ditches and settling lagoons (Figure 2) will be built and located to protect the Washpit Brook from pollution and to attenuate the rate of discharge. This network of ditches and settling lagoons will form the Development's construction drainage system. The construction drainage system will not be permitted to connect to the proposed ground drainage network described in the NWC Surface Water Drainage Strategy.

It is proposed that the ditches will capture and convey water through the site to the settling lagoons which will be carefully located. Sedimentation of suspended solids within the water will occur in the lagoons prior to discharge into the Washpit Brook through temporary drainage connections. All discharges to watercourses will be clear and uncontaminated.

These ditches and lagoons will be lined to prevent run-off infiltrating the ground and will feature control devices such as weirs to limit the discharge into the receiving watercourse.

Best practice as established by Ciria document C698, and through correspondence with Cambridge City Council (see Appendix B) states that the settling lagoons should be constructed to provide retention of silty waters for 24 hours prior to discharge. Any lagoons built at the Development must adhere to the requirements of C698 with additional consideration given for maintenance during use.

The construction of the lagoons will be based on Ciria document C698 which states:

*"The bottom and side slopes of the pond, including any benches, should be carefully prepared to ensure that they are structurally sound. The preparation should also ensure that the basin will satisfactorily retain the surface water runoff without significant erosion damage.*

*Backfilling against inlet and outlet structures needs to be controlled so as to minimise settlement and erosion. The soils used to finish the side slopes of the pond above the retained level need to be suitably fertile, porous and of sufficient depth to ensure healthy vegetation growth. If an impermeable liner is used, care should be taken to ensure that it is not damaged during construction.*

*During the SUDS establishment phase, runoff from bare soils should be minimised.*

*For example:*

*(a) Green cover on slopes should be rapidly established.*

*(b) Base-of-slope trenches should be introduced to retain the inevitable runoff sediments.*

*(c) Construction should be timed to avoid autumn and winter when high runoff rates are to be expected."*

**Figure 2 Example of settling lagoon**


### 3.1.1 *Protection of watercourses*

As the Washpit Brook watercourse runs through the proposed works, care must be taken to prevent surface water drains discharging pollutants and contaminants to the brook without prior treatment. Consequently to prevent pollution to controlled waters, it is vital that contaminated run-off is not discharged to the surface water system.

The control mechanisms identified in this document for pollution prevention must be adopted. If however, in an emergency situation, it is necessary to discharge contaminated surface water to a drain, then it will be discharged to the foul sewer in preference to the surface water drainage system.

Drain covers must be kept in close proximity to any surface water drain which is considered to be close to a potential source of pollution and therefore at risk, for example any surface water drains located near to bulk fuel or chemical storage.

### 3.1.2 *Protection of groundwater*

Protection measures to control the risk of pollution to groundwater will be consistent with the Groundwater Regulations 1998. Where reasonably practicable, the use of materials that could pollute groundwater will be avoided. This will include special consideration of the use of substances contained within List I and II of the Groundwater Regulations SI 1998/2746 (Groundwater Directive: 80/68/EEC).

Further protection measures which reduce the risk of groundwater pollution are outlined later in this strategy.

### 3.1.3 *Site drainage & SUDS*

Site drainage is composed of foul sewer and surface water drains and the Washpit Brook. A site plan will be developed for construction which clearly identifies the foul and surface water drains on the worksite. The drain covers will be colour coded or labelled so that they are clear and unambiguous to site staff (common colour coding is blue for storm and red for foul sewer). It is a requirement that the site drainage plan also includes the locations of spill kits and drain covers and that it is displayed in prominent key locations on the worksite.

Ciria document C698 states that SUDS features will need time to become established so that vegetation is not eroded and that excess silts do not inundate this vegetation and clog features such as porous sub-bases:

*"A viable vegetative cover should be established within one year on all disturbed areas and soil stockpiles not otherwise permanently stabilised. Vegetation is not considered established until a ground cover is achieved which is sufficiently mature to control soil erosion and can survive moderate runoff events."*

To comply with the recommendations of C698, careful planning of the formation of SUDS features will need to be undertaken to ensure that construction works do not unduly affect these drainage systems. Furthermore where vegetation will be used within proposed SUDS, protective measures, as described by this chapter, will be required to allow for establishment.

## 3.2 Source Risk Mitigation

### 3.2.1 *Material storage*

As identified in Section 2.2 "*Sources of Pollution*" incorrectly stored materials can cause pollution to enter watercourses, contaminate groundwater or impair SUDS features. Materials will therefore be stored in a sensible manner in accordance with appropriate Health, Safety and Environmental legislation. Containers of contaminating substances will be:

a) Leak proof.

b) Kept in a safe and secure compound or building from which they cannot leak and are protected from vandalism (see Figure 3).

c) Isolated from surface water drainage on impermeable hard standing of good integrity to prevent run-off infiltrating ground or reaching un-established SUDS features.

d) Located to minimise the risk of impact from mobile plant and other vehicles.

e) Protected by temporary impermeable bunds with a capacity of no less than 110% of the maximum stored volume.

**Figure 3 Secure compound**


Areas for transfer of contaminating substances will be similarly protected.

Oils must be stored (including bowsers) in accordance with any regulations pertaining to the storage of potentially polluting materials e.g. *The Control of Pollution (Oil Storage) (England) Regulations 2001*.

Guidance of the storage of contaminating materials is available in the Environment Agency' Pollution Prevention Guidelines:

- *PPG2: Above Ground Oil Storage Tanks*
- *PPG8: Safe Storage and Disposal of Used Oils*
- *PPG26: Storage & Handling of Drums & Intermediate Bulk Containers*

In addition the storage area will be adequately bunded and secured with impervious walls and floor for the temporary storage of fuel, oil and chemicals on site during construction.

Refuelling, oiling and greasing will:

a) take place above a drip tray or on an impermeable hard standing;

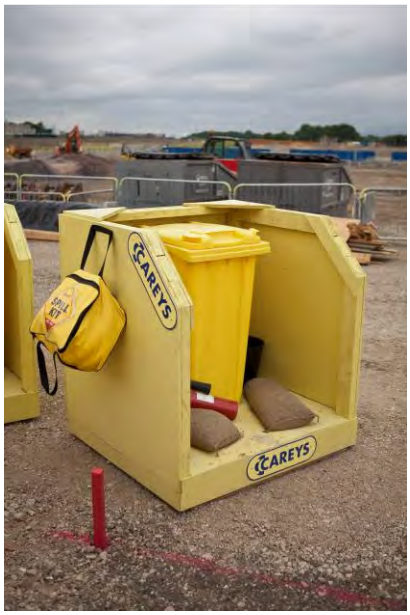
b) be located away from surface water drains; and

c) be supervised at all times.

Oil interceptors will be fitted to all temporary discharge points and for discharge from any temporary oil storage or refuelling area.

Spill kits must be located near areas used for refuelling. If a bowser or tanker is used for refuelling, then the bowser or tanker will carry an appropriate spill kit (Figure 4).

**Figure 4 Photographs showing bunded bowser and spill kit**


Guidance is available from the Environment Agency's Pollution Prevention Guidelines, *PPG7: Refuelling Facilities*.

### 3.2.2 *Silt pollution*

Areas of exposed soils and subsoils have the potential to generate silt contaminated surface water. Section 2.1 "*Area at risk of Pollution*" identified in both the construction phase and after completion that silty water will generally flow towards the Washpit Brook. Given the detrimental effect of silty water on the aquatic environment as noted in Section 2.2 "*Potential Sources of Pollution*" such water must not be permitted to enter the Washpit Brook. Measures will therefore be adopted to:

Minimise areas of exposed soils, subsoils and stockpiles

a) Isolate surface water from areas of exposed soils to minimise the generation of silt;

b) Avoid using vehicles on areas of exposed soils;

c) Isolate silty water from surface water drains; and

d) Prevent the transmission of silt onto highways through wheel washing and street sweeping.

In addition, vehicular movements over exposed, unvegetated ground should be kept to a minimum and haul roads should be used wherever possible. Exposed ground should be vegetated and planted as soon as possible to reduce the risk of erosion and sediment transference into receiving waters.

Control methods for managing residual silt within surface water include:

e) Containment and settling lagoons;

f) Settling tanks, for example 'siltbusters';

g) Bunds and drain covers;

h) Silt fences and filters;

i) Wheel Washes and road sweepers (to prevent transmission onto public highways); and

j) Pumps.

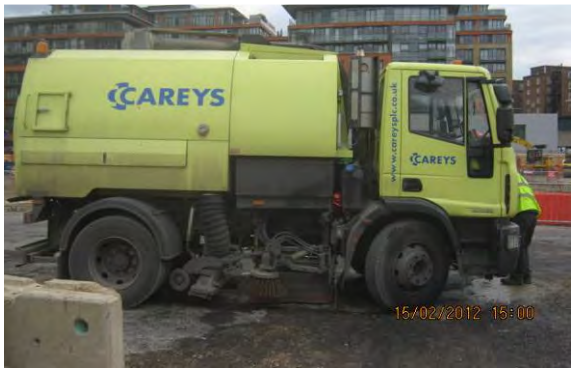
Flocculants can also be used as a tool in silt management. However these have the potential to cause pollution and must be employed with care; the Environment Agency will be consulted prior to their use.

Measures established in Pollution Prevention Guidelines: PPG5 Works In, Near or Liable to affect Watercourses will be adopted.

### 3.2.3 *Haul roads*

Haul roads must be designed so that the length is kept to a minimum, but still serves its purpose. The gradient will be shallow to prevent increasing runoff velocity and, if possible, bunds and/or discrete ditches constructed to intercept the runoff. Haul roads must be watered on a regular basis to keep dust down. If any sections of haul roads are hard surfaced, they must be cleaned on a regular basis to prevent the accumulation of dust and mud.

**Figure 5 Example of watering haul road to suppress dust and road sweeper**




### 3.2.4 *Wash down of vehicles and plant*

Wash down of vehicles must only be undertaken in designated areas isolated from the surface water system.

Where wash water is discharged to the sewer, then a 'consent to discharge trade effluent' may be required from the sewerage undertaker. Wash down facilities and arrangements will comply with the Environment Agency's Pollution Prevention Guidelines *PPG13: Vehicle Washing and Cleaning*.

Use of detergents must be avoided as they may compromise the effectiveness of any oil separators or interceptors. In addition these facilities will be located as far from a receiving watercourse as possible.

**Figure 6 Example of a wheel wash facility on site**

### 3.2.5 *Concrete washout areas*

Where it is required to clean out concrete wagons or skips containing wet concrete mixes, a designated area must be made available clear of watercourses or drainage systems so that the cement content does not enter water systems or block or blind drainage networks. This area may require an impermeable surfacing to prevent seepage into underlying soils.

### 3.2.6 *Washroom/welfare facilities*

All foul water from onsite washroom/welfare facilities will be disposed to the public foul sewer.

### 3.2.7 *Dewatering*

Any pumped groundwater from dewatering which is required within the construction corridor will be disposed of appropriately according to EA Pollution Prevention Guidelines.

The nature of any dewatering operation together with the full specific details would need to be agreed with the Environment Agency prior to commencement of any dewatering operation.

To assist in reducing the amount of suspended solids within the runoff from dewatering a number of techniques will be adopted:

- passing the discharge water over a grassed or vegetated area, the discharge velocity has to be monitored and kept sufficiently low to promote settlement
- passing the discharge water through a temporary gravel strip
- controlled use of skips and/or tanks to act as stilling basins
- controlled use of stilling ponds.

## 3.3 Emergency plan

The main priority of any emergency plan is to avoid spillage and emergency situations. This will be achieved through minimising the risk of spillage at source through avoiding the use of polluting materials where possible. Where the use of polluting materials is unavoidable, then suitable containment in a sensible location is essential.

Additionally, pathways for pollution to escape must be identified, removed and intercepted. This can be achieved through isolating polluting materials from drainage infrastructure and ensuring that there are appropriate methods for intervention and containment e.g. spill kits and drain covers. General guidance on the prevention of pollution is available in the Environment Agency's Pollution Prevention Guidelines (PPG):

- *PPG1: General Guide to the Prevention of Pollution*
- *PPG6: Working at Construction and Demolition Sites*
- *PPG21: Pollution Incident Response Planning*
- *PPG 5: Works and maintenance in or near water (Washpit Brook and the drainage ditches throughout the development area)*
- *PPG 7: Refueling Facilities (ensuring they are appropriately placed to reduce the risk of a pollution incident)*
- *PPG 22: Dealing with Spills*
- *EA Position Statement 7: Concrete Washwaters*

A detailed Emergency Response Plan will be developed by the appointed contractor. This will govern the management of environmental incidents. The contractor must ensure adherence to the plan and ensure that site operatives are familiar with the emergency arrangements.

The Emergency Response Plan must be clear and unambiguous. It must clearly define responsibility and will contain emergency phone numbers and the method of notifying local authorities and statutory authorities. A list of emergency contacts for the Environment Agency and the Environmental Health Officers at both Cambridge City Council and South

Cambridgeshire District Council should be available at all times, across the site. Contact numbers for other key personnel will also be included. In formulating the plan, consideration will be given to normal operating conditions as well as abnormal operating conditions, e.g. those situations where staffing levels may be reduced. The emergency plan will be subject to a process of ongoing review and will reflect the stage of construction and associated risk.

### 3.3.1 *Dealing with spills*

A site drainage plan will be kept on the work sites showing the water interests in the vicinity of the site. This plan will include the location of both foul water drains and surface water drains. Spill kits will be kept on each of the work sites. The precise contents and capacity of the spill kits will depend on the detailed inventory of products that will be stored and handled on the site. The list below provides an overview of the likely content of these spill kits.

- *oil-absorbent granules*
- *floating "booms" or "sausages"*
- *absorbent mats*
- *drain covers*
- *polythene sheeting*
- *string*
- *gloves*
- *knives*
- *shovels*
- *bags*

The spill kits will be clearly marked and sign-posted, close to the area where potentially polluting materials are stored and handled. The spill kits will be subject to periodic inspection to ensure they contain appropriate equipment in sufficient quantities.

Spill response training, including the location of and correct use of spill kits will be included in induction training (the location of spill kits will be recorded on the site plan). A process of ongoing refresher training on pollution prevention will be delivered through 'tool box talks'.

A specialist spill contractor will be identified that can be called upon should this be required to manage a major spill.

In the event of a spill occurring, the emergency plan will be put into action and the following actions will be taken:

a) The site manager will be informed immediately.

b) In dealing with the spillage the personal safety of the site-workers and the general public will not be compromised.

c) Where required to stop or contain the spillage, work will be halted.

d) The cause of the spillage will be identified and stopped.

e) The spill will be contained. Particularly pathways to any drains and water courses will be intercepted as soon as possible.

f) The spilled materials and spent absorbents will be removed and disposed of in accordance with the waste regulations. The spent absorbents, spilled and any other contaminated materials; gloves, may be classified as Hazardous Waste.

In the event of major or complicated spills, the following additional actions will be taken:

a) Site manager will assess the incident and if appropriate request a specialist spill contractor to attend the site.

b) A site representative will verify that all appropriate actions have been taken and if required instruct the contractor to carry out additional works or request the assistance of a specialist spill contractor.

c) Any spillage is a non-conformance and will be recorded, investigated and corrective and preventive action will be implemented.

### 3.3.2 *Managing fire water*

Health and Safety procedures and processes will be established in relation to minimising the risk of, and the management of a fire emergency. Consideration will also be given to the management of any subsequent fire water; the run-off generated from fire fighting activities.

This water will be considered contaminated and it has the potential to cause pollution. In developing strategies for dealing with a fire emergency, consideration must be given to minimising the risk to the environment associated with fire water. The Environment Agency's Pollution Prevention Guidelines PPG18: Managing Fire Water and Major Spillages, provides guidance on the control of fire water and the recommendations within will be adhered to.

## 3.4 Construction management

To discharge Planning Condition 52, a Construction Environmental Management Plan (CEMP) has been produced. This plan adheres to the strategy outlined above and provides further detail for the consideration of the environment during construction.

The CEMP includes the development of pollution control procedures in line with the EA's Pollution Prevention Guidelines, and appropriate training for all construction staff and restrictions on use of machinery near adjacent water bodies,

## 3.5 Post construction and development occupancy

Following construction and the occupation of the Development, primary pollution contributors will be from the use of dwellings, services such as shops and transport. Pollution sources could include, but will not be limited to, small oil spills, refuse storage areas and road salts applied to highways through the Development.

It is proposed by the NWC Surface Water Drainage Strategy that a SUDS Management Train will assist in removing contaminants which have entered the drainage system prior to discharging into the Washpit Brook. As the NWC Surface Water Drainage Strategy also identifies that groundwater must be protected, all SUDS features will be lined to prevent pollutants from infiltrating the ground.

To prevent against the effect of excessive build-up of contaminants within highway and paved areas, maintenance plans such as the regular sweeping of streets should be implemented. As Ciria document C609 identifies "*as a minimum, a pavement should be swept twice a year, in spring and in autumn to remove leaf fall. The sweeping pattern should avoid pushing material towards the inlets to the SUDS and should be undertaken by an experienced operator.*"

The NWC Surface Water Drainage Strategy provides further information on the SUDS features proposed for the Development and the intended management train for which it is intended that all contaminants within surface water will be captured.

# 4 CONCLUSION

This strategy has highlighted potential sources of pollution and contamination hazards to water receptors. Commitments to protecting the Washpit Brook, groundwater and the drainage system including SUDS features have been made within this report in order to comply with Planning Condition 33.

Mitigation against the risks of pollution and contaminants reaching the water receptors has been identified and include the management of silty water, material stockpiles, fuels and oils and construction near the Washpit Brook.

In particular this strategy has proposed that the treatment of any Development site runoff with elevated suspended solids prior to discharge will include, as a minimum, perimeter cut-off ditches, settlement lagoons, overland flow through vegetated areas or settlement tanks.

Hazardous substances will be stored within impermeable, bunded areas to remove the risk of migration to groundwater or a nearby watercourse and appropriate construction management practices in addition to the provision of sediment traps and pollution control interceptors will mitigate against the risk of pollution and will remove and residual suspended solids and hydrocarbons.

Silty water from wheel-washes and other sources will require appropriate disposal to prevent unacceptable levels of suspended solids entering any nearby surface water bodies. This can be achieved in part through:

- the locating of wheel washing facilities as far from surface waters as possible
- the reseeding of cleared land as soon as practicable, to minimise exposed land and the entrainment of sediment by overland flow; and
- appropriate storage of materials and vehicles on hardstanding areas with careful stockpiling

Temporary pollution control structures will be introduced upstream of receiving watercourses and on-site drainage to ensure that elevated levels of suspended solids will not be conveyed to local surface water bodies. Rainfall runoff from haul roads will be directed to appropriate temporary pollution control structures before being conveyed to balancing ponds where the discharge to the watercourse will be controlled to greenfield runoff rates. In addition, best practice during construction as defined within CIRIA C698 will be adopted to ensure that construction works do not adversely affect the subsequent performance of SUDS.

Emergency management plans have been established to detail actions to be undertaken in the event of occurrences such as oil spills or water generated from fire suppression.

It is anticipated that through the mitigation of risks and the adoption of control measures, the NWC site will prevent contaminants from entering water receptors and ensure that the Development will comply with Planning Condition 33.

## APPENDIX A – PLANNING POLICY

**Local Policy, Strategy & Guidance**

The Application Site lies astride the administrative boundaries of South Cambridgeshire District Council (SCDC) and Cambridge City Council (CCC). As a result, water related policies contained within both of the authorities' emerging Local Development Frameworks are relevant to the Proposed Development and have been referenced here.

**North West Cambridge Area Action Plan**

The principal Local Development Document that has been produced jointly by SCDC and CCC and that relates specifically to the Application Site is the North West Cambridge Area Action Plan which was adopted in October 2009. The Plan contains the following policies relevant to water resources:

- Policy NW25: Surface Water Drainage

  ***'1. Surface water drainage for the site should be designed as far as possible as a sustainable drainage system (SUDS) to reduce overall run-off volumes leaving the site, control the rate of flow and improve water quality before it joins any water course or other receiving body;***

  ***2. The surface water drainage system will seek to hold water on the site, ensuring that it is released to surrounding water courses at an equal, or slower, rate than was the case prior to development;***

  ***3. Water storage areas should be designed and integrated into the development with drainage, recreation, biodiversity and amenity value; and***

  ***4. Any surface water drainage scheme will need to be capable of reducing the downstream flood risk associated with storm events as well as normal rainfall events. All flood mitigation measures must make allowance for the forecast effects of climate change.'***

  *'The eastern and northern parts of the site lie above the surrounding land. The area then slopes down to the Washpit Brook and as such surface water at the site drains naturally in that direction. Apart from the immediate area along the Washpit Brook, there is little evidence of flood risk to the site itself.*

  *However, surface water run-off will increase as a result of development, which will create impermeable areas. As a result, full attenuation measures will be required to ensure that surface water runoff from the development does not increase the risk of flooding to the site itself and areas downstream of the development.*

  *The principles of Sustainable Drainage Systems (SUDS) should be employed where possible on the site to deal with surface water drainage. SUDS are an alternative approach to drainage that replicate as closely as possible the natural drainage of the site before development. This reduces the risk of flood downstream of the development, helps replenish ground water and remove pollutants gathered during run-off, benefiting local wildlife, in line with the SUDS management train.*

  *A Strategic Water and Drainage Strategy will be required to support a planning application. This will include a strategic scale flood risk assessment for the site and any impact on the wider catchment, and will identify the types of SUDS proposed and options for future adoption and maintenance arrangements.*

- Policy NW26: Foul Drainage and Sewage Disposal

  ***Development of any single phase will not result in harm in the form of untreated wastewater or increased flood risk from treated wastewater. Planning conditions (which may include 'Grampian' style conditions) will link the start and phased development of the site to the availability of wastewater treatment capacity and the capacity of receiving watercourses.***

  *The foul water produced at the site will be directed to Cambridge Sewage Treatment Works at Milton to take advantage of consolidating existing facilities. Anglian Water are currently undertaking an appraisal of sewerage provision for the whole catchment and the outcome of that appraisal will inform the approach to be followed for foul water arising from North West Cambridge.*

  *In accordance with the requirements of the WFD, the treatment of wastewater must not cause deterioration of the water environment. The options for the treatment of foul drainage and sewage disposal from the site will need to be agreed with the Environment Agency to ensure that development does not result in further pressure on the water environment and compromise WFD objectives.*

- Policy NW27: Management and Maintenance of Surface Water Drainage Systems

  ***1. All water bodies, watercourses and sustainable drainage features required to serve the development will be maintained and managed by one or more publicly accountable bodies to ensure a comprehensive and integrated approach to surface water drainage with defined areas of responsibility;***

  ***2. No development shall commence until the written agreement of the local planning authorities has been secured stating that organisations with sufficient powers, funding, resources, expertise and integrated management are legally committed to maintain and manage all surface water systems on the North West Cambridge site in perpetuity.***

  *North West Cambridge's surface water drainage systems will need to be managed in perpetuity, during and beyond the lifetime of construction. The options for this are for maintenance and management to be the responsibility of one or more of the following:*

  *a. The City and/or District Council;*

  *b. A water company such as Anglian Water;*

  *c. A publicly accountable trust.*

It is important to ensure that the body or bodies made responsible have adequate expertise and are financially stable in perpetuity. It will be the responsibility of the developer to secure and fund a suitable management and maintenance body/bodies in agreement with the Authorities.

**Other Documentation**

Guidance on prevention of pollution during construction is provided in the following publications:

- Control of water pollution from construction sites – guide to good practice, C532 (CIRIA, 2001)
- Guide to good practice on site, SP156 (CIRIA 2002)

- Control of water pollution from linear construction projects. Technical guidance, C648 (CIRIA 2006)
- Control of water pollution from linear construction projects. Site guide, C649 (CIRIA 2006)

The main requirements are to control surface water runoff and pumped water from sites, for example by the use of settling tanks, to ensure that sediments and chemicals do not pollute receiving waters. The safe storage of materials and fuels is also important so that if spills occur they are contained (by the use of berms, check ditches or other techniques) and do not cause a pollution incident. Although it is worth emphasising that sediments in suspension are the most common form of pollution.

## APPENDIX B – CORRESPONDENCE

## Suzanne Scobie

**From:** Rob Thomson
**Sent:** 07 March 2013 11:42
**To:** Suzanne Scobie
**Subject:** FW: Pollution Strategy and residence times

FYI

-----Original Message-----
From: Simon Bunn [mailto:Simon.Bunn@cambridge.gov.uk]
Sent: 07 March 2013 11:32
To: Rob Thomson
Subject: Pollution Strategy and residence times

Hi Rob,

I have been looking at the SuDS manual C609 which has better information than the current one. I would recommend the temporary lagoons be designed for a 24 hr residence time coupled with a series of weirs that act like a series of sediment forebays and would be similar to a large settlement tank.

I hope that helps,

Simon