

Watercourse Realignment Overview

Overview of the watercourse realignment works to the un-named tributary of Pigs Lee Brook and the treatment of associated silts.



**Former Tetrosyl Works,
Walmersley Old Road,
Bury.
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1.0 Introduction

Urban Regen Ltd. have been contracted as by Barratt Homes (Manchester), to carry out, the site preparatory works associated with the residential redevelopment of the former Tetrosyl Works, Bury. These preparatory works include the demolition of all above ground structures, site wide in-ground remediation, and the diversion of the un-named Pigs Lee Brook watercourse/culvert tributary.

This overview outlines the general methodology to be employed to safely carry out the diversionary earthworks associated with the re-routing of the un-named Pigs Lee Brook watercourse/culvert tributary, and the remediation works associated with it. It should be read in conjunction with the following documents:

- *Construction Phase Health and Safety Plan - see Appendix A*
- *Site infrastructure plan (existing layout and design) – see Appendix B*
- *Site infrastructure plan (design installation stages) – see Appendix C*
- *Flood risk assessment – see Appendix D*
- *Technical Note 6155/01 – see Appendix E*
- *Ecological survey and assessment – see Appendix F*
- *Arboricultural impact assessment – see Appendix G*
- *Former Tetrosyl Site Bury – Culvert Diversion – see Appendix H*
- *Proposed Watercourse Geomorphology (Sheet 1 of 2) – see Appendix I*
- *Proposed Watercourse Geomorphology (Sheet 2 of 2) – see Appendix I*
- *Flood Storage Area General Arrangement - see Appendix J*

This overview has been prepared in accordance with the following documentation:

- Construction (Design and Management) Regulations 2015

The works are also to comply with:

- Health and Safety at Work Act 1974
- Control of Asbestos regulations 2012
- Building Act 1984
- BS:6187 2011 Code of Practice for Full and Partial demolition.
- Environmental Protection Act 1990
- Environmental Permitting Regulations 2010
- Hazardous Waste regulations 2005
- List of Waste regulations 2005
- Control of Pollution Act 1974
- Wildlife and Countryside Act 1981 (as amended)
- All other relevant safety legislation, codes, standards, and guidance which have been referred to during the preparation of this document.

This document does not constitute a task specific Risk Assessment/Method Statement (RAMS)

1.1 Site description

Located off Walmersley Old Road, the site covers an area of approximately 10.8 ha (26.7 acres). Formerly known as the Tetrosyl Works, the site comprises of a mixture of buildings which include a 19th century cotton mill together with more recent warehouses and offices. Hardstanding also covers areas of the site to the south and north west. The site landform generally falls in a southerly direction, levels at the northern boundary being 159.6m – 162.0m AOD and 136.5m – 142.0m AOD to the south.

The former mill lodge is present to the centre east of the site; constructed on the alignment of an un-named tributary of the Pigs Lee Brook (which passes through site in a generally south westerly direction). To the north, the waters flow into the mill lodge through an open watercourse, to the south they pass through a weir/spillway structure and through a culverted section of watercourse, exiting into an open channel circa 175m beyond the southern site

boundary. Undeveloped open land is present to the northern end of the site. Residential properties bound the site to the south and east with open fields and the M66 being present to the north and east.

1.2 Historic site use

The site occupies the valley of the un-named tributary of Pigs Lee Brook. Historically, this valley was backfilled to form the main mill lodge which discharged to two other lodges on site, and a culvert which discharged off site to the south. This enabled the '*Bentley and Lumn Cotton Mills*' to be developed.

In addition to the mills, coal mining was present on-site, with adits located to the south east corner to access the Sand Rock coal seam. A rock quarry is also identified.

Over time, the mills were redeveloped and/or expanded with the various lodges reconfigured/infilled as necessary using the available materials. By the early 1900's the mills were disused being replaced by the '*Bevis Green Paint Works*'.

Latterly, the site was occupied by Tetrosyl Ltd. for the manufacture, packaging, storage, and distribution of car care products inc' antifreeze, waxes and paints. A solvent recovery process was also carried out on the site under an Industrial Pollution Control (IPC) permit.

1.3 Geology

Bedrock underlying the site is identified as the Rough Rock, a sandstone of the Millstone Grit series (this out crops beyond the northern boundary). To the western boundary this gives way to the Upper Haslingden Flags sequence of sandstones and mudstones. The Rough Rock is typically circa 20m thick, containing the Sand Rock coal seam (0.6m thick) about 12m above its base. This coal seam can be seen outcropping adjacent to the south east site boundary, dipping away from site to the south east. A fault crosses the centre of the site from southeast to northwest, displacing strata down to the southwest.

Although absent across significant parts of the site, superficial deposits of glacial till (boulder clay - thin layers of sandy gravelly clay), usually <2m, are present.

Due to the former industrial uses (e.g., coal mining/quarrying, spoil disposal, coal fired boilers with ash disposal etc.), made ground is widespread across the developed areas of the site. Due to the former damming of the valley and the progressive demolition that has been carried out, these deposits extend to varying depths; being deepest to the south of Mill Lane where the ash fill is circa 11m thick. The undeveloped area to the north contains only natural soils.

1.4 Hydrogeology

The local hydrogeology is likely to reflect the original surface topography, which falls from around 154.0m AOD to 135.0m AOD across the site (north to south). Groundwater is typically 2-3m below the sandstone rockhead, sloping down to the south.

The Rough Rock is classed as a Secondary A aquifer; the presence of historical wells and pumps in the area indicating that flows are sufficient for local industrial abstraction.

1.5 Surface water/watercourse

The un-named tributary of Pigs Lee Brook rises on the southern edge of Harden Moor. Flowing in a generally southerly direction, it passes through open farmland and three small reservoirs before passing under the M66 and through the site. Confluence of the watercourse with Pigs Lee Brook is beyond the south of the site; being in the Bevis Green area of Bury. Pigs Lee Brook itself is a tributary of the River Irwell.

On-site, the un-named tributary of Pigs Lee Brook has been modified to create a lodge/reservoir to the centre east of the land parcel. Controlled by a weir, the outfall from the lodge/reservoir passes down a spillway and into a culverted section of watercourse, passing underneath buildings and hardstanding before exiting into an open channel circa 175m beyond the southern site boundary.

Generally, the existing site surface water drainage flows to public combined sewer at the site access onto Walmersley Old Road (Access 1). However, there are also several incoming pipe connections along the on-site culverted watercourse (to the south of the lodge/reservoir), which are assumed to be surface water connections from the site.

1.5.1 Flood risk

The un-named tributary of Pigs Lee Brook is classified as a 'Main River' as it passes through the site. The Environment Agency 'Flood Zone Map' for the area identifies that the site is located within 'Flood Zone 1' (low risk), with minor flooding of the site possible (mainly contained to the site roads) directly from the watercourse (and associated lodge/reservoir). In the event of a flood situation arising from the reservoirs to the north; there is the potential for the whole of the site to be flooded.

Historically, there are no records of flooding on the site from either the watercourse/lodge/reservoir or other, off-site fluvial sources.

1.6 Realignment of the un-named Pigs Lee Brook tributary

Currently, the un-named tributary of the Pigs Lee Brook runs from north to south through the centre east of the site. To the north, the watercourse enters site as an open channel before it flows into the former mill lodge/reservoir. The lodge/reservoir is controlled by a weir/spillway structure located to the south west which discharges waters into a culverted section of the watercourse. This culverted watercourse flows predominantly in a south/southwest direction, under the buildings located to the south east of the site. Upon reaching the southern site boundary it turns west and gradually south before becoming an open channel again. To enable redevelopment for a residential end land use, it is necessary to remove the lodge/reservoir and realign the watercourse along the eastern boundary of the site, and carry out remediation of the underlying strata, as necessary. These works are to include:

- Silt control measures.
- Maintaining flows to the un-named tributary of Pigs Lee Brook at all times.
- De-watering of the existing lodge/reservoir.
- Removal of fish from the existing lodge reservoir.
- Installation of temporary impermeable bunds to enable exposed lodge/reservoir silts to be stabilised/protect the existing watercourse.
- Installation of temporary flood barriers to protect exiting/proposed properties.
- Installation of silt traps to protect the existing watercourse.
- Demolition of all structures across site.
- Remediation of the existing landform.
- Re-profiling of the existing landform to achieve the required development platform inc' re-engineering of site derived fill materials to the required specification.
- Excavation of a new watercourse channel along the eastern boundary.
- Excavation of a new flood attenuation pond along the new alignment of the watercourse.
- Installation of a clay liner as required along the length of the proposed watercourse/flood attenuation pond.
- Installation of geomorphological features to the proposed watercourse/flood attenuation pond.
- Installation of a new length of culvert and associated headwall to connect the new watercourse to the existing culvert (towards the southern boundary).
- Installation of a flow control structure to the southern end of the new flood attenuation pond.

2.0 Notifications

Prior to any works commencing the following notifications must be made:

2.1 F10

Under the '*Construction (Design and Management) Regulations 2015*', the Client must notify the HSE of the project using the form F10.

A copy of the F10 notification is to be provided to the Principal Contractor by the Client prior to any works commencing (to be included in the supplied PCI). This form is to be displayed on site at all times and a copy held within the relevant register of the '*Construction Phase Health and Safety Plan*'.

2.2 Environment Agency

An '*Environmental Permit for a flood risk activity*', is to be obtained by the Client from the Environment Agency to allow the realignment works to be carried out to the un-named tributary of the Pigs Lee Brook.

A copy of the '*Environmental Permit for a flood risk activity*' is to be provided to the Principal Contractor by the Client prior to any works commencing which are directly associated with the realignment of the un-named tributary to Pigs Lee Brook, or which may impact on the un-named tributary of Pigs Lee Brook.

A copy of the '*Environmental Permit for a flood risk activity*' is to be held on site at all times within the relevant register of the '*Construction Phase Health and Safety Plan*'.

3.3 Section 80/81 (required as part of the enabling works to carry out demolition)

Under the '*Building Act 1984*', notification must be made to the Local Authority of the intention to demolish the whole or part of a building.

Prior to any works commencing, Urban Regen Ltd. are to make a '*Section 80 – Notice of Intended Demolition*' submission (accompanied by all requested information) to the Local Authority. No demolition works are to commence until a period of 6 weeks have elapsed from the date of the '*Section 80 – Notice of Intended Demolition*' submission, or the Local Authority has given notice under '*Section 81 – Notice to Person undertaking demolition*'.

Completed copies of the '*Section 80/81*' are to be held on site at all times within the relevant register of the '*Construction Phase Health and Safety Plan*'.

2.4 ASB5 (*required as part of the enabling works to carry out demolition*)

Under '*The Control of Asbestos Regulations 2012*', the removal of any licensable asbestos must be notified to the HSE a minimum of 14 days prior to commencing the works, detailing how the works are to be carried out.

A copy of the ASB5 submission is to be provided by the licensed asbestos removal contractor prior to any works commencing.

A copy of the ASB5 is to be held on site at all times within the relevant register of the '*Construction Phase Health and Safety Plan*'.

3.0 Resources

3.1 Plant

Plant likely to be employed for the works include:

- 2 no. 25T-50T tracked excavators c/w attachments.
- 1 no. 25T-35T dump trucks
- Forward tipping dumper
- 4" pump and associated suction/delivery (+ spill tray etc.)
- Mobile fuel bowser
- Tractor/bowser
- Road sweeper
- Lifting chains
- Articulated lorries (for plant/materials/bulk cement deliveries)

All plant will be accompanied with the relevant certification in accordance with '*PUWER Regulations 1998*' and provided to the Principal Contractor for entry into the relevant register of the '*Construction Phase Health and Safety Plan*'.

All machines must allow the operator to have a minimum of 1m visibility around the full perimeter of the machine at all times.

All self-propelled mobile plant operated on site must have an amber warning beacon to alert pedestrians and other plant users of operational equipment in the immediate vicinity.

All plant (inc' attachments) must be inspected and maintained daily in accordance with the manufacturer's recommendations prior to use (or post re-configuration); a written report made weekly and provided to the Principal Contractor for entry into the relevant register of the '*Construction Phase Health and Safety Plan*'.

When not in use, all plant and equipment are to be stored securely in the plant compound located to the south of the site adjacent to the welfare facilities.

3.2 Materials

Anticipated materials for the works include:

- Bulk cement (supplied in sealed 2t bags)
- Visqueen
- Gas oil
- Engine oil
- Hydraulic oil
- Suitable spill kits
- Cement/concrete
- Re-bar
- Other miscellaneous materials for civils works
- Miscellaneous materials to create geomorphological features

When not in use, all fuels and oils are to be stored securely in the plant compound located to the south of the site, adjacent to the welfare facilities. Bulk cement is to be stored securely on a convenient hard standing away from any watercourse/drains.

3.3 Personnel

Personnel likely to be employed for the works include:

- Project Manager
- WAMITAB technically competent manager (provided by Urban Soil Solutions Ltd)
- Site Engineer
- Qualified Plant Operators
- Labourer

All personnel are to be in possession of a valid and suitable CPCS/CCDO/CSCS/NPORS card or similar. Copies of all certification are to be kept in the relevant section of the '*Construction Phase Health and Safety Plan*'. Random certification checks are to be carried out, as necessary.

All personnel are to sign in and out of site daily using the relevant register of the '*Construction Phase Health and Safety Plan*'.

All site personnel are to receive a site specific '*Safety Induction*' and be briefed on task specific '*Method Statement*' prior to commencing any works on site. These are to be signed for and entered into the relevant register of the '*Construction Phase Health and Safety Plan*'.

NOTE: All works associated with the treatment of the silts in the lodge/reservoir are to be directly managed by the WAMITAB technically competent manager provided by Urban Soil Solutions Ltd.

4.0 Enabling works

Prior to any realignment earthworks to the un-named tributary of Pigs Lee Brook being carried out, the following operations must be completed:

4.1 Letter drop

Prior to works commencing, a letter drop is to be carried out to inform local residents of the proposed works. The letter is to detail the following information as a minimum:

- The anticipated start and finish dates for the works.
- Likely works which are to be carried out.
- Suitable contact information.

4.2 Site security

High standards of site security are to be maintained at all times.

The site is secured by existing 2.4m high palisade fencing. Gates accessing through this fence are to be kept locked at all times except for access.

Signage is to be established at the site entrance informing any site visitors of the Urban Regen Ltd. Company details and the health and safety requirements on site.

Formal fencing inspections are to be carried out weekly by the Principal Contractor; being recorded on the fencing inspection form and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'. Temporary repairs to any damaged fencing are to be carried out immediately upon discovery to prevent third party access with permanent repairs carried out as soon as is practicable.

Outside of working hours the following actions are also to be taken (if necessary):

- Immobilise vehicles and plant.
- Isolate electricity and gas supplies or enclose them in a locked compound.
- Remove ladders which may provide access to above ground areas.
- Secure potential access points to buildings, including windows.
- Excavations are to be fenced.

4.3 Site compound/welfare facilities

The site compound is to be established to the south of the site, off the north side of Mill Road. Accessed via 'Site Access 2', the welfare cabins are to be located immediately to the south of 'Building 6', with the on-site car park located on the hardstanding immediately to the west. The plant compound is to be located to the west of 'Building 5', is to be fenced with HERAS type fencing, and kept secure at all times.

These facilities are to comply with the standards of accommodation and welfare provided in 'HSE Document HS (G) 150 Health and Safety in Construction', and are to provide suitable sanitary conveniences, washing facilities, drinking water and facilities to prepare and eat food. A detailed list of welfare provisions is detailed in the Urban Regen Ltd. 'Construction Phase Health and Safety Plan'.

NO smoking is allowed within the welfare facilities or on operational site. Smoking is ONLY permitted in an area specifically designated by the Urban Regen Ltd. Project Manager.

Post demolition operations, the site compound is to be relocated as necessary to accommodate the on-going earthworks.

4.4 Traffic management

A suitable 'Traffic Management Plan' is to be established to detail access/egress arrangements and control vehicle/plant/pedestrian movements around site to minimise interfaces/potential

conflicts. This document is to be based on '*HS (G) 144 The Safe Use of Vehicles on Construction Sites*'.

On-site dedicated parking is to be established on the hardstanding immediately to the west of the site welfare facilities. A suitable pedestrian area is to be established around these facilities. If deemed necessary, a pedestrian route will be provided from the site entrance to the welfare facilities to accommodate visitors and site operatives arriving on foot or by bicycle.

A suitable turning point is to be established on-site to ensure that all vehicles exit site in a front facing manner i.e., do not need to reverse onto a public highway. Turning operations are to be supervised by Urban Regen Ltd. personnel at all times.

Construction materials are to be stored in a secure area of designated hard standing as identified on the '*Traffic Management Plan*'.

Urban Regen Ltd. will ensure that the '*Traffic Management Plan*' is updated as necessary as works progress; and will ensure that a copy of the '*Traffic Management Plan*' is provided to all sub-contractors. The Urban regen Ltd. Project Manager is also to ensure that:

- A record of the '*Traffic Management Plan*' is held on site in the '*Construction Phase Plan*'.
- The '*Traffic Management Plan*' is displayed on the site notice board.
- All site personnel are to be made aware of the '*Traffic Management Plan*' and the requirements therein at the '*Safety Induction*'.

4.5 Existing services

Details of all known services in and around the immediate work area are to be provided to the Principal Contractor by the Client prior to any works commencing (to be included in the PCI). This information is to be held on-site at all times within the relevant register of the '*Construction Phase Health and Safety Plan*'.

All relevant services are to be terminated by the Client prior to works commencing with the associated disconnection certification provided and entered into the relevant register of the '*Construction Phase Health and Safety Plan*'.

Any services which are to remain live within or around the immediate work area or may be impacted by the works i.e., subject to the movement of heavy plant, ground transmitted vibration from the operation of plant or from falling debris, are to be protected at all times. Any protective measures implemented should be as specified by the service providers.

4.6 Ecological mitigation

Prior to the works commencing, all necessary ecological mitigation works are to be implemented as detailed in the relevant ecological reports. These include:

- Tree protection fencing is to be established as specified to protect/identify trees to be retained. Trees not being retained are only to be removed outside of the nesting bird season.
- A 30m exclusion fence is to be established around the badger setts located immediately to the north west of the lodge/reservoir. A '*Toolbox Talk*' is also to be given by a suitably trained ecologist to identify any precautionary measures to be taken during the works.
- A bat roost has been identified to the northern gable of 'Building 7'. A license is to be obtained from Natural England allowing the bats to be removed from the roost. These works are to be carried out by a suitably certificated ecologist. Also, in the event that bats are present in other buildings, a suitably certificated ecologist is to be in attendance during demolition operations of specified buildings.
- The draining down of the lodge/reservoir outside of the amphibian breeding/hibernating period, and the subsequent recovery of fish and common toad by a suitably certificated ecologist.

- Straw bales are to be placed down all surface gullies to act as localised silt traps whilst surface drainage is still live, mitigating suspended solids entering into the culvert of the un-named tributary of Pigs Lee Brook and the local drainage network.

4.7 Surface water/watercourse monitoring

Prior to any works commencing, the Urban Regen Ltd. Project Manager will carry out initial visual monitoring of the existing un-named tributary of Pigs Lee Brook, with a photographic record made to provide a permanent record. All information is to be recorded on the '*Daily Surface Water Inspection Form*' and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'. This information is to be used to provide a baseline for all future monitoring of the un-named tributary of the Pigs Lee Brook.

4.8 Confirmation of the line and level of the existing culvert of the un-named tributary of Pigs Lee Brook

Prior to any demolition operations being carried out, the line, level, and condition of the un-named tributary of Pigs Lee Brook is to be confirmed.

A remote drain survey is to be carried out by a suitably qualified contractor, from the spillway at the start of the culvert, to the discharge point circa 175m beyond the southern site boundary. During the survey, a video record is to be made to confirm the condition of the existing culvert and identify any inlets which may be present (to be related to the existing surface drainage if possible). During the survey, a sonde is to be 'towed' along the culvert to enable the line and level of the culvert to be determined at regular intervals/changes in direction along its length using a CAT. The associated positions and depths are to be sprayed up on the concrete floor. A full written/digital report is to be provided.

Dependent upon the likely accuracy of the remote drain survey, it may be necessary to carry out localised trial pits to confirm the alignment and depth of the culvert.

When the remote drain survey has been carried out (and possibly confirmed with trial pits) the position of the culvert is to be surveyed (and associated depths recorded); the results being superimposed onto a suitable CAD drawing for reference. The alignment of the culvert is also to be clearly marked out on site for visual reference.

4.9 Demolition

To enable the watercourse realignment earthworks to be carried out along the east side of the site, several buildings must first be demolished. These include Buildings 11, 12 and 13 which predominantly impact on the new alignment of the watercourse, and Buildings 4, 5, 8, 14 and 15, which are generally located over the existing culverted watercourse (to be abandoned).

Note: All demolition works are to be carried out to slab only. Slab removal is to be carried out as part of the site wide earthworks remediation.

Prior to demolition works being carried out, each building/structure is to be ‘Risk Assessed’ and a task specific ‘Method Statement’ prepared to detail how the demolition is to be carried out. No works are to be carried out outside the scope of the task specific ‘Method Statement’. In the event that unforeseen circumstances are encountered, work is to stop, a revised ‘Method Statement’ prepared, and a re-briefing carried out prior to works recommencing.

The task specific ‘Method Statements’ are to detail the following information:

4.9.1 Removal of asbestos containing materials (ACM’s)

Prior to any demolition works being carried out, a ‘Refurbishment and Demolition Survey’ must be carried out to all buildings/structures to identify any ACM’s present. If ACM’s are identified, they must be removed prior to any demolition works commencing.

Dependent upon the type of asbestos and the product identified, the asbestos works may be classed as ‘Licensed’ or ‘Non-Licensed’.

4.9.1.1 Licensed asbestos removal

These works are carried out under an ASB5 notification to the HSE and in accordance with the submitted '*Plan of Works*'. All personnel must be suitably trained and in possession of relevant in date certification. Licensed ACM's inc' asbestos insulation/lagging, asbestos insulating board (AIB) etc.

The removal of licensed ACM's often includes the construction of airtight enclosures with negative pressure to ensure that operatives and third parties are not exposed to airborne fibre concentrations in excess of 0.1f/cm³ exposure limit (control limit). Exposure limits are to be determined by background and personal air monitoring carried out by an independent analyst.

Copies of all air monitoring results are to be held on-site within the relevant register of the '*Construction Phase Health and Safety Plan*'.

All ACM's removed from buildings/structures are to be placed in lockable enclosed skips and relocated to a suitably licensed facility for disposal.

4.9.1.2 Non-licensed asbestos removal

These works do not need to be notified to the HSE; they are carried out in accordance with HSE guidelines by suitably trained personnel in possession of relevant in date certification. However, in some cases, it may be necessary to disturb the matrix in which the asbestos is bound. These works are classed as '*Notifiable Non-Licensed Works*' (NNLW) and will require the appropriate notification to the HSE in advance of works being carried out. Non-Licensed ACM's inc' asbestos cement, gaskets, floor tiles, fuse pads etc.

Operatives removing these materials are not to be exposed to airborne fibre concentrations in excess of 0.1f/cm³ exposure limit (control limit). Exposure limits are to be determined by background and personal air monitoring carried out by an independent analyst.

Copies of all air monitoring results are to be held on-site within the relevant register of the *'Construction Phase Health and Safety Plan'*.

All ACM's removed from buildings/structures are to be placed in lockable enclosed skips and relocated to a suitably licensed facility for disposal.

4.9.2 Soft stripping operations

Post asbestos removal, but prior to mechanical demolition operations being carried out, all buildings are to be soft stripped as much as is practicable to minimise the cross contamination of demolition arising's.

Soft stripping is to be carried out by trained and experienced demolition personnel using basic hand tools. Soft stripping activities required at height will be accessed from podiums or scaffold towers erected by PASMA trained personnel only.

All soft strip materials are to be segregated into their relevant waste streams and placed into the associated skip for recycling/disposal at a suitably licensed facility off-site.

4.9.3 Mechanical demolition

Due to the restricted access to the buildings/structures across the site, and with consideration for the necessary earthworks required to remediate the site and prepare the required landform, demolition operations are to be carried out using 2no demolition teams working concurrently – for the majority of the works.

All machines carrying out demolition must be of demolition specification; being fitted with a *'Falling Object Protection Structure'* (FOPS), and *'Falling Object Guard Screen'* (FOGS), to the cab conforming to BS EN ISO 3449 and ISO 10262, respectively.

All site personnel carrying out mechanical demolition operations are to be suitably trained, qualified, and experienced to carry out the demolition task being undertaken.

Prior to any mechanical demolition works being carried out; a suitable '*Exclusion Zone*' is to be established around the building/structure being demolished as detailed in 'BS 6187 Code of Practice for Demolition'. The '*Exclusion Zone*' is to be defined by the use of fencing no less than 2m high e.g., HERAS type temporary fencing. This fencing is to be maintained and effective at all times, so as to prevent unauthorised access.

The '*Exclusion Zone*' is to be designed/established to ensure that persons outside the zone are not exposed to physical hazards associated with the demolition activities.

All works associated with the demolition operation are to be carried out within the specified '*Exclusion Zone*' (inc' processing and waste management).

Suitable warning signage is to be established on the fencing in clear visible positions to clearly identify the nature of the works being carried out within the '*Exclusion Zone*' and the dangers therein.

Dependent upon the depth of the exiting culvert of the un-named tributary of Pigs Lee Brook below the associated buildings, protection measures to ensure that demolition operations do not impact on the integrity of the culvert are to be installed i.e., steel plates spanning the culvert. Any movement of machines over the culvert alignment is also to be minimised.

Mechanical demolition of the buildings/structures is to be carried out as detailed in the relevant task specific '*Method Statement*'. Generally, this will entail that the building/structure is systematically demolished bay by bay in a top-down manner, ensuring that the working area is kept clear and tidy. An ancillary machine located behind the main demolition operation will process and skip all available materials to ensure this.

When working adjacent to any environmental consideration e.g., a water body, works are to be carried out to ensure that the demolition operation does not have any environmental impact e.g., materials are not allowed to enter the water body (the works should be designed to prevent this from happening as much as is practicable).

4.9.4 Scrap processing and ground burning

All scrap processing and ground burning is to be carried out within the '*Exclusion Zone*' of the building/structure being demolished.

4.9.4.1 Scrap processing

Demolition operations result in the production of large quantities of scrap metal. Where possible these will be processed by machine and separated into their relevant waste streams, being stockpiled prior to removal off-site to a suitable recycling facility. Where machine processing is not possible, ground burning will be necessary.

4.9.4.2 Ground burning

Ground burning uses hot cutting equipment to reduce oversized scrap metal to a suitable size for removal off-site. These works are controlled using a '*Hot Works Permit*' which are held on-site, within the relevant register of the '*Construction Phase Health and Safety Plan*'. Access to ground burning processing is permitted to essential personnel only.

4.9.5 Processing of demolition arising's

All processing of hard materials is to be undertaken as detailed in the NFDC's guidance document '*Safe Use of Mobile Crushers in Demolition*'.

Processing of site derived hard materials is carried out utilising a mobile crushing plant licensed by the Local Authority. All processing operations are to be carried out as stipulated within the specific license.

During all of the processing/recycling, operations are to be carried out to minimise /prevent any impact on the surrounding environment (e.g., noise, vibration, dust, and surface water run-off).

Processing operations are to be carried out in a designated area remote from other works and located sympathetically with regards to any environmental receptors.

Prior to any processing being carried out, suitable dust suppression control measures are to be in place to control any potential dust generated during the processing operation. No processing is to be carried out until suitable and sufficient dust suppression facilities are in place and operational.

Processed materials are to be stockpiled separately adjacent to the mobile crushing plant for grading, chemical analysis, and asbestos testing prior to re-use.

4.9.6 Waste management

The Environment Agency's Waste Hierarchy is to be used as the basis for site waste management and disposal/recycling. The various waste streams must also ensure compliance with the Environmental Permitting Regulations 2010, EPA 1990, Hazardous Waste Regulations 2005, and the List of Waste Regulations 2005.

All on-site materials require the appropriate level of testing to enable full categorisation prior to removal off-site. Hauliers and disposal facilities are to be fully verified prior to them being used; with full and detailed records retained on-site within the relevant register if the '*Construction Phase Health and safety Plan*' to verify duty of care compliance.

All waste is to be minimised, with materials recycled for re-use on site where possible. All materials are to be segregated as much as is practicable into their individual waste streams i.e., slates, timber, plaster board, various metals, general waste etc.; being skipped accordingly.

Aggregate materials generated from demolition operations which are to be re-used are to be prepared in accordance with a site '*Materials Management Plan*' (MMP) prepared in-line with the CL:AIRE Code of Practice (which requires approval from the Environment Agency as well as the Local Planning Authority).

5.0 Watercourse realignment works

5.1 Deliveries

All deliveries are to be co-ordinated by the Urban Regen Project Manager, with full and detailed records kept in the relevant register of the '*Construction Phase Health and Safety Plan*'.

Deliveries are to be confined to normal working hours only (although movement of particularly large plant may need to take place at other times).

All deliveries are to access site via the Mill Road (Site Access 2) entrance only (unless directed to the Walmersley Road entrance - Site Access 1), adhering to all traffic management requirements.

No construction vehicles are to block any public highways at any time.

Road vehicles delivering plant and materials to the site are to remain on hard standings at all times; being maintained/cleaned by a road sweeper as necessary to minimise dust/trafficking. prior to leaving site these vehicles are to be inspected to ensure that they are sufficiently clean, a record of which is to be maintained and entered into the relevant register of the '*Construction Phase Health and Safety Plan*'.

5.2 Storage

All materials delivered to site are to be stored within the confines of site only.

5.2.1 Bulk cement

Bulk cement imported to site is to be delivered directly to the designated unloading/storage area located on hard standing; being relocated directly to the work area by 360° tracked excavator when required.

Note: The cement is supplied within a sealed plastic membrane/bag contained within a woven textile bag with lifting straps.

5.2.2 Civil/construction materials

All materials are to be temporarily stored in a designated stocking area, preferably on hardstanding, in relatively close proximity to the proposed work area; being relocated directly to the work area by 360° tracked excavator when required.

5.2.3 Plant

When not in use, site plant and equipment is to be secured within the plant compound located to the south of the site, adjacent to the welfare facilities.

5.3 Watercourse realignment works – Stage 1 (see Figure 1)

When the enabling works have been sufficiently completed, works are to commence to carry out the realignment of the un-named tributary of Pigs Lee Brook.

5.3.1 Partial de-watering of the lodge/reservoir (week 17-23)

A survey carried out to determine silt and water levels across the lodge/reservoir indicate that silt levels vary from north to south, being 0.9m to the north, 0.3m in the centre and 0.6m to the south. The corresponding water depths in these areas are 1.8m, 3.9m and 4.2m, respectively. To facilitate the recovery and relocation of the fish and common toads currently living in the waterbody, the water level in the existing lodge/reservoir is to be reduced down to a minimum of 1.8m.

Currently, the lodge/reservoir is drained via a weir located to the south west. Water spills over this structure and along a channel prior to flowing down a spillway, located directly to the south of the waterbody, and into the culverted watercourse which runs through the southern section of the site. As it is anticipated that the existing drainage infrastructure associated with the lodge/reservoir is not functional, a localised excavation/channel is to be excavated to the south of the lodge/reservoir to connect the waterbody directly to the spillway, allowing waters to bypass the weir and thus reduce in level.

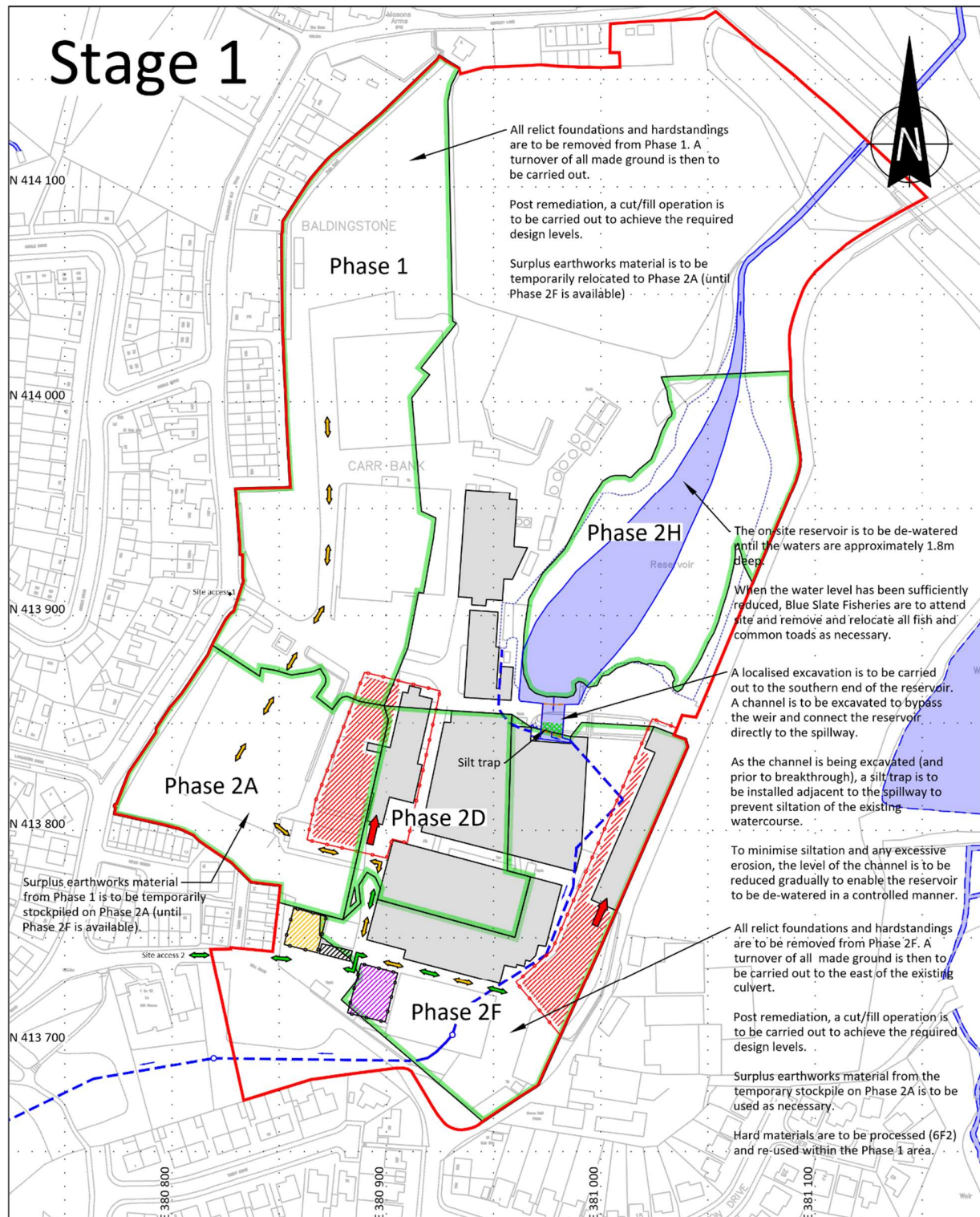


Figure 1: Overview of the watercourse realignment works - Stage 1

Excavation works are to be carried out in a controlled manner at all times to prevent/minimise any impact on the adjacent watercourse; ensuring that no debris enters into the spillway.

Initially, the hardstanding materials located in the work area are to be broken out. These materials are to be relocated to the processing stockpile located on Phase 2A as they are generated. When the hardstanding materials have been removed, the excavation is to be gradually reduced down to a level slightly higher than the water level in the lodge/reservoir (see Figure 2)

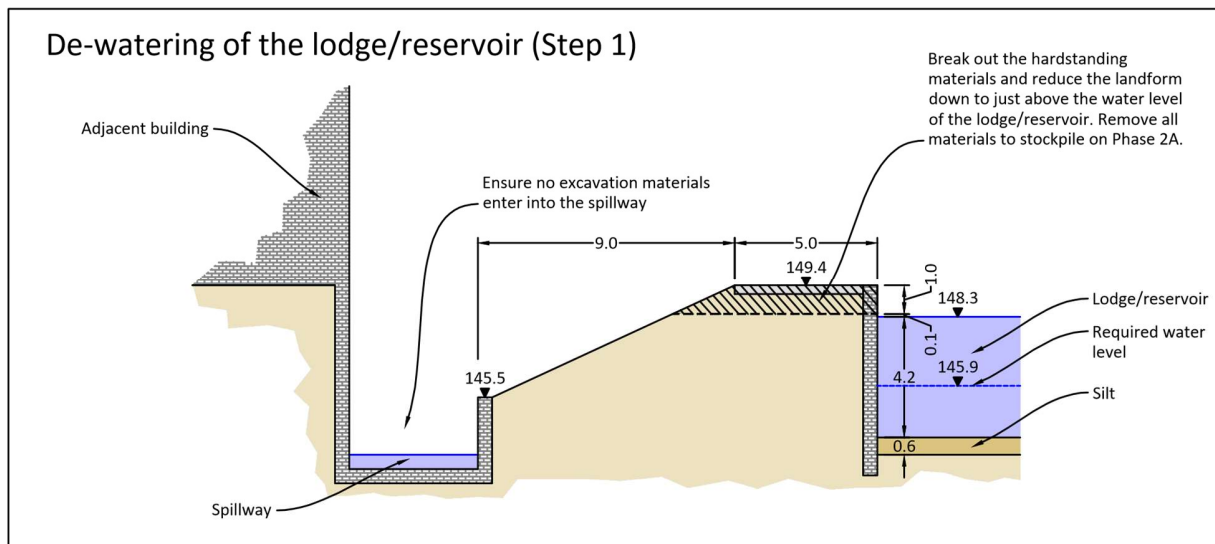


Figure 2: Lodge/reservoir de-watering channel – initial excavation

When this level is achieved, the southern half of the excavation/channel (spillway side) is to be reduced down to the level of the spillway wall, ensuring that all of the exposed sides are cut to a maximum of 45° (see Figure 3). All of the excavated materials are to be relocated to the earthworks stockpile located on Phase 2A as they are generated.

When complete, the base of the excavation/channel is to be sheeted with visqueen as an erosion barrier, and a suitable silt trap installed e.g. straw bales wrapped in a woven geotextile, to filter out potential suspended solids from the lodge/reservoir waters (see Figure 4).

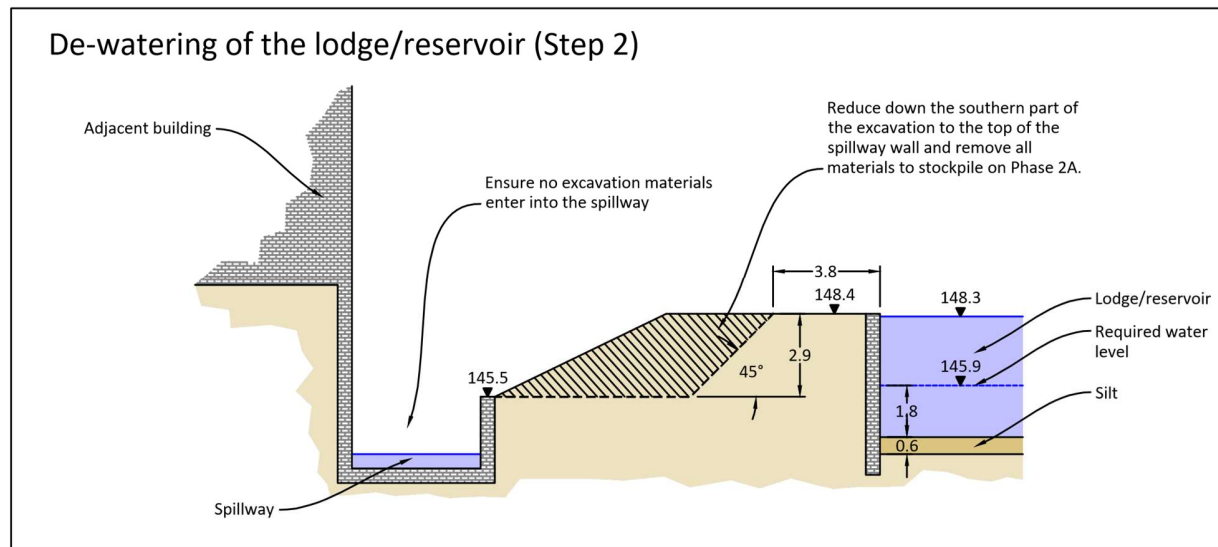


Figure 3: Lodge/reservoir de-watering channel – silt trap excavation

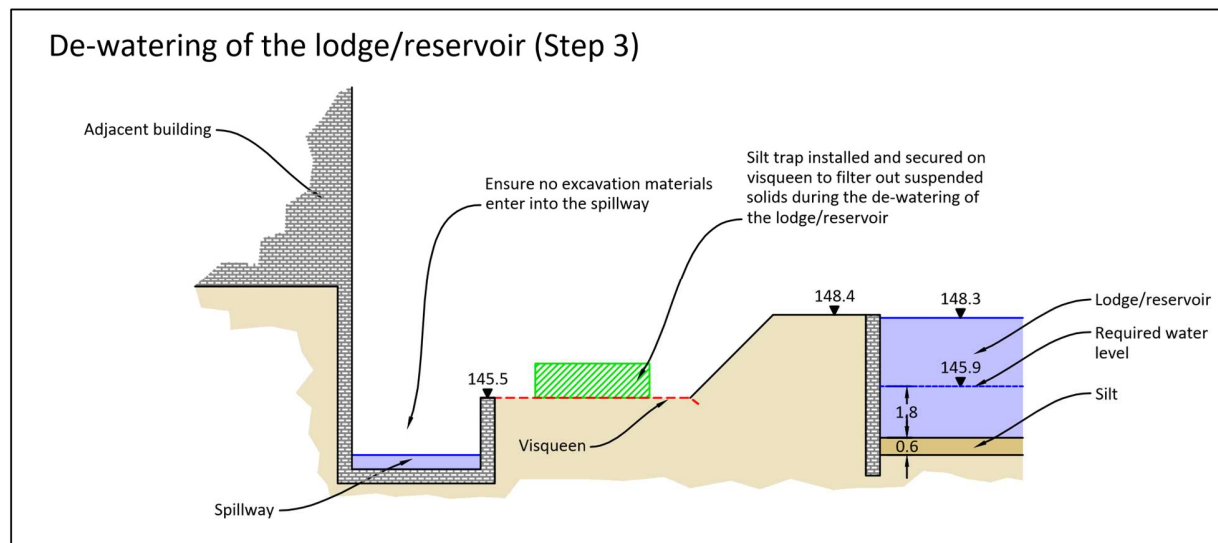


Figure 4: Lodge/reservoir de-watering channel – silt trap installation

When the silt trap has been installed, the northern section of the excavation/channel, between the silt trap and the lodge/reservoir, is to be gradually reduced to a level which just allows water to flow from the lodge/reservoir, along the excavation/channel, through the silt trap, and into the spillway. As these initial flows are passing through the channel/silt trap, waters are to be visually inspected/monitored, to ensure that the silt trap is working effectively. A photographic

record is also to be made to provide a permanent record. If the removal of suspended solids is not sufficient, the silt trap is to be improved until water quality is satisfactory.

When the silt trap is working effectively, the northern section of the excavation is to be reduced in circa 50mm increments to allow the lodge/reservoir to drain. The reduction in the level of the channel is to be carried out in small increments to ensure that any potential erosion and associated siltation is kept to a minimum. The reduction in the depth of the northern channel is to continue until the required water level in the lodge/reservoir is achieved (see Figure 5).

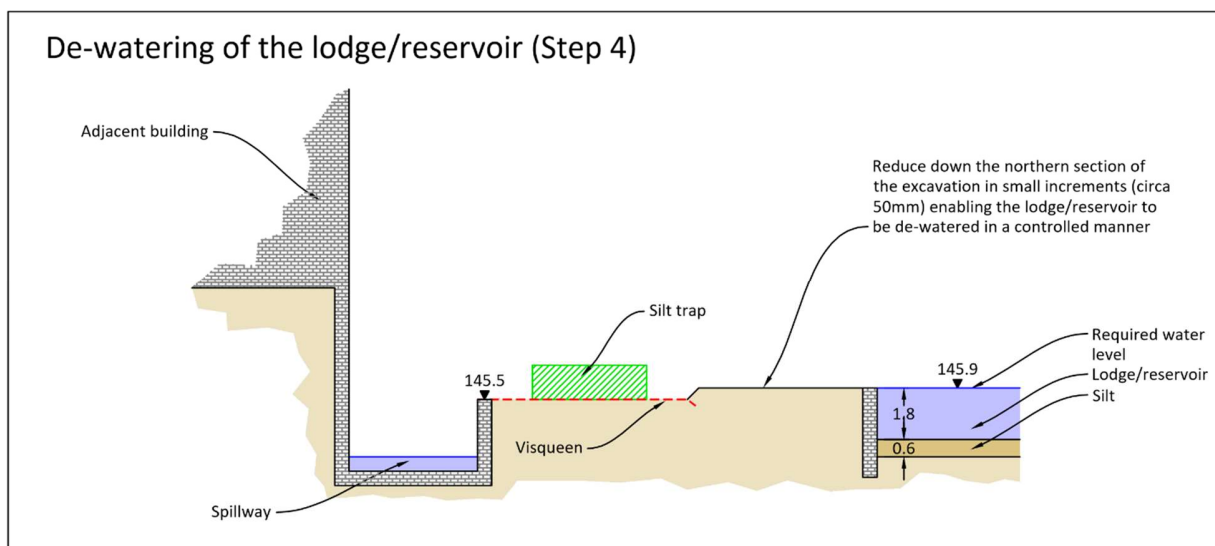


Figure 5: Lodge/reservoir de-watering channel – drained for fish recovery

As the lodge/reservoir is draining, the waters are to be visually inspected/monitored on a regular basis to ensure that the silt trap is continuing to work effectively. A photographic record is also to be made to provide a permanent record. In the event that the removal of suspended solids is not sufficient, the silt trap is to be improved until water quality is satisfactory.

As this excavation/channel is to be left open for a prolonged period of time, it is to be securely fenced at all times.

These works are to be scheduled to prevent/minimise the impact on the breeding/hibernating of amphibians which are also likely to be present.

Waters from the un-named tributary of Pigs Lee Brook are to continue to flow through the silt trap until the watercourse is permanently diverted along the new alignment to the east of the site. Daily visual inspections/monitoring of the channel is to be carried out for the duration that the earthwork/channel is 'live'. A photographic record is also to be made to provide a permanent record.

All inspection/monitoring information associated with the works are to be recorded on the '*Daily Surface Water Inspection Form*' and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'.

5.3.2 Recovery of fish and common toads from the lodge/reservoir (week 19-23)

When the lodge/reservoir has been reduced to the required level, '*Blue Slate Fisheries*' are to undertake the recovery and relocation of the fish and common toads under an Environment Agency permit.

5.3.3 Other works being carried out on site

During the de-watering of the lodge/reservoir, other works associated with site preparation are being carried out.

5.3.3.1 Demolition

Demolition operations are being carried out across the site. Building 10, which straddles Phases 2A and 2D, is 50% complete. Building 13, which is located to the east side of Phase 2F is approximately 40% complete. The demolition of Building 13 is necessary to the watercourse realignment works as the new open channel of the watercourse is to be constructed along its footprint.

Both areas of demolition are individually fenced forming secure exclusion zones in which all processing of demolition arising's is to be carried out. Vehicular access to these areas is via '*Site*

Access 2' located off Mill Road. Haul routes are on hardstanding at all times to minimise trafficking off-site.

Scrap metal, timber, cable, general waste etc., are to be removed off-site to a suitably licensed facility, hard materials are to be relocated to Phase 2A for processing and testing prior to being re-used as part of the Phase 1 works (piling mats, road boxes etc.).

5.3.3.2 Remediation/earthwork

Remediation works are being carried out across the west and south of the site. Phase 1, which is the first area to be released to the Client, and the southern part of Phase 2F to the east side of the existing culvert, are being broken out and turned over to remove all hardstanding material and relict foundations. The remediation of the Phase 2F area subsequently allows the installation of the new section of culvert as well as the southern end of the realigned open watercourse.

All hard materials generated from the remediation operations are to be relocated to Phase 2A for processing and testing prior to being re-used as part of the Phase 1 works (piling mats, road boxes etc.).

When the areas have been remediated, cut/fill is being carried out to achieve the required levels. Surplus materials generated from Phase 1 are placed in temporary stockpile on Phase 2A prior to being relocated and placed in Phase 2F (when the area is available).

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

All earthworks material is to be placed in layers and re-engineered as necessary to achieve a suitable building platform prior to being trimmed to the required level.

5.4 Watercourse realignment works - Stage 2 (see Figure 6)

When the lodge/reservoir has been sufficiently de-watered and the fish/common toads have been relocated, works are to commence to facilitate the stabilisation of exposed silts to the east of the site.

5.4.1 Installation of a temporary impermeable barrier (week 23-26)

To protect the un-named tributary of Pigs Lee Brook and the remaining water body of the lodge/reservoir from the silt stabilisation works, a temporary impermeable barrier is to be installed.

Constructed from site derived clays, the temporary impermeable barrier is to be located a minimum of 2.0m to the east side of the waterbody, running in a generally north-south direction. It is to be constructed a minimum of 0.5m above the level of the adjacent silts to the west. Assuming that the exposed silts are <1.0m thick (based on the available information), the impermeable barrier will be on average 1.5m thick. To enable the construction of the barrier, the base of the landform is required to be 5.0m wide, tapering to 3.0m at the top.

Initially, the alignment of the temporary impermeable barrier is to be determined. This will be governed by the extent of the remaining water body of the lodge/reservoir and the specifications of the barrier design (see above). When the alignment has been confirmed, installation can commence.

Due to silts containing a high percentage of water, making the material mobile, it is not possible to move heavy plant directly over it to construct the temporary impermeable barrier, rather, the heavy plant needs to use the temporary impermeable barrier to access the area.

Working from the south, the temporary impermeable barrier is to be installed in a northerly direction. The 25T 360° excavator is to excavate out the silts directly in front of the machine, casting them to the east. This is to continue until the silts have been removed and a sufficient footprint (circa 5.0m wide and the reach of the excavator forwards) has been exposed. Site

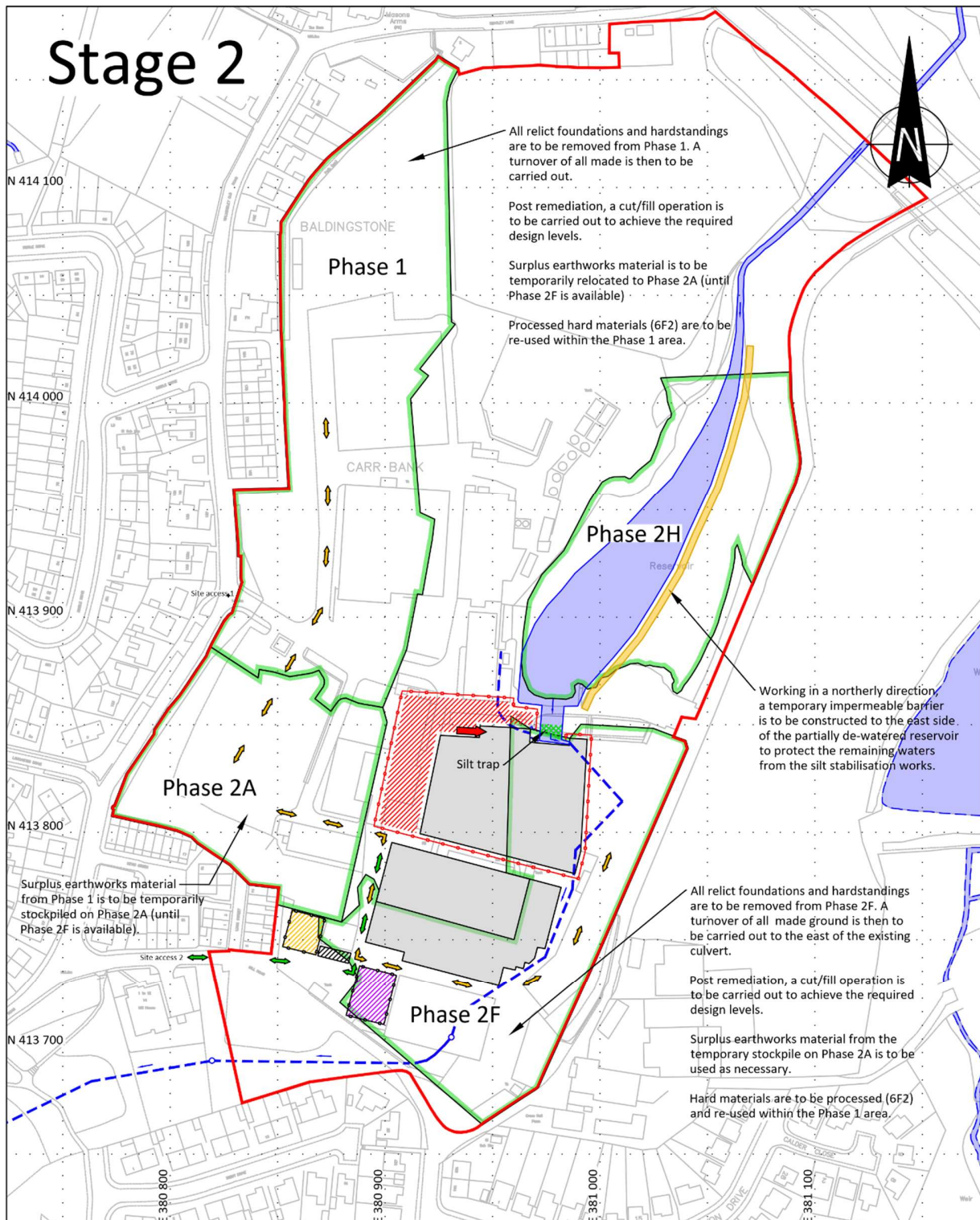


Figure 6: Overview of the watercourse realignment works - Stage 2

derived clays (delivered by dump truck) can then be placed and built up within this exposed footprint to the required thickness; the excavator re-engineering the materials up in layers and tracking them in as necessary to form a running surface.

When the initial section of temporary impermeable barrier has been constructed, the excavator is to track forwards on the barrier and excavate out the silts on the required alignment as previous (circa 5.0m wide and the reach of the excavator forwards). Due to the restriction of the silts, site derived clays cannot be tipped directly into the exposed footprint, rather the clays must be delivered by forward tipping dumper travelling along the already constructed temporary impermeable barrier, tipping them directly behind the excavator for placement and re-engineering.

This operation is to continue in this manner until a full temporary impermeable barrier has been constructed through the exposed silts.

5.4.2 Other works being carried out on site

5.4.2.1 Demolition

Demolition operations have commenced to Building 14. Located adjacent to the southern end of the lodge/reservoir, the northern wall of the structure forms the southern side of the spillway. Care is to be taken to ensure that no debris from the demolition of the structure enters into the spillway channel and causes a blockage to the entrance of the culvert. Control measures are to be in place to ensure this.

A secure exclusion zone is established around the building within which all processing of demolition arising's is to be carried out. Vehicular access to these areas is via '*Site Access 2*' located off Mill Road. Haul routes are on hardstanding at all times to minimise trafficking off-site.

Scrap metal, timber, cable, general waste etc., are to be removed off-site to a suitably licensed facility, hard materials are to be relocated to Phase 2A for processing and testing prior to being re-used as part of the Phase 1 works (piling mats, road boxes etc.).

5.4.2.2 Remediation/earthwork

Remediation works are being carried out across the west and south of the site. Phase 1, which is the first area to be released to the Client, and the southern part of Phase 2F to the east side of the existing culvert, are being broken out and turned over to remove all hardstanding material and relict foundations. The remediation of the Phase 2F area subsequently allows the installation of the new section of culvert as well as the southern end of the realigned open watercourse.

All hard materials generated from the remediation operations are to be relocated to Phase 2A for processing and testing prior to being re-used as part of the Phase 1 works (piling mats, road boxes etc.).

When the areas have been remediated, cut/fill is being carried out to achieve the required levels. Surplus materials generated from Phase 1 are placed in temporary stockpile on Phase 2A prior to being relocated and placed in Phase 2F (when the area is available).

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

All earthworks material is to be placed in layers and re-engineered as necessary to achieve a suitable building platform prior to being trimmed to the required level.

5.5 Watercourse realignment earthworks - Stage 3 (see Figure 7)

5.5.1 Silt stabilisation works (east) (week 26-31)

When the temporary impermeable barrier adjacent the remaining water body of the lodge/reservoir has been installed, silt stabilisation works are to be carried out under the supervision of a WAMITAB technically competent manager (provided by Urban Soil Solutions Ltd).



The silts contain a high percentage of water making the material mobile. To stabilise the silts, they are to be subject to chemical and physical treatment to essentially '*dry them out*', making them useable on site. To achieve this, bulk cement is spread over the silts at the required percentage and mechanically blended.

Due to silts containing a high percentage of water, it is not possible to move heavy plant directly over them to carry out the stabilisation works. Instead, the heavy plant is to work through the silt mass in a systematic manner until they have all been treated.

Working from the southern edge of the eastern silts, the primary 35T 360° excavator is to carry out the stabilisation works on a cell by cell basis, each cell being the extent that the excavator can comfortably reach (circa 10m²).

Bulk bags of cement stored in the designated unloading/storage area located on hard standing, are to be delivered to the working area by a secondary 35T 360° excavator.

Initially, the primary 35T 360° excavator is to spread the cement over the surface of the silt. This is achieved by lifting up the bulk bag of cement by its lifting straps, circa 1.5m off the floor. The base of the bag is then sliced open with a knife making a slit for the cement to pour out of in a controlled manner (at no time is anyone to stand directly below the suspended bulk bag of cement. The cutting of the bag is to be done stood to the side and reaching under only). The primary 35T 360° excavator is then to lower the bag to circa 0.5m above the silt and proceed to move the bag over the extent of the current 'cell', establishing a thin layer. When the bulk bag is empty, the bag is to be removed from the immediate work area and placed in an on-site general waste skip for future disposal off-site at a suitably licensed facility.

The mixing of the cement with the silt is to be carried out using the primary 35T 360° excavator on mixer bucket attachment. The mixing is to be carried out in a steady, methodical manner with the upper layer of the silt mixed through with cement achieving a mix of circa 5% cement with 95% silt.

When placing/mixing the cement on/with the silt, care is to be taken to minimise the generation of airborne cement dust. This is best achieved by:

- Ensuring that the mixing location is not overly windy or susceptible to wind.
- Using one bulk bag of cement at a time to minimise the amount of exposed cement.
- When depositing the cement from the bulk bag onto the silt; keep the bulk bag as close to the silt as possible to minimise any impact dust.
- Only deposit a thin layer of cement onto the silt. This will ensure that the moisture contained within the silt is more easily transferred to the cement, thus preventing it from becoming airborne.
- The mixing of the cement with the silt is to be carried out in a steady, methodical manner, keeping the bucket of the primary 35T 360° excavator as close to the ground as possible.

As the silt is treated with cement it is to be stockpiled in a windrow to the west side of the cell, being left to cure prior to re-use. The windrows are to remain uncovered to aid the curing process. To prevent the windrows from being adversely affected by the weather, they are to be shaped to allow any direct rainfall to free drain.

When the initial cell has been treated, the works are to continue in the same manner on a cell by cell basis until all of the silts have been stabilised.

During these works, additional dust monitoring is to be carried out to ensure that the works are not impacting on the wider environment. Also, pH analysis of the un-named tributary of Pigs Lee Brook and the remaining water body of the lodge/reservoir is to be carried out to ensure that the cement used for the stabilisation works hasn't/isn't impacting on the waters.

All inspection/monitoring information associated with the works are to be recorded on the '*Daily Surface Water Inspection Form*' and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'.

When all of the silts have sufficiently cured, they are to be re-used as part of the earthworks within the Phase 2H (east) area to achieve the required levels. In the event that there is a shortfall of materials to achieve the necessary levels, additional material is to be sourced from the temporary earthworks stockpile on Phase 2A and the arising's generated from the excavation of the new open watercourse channel in Phase 2F.

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

All earthworks material is to be placed in layers and re-engineered as necessary to achieve a suitable building platform prior to being trimmed to the required level.

5.5.2 Excavation of the new open watercourse channel (south east) (week 28-30)

When the following works have been completed, the new open watercourse channel to the east side of Phase 2F can be excavated:

- Demolition of Buildings 11-14.
- The remediation of hardstanding/relict foundations to the east side of the existing culvert.
- The cut/fill operation to the east side of the existing culvert.

Commencing from the southern end and working in a northerly direction, the new open watercourse channel is to be excavated/formed to the required shape, before being lined with clay, as necessary. Arising's are to be transported to either temporary stockpile on Phase 2A or utilised within any fill requirements during the cut/fill operations carried out in Phase 2H.

5.5.3 Installation of the new culvert section (week 28-34)

When the following works have been completed, the new culvert and associated manholes can be installed to the south east side of Phase 2F:

- Demolition of Buildings 11.
- The remediation of hardstanding/relict foundations to the east side of the existing culvert.
- The cut/fill operation to the east side of the existing culvert.

Initially, manhole MH3, located to south east of Phase 2F, is to be constructed. When complete, the manhole is to be connected to the new open watercourse channel and the headwall constructed.

To prevent waters, which may accumulate within the new open watercourse channel, from impacting on the construction of the new culvert section (and subsequently have an environmental impact on the existing live culverted watercourse - post connection), a temporary impermeable barrier is to be constructed across the end of the open water course channel, immediately in front of the headwall. Waters which accumulate within the new open watercourse are to be pumped out and used for dust suppression across the site.

When the headwall is complete and the earthworks barrier in place, the culvert section connecting manhole MH3 to MH4 is to be constructed followed by the connecting manhole MH4.

Manhole MH4 is constructed directly on the alignment of the existing '*live*' culvert. Prior to breakthrough into the existing '*live*' culvert, a silt trap is to be established at the discharge point of the culvert circa 175m south of the site boundary (it is not possible to construct a silt trap closer to the works due to the restrictions of the existing culvert).

During construction works, the flow of waters within the existing '*live*' culvert is to be maintained at all times. Also, no '*hard debris*' is to be left within the live channel when the construction works are complete.

During these works, pH analysis of the un-named tributary of Pigs Lee Brook is to be carried out to ensure that the concrete/cement used in the construction works hasn't/isn't impacting on the waters.

All inspection/monitoring information associated with the works are to be recorded on the '*Daily Surface Water Inspection Form*' and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'.

5.5.4 Installation of the temporary flood barrier to Phase 1

When Phase 1 remediation works are complete and the area has been prepared to the required levels, a temporary flood barrier is to be constructed as specified in '*Technical Note 6155/01*' (see Appendix E).

The temporary flood barrier is to be constructed to a level 500mm above the finished design levels to mitigate any potential flooding which may be caused during the realignment of the unnamed tributary of Pigs Lee Brook and the residential development works.

The temporary flood barrier is to be constructed from site derived clays along the specified alignment, being 1m wide at the crest with sides of 1 in 3.

5.5.5 Other works being carried out on site

5.5.5.1 Demolition

Demolition operations are being carried out across the site. Building 14, which straddles Phases 2D and 2F, is almost complete. Building 15, which also straddles Phases 2D and 2F, is approximately 75% complete.

Both areas of demolition are individually fenced forming secure exclusion zones in which all processing of demolition arising's is to be carried out. Due to the restrictions caused by the demolition of Building 15, the vehicular access to these areas is via '*Site Access 1*' located off Walmersley Road. Haul routes are on hardstanding/crush at all times to minimise trafficking off-site.

Scrap metal, timber, cable, general waste etc., are to be removed off-site to a suitably licensed facility, hard materials are to be relocated to Phase 2A for processing and testing prior to re-use within the works (piling mats, road boxes etc.).

5.5.5.2 Remediation/earthwork

Remediation works are being carried out to the northern part of Phase 2F, to the east side of the existing culvert. All ground is being broken out and turned over to remove hardstanding material and relict foundations. The remediation of this part of Phase 2F enables the new open watercourse channel to be excavated.

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

All hard materials generated from the remediation operations are to be relocated to Phase 2A for processing and testing prior to being re-used as part of the works (piling mats, road boxes etc.).

When the area has been remediated, cut/fill is being carried out to achieve the required levels. Surplus arising's are either used locally or transported to either temporary stockpile on Phase 2A or utilised within any fill requirements during the cut/fill operations carried out in Phase 2H.

All earthworks material is to be placed in layers and re-engineered as necessary to achieve a suitable building platform prior to being trimmed to the required level.

5.6 Watercourse realignment works - Stage 4 (see Figure 8)

When the silt stabilisation and cut/fill works have been completed to east side of the temporary impermeable barrier (Phase 2H), the new open watercourse channel can be extended, and the flow control structure constructed.

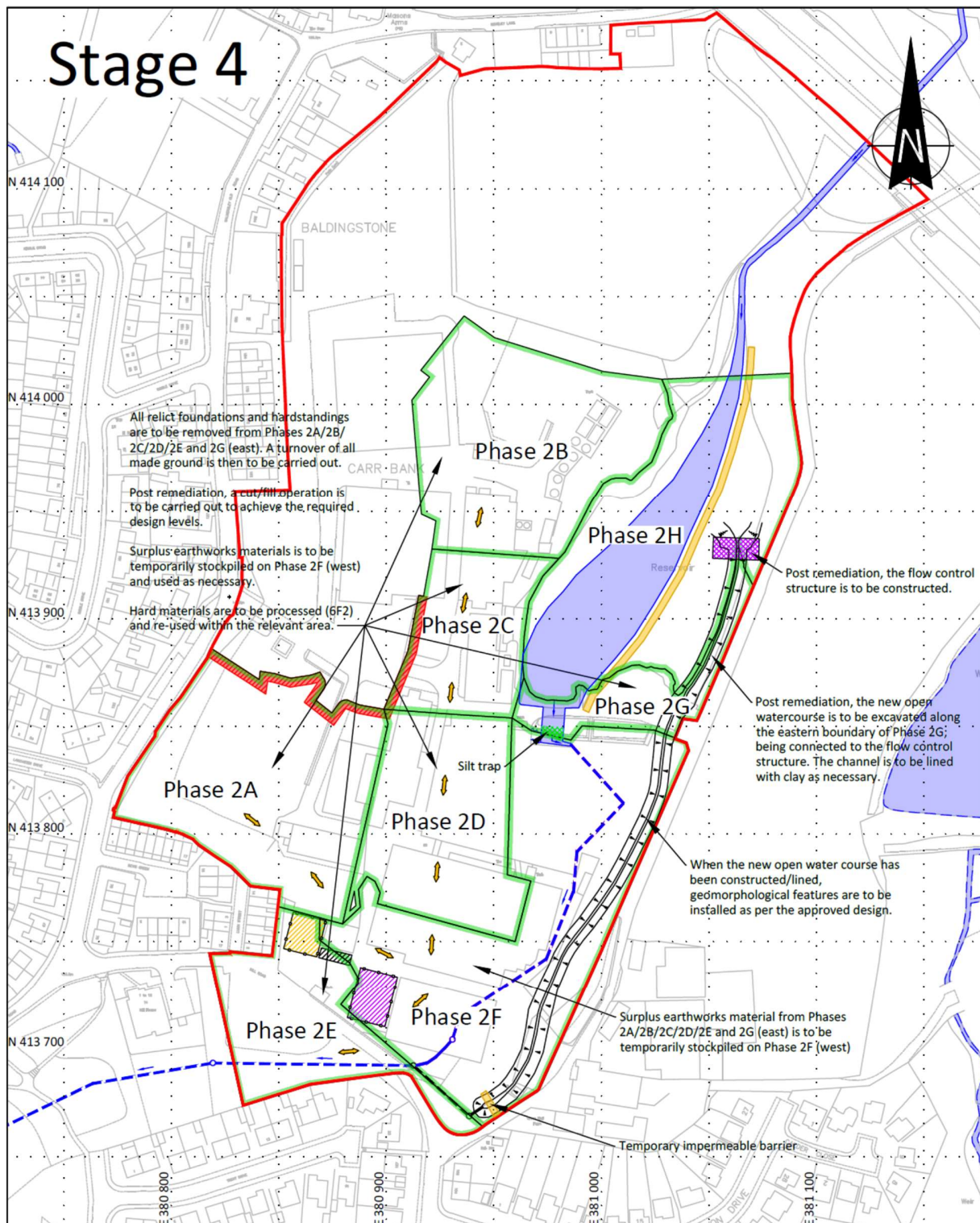


Figure 8: Overview of the watercourse realignment works - Stage 4

5.6.1 Installation of the flow control structure (week 49-52)

The flow control structure is to be constructed post silt stabilisation (to the eastern silts) and the subsequent cut/fill operation to achieve the required surface levels.

Constructed remotely from the existing watercourse (located to the west side of the temporary impermeable barrier, an excavation is to be made to accommodate the structure. Civil construction works are then to be carried out to construct the structure to the required design.

Surplus earthwork materials are to be temporarily stockpiled on Phase 2F for re-use within the cut/fill of Phase 2H (west).

5.6.2 Excavation of the new open watercourse channel (centre east) (week 52-54)

When the remediation works to Phase 2G (east) have been completed and the required cut/fill operations carried out to the required level, the excavation of the new open watercourse channel can be extended up to the flow control structure.

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

Commencing from the southern end and working in a northerly direction, the new open watercourse channel is to be excavated/formed to the required shape, being lined with clay, as necessary. Arising's are to be transported to temporary stockpile on Phase 2F for re-use within the cut/fill of Phase 2H (west).

Waters which accumulate within the new open watercourse are to be pumped out and used for dust suppression across the site.

5.6.3 Installation of geomorphological features

When the proposed open watercourse has been excavated and lined with clay as necessary, between the new culvert to the south, and the flow control structure, geomorphological features are to be installed.

Geomorphological features are to be installed under the supervision of a suitably qualified geomorphologist, and in accordance with the approved plans (see Appendix I and J).

5.6.4 Other works being carried out

5.6.4.1 Demolition

All demolition works are complete.

5.6.4.2 Remediation/earthwork

Remediation works are being carried out across the site to Phases 2A, 2B, 2C, 2D, 2E and Phase 2G (east). All ground is being broken out and turned over to remove hardstanding material and relict foundations.

All hard materials generated from the remediation operations are to be relocated to Phase 2F for processing and testing prior to being re-used as part of the works (piling mats, road boxes etc.).

When the areas have been remediated, cut/fill is being carried out to achieve the required levels. Surplus arising's are either used locally or transported to temporary stockpile on Phase 2F for future re-use within Phases 2F (west) and 2H (west).

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

All earthworks material is to be placed in layers and re-engineered as necessary to achieve a suitable building platform prior to being trimmed to the required level.

5.7 Watercourse realignment works - Stage 5 (see Figure 9)

When the flow control structure is complete and the new open watercourse channel has been connected to it, works are to be carried out to divert the un-named tributary of Pigs Lee Brook, along the new alignment.

5.7.1 Excavation of the new attenuation pond (east) and associated base channel (week 55-57)

To connect the un-named tributary of Pigs Lee Brook along the new alignment, the new flood attenuation pond has to be partially excavated along with the associated base channels/ponds/geomorphological features.

To minimise any siltation to the existing watercourse during these works, it is necessary to establish a temporary '*overflow*' channel to maintain the flows of the un-named tributary of Pigs Lee Brook into the lodge/reservoir (bypassing the work area). To achieve this, a temporary impermeable barrier is to be constructed using site derived clays across the existing watercourse, upstream of the lodge/reservoir, to '*stop off*' the existing flows. From this '*sump area*' a temporary '*overflow*' channel is to be excavated, bypassing the work area, routing waters directly to the lodge/reservoir; being established on the western side of the existing watercourse, adjacent to the area which is restricted by the badger set (see Figure 10).

When the temporary '*overflow*' channel is working satisfactorily, the existing temporary impermeable barrier is to be modified to protect the un-named tributary of Pigs Lee Brook from silt stabilisation works (when diverted along its new alignment).

The modification of the existing temporary impermeable barrier is to be carried out using the same technique as previously detailed in 5.4.1.

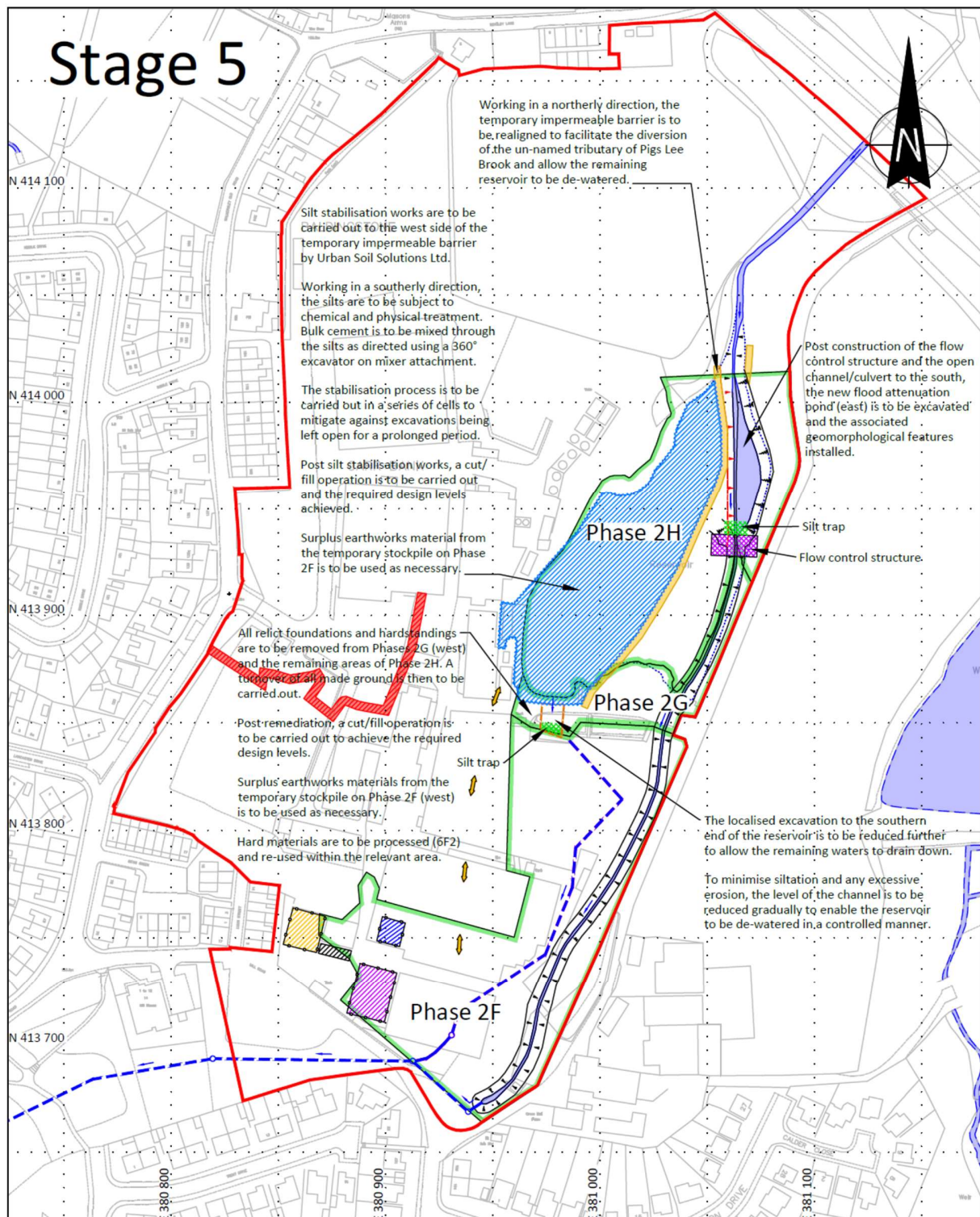


Figure 9: Overview of the watercourse realignment works - Stage 5

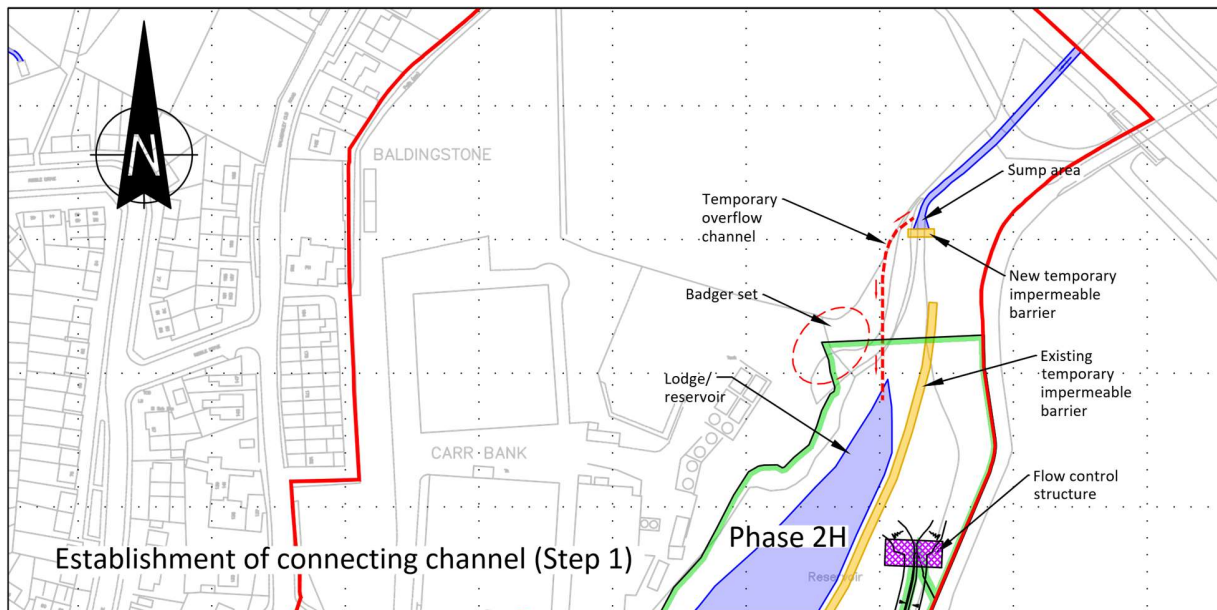


Figure 10: Temporary 'overflow' channel to the north of the lodge/reservoir

Initially, the modified alignment of the temporary impermeable barrier is to be determined. This will be governed by the extent of the remaining water body of the lodge/reservoir and the specifications of the bund design (see 5.4.1). When the alignment has been confirmed, installation can commence.

Continuing working in a northerly direction, the 25T 360° excavator is to track forwards on the existing temporary impermeable barrier and excavate out the silts on the required alignment (circa 5.0m wide and the reach of the excavator forwards), casting them to the western side. Clays are then to be delivered by forward tipping dumper travelling along the already constructed barrier (from the south), tipping them directly behind the excavator for placement and re-engineering.

This operation is to continue in this manner until the temporary impermeable barrier has been modified as necessary, through the exposed silts/across the former channel supplying the lodge/reservoir – ensuring that the temporary 'overflow' channel is not compromised (see Figure 11).

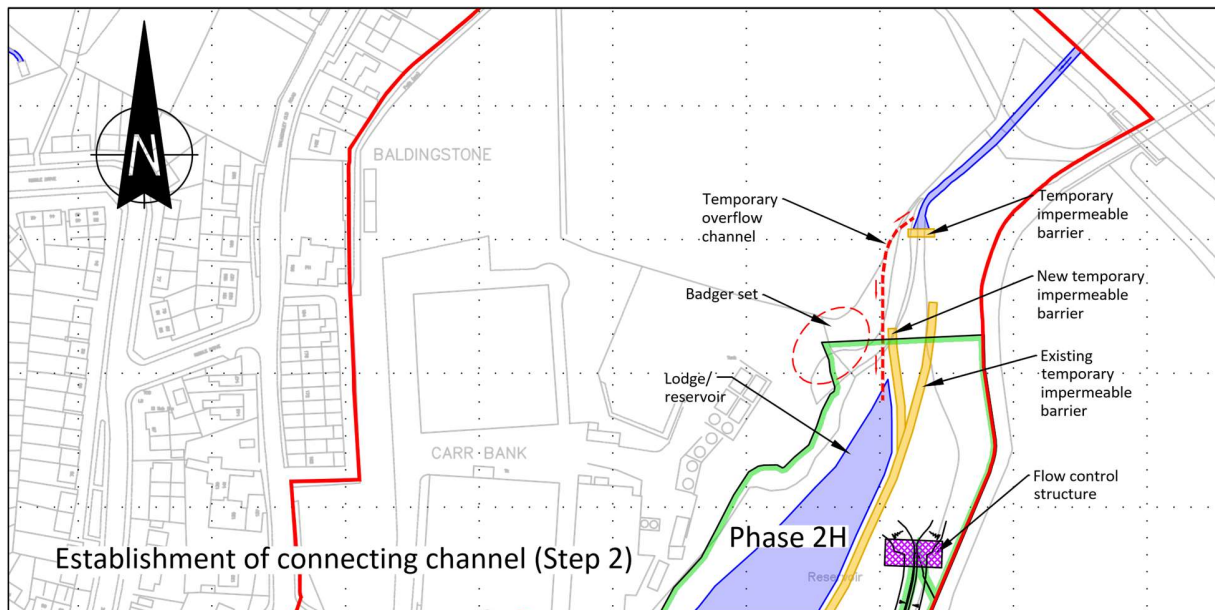


Figure 11: Modifications to the temporary impermeable barrier

When the existing temporary impermeable barrier has been modified, the new flood attenuation pond (east) can be excavated. Retreating in a southerly direction, from the channel of the unnamed tributary of Pigs Lee Brook, where it formerly entered the lodge/reservoir, the new flood attenuation pond (east) is to be excavated to the east side of the modified temporary impermeable barrier. The earthworks are to cut through the former alignment of the temporary impermeable barrier, directly to the flow control structure. Materials excavated from the northern side of the original temporary impermeable barrier are to be relocated to Phase 2H (west) in the event that they contain silts which require stabilisation. Materials excavated from the southern side of the original temporary impermeable barrier are to be temporarily stockpiled on Phase 2F (west) for re-use within the cut/fill of Phase 2H (west) (see Figure 12).

When the new flood attenuation pond (east) has been excavated, base channels/ponds/geomorphological features are to be installed. Geomorphological features are to be installed under the supervision of a suitably qualified geomorphologist, and in accordance with the approved plan (see Appendix K).

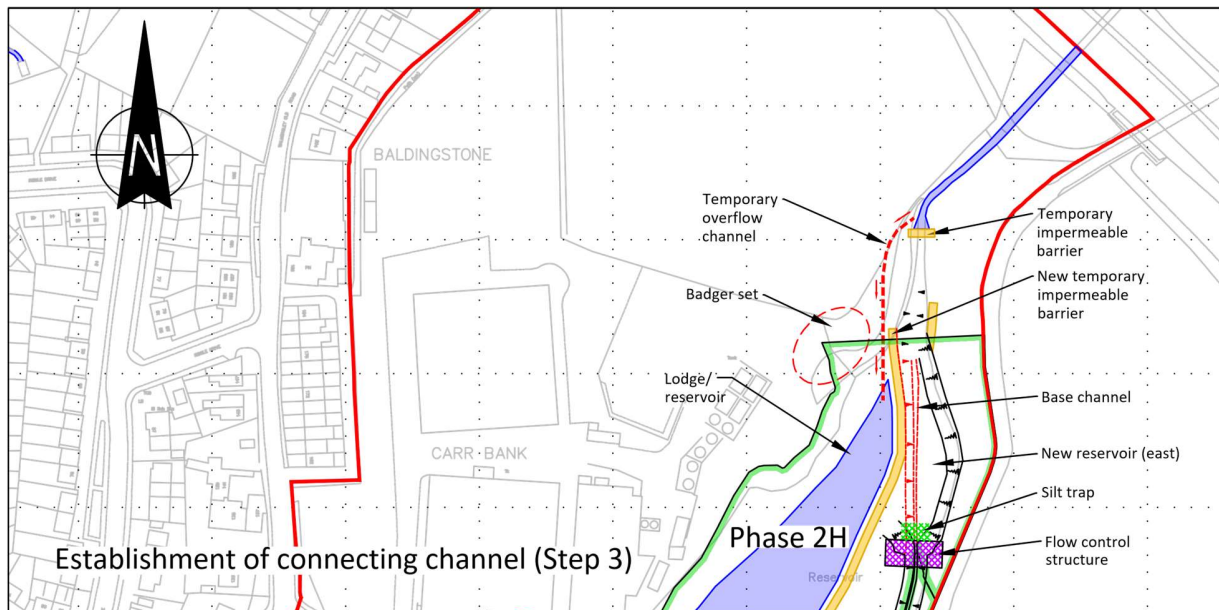


Figure 12: Excavation of the flood attenuation pond (east) and the associated base channel

When the base channels/ponds/geomorphological features of the flood attenuation pond (east) have been installed, the un-named tributary of Pigs Lee Brook is to be diverted along the realigned route.

Prior to any '*breakthrough*' operation being carried out, a silt trap is to be established immediately in front of the flow control structure, e.g., straw bales wrapped in a woven geotextile, to filter out potential suspended solids which may be generated during the works.

When the silt trap has been installed, the temporary impermeable barrier constructed previously, across the end of the open water course channel, immediately in front of the headwall to the south, is to be removed. This will allow waters to flow unimpeded along the open watercourse channel, into the new culvert, and discharge to the south. The temporary impermeable barrier located adjacent to the temporary '*overflow*' channel can then be removed (the materials being used to block off the mouth of the temporary '*overflow*' channel), releasing the waters of the un-named tributary of Pigs Lee Brook to flow along the new alignment.

5.7.2 Final de-watering of the lodge/reservoir (week 58-60)

When the un-named tributary of Pigs Lee Brook has been diverted along the new alignment, works can re-commence to de-water the remaining waters in the lodge/reservoir.

To allow the lodge/reservoir to be fully de-watered, the temporary earthwork constructed previously (see 5.3.1) must be reduced further. Initially the silt trap is to be removed to allow excavation works to be carried out. The southern half of the excavation/channel (spillway side) is to be reduced down to the base of the spillway (no waters are now flowing along the spillway as the un-named tributary of Pigs Lee Brook has been diverted along the new alignment and the lodge/reservoir is not recharging), ensuring that all exposed sides are cut to a minimum of 45° (see Figure 13). All of the excavated materials are to be relocated to the temporary earthworks stockpile located on Phase 2F (west) as they are generated, for re-use within Phase 2H (west).

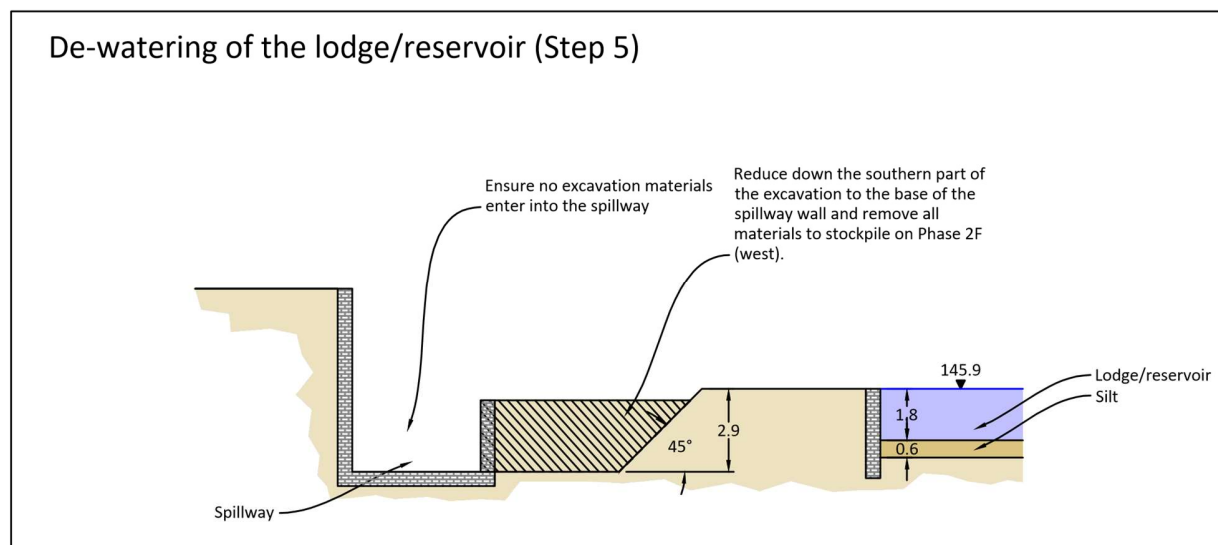


Figure 13: Lodge/reservoir dewatering channel – 2nd silt trap excavation

When complete, the base of the excavation/channel is to be sheeted with visqueen as an erosion barrier, and a new suitable silt trap installed e.g., straw bales wrapped in a woven geotextile, to filter out potential suspended solids from the lodge/reservoir waters (see Figure 14).

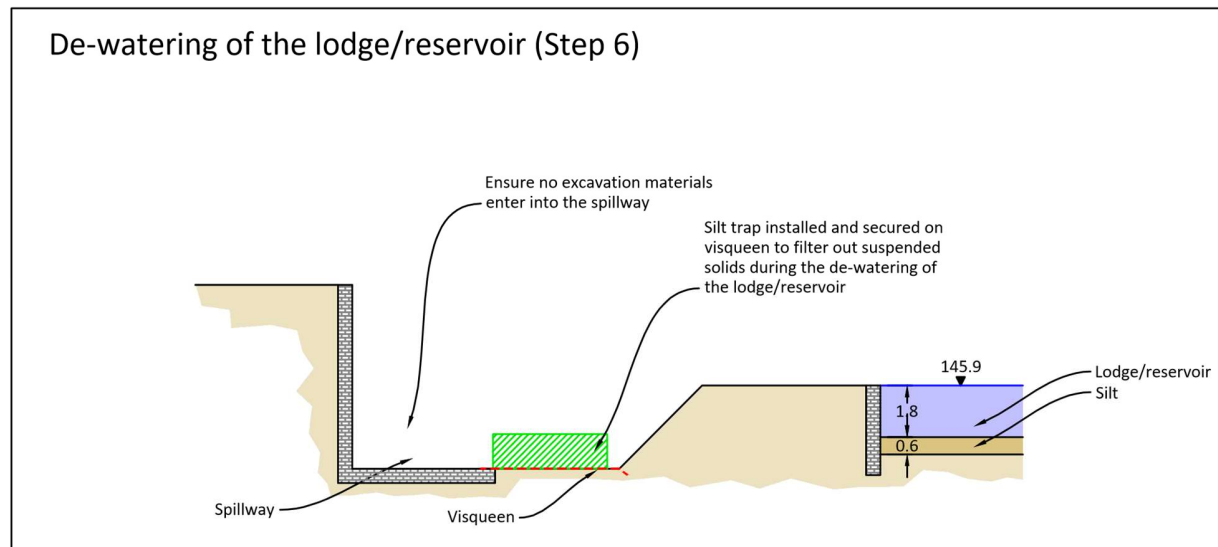


Figure 14: Lodge/reservoir dewatering channel – 2nd silt trap installation

When the silt trap has been installed, the northern section of the excavation/channel, between the silt trap and the lodge/reservoir, is to be gradually reduced to a level which just allows water to flow from the lodge/reservoir, along the excavation/channel, through the silt trap, and into the spillway. As these initial flows are passing through the channel/silt trap, waters are to be visually inspected/monitored, to ensure that the silt trap is working effectively. A photographic record is also to be made to provide a permanent record. If the removal of suspended solids is not sufficient, the silt trap is to be improved until water quality is satisfactory.

When the silt trap is working effectively, the northern section of the excavation is to be reduced in circa 50mm increments to allow the lodge/reservoir to drain. The reduction in the level of the channel is to be carried out in small increments to ensure that any potential erosion and associated siltation is kept to a minimum. The reduction in the depth of the northern channel is to continue until the required water level in the lodge/reservoir is achieved (see Figure 15).

As the lodge/reservoir is draining, the waters are to be visually inspected/monitored on a regular basis to ensure that the silt trap is continuing to work effectively. A photographic record is also

to be made to provide a permanent record. In the event that the removal of suspended solids is not sufficient, the silt trap is to be improved until water quality is satisfactory.

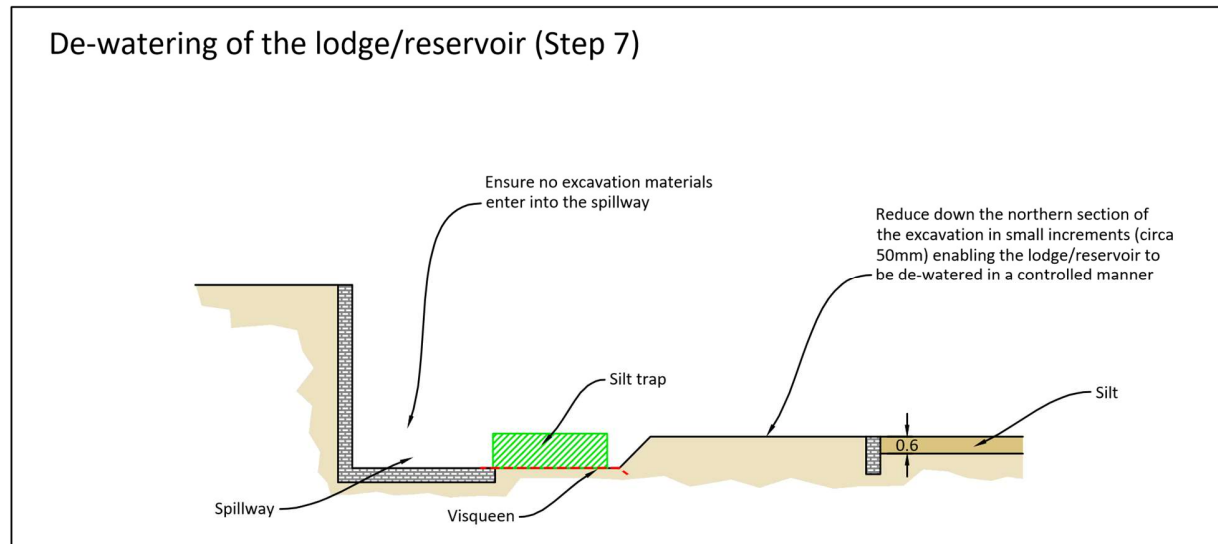


Figure 15: Lodge/reservoir dewatering channel – De-watering complete

In the event that not all waters can be drained from the lodge/reservoir via natural flow, a 6" pump is to be utilised to de-water any remaining waterbodies. Located on a suitable spill tray, the pump is to be used to draw waters out of the lodge/reservoir, discharging them through the silt trap established in the excavated channel.

These works are to be scheduled to prevent/minimise the impact on the breeding/hibernating of amphibians which are also likely to be present.

All inspection/monitoring information associated with the works are to be recorded on the '*Daily Surface Water Inspection Form*' and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'.

When the lodge/reservoir has been completely de-watered, the silt trap installed in the temporary channel can be removed.

5.7.3 Silt stabilisation works (west) (week 60-64)

When the lodge/reservoir has been completely de-watered, the remaining silt stabilisation works are to be carried out under the supervision of a WAMITAB technically competent manager (provided by Urban Soil Solutions Ltd).

As previously detailed in 5.5.1, heavy plant is to work through the silt mass in a systematic manner until they have all been treated.

Working from the southern edge of the eastern silts, the primary 35T 360° excavator is to carry out the stabilisation works on a cell by cell basis, each cell being the extent that the excavator can comfortably reach (circa 10m²).

Bulk bags of cement stored in the designated unloading/storage area located on hard standing, are to be delivered to the working area by a secondary 35T 360° excavator.

Initially, the primary 35T 360° excavator is to spread the cement over the surface of the silt. This is achieved by lifting up the bulk bag of cement by its lifting straps, circa 1.5m off the floor. The base of the bag is then sliced open with a knife making a slit for the cement to pour out of in a controlled manner (at no time is anyone to stand directly below the suspended bulk bag of cement. The cutting of the bag is to be done stood to the side and reaching under only). The primary 35T 360° excavator is then to lower the bag to circa 0.5m above the silt and proceed to move the bag over the extent of the current 'cell', establishing a thin layer. When the bulk bag is empty, the bag is to be removed from the immediate work area and placed in a general waste skip on site for future disposal off site at a suitably licensed facility.

The mixing of the cement with the silt is to be carried out using the primary 35T 360° excavator on mixer bucket attachment. The mixing is to be carried out in a steady, methodical manner with the upper layer of the silt mixed through with cement achieving a mix of circa 5% cement with 95% silt.

When placing/mixing the cement on/with the silt, care is to be taken to minimise the generation of airborne cement dust. This is best achieved by:

- Ensuring that the mixing location is not overly windy or susceptible to wind.
- Using one bulk bag of cement at a time to minimise the amount of exposed cement.
- When depositing the cement from the bulk bag onto the silt; keep the bulk bag as close to the silt as possible to minimise any impact dust.
- Only deposit a thin layer of cement onto the silt. This will ensure that the moisture contained within the silt is more easily transferred to the cement, thus preventing it from becoming airborne.
- The mixing of the cement with the silt is to be carried out in a steady, methodical manner, keeping the bucket of the primary 35T 360° excavator as close to the ground as possible.

As the silt is treated with cement it is to be stockpiled in a windrow to the west side of the cell, being left to cure prior to re-use. The windrows are to remain uncovered to aid the curing process. To prevent the windrows from being adversely affected by the weather, they are to be shaped to allow any direct rainfall to free drain.

When the initial cell has been treated, the works are to continue in the same manner on a cell by cell basis until all of the silts have been stabilised.

During these works, additional dust monitoring is to be carried out to ensure that the works are not impacting on the wider environment. Also, pH analysis of the un-named tributary of Pigs Lee Brook is to be carried out to ensure that the cement used for the stabilisation works hasn't/isn't impacting on the waters.

All inspection/monitoring information associated with the works are to be recorded on the '*Daily Surface Water Inspection Form*' and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'.

When all of the silts have sufficiently cured, they are to be re-used as part of the earthworks within the Phase 2H (west) area to achieve the required levels. In the event that there is a shortfall of materials to achieve the necessary levels, additional material is to be sourced from the temporary earthworks stockpile on Phase 2F.

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

All earthworks material is to be placed in layers and re-engineered as necessary to achieve a suitable building platform prior to being trimmed to the required level.

5.7.4 Other works being carried out

5.7.4.1 Remediation/earthwork

When the lodge/reservoir has been completely de-watered, the western section of Phase 2 G is to be remediated with all ground being broken out and turned over to remove hardstanding material and relict foundations.

All hard materials generated from the remediation operations are to be relocated to Phase 2F (west) for processing and testing prior to being re-used as part of the works (piling mats, road boxes etc.).

When the areas have been remediated, cut/fill is to be carried out to achieve the required levels. Surplus arising's are either used locally or transported to temporary stockpile on Phase 2F (west) for future re-use within Phases 2F (west) and 2H (west).

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

All earthworks material is to be placed in layers and re-engineered as necessary to achieve a suitable building platform prior to being trimmed to the required level.

5.8 Watercourse realignment works - Stage 6 (see Figure 17)

When the silt stabilisation and cut/fill works have been completed to west side of Phase 2H, the new flood attenuation pond (west), can be excavated, completing the diversionary works to the un-named tributary of Pigs Lee Brook.

5.8.1 Excavation of new flood attenuation pond (west) (week 64-65)

Prior to any excavation being carried, the temporary silt trap installed in front of the flow control structure, is to be checked to ensure that it is still working. If necessary, a new silt trap e.g., straw bales wrapped in a woven geotextile, is to be installed to filter out potential suspended solids which may be generated during the works.

Excavating in a generally northern direction (uphill) to minimise the potential for waters to spill into the excavation from the un-named tributary of Pigs Lee Brook, the 35T 360° excavator is to form the landform as per design.

As the excavation works are being carried out, the waters of the un-named tributary of Pigs Lee Brook are to be visually inspected/monitored on a regular basis to ensure that the silt trap is continuing to work effectively. A photographic record is also to be made to provide a permanent record. In the event that the removal of suspended solids is not sufficient, the silt trap is to be improved until water quality is satisfactory.

All inspection/monitoring information associated with the works are to be recorded on the '*Daily Surface Water Inspection Form*' and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'.

Surplus arising's from the excavation are to be transported to temporary stockpile on Phase 2F for future re-use within Phase 2F (west).

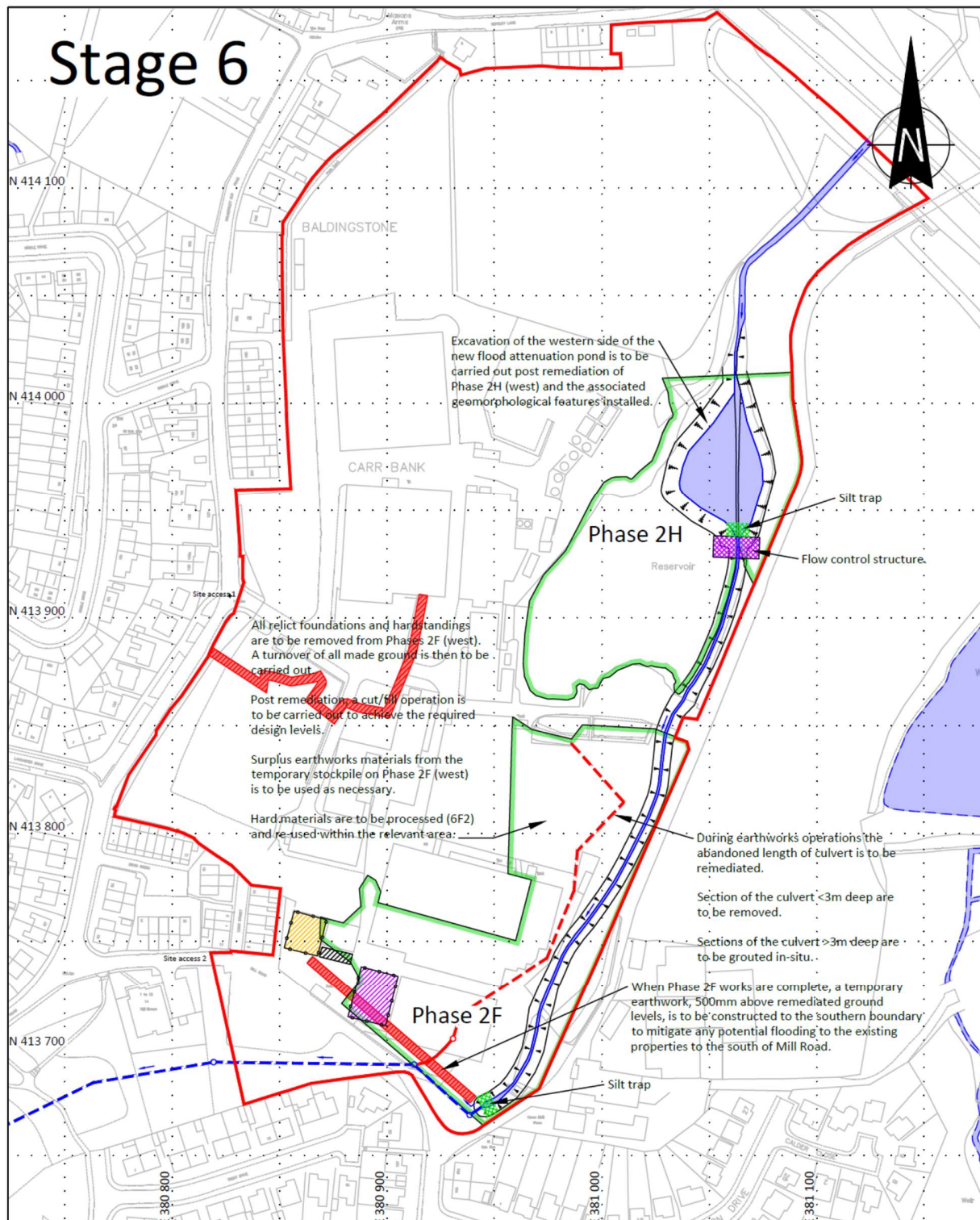


Figure 17: Overview of the watercourse realignment works - Stage 5

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

When the new flood attenuation pond (west) has been excavated, base channels/ponds/geomorphological features are to be installed. Geomorphological features are to be installed under the supervision of a suitably qualified geomorphologist, and in accordance with the approved plan (see Appendix K).

When the base channels/ponds/geomorphological features of the flood attenuation pond (west) have been installed, the silt trap installed at the flow control structure can be removed.

5.8.2 Other works being carried out

5.8.2.1 Remediation/earthwork

With the un-named tributary of Pigs Lee Brook realigned and the lodge/reservoir de-watered, the former culvert which ran through the southern half of the site can be abandoned (up to the connection with the new culvert). This enables the western side of Phase 2F to be remediated, with all ground being broken out and turned over to remove hardstanding material and relict foundations.

When the areas have been remediated, cut/fill is to be carried out to achieve the required levels. Any surplus arising's are to be used locally to achieve the required cut/fill levels.

Earthworks operations along the alignment of the proposed open watercourse/flood attenuation pond are to be carried out in accordance with Curtins Consulting Ltd. Report reference '079657-CUR-XX-XX-RP-GE-00001-P01' (see Appendix H).

All earthworks material is to be placed in layers and re-engineered as necessary to achieve a suitable building platform prior to being trimmed to the required level.

5.8.2.2 Breakout/grout culvert to be abandoned (week 73-76)

The remediation of the length of abandoned culvert is dependent upon the depth of the structure. If the culvert is less than 3m deep, it is to be broken out and relocated on-site for processing and reuse within the works. The resultant void is to be backfilled with site derived earthworks materials: being re-engineered in layers as necessary and trimmed to the correct level.

If the culvert is more than 3m deep, it is to be grouted. If the section of culvert immediately adjacent to MH4 (the connecting manhole of the realigned watercourse) requires grouting, a suitable and sufficient barrier must be installed to contain the grout and prevent it from flowing into the un-named tributary of Pigs Lee Brook.

During the grouting works, the waters of the un-named tributary of Pigs Lee Brook are to be visually inspected/monitored on a regular basis to ensure that any barrier is working effectively. A photographic record is also to be made to provide a permanent record.

All inspection/monitoring information associated with the works are to be recorded on the '*Daily Surface Water Inspection Form*' and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'.

5.8.2.3 Installation of the temporary flood barrier to Phase 2F

When Phase 2F remediation works are complete and the area has been prepared to the required levels, a temporary flood barrier is to be constructed to mitigate any potential surface water which may flow off-site and flood the existing properties to the south of Mill Road.

Constructed from site derived clays to a level 500mm above remediation levels, being 1m wide at the crest, with sides of 1 in 3, the temporary flood barrier is to be constructed from the southern end of the un-named tributary of Pigs Lee Brook open channel, angling north west circa 100m. As the site generally falls to the south east, surface water run-off will flow towards the

temporary flood barrier where it will be guided into the open channel of the un-named tributary of Pigs Lee Brook and off-site via the culvert.

In conjunction with this flood barrier, a silt trap is to be installed in front of the headwall structure to the southern end of the un-named tributary of Pigs Lee Brook open channel e.g. straw bales wrapped in a woven geotextile, to filter out potential suspended solids which may be generated from any surface water run-off.

6.0 Health and safety

All works to be carried out on site are to be ‘*Risk Assessed*’ and suitable task specific ‘*Method Statements*’ prepared and approved prior to any associated works commencing. These documents are to be briefed to all associated personnel, signed for, and entered into the relevant register of the ‘*Construction Phase Health and Safety Plan*’.

6.1 Risk assessments

Risk assessments associated with the works are to be included within the relevant section of the Urban Regen Ltd. ‘*Construction Phase Health and Safety Plan*’. These include:

- Soil stabilisation
- Earthworks
- Operated construction plant
- HGV Driving
- General operations (Health/Fire/Skin/Disease/trips/Electric/Injury)
- Manual Handling
- Cut/trapped limbs/fingers or hands
- Refuelling
- Management of underground services
- Environmental risk assessment
- Fire risk assessment

6.2 COSHH

COSHH data sheets providing recommended precautions and PPE requirements for substances likely to be encountered on site are to be included within the Urban Regen Ltd. ‘*Construction Phase Plan*’ e.g. fuels/oils/leachates/cement etc.

6.3 Personal protective equipment

PPE is to be supplied to protect against those risks associated with the works that cannot be avoided. Appropriate training is to be provided to all site personnel in the safe use of PPE. Spare PPE is to be available at all times.

Minimum requirement for PPE is as follows:

- Hard hat
- Hi-visibility vest/coat
- Safety footwear

Additional task specific PPE as required:

- Eye protection
- Dust mask
- Ear protection
- Gloves
- Disposable suits

If any other PPE is required to carry out works on site, it is to be provided by the Principal Contractor.

6.4 Permits

Prior to any works being carried out, the Urban Regen Ltd. Project Manager must issue a '*Permit to Work*' detailing the work area, access arrangements and any constraints therein. In the event that ground is to be broken i.e. earthworks/breakout, the Urban Regen Ltd. Project Manager is also to issue a '*Permit to Dig*' detailing the location of all known services, accompanied with appropriate disconnection certificates if necessary. These documents are to be signed for and entered into the relevant register of the '*Construction Phase Health and Safety Plan*'.

On receipt of a 'Permit to Dig', the designated Supervisor is to attend the work area with all associated personnel and locate and mark out all known services as detailed using a CAT, as necessary, to aid identification. In the event that additional services are identified, excavation/breakout works must not commence. The Urban Regen Ltd. Project Manager is to be informed immediately.

'Hot Works Permits' are to be issued by the Urban Regen Ltd. Project Manager in the event that such works are required on site. These documents are also to be signed for and entered into the relevant register of the '*Construction Phase Health and Safety Plan*'.

7.0 Environmental considerations

All site personnel are responsible for reporting any environmental issues to the Urban Regen Ltd. Project Manager immediately. This will be instructed during the site-specific site induction. Any environmental issues reported to the Urban Regen Ltd. Project Manager are to be investigated immediately with the information recorded on the relevant form and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'.

7.1 Contamination/pollution

The majority of the site is covered with made ground which varies between 0.5m – 11m deep. This is impacted with inorganic heavy metals, asbestos fibres, and non-volatile PAH's. Initial monitoring has also identified the presence of marginally elevated methane (CH₄) and carbon dioxide (CO₂) within the deep made ground. Monitoring is to continue through the works.

Elevated volatile (aliphatic and aromatic) petroleum range (BTEX) compounds have been identified within the shallow soil and groundwater adjacent to the above ground storage tanks (AST's) used for the storage/recovery of bulk solvents and the underground storage tanks (UST's) used to store petrol, diesel, and white spirit. Upon decommissioning/demolition of the tanks, additional site investigation is to be carried out in this area to develop the 'Remediation Strategy' to the satisfaction of the Local Authority and the Environment Agency.

Further post demolition site investigation is also necessary to further characterise the nature of the deep fills associated with the former reservoirs on-site.

Soil concentrations for the identified contaminants have been compared against accepted limits and categorised as having no significant impact to human health or controlled waters.

If during the works any additional suspected contamination/pollution is encountered all associated works are to cease and the Urban Regen Ltd. Project Manager informed immediately.

7.2 Odour

The generation of any odour is to be kept to a minimum. Attention must be given to wind direction during the works and best practice employed to ensure that this is achieved. Mitigation methods are to be employed if necessary, to achieve this e.g. odour atomiser.

If, during the works, any nuisance odour cannot be controlled with existing methods, all works associated with the odour are to cease and the Urban Regen Ltd. Project Manager informed immediately.

If necessary, formal odour monitoring is to be carried out. All odour monitoring is to be recorded and copies held on site within the relevant register of the '*Construction Phase Health and Safety Plan*'.

7.3 Noise

Noise generation is to be kept to a minimum at all times. To achieve this the following points are to be considered:

- The condition of machinery being used (e.g. efficient engines, silencers, covers and compliance with manufacturers' maintenance requirements).
- The citing of machinery (e.g. the use of available shielding such as walls or buildings, the placing of material stores and distance from noise sensitive receptors).
- The method of operation (e.g. the use of operation time restraints to avoid disturbance).
- Substitution of machinery (e.g. electric power in place of internal combustion power).
- Substitution of methodology (e.g. pressure bursting instead of percussive methods).
- Reduction of boundary noise levels by appropriate positioning of preformed shielding.
- Be aware of the planning conditions with reference to permitted working hours.

If necessary, formal noise monitoring is to be carried out. All noise monitoring is to be recorded and copies held on site within the relevant register of the '*Construction Phase Health and Safety Plan*'.

7.4 Vibration

The generation of any vibration nuisance is to be kept to a minimum.

Attention must be given to the movement of heavy plant and the import of bulk materials at all times.

Vibration should be monitored in sensitive locations e.g. where neighbours and facilities are likely to be affected by the works.

If during the works any nuisance vibration is suspected all associated works are to cease and the Urban Regen Ltd. Project Manager informed immediately.

If necessary, formal vibration monitoring is to be carried out. All vibration monitoring is to be recorded and copies held on site within the relevant register of the '*Construction Phase Plan*'.

7.5 Dust

The generation of any dust is to be kept to a minimum. Attention must be given to wind direction during the works and best practice employed to ensure that this is achieved. Mitigation methods are to be employed if necessary, to achieve this e.g. tractor and bowser.

If, during the works, any nuisance dust cannot be controlled with existing methods, all works associated with the dust are to cease and the Urban Regen Ltd. Project Manager informed immediately.

If necessary, formal dust monitoring is to be carried out. All dust monitoring is to be recorded and copies held on site within the relevant register of the '*Construction Phase Plan*'.

7.6 Surface water/watercourse

Waters flowing onto/from site generally flow downhill, towards the southern end of the site. During the works, surface water run-off is to be managed at all times to ensure that it does not impact on the works or lead to contamination of the adjacent watercourse.

Monitoring of surface water, and specifically the un-named tributary of Pigs Lee Brook, is to be carried out a minimum of daily for the duration of the works.

Daily, prior to any works commencing, the Urban Regen Ltd Project Manager is to check and document the weather conditions on the '*Daily Site Diary*'. This enables potential surface water issues to be predicted, with proactive remedial actions implemented prior to any issues arising. The assessing of the weather conditions should be an on-going process with the information recorded at regular intervals.

The Urban Regen Ltd Project Manager (or designated person) will carry out visual monitoring of surface water/watercourse a minimum of daily, with a photographic record made to provide a permanent record. All information is to be recorded on the '*Daily Surface Water Inspection Form*' and held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'. The information recorded on the '*Daily Surface Water Inspection Form*' is also to include any mitigation/repairs/maintenance which may have been implemented/carried out to control/manage the surface water/watercourse. If planned works are being carried out which may generate surface water/watercourse issues, these inspections are to be increased, as necessary.

All staff responsible for assessing the surface water/watercourse, will receive appropriate training from the Urban regen Ltd. Project Manager.

On a weekly basis, Smith Grant Partnership (Environmental Consultants) are to undertake water sampling of the un-named tributary of Pigs Lee Brook to determine the level of suspended solids within the water body. Samples are to be taken upstream of the lodge/reservoir and downstream

of the realignment earthworks to determine any impact that the works may be having on water quality. This information is to be held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'. During the silt stabilisation and culvert installation works, it may also be necessary for the pH of the watercourse to be monitored to ensure that the cement being used is not impacting the watercourse.

In the event that the realignment earthworks are identified to be having an adverse impact on the watercourse, all works are to cease, and the working method reassessed and modified to prevent impact.

Post installation, the Client is to continue ongoing monitoring of the proposed channel to assess channel adjustment, and the need for any adaptive management of the installed geomorphological features.

8.0 Emergency procedure

Should an emergency incident occur all works are to stop, the Urban Regen Ltd. Project Manager is to be informed immediately, and the 'Emergency Plan' is to be implemented.

The 'Emergency Plan' is prepared as part of the '*Construction Phase Health and Safety Plan*' and provides information/details the procedures to be followed, in the event of physical injuries, mechanical damage or environmental impact etc.

As a minimum the 'Emergency Plan' should identify the following:

- Emergency contacts (e.g., emergency services/Environment Agency/Waste Management and Spill Management contractors/water companies etc.)
- Site contact details
- Site specific restrictions (e.g., working hours/noise restrictions/protected and restricted areas etc.)
- Site layout plan detailing the main site features, foul and surface water drainage, waste locations (skips/stockpiles), sensitive receptors (inc' residents), protected or restricted areas, spill response equipment, firefighting equipment, first aid equipment etc.
- Record of fuels/oils/chemicals on site detailing location, quantity/volume, hazard and means of use.
- A flow diagram detailing the procedure to follow in the event of an incident.

All site personnel are to be briefed on the 'Emergency Plan' during the site induction.

The emergency procedure/plan is to be displayed on the site '*Notice Board*' at all times being updated as necessary as the works progress.

A record of any incidents and associated correspondences, are to be retained on site; being held within the relevant register of the Construction Phase Health and Safety Plan.

8.1 Abnormal meteorological conditions

Prolonged rainfall could result in a flood event centred around the un-named tributary of Pigs Lee Brook.

Daily, prior to any works commencing, the Urban Regen Ltd Project Manager is to check and document the weather conditions on the '*Daily Site Diary*'. This enables potential surface water issues to be predicted, with proactive remedial actions implemented prior to any issues arising. The assessing of the weather conditions should be an on-going process with the information recorded at regular intervals. Information should also be obtained from the Local Authority and the Environment Agency to determine if a flood event is predicted.

On-site, to monitor the water levels of the un-named tributary of Pigs Lee Brook directly, a graduated marker post is to be established within the confines of the channel. This marker post is to be monitored regularly to identify the current water level and determine if it is rising – which may indicate that a flood event on site is imminent. All recorded information is to be held on-site in the relevant register of the '*Construction Phase Health and Safety Plan*'.

In the event that a flood event is predicted, works are to cease and all potential sources of pollution located in and/or around the impact area, are to be relocated out of any likely flow path to minimise any impact on the adjacent environment.

In the event that a flood event is expected from the reservoirs located upstream of the un-named tributary of Pigs Lee Brook, works are to cease and all potential sources of pollution located in and/or around the site, are to be relocated to a safe secure area, and the site evacuated until the flood event has passed.

Appendix A Construction Phase Health and Safety Plan

Appendix B Site infrastructure plan (existing layout and design)

Appendix C Site infrastructure plan (design installation stages)

Appendix D Flood risk assessment

Appendix E Technical Note 6155/01

Appendix F Ecological survey and assessment

Appendix G Arboricultural impact assessment

Appendix H Former Tetrosyl Site Bury – Culvert Diversión

Appendix I

Proposed Watercourse Geomorphology (Sheet 1 of 2)

Appendix J Proposed Watercourse Geomorphology (Sheet 2 of 2)

Appendix K Flood Storage Area General Arrangement

