October 2013

SCREENING FOR APPROPRIATE ASSESSMENT

Application of Waste Licence Review, Mullingar, Co. Westmeath

Submitted to:
Soltec (Ireland) Ltd.
Zone A
Mullingar Business Park
Mullingar
Co. Westmeath

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1.0 INTRODUCTION

1.1 Terms of Reference

The purpose of this report is to undertake an Appropriate Assessment Screening in relation to the application of a waste license review, W0115-02. The site is located at Zone A, Mullingar Business Park, Mullingar, Co. Westmeath (Figure 1) and is operated under its present waste license W0115-01. The Screening is carried out in accordance with the requirements of the EU Habitats Directive (Directive 92/43/EEC).

Articles 6(3) and 6(4) of this Directive state the following:

6(3). Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

6(4). If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

The requirements of Articles 6(3) and 6(4) of the Habitats Directive have been transposed into Irish legislation by means of the Habitats Regulations, 1997 (S.I. No. 94 of 1997) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011).

1.2 Methods

This report has been prepared with reference to the following documents:

- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Communities, 2002);
- Managing Natura 2000 sites: the provisions of Article 6 of the ‘Habitats Directive’ 92/43/EC (European Communities, 2000); and
- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities (Dept. Environment Heritage and Local Government, December 2009);

The Appropriate Assessment process is carried out in stages, as recommended by the Guidance Documents. There are four stages as follows:

1.2.1 Stage 1: Screening

This initial stage aims to identify the likely impacts of the project on a Natura 2000 site, either alone or in combination with other projects or plans. The impacts are examined to establish whether these impacts are likely to be significant. Assessment of the significance of effects is carried out in consultation with the relevant nature agencies.
1.2.2 Stage 2: Appropriate Assessment

The aim of this stage is to identify the conservation objectives of the site and to assess whether or not the project, either alone or in combination with other projects or plans will result in adverse effects on the integrity of the site, as defined by the conservation objectives and status of the site. Stage 2 is carried out in consultation with the relevant nature agencies.

Where it cannot be demonstrated that there will be no adverse effects on the site, it is necessary to devise mitigation measures to avoid, where possible, any adverse effects.

1.2.3 Stage 3: Assessment of alternative solutions

This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site. If alternative solutions have been identified that will either avoid any adverse impacts or result in less severe impacts on the site, it will be necessary to assess their potential impact by recommencing the assessment at Stage One or Stage Two as appropriate. However, if it can be reasonably and objectively concluded that there is an absence of alternatives, it will be necessary to proceed to Stage Four of this assessment methodology.

1.2.4 Stage 4: Assessment where adverse impacts remain

For sites that host priority habitats and species, it is necessary to consider whether or not there are human health or safety considerations or environmental benefits flowing from the project. If such considerations do exist, then it will be necessary to carry out the Stage Four assessments of compensatory measures. If no such considerations exist, then establish whether there are other imperative reasons of overriding public interest (IROPI) before carrying out the Stage Four assessments. Where IROPI exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the site will be necessary before the project or plan can proceed.

This report is for Stage 1 - Screening for Appropriate Assessment.

2.0 STAGE 1: APPROPRIATE ASSESSMENT SCREENING

The objective of the screening stage is two fold:

- To examine the likely effects of the proposed development upon the Natura 2000 site; and
- To provide an objective assessment of whether or not any of these effects are likely to be significant.

Screening steps are as follows:

- Describe the project;
- Review existing available information on the local ecological environment, including information on the Natura 2000 site);
- Develop and apply appropriate assessment criteria ;
- Prepare Recommendations; and
- Consult with statutory bodies.

2.1 Brief Description of Project / Plan

The existing facility is located in a busy industrial estate located near Mullingar Town, Co. Westmeath. The exact address is Zone A, Mullingar Business Park, Co. Westmeath. A site plan has been included in Appendix A.
The facility is currently licensed by its present waste license W0115-01. Soltec Ireland Ltd. (Soltec) is seeking application of a waste license review, W0115-02.

Soltec distil solvent at its facility in Mullingar through dry distillation. Soltec also accept, store and recover solid hazardous waste such as solvent contaminated PPE. All waste is stored in bunded yards / warehouses. No emission is made to surface water, water from car parks and foul water is sent to Clonmore WWTP for treatment. Bund water is pumped into IBC and sent to an Agency approved waste contractor.

2.1.1 Description of the subject site

The site is bound by industrial buildings to the south, east and west. A train line is located on the northern edge of the site, which is separated from the site by dense scrub and a treeline. The River Brosna is located ca. 100 m to the east of the site. This river flows southwards and enters Lough Ennell ca. 3 km from the subject site. Impacts on this designated area will be analysed in this screening report.

3.0 DESCRIPTION OF THE NATURA 2000 SITE

There are four Natura 2000 sites located in Westmeath which are relevant to this appropriate Assessment Screening. They are Lough Ennell SPA (site code 004044), Lough Ennell SAC (site code 000685), Lough Owel SAC (site code 000688) and Lough Owel SPA (site code 004047). These are shown on Figure 1.

Lough Owel is situated 4 km north of Mullingar and is located in a separate hydrometric area to that of the subject site. Furthermore, annual ground water and bi-annual air emission monitoring have shown no breaches of the limits as set out in Soltec’s waste licence, therefore it is unlikely that Soltec would have an impact on these sites. For these reasons Lough Owel SPA and SAC can be screened out at this time.

3.1.1.1 NPWS Site Synopsis of Lough Ennell SAC (000685)

Lough Ennell is a large, open, steep-sided lake, located 3 km south of Mullingar, Co. Westmeath. The lake bottom is of limestone with a marl deposit. The water is markedly alkaline and mesotrophic, possibly owing to effluents received from Mullingar town and to fertilizer inputs from farmland surrounding the lake. The River Brosna flows into the lake from the north, at Butler's Bridge, and out from the south.

Lough Ennell supports a diverse aquatic flora; seven Stonewort species have been identified including two Red Data Book species, Chara denudata and C. tomentosa. Scharff's Char (Salvelinus scharffi), a distinct race of char which was once found only in Lough Owel and Lough Ennell, is now thought to be extinct. Notable aquatic invertebrates recorded from the lake include Tinodes maculicornis, Metalyne fragilis, Limnephilus nigriceps (Trichoptera); Picromerus bidens, Monarthia humili (Hemiptera) and Donacia obscura (Coleoptera).

Much of the lakeshore is rather dry, stony ground, which was formerly part of the lake bed but is now exposed by drainage, and colonised by calcareous grassland. Species such as Mountain Everlasting (Antennaria dioica), Hairy Lady's-mantle (Alchemilla filicaulis subsp. vestita), Frog Orchid (Coelglossum viride), Fairy Flax (Linum catharticum) and Yellow-wort (Blackstonia perfoliata) occur here. Alkaline fen, a habitat listed on Annex I of the EU Habitats Directive, is also found on the lake shore with species such as Grass-of-parnassus (Parnassia palustris), Marsh Pennywort (Hydrocotyle vulgaris) and Bottle Sedge (Carex rostrata). In wet marshy patches along the shore Marsh-marigold (Caltha palustris), Brookweed (Samolus valerandi) and Lesser Water-plantain (Baldellia ranunculoides) are common.

Reedbeds and species-poor swamp vegetation occasionally fringe the lake, particularly around the points of inflow and outflow and on the eastern shore, around Tudenham Park. Common Reed (Phragmites australis) is abundant here. Waterplantain (Alisma plantago-aquatica), Cowbane (Cicuta virosa), Frogbit (Hydrocharis morsus-ranae) and Tufted Sedge (Carex elata) also occur. The latter two species are of note in that they are of occasional in the eastern midlands but are rarely recorded elsewhere. The rare Fibrous Tussock-sedge (Carex appropinquata) has been recorded here also. This species has a disjunct distribution, being recorded only from Co. Clare and from two midland counties (Westmeath and Offaly).
Mixed woodland of Beech (*Fagus sylvatica*), Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*) fringes the lakeshore to the northwest. Bluebell (*Hyacinthoides non-scripta*) and Lords-and-ladies (*Arum maculatum*) are among the woodland ground flora.

A species of blue-green alga (*Schizothrix fasciculata*), which forms little pebbles of lime that are cast up on the lakeshore, occurs in Lough Ennell and has not been recorded from anywhere else in Ireland.

Yellow Archangel (*Lamiastrum galeobdolon*), a rare plant listed in the Red Data Book, has been recorded in the woods along the eastern shores of Lough Ennell. This is the only record for this species outside the south-east of Ireland. The rare Myxomycete fungus, *Licea castanea*, has been recorded from woodland in the site.

This site shares an internationally important Greenland White-fronted Goose flock with Loughs Iron, Glen and Owel. The numbers of Geese which visit Lough Ennell are lower than for the other lakes: 91 birds (3 year average peak). Nationally important bird populations which have been recorded on Lough Ennell are: Cormorant (average peak 149; absolute maximum 448); Mute Swan (average peak 424); Pochard (average peak 889; maximum 2,600 on 8/11/85); Tufted Duck (average peak 720) and Coot (average peak 639). All of these data were compiled from counts made over 3 seasons, 1984/85 - 1986/87. A single count of 522 Golden Plover was obtained in that period, i.e. a regionally important population.

Lough Ennell is an important amenity area, much used for fishing, boating and camping. Sections of the shoreline are managed for visitor access and amenity. The chemical composition of effluent from the Mullingar sewage treatment plant has a significant impact on the water quality of Lough Ennell. The mid-1970s saw the introduction of treatment of the sewage to reduce phosphates, with a resulting improvement in water quality (according to data compiled during 1987-90). However, levels of planktonic algal growth in the lake water continue to fluctuate, in response to the variable efficiency of the phosphate removal facility at the sewage treatment plant and the re-mobilization of phosphate from the lake sediments.

Lough Ennell is of significance as a highly productive lake which supports a rich variety of lower plant and invertebrate species. Its lakeshore habitats, which include alkaline fen, a habitat listed on Annex I of the EU Habitats Directive, support a diverse flora. These habitats also provide important refuges for wildfowl.

### 3.1.1.2 NPWS Site Synopsis of Lough Ennell SPA (004044)

Lough Ennell is a large, limestone lake. It has a length of approximately 6.5 km along its long axis and is mostly ca. 2 km wide. The River Brosna is the principal inflowing and outflowing river. It is a relatively shallow lake, with a maximum depth of ca. 30 m. The water is hard, with low colour and markedly alkaline pH. The lake is classified as a mesotrophic system though it has been eutrophic in the past. The lake bottom is of limestone with a marl deposit.

Lough Ennell supports a diverse aquatic flora, with a particularly well-developed charophyte flora, including two Red Data Book species, *Chara denuidata* and *C. tomentosa*. Reeds beds and species-poor swamp vegetation fringe part of the lake, particularly around the points of inflow and outflow and on the eastern shore, around Tudenhamp Park, where Common Reed (*Phragmites australis*) is abundant. Waterplantain (*Alisma plantago-aquatica*), Cowbane (*Cicuta virosa*), Frogbit (*Hydrocharis morsus-ranae*) and Tufted Sedge (*Carex elata*) also occur. Much of the lakeshore is rather dry, stony ground, which was formerly part of the lake bed but is now exposed by drainage, and colonised by calcareous grassland. Alkaline fen also occurs on the lake shore. There are several islands within the lake. Lough Ennell is an important Trout fishery.

Lough Ennell is one of the most important Midland lakes for wintering waterfowl, with nationally important populations of Mute Swan (340), Pochard (738), Tufted Duck (1,303) and Coot (433) - all figures are average peaks for the 5 seasons 1995/96- 1999/00. The population of Tufted Duck represents over 3% of the national total. At times, the lake is utilised as a roost (with limited feeding) by the internationally important Midland lakes population of Greenland White-fronted Goose (ca. 400 strong). The site also attracts Golden Plover (200) and Lapwing (673) though these feed mainly outside of the site, as well as Little Grebe (30), Mallard (93), Great Crested Grebe (24) and Goldeneye (22).
Lough Ennell is very vulnerable to pollution from agricultural and domestic sources though water quality has been satisfactory in recent years. A deterioration in water quality could affect bird populations (as shown by marked fluctuations in some populations in the past). It is an important amenity area, much used for fishing, boating and camping. Parts of the shoreline are managed for visitor access and amenity. Increases in such recreational activities could cause disturbance to the birds. Lough Ennell is of ornithological significance for wintering waterfowl, with four species having populations of national importance. The occurrence of a further two species in the vicinity of the lake, Greenland White-fronted Goose and Golden Plover, is of particular note as these are listed on Annex I of the E.U. Birds Directive.

4.0 RIVER BROSNA

The River Brosna flows adjacent to the subject site and occurs in the water catchment of the Lough Ennell SAC/SPA. The River Brosna flows ca. 3 km prior to reaching the Lough Ennell SAC/SPA just south of Mullingar. Given the close proximity of the River Brosna to the subject site (ca. 100 m) any discharges to surface waters must be examined and mitigations measures put in place. However, Soltec do not emit to surface/ground water therefore adverse effects from production or increased production are not anticipated. Furthermore air emissions measured on site are below the thresholds set by the EPA, as a result it is unlikely that air emissions would have a significant effect on the River Brosna. The foremost potential impact from Soltec upon the Lough Ennell SAC/SPA are considered to be accidental spillages, these are examined in further detail in this report.

4.1 Water Quality

The River Brosna is located in the Inny Water Management Unit. Water quality upstream of Mullingar is rated as both Q3-4 - Moderate Status (Sampling location 1.1 km downstream of Lough Owel) and Q2-3, Q3 - Poor Status (all sites from 1.5 km downstream of Lough Owel to Lough Ennell).
4.2 Assessment Criteria

4.2.1 Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site

Elements of the development that are likely to give rise to impacts on the Natura 2000 site include the following:

<table>
<thead>
<tr>
<th>Relevant elements of the plan</th>
<th>Possible impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operation</strong></td>
<td></td>
</tr>
<tr>
<td>Accidental spillages at the facility, (which may result from fires, human error and disrepair of facility infrastructure)</td>
<td>If not managed correctly, chemicals stored and processed on site could infiltrate into ground water under the site and/or migrate off site via surface water adjacent to the site. These pathways have the potential to impact the biotic quality and overall integrity of Lough Ennell SPA/SAC.</td>
</tr>
</tbody>
</table>

4.2.2 Cumulative impacts

The site is located in a commercial industrial estate. As Soltec do not emit emissions to surface waters, combination effect does not apply to this site. In accordance with the current waste licence Soltec carry out monitoring of ground water and atmospheric emissions at their site, further details are contained in Section 4.2.3. As appropriate procedures and measures for accidental spillages are in place, this will ensure that no cumulative impacts are caused.

4.2.3 Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:

<table>
<thead>
<tr>
<th>Size and scale</th>
<th>The development is an existing solvent distillery. The current licenced activities are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Class 1.</strong> Solvent reclamation or regeneration:</td>
</tr>
<tr>
<td></td>
<td>This activity is limited to the distillation of waste solvents.</td>
</tr>
<tr>
<td></td>
<td><strong>Class 13.</strong> Storage of waste:</td>
</tr>
<tr>
<td></td>
<td>This activity is limited to the storage, pending recovery, of waste solvents and other wastes arising from the waste solvent distillation process.</td>
</tr>
<tr>
<td>Land-take</td>
<td>None, as this is an existing facility.</td>
</tr>
<tr>
<td>Distance from Natura 2000 site or key features of the site</td>
<td>The subject site is ca. 3 km upstream of the Natura 2000 site Lough Ennell SAC (Site Code:000685) and Lough Enell SPA (Site Code:004044). Intervening lands comprise houses, roads and agricultural lands.</td>
</tr>
<tr>
<td>Resource requirements (water abstraction etc.)</td>
<td>There is no abstraction from ground water. The facility is connected to Mullingar mains water supply.</td>
</tr>
</tbody>
</table>
Onsite measures – accidental spillages

The main emergency risks associated with Soltec operations are fire and chemical spills. Soltec’s EMS SOP (Environmental Management System – Standard Operating Procedure) outlines emergency procedures that must be followed when dealing with any potential emergency situation such as fire, chemical spill, explosion, equipment failure and bomb threat. Soltec has classified various accidental events which require emergency response procedures to prevent contamination.

- Minor Spillages < 25L;
- Major Spillages > 25L in Bunded areas;
- Major Spillages > 25L in Unbunded areas;
- Fire and/or Explosion; and
- Emissions.

Once these procedures and measures are followed it is unlikely that there will be impacts to Lough Ennell SAC/SPA. Soltec’s EMS SOP has been included in Appendix B of this screening.

In the event of a fire occurring within the facility bunds have been designed to store fire water. Further details of the bundings fire retention capacity can be found within Appendix C.

Onsite measures – bunding and chemical storage

All hazardous chemicals stored onsite are located in bunded units. Soltec have taken the necessary precautions to ensure these storage facilities do not impact groundwater and adjacent surface water which lead to Lough Ennell SPA/SAC. The bunding under the storage facilities has been designed and constructed to BS8007: Code of practice for the design of concrete structures for retaining aqueous liquid. The construction materials have also been chosen as specified in the same standard. Specifications of the bunding have been included in Appendix C.

All bunding on site undergoes regular inspection and maintenance, should it be required. Breaches of the bunding structure should be immediately amended to the recognised standard. Details of inspecting the bunds are contained in the standard (BS8007: Section 9-Inspection and testing of structure). Soltec carry out a stepped approach to inspecting the bunds.
Emissions (disposal to land, water or air), continued

Onsite monitoring – groundwater and air
Soltec carry out ground water (annual) and air monitoring (bi-annual) at their facility in accordance with their current waste licence, a map of these locations has been included in Appendix D.

Ground water monitoring has shown no detectable VOCs or Semi-VOCs in the samples. Additionally, air monitoring has shown all atmospheric emissions to be tested for (TOC and TA Luft Class 1) were below the prescribed limits of the waste licence. Any increases in production will also require continued monitoring but subsequent upon the Lough Ennell SAC/SPA are unlikely given Soltec’s previous compliance.

Run off from hard-standing areas
Runoff from car parks, hard standing areas and foul water from the facility are sent to Clonmore WWTP for treatment.

Excavation requirements
None required as this is an existing structure

Transportation requirements
It is unlikely that the volume of transportation at the facility will affect Lough Ennell SAC/SPA

Duration of construction, operation, decommissioning etc.
This is a permanent facility.

Other
None.

4.2.4 Describe any likely changes to the site arising as a result of:

<table>
<thead>
<tr>
<th>Reduction of habitat area</th>
<th>None, as this is an existing facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbance to key species</td>
<td>Disturbance to key species is very unlikely due to the distance from Lough Ennell SPA/SAC.</td>
</tr>
<tr>
<td>Habitat or species fragmentation</td>
<td>There will be no habitat or species fragmentation due to the development, as this development is located in an urban area in an existing urban park.</td>
</tr>
<tr>
<td>Reduction in species density</td>
<td>No reduction in species density is anticipated. The subject site is located outside of the SAC.</td>
</tr>
<tr>
<td>Changes in key indicators of conservation value (water quality etc.)</td>
<td>Permanent Effects on water quality are not anticipated as appropriate measures are incorporated into the design of the facility. Runoff from hard standing surfaces is unlikely to affect aquatic SAC habitats as it is sent to Clonmore WWTP for treatment</td>
</tr>
<tr>
<td>Climate change</td>
<td>None likely.</td>
</tr>
</tbody>
</table>
4.2.5 Describe any likely impacts on the Natura 2000 site as a whole in terms of:

<table>
<thead>
<tr>
<th>Interference with the key relationships that define the structure of the site:</th>
<th>No impacts are likely.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interference with key relationships that define the function of the site</td>
<td>The maintenance of good water quality is important for the function of the SAC. Indirect effects such as silt runoff into the stream or discharges are not anticipated; this is mitigated through proper site management and the disposal of surface water at an appropriate WWTP.</td>
</tr>
</tbody>
</table>

4.2.6 Provide indicators of significance as a result of the identification of effects set out above in terms of:

<table>
<thead>
<tr>
<th>Loss (Estimated percentage of lost area of habitat)</th>
<th>There will be no habitat loss.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragmentation</td>
<td>There will be no habitat fragmentation.</td>
</tr>
<tr>
<td>Disruption and disturbance</td>
<td>Disturbance and disruption to species is unlikely.</td>
</tr>
<tr>
<td>Change to key elements of the site (e.g. water quality etc.)</td>
<td>Changes in water quality are unlikely.</td>
</tr>
</tbody>
</table>

4.2.7 Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is unknown

No significant adverse impacts on the Natura 2000 site as a result of this facility are anticipated. The foremost risk at the site to the Lough Ennell SAC/SPA are accidental chemical spills. If the protocols in Soltec’s SOP are adhered to and on site bunding is maintained correctly it is unlikely that the facility will have an impact on Lough Ennell SAC/SPA. Furthermore, as noted earlier, cumulative impacts with the existing developments in the area are not anticipated should these procedures and measures be adhered to.

5.0 DATA COLLECTED TO CARRY OUT THE ASSESSMENT

The assessment was carried out by:

Kevin McGillycuddy BA (Mod), MSc – Environmental Scientist Golder Associates Ireland

Reviewed by:

Anne Murray BSc., MIEEM – Senior Ecologist Golder Associates Ireland

Sources of Data:

Existing information from NPWS, GSI and EPA.

Level of assessment completed:
Desktop study and Screening report.

REFERENCES


European Communities (2001). Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC.


Websites

National Parks and Wildlife Service Mapviewer: http://webgis.npws.ie/npwsviewer/


EPA Envision Environmental Data Mapviewer: http://maps.epa.ie/InternetMapViewer/mapviewer.aspx

Water Framework Directive Water Maps:
http://watermaps.wfdireland.ie/NsShare_Web/Viewer.aspx?Site=NsShare&ReloadKey=True
Report Signature Page

GOLDER ASSOCIATES IRELAND LIMITED

Kevin McGillycuddy
Environmental Scientist

Anne Murray
Senior Ecologist

KMG/AM/aw

Registered in Ireland Registration No. 297875
Town Centre House, Dublin Road, Naas, Co. Kildare, Ireland
Directors: M. Gilligan, A. Harris (British)
VAT No.: 8297875W
APPENDIX A

Site Plan
APPENDIX B
Soltec (Ireland) Ltd. EMS SOP
16.1 Purpose
To identify the control measures to be taken in the event of an accident or emergency occurring in relation to the product or process.

16.2 Scope

The main emergency risks associated with Soltec operations are fire and chemical spills. This emergency plan outlines the emergency procedure that should be followed when dealing with any potential emergency situation such as fire, chemical spill, explosion, equipment failure, bomb threat etc.

1.3 This emergency plan applies to both Soltec & Cortec

<table>
<thead>
<tr>
<th>This procedure outlines controls in relation to</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Spillages &lt; 25L Classed as Category 3</td>
<td>4</td>
</tr>
<tr>
<td>Major Spillages &gt; 25L in Bunded areas Classed as Category 2</td>
<td>5</td>
</tr>
<tr>
<td>Major Spillages &gt; 25L in Unbunded areas Classed as Category 2</td>
<td>6</td>
</tr>
<tr>
<td>Fire and/ or Explosion Classed as Category 1</td>
<td>9</td>
</tr>
<tr>
<td>Emissions Classed as Category 2</td>
<td>14</td>
</tr>
<tr>
<td>Emergency Telephone Numbers</td>
<td>15</td>
</tr>
<tr>
<td>Exit Map</td>
<td>17</td>
</tr>
</tbody>
</table>

3.0 Responsibilities & Related Duties

The following section outlines the responsibilities and duties of all Soltec personnel charged with implementing and maintaining the emergency plan.

The Incident controller is the M.D. Michael Corcoran and in his absents David Corcoran HSE

3.1 Managing Director or Designate

The Managing Director assumes overall control in an emergency situation, providing overall direction and support to those responsible for the operations throughout the plan. In the absence of the Managing Director the HSE Manager assumes overall control / management of the emergency.
The MD ensures that

- Adequate financial and manpower resources are available to prepare for and carry out emergency duties.
- All external enquiries from interested parties are responded to in connection with an emergency situation.
- Full control of operations is taken during an emergency by the all staff concerned incident controller.

3.2 Health & Safety Advisor (David Corcoran)

The Health and Safety Advisor assumes responsibility for

- Formulating, reviewing and updating the emergency plan in conjunction with relevant management personnel.
- Monitoring the effectiveness of the plan through periodic drills held at least once a year.
- Informing local emergency response teams of the details of the emergency plan.
- Overseeing all emergency responses (if present).
- Providing and updating necessary SDS information for all chemicals handled on site.
- Checking and maintaining the entire necessary emergency supplies and equipment.
- Providing/organising training for personnel with responsibilities as outlined in this emergency plan.
- Provide and maintain up to date roll calls for an emergency.
- Organise a minimum of 1 evacuation/emergency drills per annum
- In the absence of the Director, taking full control of operations in an emergency in the role of plant incident controller (if present).

3.3 Area Managers/Supervisors/Foremen/ Production Engineer

- Checking that staff are sufficiently trained/briefed to follow the emergency procedures as outlined in this emergency plan.
- Indicating any required modifications/additions to the emergency plan to the Health and Safety Advisor, or Director on an on going basis
- Providing up to date engineering information to help with the maintenance. Development of this emergency plan.
- In the absence of the Managing Director, taking full control of operations in an emergency in the role of plant incident controller.

4 Soltec Personnel

- Notifying their supervisor, manager or Director as appropriate on leaving or returning to the plant inside normal working hours.
<table>
<thead>
<tr>
<th>Section Name</th>
<th>Section No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Preparedness &amp; Response</td>
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</tr>
</tbody>
</table>

- Inform a responsible person assigned to their own assembly point of any visitors to the premises so that they can be accounted for in the event of an emergency occurring.
4.0 EMERGENCY RESPONSE PROCEDURES

4.1 The following section outlines the emergency response procedure and individual responsibilities.

4.1.1 Minor Spills – Category 3

All products are offloaded stored and processed in bunded areas.

A minor spill is deemed to be one of less than 25Litres

- All staff in the area must make sure they are wearing their Personal Protective Equipment as defined on page 12 of this procedure.

- Staff will take the spill kit and choose one or all of the following
  - Containment Booms
  - Sandbags
  - Absorbent material
  - Wiping Cloths

- Place the containment booms or Sand bags around spill.

- Place absorbent material / sand on the spill

- Shovel the contaminated waste into an open top barrel for disposal.

- Seal the containers of waste

- Identify / label the containers with an accurate description of content

- Store waste containers in a bunded area.

- Arrange for shipment to the incineration plant

- Accompany the load with the Trans Frontier Shipment (TFS) Document

- Details recorded and appropriate corrective action taken

- An incident report forwarded to EPA by Telephone and by Fax and recorded as a non-urgent environmental accident.

Epa – Condition 9.4.1

4.2 Major Spills (one involving in excess of 25L of product) Category 2
4.2.1 Bunded Area

- All staff in the area must wear the Personal Protective Equipment
- Where possible isolate the source of the leak e.g. turn off tanker flow, Identify containers affected.
- Pump waste into suitable containers
- Store the recovered spill in a bunded area
- Re-process the material in the normal way
- Record the incident including
  
  | Date / Time Place | Reference whether in a bunded area |
  | Use RS 13.2 to record the incident | Reason for problem |
  | Immediate action taken | Investigation the cause |
  | Corrective action must be confirmed and authorized on completion |

EPA – **Condition 9.1**

In the event of an incident occurring the following steps must be taken immediately:

a) Identify the date time and place of the incident,

b) Carry out an immediate investigation to identify the nature, source and cause of the incident and any emissions arising

c) Isolate the source of any such emission,

d) Evaluate the environmental pollution, if any, caused by the incident

e) identify and implement measures to minimise the emissions or the effects on the environment

**EPA Condition 11.2**

a) The incident must be reported to the EPA as soon as is practicable and in any case not later than 10 am on the morning after the incident.

b) Submit a written record of the incident including all aspects described in condition 9.1 (a-e) to the agency as soon as practicable and in any case within five working days after the occurrence of any incident.

c) In the event of any incident which relates to discharges to surface/sewer water notify Westmeath County Council as soon as is practicable and in any case not later than 10 am on the following working day after such an incident.

d) Should any further actions be taken as a result of an incident occurring the licensee shall forward a written report of those actions to the agency as soon as practicable and no later than ten days after the initiation of those actions.
4.2.2 Major Spill in an unbunded area - Category 2

- All staff in the area must wear the Personal Protective Equipment
- Block all drains
- Where possible isolate the source of the leak e.g. turn off tanker flow, Identify containers affected.
- Move the container to a bunded area if possible
- Where possible isolate the source of the leak e.g. turn off tanker flow, Identify containers affected.
- Pump waste into suitable containers
- Store the recovered spill in a bunded area
- Re-process the material in the normal way
- Record the incident including
- Inform Local Authorities
  - Guards
  - Council
  - Fire Brigade
- Provide preliminary information to the emergency services including the fire register and:
  - Product in process
  - Site map
  - Plant layout
  - Material safety data sheets

Epa – Condition 9.1
In the event of an incident occurring the following steps must be taken immediately:

a) Identify the date time and place of the incident,

b) Carry out an immediate investigation to identify the nature, source and cause of the incident and any emissions arising

c) Isolate the source of any such emission,

d) Evaluate the environmental pollution, if any, caused by the incident

e) Identify and implement measures to minimise the emissions or the effects on The environment.
Condition 11.2

- The incident must be reported to the EPA before 10 am on the morning after the incident.
- Within one month of the incident Soltec must provide the EPA with a proposal for corrective action and remedial action taken
- Investigate the cause of the incident
- Record the findings on RS 13.2 Incident record. This report should be supported by back up detailed records if necessary.

Notification to the public

- The public file must be updated and made available for viewing by interested parties
<table>
<thead>
<tr>
<th>Section Name</th>
<th>Section No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Preparedness &amp; Response</td>
<td>SOP 9A.16(EMS 4.4.7)</td>
</tr>
</tbody>
</table>
4.2.3 Major Fire- Category 1

On discovering an emergency situation the finder should;

- Raise the alarm by breaking a glass unit, which is situated in the production areas, bulk tanker load area, offices and hall ways.
- Turn off the power supply in the control room if appropriate and safe to do so
- Inform reception and attempt to tackle the emergency with the available emergency equipment, e.g. fire extinguishers, if trained to do so.
- If the finder considers the emergency to be beyond control, to leave immediately by the nearest fire exit and proceed to the designated assembly point at the front of the building.
- Immediately inform reception of the location/nature of the emergency and services required.

Reception

- Return to reception if absent and remain there for the duration of the emergency, unless otherwise instructed by the plant incident controller
- Await instructions from the plant incident controller or his designate. If evidence of a serious emergency exists, dial 999 or 112 immediately and give whatever information that is available.
- Keep telephone lines clear for emergency calls
- Take roll call for visitors/representatives and inform the Chief warden of the headcount status.
- On the instructions of the plant incident controller, inform personnel to leave the site.
- Prevent incoming traffic except for outside emergency services/call in personnel.
- Direct outside emergency services to site of emergency on arrival

Epa – Condition 9.1

In the event of an incident occurring the following steps must be taken immediately:

a) Identify the date time and place of the incident,

b) Carry out an immediate investigation to identify the nature, source and cause of the incident and any emissions arising

c) Isolate the source of any such emission,

d) Evaluate the environmental pollution, if any, caused by the incident
e) identify and implement measures to minimise the emissions or the effects on the environment

**EPA – Condition 11.2**
- The incident must be reported to the EPA before 10 am on the morning after the incident.
- Within one month of the incident Soltec must provide the EPA with a proposal for corrective action and remedial action taken
- Investigate the cause of the incident
- Record the findings on RS 13.2 Incident record, this report should be supported by back up detailed records if necessary.

**EPA – Condition 11.2c**
- Where there is a discharge to surface water or sewer water this must be reported to Westmeath County Council before 10 am on the day following the incident

**Notification to the public**
- The public file must be updated and made available for viewing by interested parties
Soltec Ltd
Quality Management System SOP’s
Environmental Management System SOP’s (EMS)

Section Name: Emergency Preparedness & Response
Section No: SOP 9A.16 (EMS 4.4.7)

Plant Incident controller

The role of the plant incident controller shall be assumed by the Director or HSE manager, production manager / shift foreman in his absence. On hearing the alarm they should:

- Proceed directly to the emergency location.
- Liase with reception.
- Give instructions to contact outside emergency services, as required, providing information on the nature of the emergency.
- Give instructions to have all personnel removed off site depending on the nature of the emergency.
- Give the all clear when the incident is over.
- Liase with fire wardens.
- Receive information on any missing personnel.
- Instruct first aiders to proceed to the site of the emergency.
- Instruct personnel to move off site depending on the nature of the emergency.
- To initiate a search and rescue for the missing personnel, if deemed safe to do so.
- Hand over control of the emergency to outside emergency services on their arrival and provide any information/assistance as required.
- Provide preliminary information to the emergency services including
  - Product in process
  - Site map
  - Plant layout
  - Material safety data sheets

Note the Emergency Services will coordinate informing neighbouring facilities and the public during the incident.

All staff must cooperate with the requirements of the emergency services

Managers/Supervisors/Foreman

On hearing the alarm they should:

- Order immediate evacuation, checking that all equipment is shut down safely.
- Search designated area for stragglers/trapped persons and close all doors on leaving.
- Take appropriate action to confirm the emergency pending the arrival of outside emergency services.
Soltec Ltd
Quality Management System SOP’s
Environmental Management System SOP’s (EMS)

<table>
<thead>
<tr>
<th>Section Name</th>
<th>Section No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Preparedness &amp; Response</td>
<td>SOP 9A.16</td>
</tr>
</tbody>
</table>

**Safety Manager (David Corcoran)**

On hearing the alarm they should;
- Leave immediately via the nearest available exit, proceed to the nearest assembly point and take a roll call.
- The safety officer should then relay the headcount status to the plant incident controller.
- Lead personnel off site if instructed to do so by the plant incident controller.
- Instruct personnel to remain at the assembly point until all clear is given by the plant incident controller.

**First Aiders (David Corcoran)**

On hearing the alarm they should;
- Leave immediately via the nearest available exit and proceed to the nearest assembly point.
- Proceed to the emergency site if requested to do so by the Incident Controller and assist any persons in need of first aid. Otherwise remain at the assembly point until further notice by the fire warden.

**Employees/Contractors/Temporary Staff**

- Leave immediately via the nearest available exit and proceed to the nearest assembly point.

**Visitors / Representatives**

On hearing the alarm sound should;

- Leave immediately via the nearest available exit and proceed to the nearest assembly point.

**Epa – Condition 9.1**

In the event of an incident occurring the following steps must be taken immediately:
- a) Identify the date time and place of the incident,
### Emergency Preparedness & Response

<table>
<thead>
<tr>
<th>Section Name</th>
<th>Section No</th>
</tr>
</thead>
<tbody>
<tr>
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<td>SOP 9A.16(EMS 4.4.7)</td>
</tr>
<tr>
<td>Environmental Management System SOP’s (EMS)</td>
<td></td>
</tr>
</tbody>
</table>

- **f)** Carry out an immediate investigation to identify the nature, source and cause of the incident and any emissions arising

- **g)** Isolate the source of any such emission,

- **h)** Evaluate the environmental pollution, if any, caused by the incident

- **i)** Identify and implement measures to minimise the emissions or the effects on the environment

**epa – **Condition 11.2**

- The incident must be reported to the epa before 10 am on the morning after the incident.
- Within one month of the incident Soltec must provide the epa with a proposal for corrective action and remedial action taken
- Investigate the cause of the incident
- Record the findings on RS 13.2 Incident record, This report should be supported by back up detailed records if necessary.

**Notification to the public**

- The public file must be updated and made available for viewing by interested parties
Emissions

In the event of significant emissions i.e. through equipment leak / damage to bulk containers the following controls are taken.

- Staff must immediately evacuate the building
- Isolate power in the control room if possible and if safe to do so
- Inform the Management for assistance
- If necessary contact pollution control company Rilta (Eamon 087/9876252)
- Rilta will send down a specialised pollution control crew.
- And/or
- Where an emission happens as a result of explosion the incident controller must inform reception.
- Reception will then inform the emergency services.
- All staff must cooperate with the requirements of the emergency services
- Provide preliminary information to the emergency services including
  - Product in process
  - Site map
  - Plant layout
  - Material safety data sheets

Notification to the public

- The public file must be updated and made available for viewing by interested parties
## Emergency Telephone Numbers

<table>
<thead>
<tr>
<th>Service</th>
<th>Contact Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Brigade</td>
<td>999/112</td>
</tr>
<tr>
<td>Ambulance</td>
<td>999/112</td>
</tr>
<tr>
<td>Doctor Liam D’Alton</td>
<td>044/9341987</td>
</tr>
<tr>
<td><strong>Chemical Spillages over 25 Litres</strong></td>
<td></td>
</tr>
<tr>
<td>Westmeath Co Council</td>
<td>044/9332000</td>
</tr>
<tr>
<td>EPA Mayo</td>
<td>094/9048400 or 094/9048440</td>
</tr>
<tr>
<td>EPA Inspector John Gibbons</td>
<td>094/9048445 or 087/6182050</td>
</tr>
<tr>
<td>Sita Environmental</td>
<td>01/8365018</td>
</tr>
<tr>
<td><strong>Plant Break Down</strong></td>
<td></td>
</tr>
<tr>
<td>Plumber- Darren/ Morris Nea</td>
<td>087/9148274 – 086/2577004</td>
</tr>
<tr>
<td>Electrician - Joe Gilhooley</td>
<td>087/6779234</td>
</tr>
<tr>
<td>E.S.B.</td>
<td>044/9335535</td>
</tr>
<tr>
<td>Chiller European Industrial Chiller</td>
<td>01/8255155</td>
</tr>
<tr>
<td>Pump Seal – Noone Engineering</td>
<td>045/524469</td>
</tr>
<tr>
<td>Electrician - Seamus Clarke</td>
<td>087/2521702</td>
</tr>
<tr>
<td>Alarm Systems- Keepsafe</td>
<td>Peter 087/6598431</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td></td>
</tr>
<tr>
<td>CCTV – Netwatch</td>
<td>059/9139698</td>
</tr>
<tr>
<td>Lakeland Security</td>
<td>087/6809381</td>
</tr>
<tr>
<td><strong>Soltec Staff</strong></td>
<td></td>
</tr>
<tr>
<td>Michael Corcoran MD</td>
<td>086/2687111 or 044/9343614</td>
</tr>
<tr>
<td>David Corcoran</td>
<td>085/1176414</td>
</tr>
<tr>
<td>Paddy O Keeffe</td>
<td>087/2579323</td>
</tr>
<tr>
<td>Martin Wilson</td>
<td>087/1925977</td>
</tr>
<tr>
<td>Kevin Sheilds</td>
<td></td>
</tr>
</tbody>
</table>
Personal Protection/Equipment

1 Hard hats
3 Goggles
4 Safety glasses
5 Gloves
6 Chemical Suit
8 Overalls

Fire fighting equipment

1 Portable fire extinguisher
2 Fire Blanks

Spillage Kits
Spillage kits are strategically located throughout the site and include:

<table>
<thead>
<tr>
<th>Item</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorbent material</td>
<td>2 Kg</td>
</tr>
<tr>
<td>Containment booms/sand bags</td>
<td>3 Metres</td>
</tr>
<tr>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>Wiping cloths</td>
<td></td>
</tr>
<tr>
<td>SDS sheets for all applicable Chemical / Solvent</td>
<td></td>
</tr>
</tbody>
</table>

First Aid Equipment

1 Eye wash units-
2 First aid boxes – Located in the Production area, Lab and Bulk tanker unloading area

Reference
Material Safety Data Sheets
Site map
Plant Layout

Records

RS 13.2 Incident report / Corrective action
<table>
<thead>
<tr>
<th>Section Name</th>
<th>Section No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Preparedness &amp; Response</td>
<td>SOP 9A.16 (EMS 4.4.7)</td>
</tr>
</tbody>
</table>
APPENDIX C
Risk Methodology Statement
Risk Assessment Methodology Statement
Soltec Bund
Mullingar
Co.Westmeath

April 2\textsuperscript{nd} 2012

<table>
<thead>
<tr>
<th>Client</th>
<th>Revision</th>
<th>Date</th>
<th>Compiled</th>
<th>Checked</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soltec Ltd</td>
<td>A</td>
<td>02/04/2012</td>
<td>MOC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clonmore Industrial Estate</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mullingar</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Co.Westmeath</td>
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</tbody>
</table>
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Overview

This following risk assessment methodology in derived from EPA Guidance Note: Storage and Transfer of materials for scheduled materials. The flow chart below sets out each step.
1 General requirements for facilities

For all facilities it is necessary to complete a risk assessment to determine the risk of pollution associated with a facility. In addition the following general requirements apply in so far as they are not altered by other sections of this guidance note:

(1) Facilities must be designed, installed, operated and maintained in such a manner that potentially polluting substances do not escape to the surrounding environment. Plant components must be sealed and sufficiently secure from expected mechanical, thermal and chemical effects.
(2) A loss of containment of any potentially polluting substances must be quickly and reliably detected.
(3) Potentially polluting substances that escape must be quickly and reliably retained and appropriately recycled or managed. As a general rule with polluting substances, the facility should be equipped with a sealed and reliable bund if it is not already equipped with double walled construction and leak detection.
(4) In the case of an accident, material that is contaminated with the escaping polluting substances must be retained and appropriately recycled or managed.
(5) Operating personnel must be adequately trained in handling potentially polluting substances and the appropriate emergency response procedures. This training should be repeated at regular intervals.
(6) With approval of the EPA, in individual cases, equivalent regulations of other EU member states may be considered for the requirements in this guidance note.
(7) Deviations from the threshold values given in this guidance note can be agreed with the EPA in individual cases provided justification of an equivalent level of environmental protection is provided.
(8) All facilities should be operated in compliance with the Safety, Health and Welfare at Work Act of 1989 and associated regulations. In the event of a loss of primary containment the secondary containment should provide adequate protection for employees and the general public in the vicinity of the site.

2 Phase one of risk assessment

2.1 Nature and Property of material on site

- Ethylacet
- Isopropyl Alcohol
- Methanol
- Toulene
- 2/3 Xylene

2.2 Quantity of material on site

The quantity of material to be stored in the new bunded area will be a maximum of 154,000lt
3 General Assessment Criteria

3.1 Determine Water Hazard Classification

- Water hazard classification is derived from a WGK rating which was created by the German Environment Agency – Umweltbundesamt.
- Material contained in Annex 2 of the above mentioned document gives a WHC (Water hazard classification) of WHC 2

3.2 Determine Hazard Category

Hazard category determined from table below found in the EPA Guidance Note.

<table>
<thead>
<tr>
<th>Volume in m³ or mass in t</th>
<th>Hazard Categorisation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WHC 1</td>
</tr>
<tr>
<td>≤ 0.1</td>
<td>Category A</td>
</tr>
<tr>
<td>&gt; 0.1 ≤ 1</td>
<td>Category A</td>
</tr>
<tr>
<td>&gt; 1 ≤ 10</td>
<td>Category A</td>
</tr>
<tr>
<td>&gt; 10 ≤ 100</td>
<td>Category A</td>
</tr>
<tr>
<td>&gt; 100 ≤ 1,000</td>
<td>Category B</td>
</tr>
<tr>
<td>&gt; 1,000</td>
<td>Category C</td>
</tr>
</tbody>
</table>

In general, the following criteria apply to the categories defined above:
- Category A – Low hazard facility.
- Category B – Moderate hazard facility
- Category C and D – High hazard facility

Particular consideration needs to be given in relation to sensitive environmental receptors in the cases of overground facilities of category D and underground facilities of categories C and D. This can be addressed by completing a full risk assessment as outlined previously.

The facilities volume is 154m³ and water hazard classification (WHC) is 2. Therefore using the table above the Soltec bund is a Category D (High Hazard facility).
4 Retention Requirements

All material on site will be stored over ground. To determine if retention is required, the following table is used.

Table 5.4: Retention Requirements for Overground Facilities

<table>
<thead>
<tr>
<th>Volume in m³</th>
<th>Water Hazard Class (WHC)</th>
<th>Non-hazardous to waters</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 0.1</td>
<td>Retention not required</td>
<td>Retention not required</td>
<td>Retention not required</td>
<td>Retention not required</td>
<td></td>
</tr>
<tr>
<td>&gt; 0.1 ≤ 1</td>
<td>Retention not required</td>
<td>Retention not required</td>
<td>Retention required</td>
<td>Retention required</td>
<td></td>
</tr>
<tr>
<td>&gt; 1</td>
<td>Retention not required (Note 1)</td>
<td>Retention required</td>
<td>Retention required</td>
<td>Retention required</td>
<td></td>
</tr>
</tbody>
</table>

Volume is greater than 1m³ and WHC of 2, therefore RETENTION REQUIRED

When retention is required, the following capacity is to be provided to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area.
- 25% of total volume of substance which could be stored in the bunded area.

Largest Tank: 27,000lt >>> 110% = 29,700lt

Total Volume: 154,000lt >>> 25% = 38,500lt

5 Risk Assessment Phase 2

Environmental risk is a combination of the likelihood of the event occurring (in this case the probability of potentially polluting substances being discharged to the environment) and the consequence of the event on the environment, i.e. damage to the environment. It is assessed using the source – pathway – receptor method.

The phase 2 assessment has been already completed using the above mention source – pathway – receptor method.
6 Design and operation of retention facilities

To assess the specification of the bund; the flow chart below has been used.

Start

Design to a Recognised Engineering Standard (Section 6.3.1)

Determine Classification of Containment System Required (Class 1, 2, or 3) (based on Risk Assessment) (Section 6.3.2)

Select System Options (Local, Remote, or Combined) (Section 6.3.3)

General Design Requirements (Section 6.3.5)

Select suitable Material of Construction (Section 6.3.6)

Specific Design details for Reinforced Concrete, Reinforced Masonry and P weekends Bunds (Section 6.3.7)

Consider Spill/Draining Flow (Section 6.3.8)

Operation of Bunds (Section 6.4)

Maintenance of Bunds (Section 6.6)

Inspection and Testing of Bund Structure (Section 6.6)

End
6.1 Designed to recognised standard

The bund will be designed and constructed to BS8007: Code of practice for the design of concrete structures for retaining aqueous liquid.

6.2 Determine classification of containment system required.

From the risk assessment complied earlier, it was determined that the Soltec site is classed as a “High Hazard Facility”. High hazard facilities are design to Class 3 Containment System standards.

The quality of design and construction will be as Class 2 but with the addition of:

- Additional redundancies built into the concept design. For example the ability of the system to provide some measure of protection in the event that the release of material exceeds (either in volume terms or rate) that assumed in the design, e.g. fire water run-off. Alternatively, a local bund where there is no possibility of a prolonged fire leading to volumes of fire water exceeding the volume of the bund.

- Duplication of systems and key components where necessary to provide a fail-safe overall system, e.g. duty / standby transfer pumps for remote systems.

- Alarms and monitoring equipment, e.g. where an area is not permanently manned, bunds should be equipped with alarms at low level to indicate the need for emptying before containment capacity is reduced and at high level to warn of overtopping.

**Class 2 Containments system is defined as:**

Additional redundancies built into the concept design, e.g. for a remote system a gravity operated system or a pumped overground system designed so that there is no possibility of the local catchment overflowing.

- Full soil report with test results.

- Full site survey, above and below ground, with all hazards identified.

- Full drain survey and test results.

- Any enhanced standards, e.g. water retaining structures (BS 8007) and quality standards (I.S. EN ISO 9000).

- Higher safety factors.

- Construction; rigorous control, full supervision and certification of operatives.

- Subsidence control.

- Materials testing, including certification where appropriate.
6.3 Containment System Options

The bund will be a “Local” bund. Bunds provide a second container around the primary container (which may be, for example, a tank or an area in which bulk chemicals are stored), designed to prevent the spread of any material that may escape from the primary containment. They contain the material at source, hence the term local containment.

6.4 General Design Requirements (as per guidance notes)

The sealed surface providing the retention must be impermeable to the liquid being retained. This applies also to any connecting elements, such as pipes, penetrating the structure, the sealing of which must provide the same level of retention as the bund itself. The EPA inspector may require that piping systems penetrating bunds are relocated to eliminate the potential for loss of sealing at piping / bund interfaces.

There must be no adverse chemical reaction that could occur between different liquids in a bund that would impact on the integrity of the bund or the safety of personnel in its vicinity. This should be addressed during the Hazard and Operability (HAZOP) review of the design. Information on material compatibility can be obtained from Safety Data Sheets, which should comply with Directive 2001/58/EC. The German Federation of Chemical Industry’s (VCI) concept for mixed storage of chemicals provides guidance in this area for chemical storage in mobile containers; this can be downloaded from www.vci.de. A similar approach is taken by the UK Health and Safety Executive in their guidance book HS(G)71 ‘Chemical warehousing: the storage of packaged dangerous substances’.

For flammable liquids, bunds serve to limit the surface area of the spillage and also the potential for spread of the fire. For these liquids, fire fighting issues should be considered when sizing bunds i.e. the choice of one large bund or a number of sub-sectioned bunds. The upper guidance value for a bund storing flammable liquids, which includes the tank surface areas, is 7,000 m², unless the fire protection is guaranteed for a larger area. This is based upon TRbF 20 the German regulations for storage of flammable liquids.

Additionally, for flammable liquids the containment facility should be suitably zoned for flammable vapours (ATEX directives 94/9/EC and 1999/92/EC) with the correct Ex signage according to 1999/92/EC. The bund overflow should be designed to prevent burning liquid spilling over and thereby spreading the fire to other parts of the site (see CIRIA Report 164 Section 10.3.5). Further information of the design of fire protection for flammable and combustible liquids is provided by the US National Fire Protection Association (www.nfpa.org), in particular NFPA 30.

Safety or health signs (or both) should be provided in circumstances where hazards cannot be avoided or adequately reduced by collective protection measures or by methods or procedures used in the organisation of work processes. Any signs provided should be in strict accordance with the Safety, Health & Welfare at Work (Signs) Regulations 1995.
In general bund walls should not exceed 1.5 m in height so that:

- Fire-fighting operations are not hindered.
- Egress from a bunded area in event of an emergency is relatively easy.
- Natural ventilation of the bunded area is encouraged.

It is important that, where practicable, pumps, valves, couplings, delivery nozzles and other items associated with the operation of a tank are located inside the bund, although health and safety implications must be taken into account where pumps and other electrical equipment operate in bunds where flammable vapours may collect. Items not connected with the operation of the tanks should not be located within the bunded area.

The vent from a storage tank being overfilled should be contained within the bund.

It is strongly recommended that all pipework leading to or from tanks within a bund are routed over the top of the bund in order to avoid the need to breach the walls.

Bunds may be filled with liquid in the event of a spillage or may be deliberately filled with liquid during testing (see Section 6.6), electrical equipment should therefore ideally be placed above the maximum liquid height or designed for submersion.

The designer of a bund should assess and take into account in the bund design:

- All possible modes of escape of pollutant from the primary containment.
- All possible modes of failure of the bund.
- All possible incident scenarios.

6.5 Materials for construction and specific design details

The specific materials and design details are all contained with the recognised BS8007 standard to which the bund will be constructed too.

6.6 Spigotting/Jet Flow

Consideration has been given to the possibly of spigotting occurring. Four of five tanks contained in the bunded area are double skinned and do not require any additional protection.

The remaining combined tank does not obey the rule the design rule for spigotting, which states:

- “perimeter around the tank must have a width of at least half the height by which the tank protrudes above the bund wall”

The tanks distance from the perimeter will not this width requirement and will therefore be equipped with protective cladding/baffling to direct and jet flow back into the bund. This protection measure negates the need for the additional width from the perimeter wall.
6.7 **Operation of Bund**

As outdoor open topped structures bunds will fill up with rainwater. This rainwater will displace the volume available for retention and it needs to be drained at suitable intervals. Using data from Met Eireann, the local average yearly rainfall has been factored into the design of the bund. Contaminated rainwater or spillages of potentially polluting substances will not be directed to a surface water discharge. The rainwater in the bund will be routinely sampled and analysed before disposal in an appropriate manner. Provisions will be made to empty rainwater and other liquids from bunds using mobile or fixed electrical or air driven pumps. Appendix D of the EPA Guidance Document has details for emptying of bunds. Records of bund inspection, sampling and release of contents should be maintained. Contents should only be released to surface water drainage systems when it has been determined that contamination levels are sufficiently low for surface water discharge, otherwise, the contents should be treated before discharge.

**Ultimately, the safe and proper operation of the bund rests with Soltec Ltd.**

6.8 **Maintenance of Bund**

Bunds need to be maintained to a high standard such that they are able to fulfil their design duty in the event of a loss in primary containment. It is the responsibility of Soltec Ltd to ensure that their bund in maintained to the highest standard. Any breach of the bund structure should be repaired immediately to recognised standards (see CIRIA Report 164, Section 10.4.7)

7 **Inspection of Bund**

Testing and inspection of bund is contained in [BS8007: Section 9-Inspection and testing of structure](#).

The stepped approach to testing a bund is outlined in the flow chart below.
8 Design and Operation of Piping and Storage Systems

The design of piping and storage systems falls outside the remit of ORS Consulting Engineers project brief and therefore rests with Soltec Ltd.

9 Conclusion

The above method statement represents the stepped approached ORS Consulting Engineers used to design and construct the bund at the Soltec site. EPA guidance documents and known British Standards (specifically BS: 8007) have been reference and used throughout the bunds design.
Appendix A – Calculations for Bund Capacity
Bund Footprint: 164.7m²

Proposed Wall Height: 1.0m

Bund Capacity: 164.7 m³

Deductions to be factored in:

1. 25% Total Tank(s) Capacity = 38.5m³
2. Displacement of Tanks in Bund = 41.26m³
3. Fire Water (1000l/per min for 1 hour) = 60.0m³
4. Concrete Plinths = 5.6m³

Total: 145.35m³

Bund Capacity – Deductions = 19.35m³ Spare Capacity

+ Deep Section of Bund 6.2X1.1X.450 = 3m³ (approx)

Total Spare Capacity 22.35m³
APPENDIX D
Environmental Monitoring Locations
Soltec (Ireland) Ltd
Emission Monitoring
Application Ref: W0015-02

Map Legend

Site Boundary: ____________________
Air emission point: 🟢

Map prepared by: David Corcoran
21-9-12

Scale: - 1:500
Scála: - 1:500
Map Ref: - 9-1
Soltec (Ireland) Ltd
Emission Monitoring - Ground Water
Application Ref: W0015-02

Map Legend

Site Boundary:
Ground Water Monitoring Point 1: MW1
Ground Water Monitoring Point 2: MW2
Ground Water Monitoring Point 3: MW3
Ground Water Monitoring Point 4: MW5 (Proposed to be called MW4)

Map prepared by: David Corcoran

Scale: - 1:400
Scála: - 1:400
Map Ref: - 9-3
At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.