

# ESB West Offaly Power

**Risk Screening and Technical** Assessment

IEL P0611-02

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## 1. INTRODUCTION

AECOM Infrastructure and Environment Ireland Limited (AECOM) is pleased to present this report to Electricity Supply Board (ESB) which details a risk screening and technical assessment of groundwater quality at the West Offaly Power (WOP) generating station in Shannonbridge, Co Offaly and the associated Ash Disposal Facility (ADF) site at Derrylaghan, Shannonbridge, Co Offaly.

The site location plan, indicating both the WOP site and the ADF site, is presented in Figure 1. The WOP site layout is presented in Figures 2 and 3; the ADF site layout is presented in Figure 4.

### 1.1 OBJECTIVE & BACKGROUND INFORMATION

ESB operates both the WOP and the ADF sites under an Industrial Emissions Licence (IEL) Licence (Reg. No. P0611-02) issued by the Environmental Protection Agency (EPA). The most recent version of this licence was issued on 06 January 2014.

Under Condition 6.14.3 of the Licence the site is required to complete risk screening and a technical assessment of groundwater quality beneath the site as follows:

Within eighteen months of the date of grant of this licence, the licensee shall carry out a risk screening and where necessary a technical assessment in accordance with the Guidance on the Authorisation of Discharges to Groundwater, published by the Environmental Protection Agency. A report on the outcome of the screening and where relevant the recommendations of the technical assessment in relation to the setting of groundwater compliance points and values, shall be included in the next AER. Any actions required to demonstrate compliance with the European Communities Environmental Objectives (Groundwater) Regulations 20 10, as amended, shall be agreed by the Agency and implemented before 22 December 20 15. Groundwater monitoring results shall be submitted annually or as required in the Schedules to this licence.

The objective of the works reported herein is to complete an assessment of groundwater beneath the site accordance with the Guidance on the Authorisation of Discharges to Groundwater<sup>1</sup> to comply with Condition 6.14.3 of the site's IEL Licence.

### 2. SCOPE OF WORKS

AECOM completed the following scope of works to meet the objectives of this report:

- Risk Screening to include:
  - Review of publicly available historical and environmental data on the site and surrounding area, as shown on the available historical maps, aerial photographs and regulatory information;
  - Summarising the environmental site setting; and
  - Development of preliminary conceptual site model
- Tier 1 Preliminary Site Assessment to include
  - Assessment of the environmental setting of the site and surrounds by reviewing relevant geological, hydrogeological and topographical maps;
  - Review of previous environmental reports;
  - Completion of a site visit and interview with key knowledgeable staff to identify current environmental conditions at the site, which may represent a potential environmental risk;
  - A review of relevant site documentation provided by ESB, including annual environmental reports, IPPC licence application and site material safety data sheets);
  - Interviews with key knowledgeable personnel during the site visit; and

<sup>&</sup>lt;sup>1</sup> Environmental Protection Agency (2011) Guidance on the Authorisation of Discharges to Groundwater.

- Development of Conceptual Site Model.
- Tier 2 Generic Quantitative Risk Assessment to include
  - Assessment of available data against generic assessment criteria (GAC);
  - Assess potential groundwater impacts and compliance with groundwater regulations; and
  - Identify any potential data gaps and recommended additional works to demonstrate compliance with the Groundwater Regulations.
- Production of one consolidated report to include the findings of the Tier 1 and Tier 2 assessments.

## 3. **EXISTING REPORTS**

AECOM completed a review of existing site specific and regional hydrogeological information from the following sources. The data from these reports was used to inform the following sections.

- Electricity Supply Board, West Offaly Power Generating Station, IPC Licence Reg. No. 611, Annual Environmental Report, for the period 1<sup>st</sup> January 2005 to 31<sup>st</sup> December 2005.
- Electricity Supply Board, West Offaly Power Generating Station, IPC Licence Reg. No. 611-01, Annual Environmental Report, for the period 1<sup>st</sup> January 2006 to 31<sup>st</sup> December 2006.
- Electricity Supply Board, West Offaly Power Generating Station, IPC Licence Reg. No. 611-01, Annual Environmental Report, for the period 1<sup>st</sup> January 2007 to 31<sup>st</sup> December 2007.
- Electricity Supply Board, West Offaly Power Generating Station, IPC Licence Reg. No. 611-01, Annual Environmental Report, for the period 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2008.
- Electricity Supply Board, West Offaly Power Generating Station, IPC Licence Reg. No. 611-01, Annual Environmental Report, for the period 1<sup>st</sup> January 2009 to 31<sup>st</sup> December 2009.
- Electricity Supply Board, West Offaly Power Generating Station, IPC Licence Reg. No. 611-01, Annual Environmental Report, for the period 1<sup>st</sup> January 2010 to 31<sup>st</sup> December 2010.
- Electricity Supply Board, West Offaly Power Generating Station, IPC Licence Reg. No. 611-01, Annual Environmental Report, for the period 1<sup>st</sup> January 2011 to 31<sup>st</sup> December 2011.
- Electricity Supply Board, West Offaly Power Generating Station, IPC Licence Reg. No. 611-01, Annual Environmental Report, for the period 1<sup>st</sup> January 2012 to 31<sup>st</sup> December 2012.
- Electricity Supply Board, West Offaly Power Generating Station, IPC Licence Reg. No. 611-02, Annual Environmental Report, 2013.
- URS Ireland Limited (2012), West Offaly Power, Ash Disposal Facility, Groundwater Assessment, Issue No. 3, Final, Dated 18 April 2012.
- URS Ireland Limited (2013), Assessment of Dust Deposition Monitoring Locations, West Offaly Power (IPPC Register No. P0-611-02), Dated 19 December 2013, 47092647, DURP0003.
- URS Ireland Limited (2013), Assessment of Dust Deposition Monitoring Locations, West Offaly Power ADF (IPPC Register No. P0-611-02), Dated 19 December 2013, 47092647, DURP0004.
- URS Ireland Limited (2009), Shannonbridge Environmental Exit Audit, Summary Report, dated 01 June 2011, Final, Issue No 3, 49341814/DURP0008.
- ESB (2001), Shannonbridge New Peat Power Station Project, Environmental Impact Statement, February 2001, Report No. P04B003-R1-03.

### 4. SITE SETTING

For ease of description the following section is separated into two subsections. Subsection 4.1 details the West Offaly Power (WOP) generating site and subsection 4.2 details the Ash Disposal Facility (ADF).

#### 4.1 West Offaly Power Station Site

#### 4.1.1 *Description of the Facility*

The WOP site is located 400 m south of the village of Shannonbridge on the north-eastern bank of the River Shannon. Construction of the WOP station commenced in the summer of 2002 as a replacement to the former 125 megawatt (MW) Shannonbridge Power Station, a milled peat fired power-generating station. Generating activities ceased at the former Shannonbridge Power Station in 2004 and demolition of the station building was completed in 2010.

Construction of the WOP station was completed in 2004 and the station became commercially operational in January 2005. The WOP site occupies an area of 20 hectares (Ha) on a separate site adjacent to the former Shannonbridge Power Station site.

Along with Lough Ree Power Station, the WOP station is one of Ireland's first power stations to be built in conformance with the Large Combustion Plant Directive. The station consists of a single boiler/turbine unit and auxiliary plant, with an electrical output of 150 MW. The boiler operates through the combustion of milled peat, with the utilisation of gas oil as a start-up fuel. Approximately 1,245,000 tonnes of peat, supplied locally from Bord Na Móna works, is burned at this installation annually.

The plant uses circulating fluidised bed (CFB) combustion. With this technology, the fuel is injected into a hot turbulent bed of sand with air being blown through the bed from the bottom. The fluidised bed has a large thermal mass, leading to more even and controlled combustion. CFB combustion technology is particularly suitable for fuels with a high ash content or low or varying heating values. Fluidised bed combustors also produce lower NOx emissions compared to alternative combustion systems and allow for simple desulphurisation through the use of sorbent materials in the bed to retain sulphur. With the CFB technology, the air blown through the bed cause particles to become entrained in the hot gases. These particles are removed in a cyclone and a portion of the gases are recirculated through the boiler.

Ash is transported from the main generator building via pipework to the Ash Silo. At the ash silo, the ash moisture content is increased to between 15% and 18% before being dispensed to the ash wagon for transport to the ADF, a non-hazardous lined ash landfill.

The WOP station can be subdivided as follows;

- The power station site which is operated by ESB; and
- The peat handling site which is operated by Bord Na Móna.

The main features of the facility (see Figure 2) are as follows:

- Peat Screening building;
- Intermediate peat house;
- Tippler ;
- Conveyor;
- Combustion Turbine;
- Boiler house;
- Auxiliary Transformers;
- 110kV Compound;

- Transformers;
- One diesel above ground storage tank (AST)
- Chemical Tanks;
- Water Treatment Building;
- Electrical Supply Building
- Offices and administration building
- Stores;
- Workshop;
- Laboratory;
- Water Pump house;
- Demineralisation Water Tank;
- Bord Na Móna Puraflo<sup>®</sup> wastewater treatment; and
- Waste Storage Area.

## 4.1.2 Adjacent Land Use

#### Site Boundary Land Use

North	Ash ponds from the former Shannonbridge Power Station are located immediately to the north and northwest of the site. (It is understood that these have been capped with a peat layer and re-vegetated)	
	An agricultural machinery engineering yard is located to the north east of the site.	
	Residential housing is located 180 m north east of the site.	
South	Agricultural fields.	
East	Agricultural fields with the R357 regional road, and harvested bog beyond.	
West	River Shannon, with agricultural fields and harvested bog beyond.	

### 4.2 Ash Disposal Facility Site

### 4.2.1 Description of the Facility

The ADF site is located at Derrylahan, 6.5 km north east of the WOP site. It occupies an area of 36 ha located within 800 ha of commercial Bord na Móna peat harvesting land. The site layout is presented in Figure 4.

The ADF is an engineered landfill complete with a geo-synthetic clay liner (GCL) at the base. The GCL consists of sodium bentonite clay, supported by geotextiles, which forms another hydraulic barrier to the leachate. The landfill is subdivided into cells which are filled sequentially. The GCL is overlain with a composite drainage layer (CDL), which collects any leachate generated. The CDL falls to a leachate collection drain at one end of each cell, which transfers leachate to a leachate monitoring manhole. Collected leachate is either pumped over the ash as a means of dust suppression and compaction of ash or pumped to the lined lagoon using electrical submersible pump.

The majority of the leachate generated is recycled over the ash, however any excess (generally only in periods of high rainfall) is agitated in the lagoon, then tested for pH and suspended solids and, if

the values are within the licence limits, it can be discharged under permit to the Gowlan River, a tributary of the River Blackwater.

When each cell has reached capacity, the cell is capped with a permanent low permeability GCL and as a result, leachate production at the ADF will eventually cease.

## 4.2.2 Adjacent Land Use

Site Boundary	Land Use
North	Peat bog
South	Peat bog
East	Peat bog
West	Peat bog

#### 5. ENVIRONMENTAL SITE SETTING

Information presented within this section has been collated from publicly available sources, including the Environmental Protection Agency (EPA) (www.epa.ie), Ordnance Survey of Ireland (OSI) (www.osi.ie), Geological Survey of Ireland (GSI) (www.gsi.ie), National Parks and Wildlife Service (NPWS) (www.npws.ie), and Water Framework Directive Ireland (www.wfdireland.ie) and abovementioned reports.

#### 5.1 WOP Site

#### **Physical Feature** Details

The site is generally flat. According to OSI Discovery Series map No.47 the site is located at approximately 40m above Ordnance Datum (OD).		
Information from GSI indicates the underlying bedrock is Dinantian Upper Impure Limestone.		
Teagasc have identified the subsoil beneath the west of the site as being Alluvium. The eastern portion of the site is underlain by Till derived chiefly from limestone.		
Borehole logs for the two onsite monitoring wells are attached in Appendix A. Varying ground conditions were encountered at these locations and can be summarised as follows:		
BH14/GW1 in the north east of the site		
<ul> <li>0.0 – 2.0 m bgl – Made ground, comprising clayey gravelly sand</li> </ul>		
2.0 m bgl – Limestone bedrock		
BH10/GW2 in the south west of the site		
<ul> <li>0.0 – 6.0 m bgl – Made ground, comprising clayey gravelly sand</li> </ul>		
• 6.0 – 7.0 m bgl - Peat		
• 7.0 – 10.0 m bgl – Clayey Gravel		
10.0 m bgl – Limestone bedrock		
The bedrock aquifer beneath the site is classified as a locally important aquifer which is moderately productive only in Local Zones (LI).		
The GSI indicates that the site is located on a contact between zones of 'moderate' vulnerability (in the west of the site) and 'high' groundwater vulnerability (in the east of the site).		
There are no Source Protection Zones within 1 km of the site.		
Given the proximity of the River Shannon, the groundwater flow direction is expected to be towards the west of the site.		
According to the GSI, the nearest two groundwater abstraction wells are located between 1 - 1.5 km to the north of the site. Both abstraction wells are installed in the limestone bedrock and are reported to be "Good" yielding with respective yields of		

Physical Feature	Details			
Abstraction wells	109 m <sup>3</sup> /d and 135.2 m <sup>3</sup> /d; one is reported to be owned by Offaly Board of Health.			
Water Framework	Groundwater beneath the site is designated as a WFD protected area for drinking water.			
Water Framework Directive	The WFD Groundwater beneath the site is identified as the Clara groundwater body IE_SH_G_060. The EPA has classified the water body as having a 'good status' and being 'Possibly at risk of not achieving good status'.			
	The closest surface water body is the River Shannon which flows along the site's western boundary.			
Surface Water	According to the EPA, based on the most recent monitoring event at Incherky Quay (downstream from Banagher), 11 km south of the site, the River Shannon has a 'Good' Status.			
	The following protected areas were identified within 3 km of the site:			
Protected Areas	<ul> <li>The River Shannon (000216), a Special Area of Conservation (SAC).</li> <li>River Suck Callows (004096), a Special Protected Area (SPA), located approximately 1 km to the west and upstream of the site.</li> </ul>			

## 5.2 ADF Site

Physical Feature	Details	
Topography	The site is generally flat. According to OSI Discovery Series map No.47 the site is located at approximately 40m above Ordnance Datum (OD).	
Geology	The GSI, indicates that the site is located at a contact between the Dinantian Lower Impure Limestones (beneath the northern portion of the site) and the Dinantian (early) sandstones, limestones and shales (beneath the southern half of the site).	
Ceclogy	Teagasc have identified subsoil beneath the site consisting of cut peat bog.	
	Borehole logs for the onsite monitoring wells are attached in Appendix A.	
Hydrogeology	The underlying bedrock aquifer is classified by the GSI as a locally important aquifer (bedrock which is moderately productive only in local zones) with 'low' groundwater vulnerability.	
, , , , , , , , , , , , , , , , , , , ,	There are no Source Protection Zones within 5 km radius of the site.	
	Based on groundwater elevation data collected in November 2000, groundwater flow direction is torwards the Gowan River northwest of the site.	
Nearby Groundwater Abstraction wells	According to GSI records, there are no groundwater abstraction wells within a 5 km radius of the site.	
	Groundwater beneath the site is designated as a WFD protected area for drinking water.	
Water Framework Directive	The WFD Groundwater beneath the site is identified as the Clara groundwater body IE_SH_G_060. The EPA has classified the water body as having a 'good status' and being 'Possibly at risk of not achieving good status'.	
	The closest surface waterbodies are the Gowan River and the Black River. The Gowan River is located 100 m to the northwest of the site boundary. This river joins the Black River downstream of the site.	
Surface Water	The Black River, located 600 m from the southeast boundary of the site, is a tributary of the Blackwater River. The Blackwater River is located approximately 2.7 km south of the site and flows into the Shannon River 6.5 km south of the site.	
	According to the EPA, based on the most recent monitoring event at Blackwater Bridge, the Blackwater River has a 'Good' Status. The Gowan River and Black River are not monitored by the EPA.	
Protected Areas	The following protected areas were identified in within 3 km of the site:	

- Fin Lough, (000576), a Special Area of Conservation (SAC), is located 1.5 km to the north of the site.
- Mongan bog, (004017), a Special Protected Area (SPA), is located 3 km to the north of the site.

#### 6. CHEMICALS OF CONCERN

#### 6.1 WOP Site

#### Historic Contamination

The WOP site was developed adjacent to the former Shannonbridge Power station site. The majority of the site was greenfield pre-development, however the southern portion of the site has been landfilled with waste materials from the previous power station. Much of this has been remediated, however, due to access issues, an area beneath a rail track in the south east of the site remains unremediated and may be a potential source of contaminants. This area is indicated on Figure 3.

#### **Chemical Storage**

The following is a list of the major chemicals stored onsite. Storage locations for the below chemicals are indicated on Figure 3.

Chemical	Container Volume	
Caustic Soda (NaOH)	30 m <sup>3</sup> (start-up fuel for auxiliary diesel generator)	
Sulphuric Acid (H <sub>2</sub> SO <sub>4</sub> )	30 m <sup>3</sup>	
Caustic brine	30 m <sup>3</sup>	
Ammonia (NH <sub>3</sub> )	1 m <sup>3</sup>	
Diesel (gas oil)	200 m <sup>3</sup> (start-up fuel for auxiliary diesel generator) 1 m <sup>3</sup> (diesel tank for fire water pump) 1.3 m <sup>3</sup> (emergency diesel generator tank) 25 m <sup>3</sup> (back-up fuel source for locomotives) 2 No. 2.3 m <sup>3</sup>	
Turbine Lubricating Oil	8 m <sup>3</sup>	
Gear Oil	2.3 m <sup>3</sup>	
Anti-freeze	1 m <sup>3</sup>	
Waste Oil	1 m <sup>3</sup>	

The material safety data sheets for all bulk chemicals stored on-site listed in the table above are presented in Appendix B.

During the AECOM site visit, it was noted that all chemicals listed above are bunded and/or stored in double skinned containers. All bunds were reported to be in good condition. Under Condition 6.9 of the IEL Licence the site is required to complete bund integrity testing once every three years. The most recent bund integrity testing was completed during 2014, the result of which is reported in the 2014 Annual Environmental Report (AER). It was reported to AECOM that all bunds passed the 2014 integrity testing.

The site achieved ISO14001 certification in 2014. There is an appointed environmental committee for the site which sits biannually. This committee is responsible for the implementation of the following good environmental practices aimed at reducing risks from potential spills and leaks;

In-house environmental audits are completed monthly;

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- All bunds are alarmed;
- Bunds are inspected monthly and alarms tested biannually;
- Oil tanks are filled to maximum of 75% of their total capacity; and
- Chemical tanks are filled to maximum of 90% of their total capacity.

Appendix C contains a complete inventory of all chemicals stored onsite in minor volumes.

#### Other Potential Contaminants

A number of other contaminant sources were identified from the WOP site:

- Cooling water;
- Blowdown water;
- Water treatment effluent;
- Treated sewage effluent; and
- Surface water drainage infrastructure including settlement tanks.

#### Spills and Leaks

No Spills or leaks have been reported since development of the site.

### 6.2 ADF Site

The single contaminant of concern identified at the ADF site is the leachate generated at the landfill.

### 7. CONCEPTUAL SITE MODEL

## 7.1 WOP Site

A conceptual site model (CSM) identifying current understanding of source-pathway-receptor linkages based on the most recent reports is tabulated below and presented graphically in Figure 5.

Viable Pathways	Potential Receptors
Human Health (inhalation of vapours)	Human Health
1 ,	On-site employees
Controlled waters	<ul> <li>Workers onsite undertaking</li> </ul>
Lateral migration of	subsurface works
	Controlled Waters
made ground and overburden	<ul> <li>Groundwater beneath the</li> </ul>
Preferential pathways through	site
onsite drainage	The River Shannon
	Human Health (inhalation of vapours) Controlled waters Lateral migration of contaminated groundwater through the permeable fill, made ground and overburden Preferential pathways through

### 7.2 ADF Site

A conceptual site model (CSM) identifying current understanding of source-pathway-receptor linkages based on the most recent reports is tabulated below and presented graphically in Figure 6.

Potential Sources	Viable Pathways	Potential Receptors
Leachate	Controlled waters	Controlled Waters
Collected at the base landfill	<ul> <li>Lateral migration of contaminated groundwater through</li> </ul>	Groundwater beneath the site
<ul> <li>Collected in the lagoon</li> </ul>	the peat.	The Gowan River

## 8. ASSESSMENT OF CURRENT GROUNDWATER STATUS

As required by the IEL Licence ESB completes the following groundwater monitoring at the site;

Parameter	Monitoring Frequency		
pH, Electrical,	Monthly		
Conductivity			
Total Petroleum Hydrocarbons (TPH)	Quarterly		
Chloride			
Sulphate (S04)			
COD	Annually		
Total Ammonia			
Total Nitrogen			
Metals/non-metals*			
Nitrate			
Orthophosphate			
*	and the local second second		

\*boron cadmium calcium, chromium, copper, iron lead, magnesium, manganese, mercury, nickel, potassium, sodium, zinc, molybdenum, selenium.

AERs containing results of groundwater monitoring from 2005 to 2013 were provided to AECOM for review and are included in Appendix D. Groundwater monitoring results for 2014 were also provided to AECOM.

There are two groundwater monitoring wells on the WOP site, one up-gradient well and one downgradient well; providing the minimum coverage for an environmental assessment. Locations of groundwater monitoring wells are indicated on Figure 2.

Monitoring well PS-GW1 is the up-gradient well and is located at the north eastern site boundary.

Monitoring well PS-GW2 is the down-gradient well and is located within a former ash landfill on the western site boundary close to the River Shannon.

There are four groundwater monitoring wells on the ADF site, locations of which are indicated on Figure 4.

Appropriate generic assessment criteria (GAC) protective of controlled water receptors were selected based on the site setting and the conceptual site model for the site, which is summarised below:

- The closest surface water body to the site is the River Shannon (a designated SAC).
- The bedrock aquifer is classified (GSI) as a 'locally important aquifer which is moderately productive only in local zones'.
- The groundwater beneath the site is protected as a drinking water resource under the Water Framework Directive.

• There are no groundwater abstraction wells for drinking water located down-gradient of the site.

Based on the above, the most sensitive receptors identified are the protected groundwater beneath the site and the River Shannon on the eastern boundary of the site.

Given the above site setting, groundwater water quality was assessed by comparing analytical results to appropriate assessment criteria according to the following hierarchy:

- European Communities Environmental Objectives (Groundwater) Regulations, 2011 (Statutory Instrument No. 389 of 2011); and
- Environmental Protection Agency's Draft Interim Guidelines Values (IGVs) for the Protection of Groundwater, 2003<sup>2</sup>.

#### 8.1 Generic Risk Assessment

Annual and quarterly analytical groundwater data for 2014 compared against GAC are presented in Table 1. The following table presents a summary of the results which were reported above the adopted GAC in 2014.

Parameter	GAC	Reported Concentration Range of Exceedences	Exceeding wells
Arsenic	7.5 μg/L (GTV)	18 μg/L	ADF-GW5
Nickel	15 μg/L (GTV)	15.3 μg/L	ADF-GW5
Potassium	5 mg/L (IGV)	24.9 mg/L - 26.7 mg/L	PS-GW2 and ADF-GW4
Sulphate	187.5 μg/L (GTV)	273 μg/L	PS-GW2
Manganese	50 <b>u</b> g/L (IGV)	58.3 μg/L – 550 μg/L	PS-GW2, ADF-GW3, ADF- GW4, ADF-GW5 and ADF-GW6

#### 8.2 Groundwater Chemical Status

The data reviewed in this report has been compared against GAC, including the Groundwater threshold values (GTVs), as set out in the Schedules 5 of the Groundwater regulations.

Elevated concentrations of the following parameters (above the GTVs) were reported at the site during 2014:

• Arsenic, nickel and sulphate.

Elevated concentrations of the above parameters may indicate that the groundwater beneath the site is of 'Poor Status'.

Additionally, the following parameters were reported above Interim Guideline Values (IGVs):

• Potassium and manganese.

Detections of chloride were below the assessment criteria at all groundwater monitoring locations during 2014, however chloride has been detected at concentrations exceeding the GAC in the past and therefore trend analysis for chloride concentrations at each location across the site is presented in Graph 4.

<sup>&</sup>lt;sup>2</sup> Environmental Protection Agency, Towards setting guideline values for the protection of groundwater in Ireland (Interim Report).

Since 2011 Total Petroleum Hydrocarbons (TPH) have not been detected at concentrations exceeding the MDL (1 mg/L). However, it should be noted that the MDL is greater than the GAC of 0.01 mg/L.

#### 8.2.1 Temporal Trends and Potential Extent of Contamination

Temporal trends for the parameters identified as exceeding the GAC in Section 7.2 are presented in Graphs 1 to 4<sup>3</sup>. The following is a summary of the apparent trends.

#### Arsenic (Graph 1)

An elevated concentration of arsenic was detected at ADF-GW5 (18  $\mu$ g/L) in 2014. Arsenic concentrations exceeding the GTV (7.5  $\mu$ g/L) were not reported at this location prior to 2014. There is no obvious trend in the arsenic data at ADF-GW5 between 2005 and 2013, with concentrations ranging between 2  $\mu$ g/L (2011) and 6  $\mu$ g/L (2010).

The source of the elevated arsenic concentration reported at ADF-GW5 is unclear but it may be associated with;

- elevated background concentrations often associated with the regional geology in the area (impure limestones); or
- the ash landfilled at the site<sup>4</sup>.

Continued monitoring would be required to confirm this and to assess any significant upward trend in well ADF-GW5.

Elevated arsenic concentrations exceeding the GTV were detected at ADF-GW4 between 2011 and 2013. The arsenic concentrations detected in 2013 (11  $\mu$ g/L) and 2014 (5  $\mu$ g/L) indicate a general decreasing trend at this location. Continued monitoring would be required to confirm this.

Arsenic was not detected at concentrations exceeding the GTV in water samples collected from monitoring wells PS-GW1 (main WOP site), ADF-GW3 and ADF-GW6 between 2005 and 2014.

#### Nickel (Graph 2)

An elevated nickel concentration of 15.3  $\mu$ g/L was detected at ADF-GW5 in 2014. Nickel concentrations exceeding the GTV (15  $\mu$ g/L) have not been reported at this location prior to 2014. From Graph 2 there is no obvious trend in the nickel data for any of the wells analysed.

An elevated nickel concentration of 49  $\mu$ g/L was detected at ADF-GW2 in 2008. All other nickel detections at this location have been below the GTV.

Nickel has not been detected at concentrations exceeding the GTV (15  $\mu$ g/L) in water samples collected from monitoring wells PS-GW1, ADF-GW3, ADF-GW4 and ADF-GW6 between 2005 and 2014.

Nickel concentrations of 11  $\mu$ g/L, 26.3  $\mu$ g/L and 6.04  $\mu$ g/L were reported in samples collected from the leachate over three quarters during 2013. The source of the elevated nickel concentration reported at ADF GW5 is unclear but it may be associated with the ash landfilled at the site. Further monitoring would be required to confirm this and to assess any significant upward trend in well ADF-GW5.

#### Sulphate (Graph 3)

Graph 3 shows the quarterly sulphate monitoring results available between Quarter 4 (Q4) 2013 and Q4 2014. No sulphate analytical results are available for groundwater samples collected from the

<sup>&</sup>lt;sup>3</sup> No trend analysis is presented for potassium, because this has not been analysed for prior to 2014.

<sup>&</sup>lt;sup>4</sup> Arsenic concentrations of 220  $\mu$ g/L and 213  $\mu$ g/L were reported in two leachate samples collected during 2013. Considering these elevated concentrations, it is possible that the elevated arsenic concentration reported in wells ADF-GW5 and ADF-GW4 may be associated with the ash landfilled at the site.

site prior to Q4 2013 as there was no licenced requirement to monitor groundwater for sulphate prior to 2013.

Sulphate concentrations at PS-GW2 have remained relatively stable (260  $\mu$ g/L - 290  $\mu$ g/L) between Q4 2013 and Q4 2014, exceeding the GTV of 187.5  $\mu$ g/L during each monitoring event.

Sulphate concentrations at PS-GW1, ADF-GW3, ADF-GW4, ADF-GW5 and ADF-GW6 were either below the GTV or less than the MDL during all monitoring events.

The source of the elevated concentrations of sulphate at PS-GW2 is considered likely to be the former ash landfill located in this area.

#### Potassium

Elevated concentrations of potassium above the IGV of 5 mg/L were detected in 2014 at monitoring wells PW-GW2 (24.9 mg/L) and ADF-GW4 (26.7 mg/L). No potassium analytical results are available for groundwater samples collected from the site prior to 2014 as there was no licenced requirement to monitor groundwater for potassium until 2014. Further monitoring would be required to assess any trends in potassium concentrations in these wells.

The source of the elevated concentrations of potassium in these wells is not clear, however it may be associated with the landfilling of ash or elevated background concentrations associated with the regional geology.

#### Manganese

Elevated concentrations of manganese above the IGV of 50  $\mu$ g/L were detected in 2014 at monitoring wells PW-GW2 (550  $\mu$ g/L), ADF-GW3 (58.3 mg/L), ADF-GW4 (96.9  $\mu$ g/L), ADF-GW5 (95.1  $\mu$ g/L) and ADF-GW6 (242  $\mu$ g/L). Manganese analytical results are not available for groundwater samples collected from the site prior to 2014 as there was no licenced requirement to monitor groundwater for manganese until 2014.

The source of the elevated concentrations of manganese in these wells is likely to be associated with elevated background concentrations associated with the regional geology (impure limestones). In areas with such a geological make-up, manganese can frequently occur naturally in groundwater at concentrations exceeding the IGV.

Additionally, Teagasc have identified the subsoil beneath the site as consisting of cut peat bog. Peat can contain a large portion of decaying organic matter and typically would be poorly drained and waterlogged. These conditions give rise to oxygen-deficient environments which increases the solubility of manganese, giving rise to elevated manganese concentrations in the groundwater.

Further monitoring would be required to assess any trends in manganese concentrations in these wells.

#### Chloride (Graph 4)

Graph 4 shows the quarterly chloride monitoring results available between 2009 and 2014. Elevated chloride concentrations above the GTV were reported in groundwater samples collected from ADF-GW4 between Q1 2011 (375  $\mu$ g/L) and Q3 2013 (324  $\mu$ g/L). However, following a peak chloride concentration of 1,390  $\mu$ g/L detected in Q1 2012, chloride concentrations have decreased to 20.1  $\mu$ g/L in Q4 2014 indicating a decreasing trend.

It is considered likely that the increased chloride concentrations were related to leachate escaping through a breach in the base liner in Cell 1 of the ADF. In 2013 works were undertaken to improve the base liner and the cell was capped. Results of the 2014 sampling round indicate that chloride levels have declined to below the GTV following these remedial works. Chloride has not been detected at concentrations exceeding the GTV (187.5  $\mu$ g/L) in groundwater samples collected from the remaining monitoring wells at the ADF or the power station site.

#### 8.3 Impact on Receptors

### 8.3.1 Risks to Controlled Waters

#### Arsenic and Nickel

The presence of arsenic and nickel at ADF-GW5, at concentrations exceeding the GTV indicates a potential risk to controlled waters receptors. The risk to controlled waters from these elevated concentrations is considered to be low, given that it was only detected in 1 of the 4 wells analysed. Continued monitoring would be required to confirm this assumption and to assess any significant upward trends.

Furthermore, as each cell within the landfill reaches capacity, it is capped with a permanent low permeability GCL and as a result, leachate production at the ADF will eventually cease.

#### Sulphate

The presence of sulphate at PS-GW2 at concentrations exceeding the GTV over four monitoring rounds during 2014 indicates a potential risk to controlled waters receptors. Groundwater was not analysed for sulphate prior to Q4 2013.

The elevated concentrations are considered likely to be associated with the former ash landfill in which the borehole was installed. It is noted from the 2010 Exit Audit completed for the former landfill<sup>5</sup> that the elevated concentrations at PS-GW2 did not translate to elevated concentrations in the River Shannon (key receptor). Therefore the risk from the elevated concentrations of sulphate was considered to be low.

#### Potassium

Elevated concentrations of potassium were detected in PS-GW2, ADF-GW4 and ADF-GW6 indicating a potential risk to controlled waters. Potassium has not been analysed prior to 2014. The temporal trends in potassium at these locations should be assessed over future rounds to confirm this risk and to assess if there is a significant upward trend.

#### Historic Landfilled Waste

It is understood that a section of the WOP site contains an unremediated section of landfill which was part of the former ESB Shannonbridge power generation site. This area is identified as a potential source of contaminants and consequently a potential risk to controlled waters. It is recommended that groundwater samples are collected down gradient of this location to assess this potential risk.

### 8.4 Chemical Status of Groundwater Body

The Clara groundwater body IE\_SH\_G\_060 is identified as being 'Possibly at risk of not achieving good status' under the Water Framework Directive (WFD). The status of the groundwater body was identified as 'Good'.

Elevated concentrations of arsenic, nickel, potassium and sulphate were detected at groundwater monitoring locations across the ADF and power station site. However, given that the elevated concentrations were <100 GAC the risk to the overall status of the groundwater body as a whole is considered to be low.

<sup>&</sup>lt;sup>5</sup> URS Ireland Limited (2010) ESB Shannonbridge Exit Audit – Ash Ponds. Issue No. 3 Dated 30 November 2010

### 9. CONCLUSIONS AND RECOMMENDATIONS

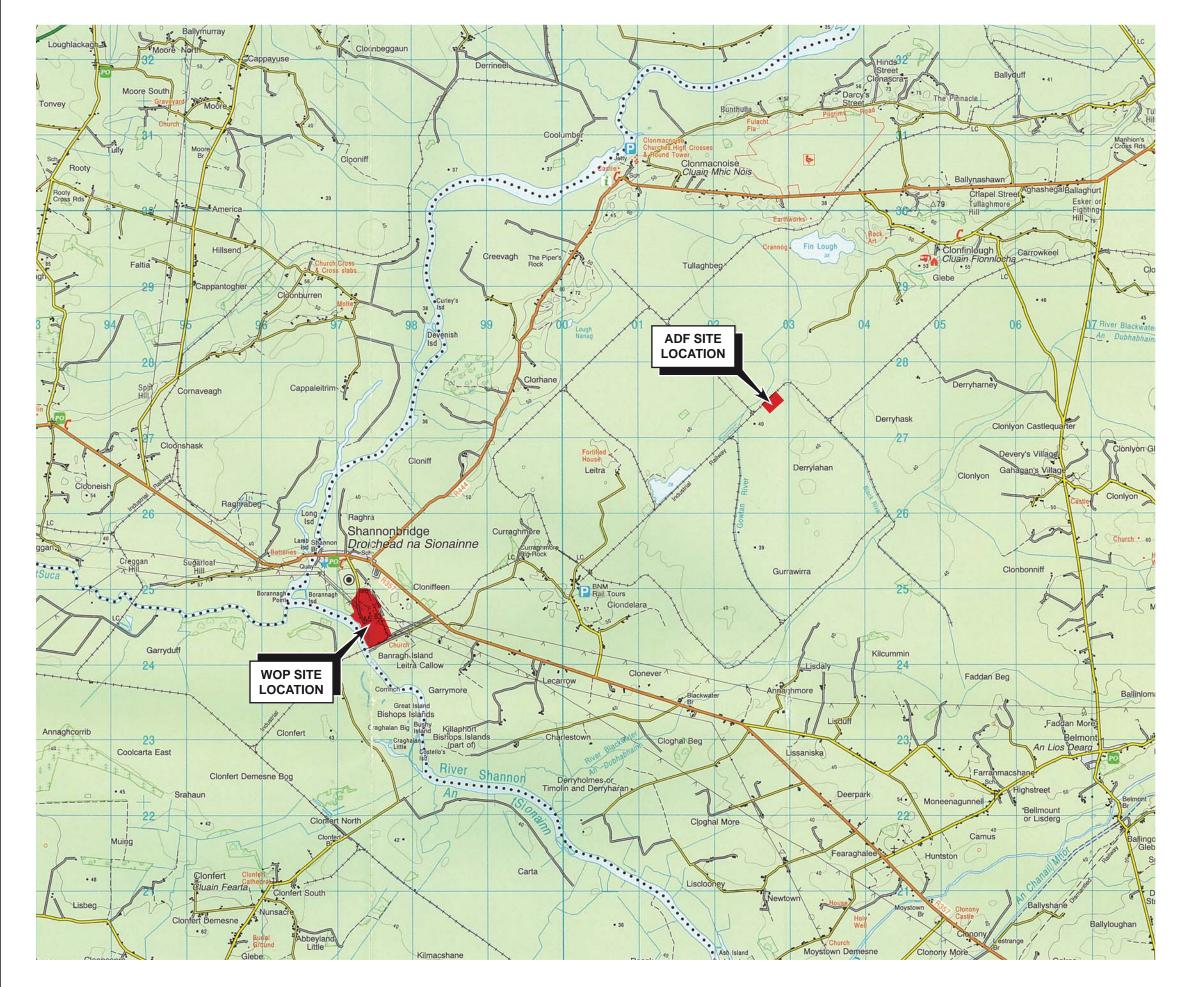
Based on the hydrogeological assessment completed herein, AECOM conclude the following with respect to the site:

- The following potential on-site sources have been identified:
  - Chemical and Heavy Fuel Oil Storage;
  - Site drainage infrastructure;
  - Process water effluent infrastructure;
  - o Wastewater treatment infrastructure;
  - o Surface water drainage infrastructure (including Sedimentation tank); and
  - o Potentially contaminated land to the south of the site.
- No spills or leaks have been reported since development of the site.
- Potential risks to groundwater were identified from elevated concentrations of arsenic, nickel, potassium and sulphate. Further monitoring is recommended to identify any significant upward trends and to confirm or otherwise the potential risks and to demonstrate compliance with the Groundwater Regulations.
- Given that the elevated concentrations of arsenic, nickel, potassium and sodium were <100 GAC, the risk to the overall status of the groundwater body is considered to be low.
- An area to the south of the site is identified as a potential risk to controlled waters, as it contains landfilled waste materials from the former power station. It is recommended that a groundwater sample is collected down hydraulic gradient of this area to assess possible impact to the groundwater body and to demonstrate compliance with the Groundwater Regulations.
- Bunds were observed to be in a good condition. Bund integrity testing was completed in 2014 and it was reported to AECOM that all bunds passed the respective integrity tests. Good environmental management practices are in place to reduce the risk of spills to the environment.
- As each cell within the landfill reaches capacity, it is capped with a permanent low permeability GCL and as a result, leachate production at the ADF will eventually cease.
- It is recommended that alternative analysis for hydrocarbons is used with an LOD <10ug/L to screen for potential hydrocarbons.

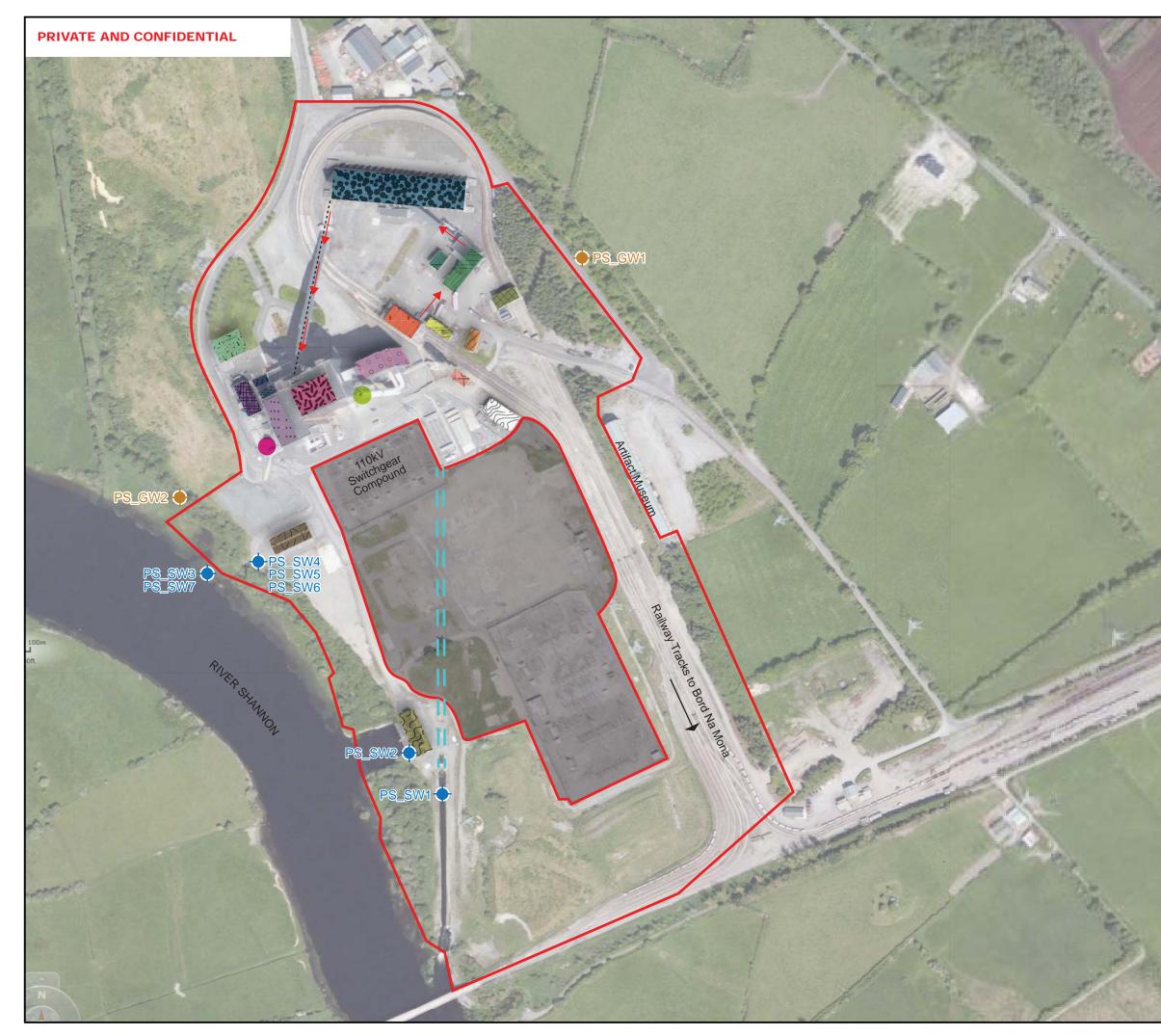
## **FIGURES**

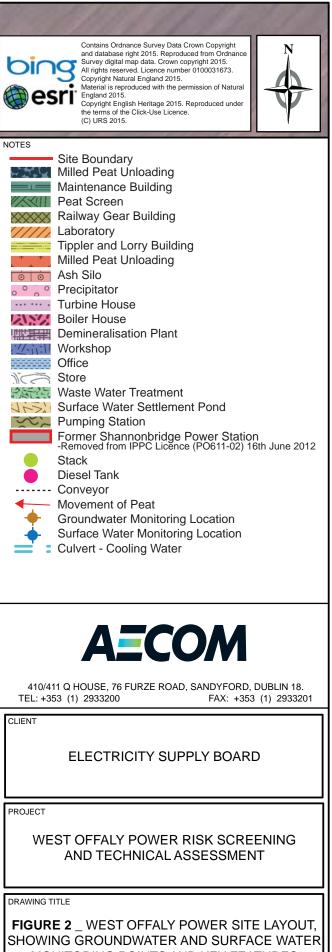
WEST OFFALY POWER/P0611-02 August 2015

### PRIVATE AND CONFIDENTIAL



•OFFALY
0 km 1 km 2 km 3 km
ORDNANCE SURVEY IRELAND LICENCE NO. EN 0001915 ©ORDNANCE SURVEY IRELAND/GOVERNMENT OF IRELAND
NOTES         West Offaly Power           ADF         Ash Disposal Facility
AECOM
410/411 Q HOUSE, 76 FURZE ROAD, SANDYFORD, DUBLIN 18. TEL: +353 (1) 2933200 FAX: +353 (1) 2933201
ELECTRICITY SUPPLY BOARD
PROJECT WEST OFFALY POWER RISK SCREENING AND TECHNICAL ASSESSMENT
DRAWING TITLE
DRAWN TRACED CHECKED APPROVED DATE SML CF JL/DUB MAR 2015 SCALE JOB NO. 1:50,000 @ A3 47092932



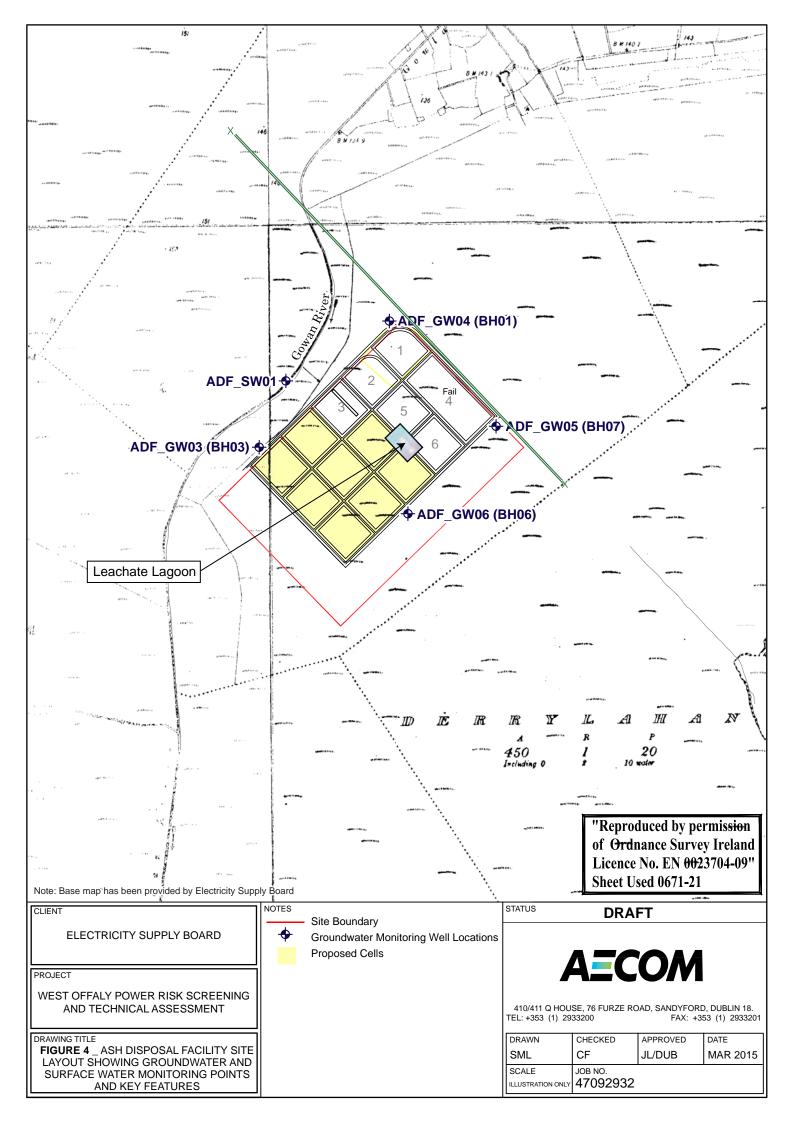


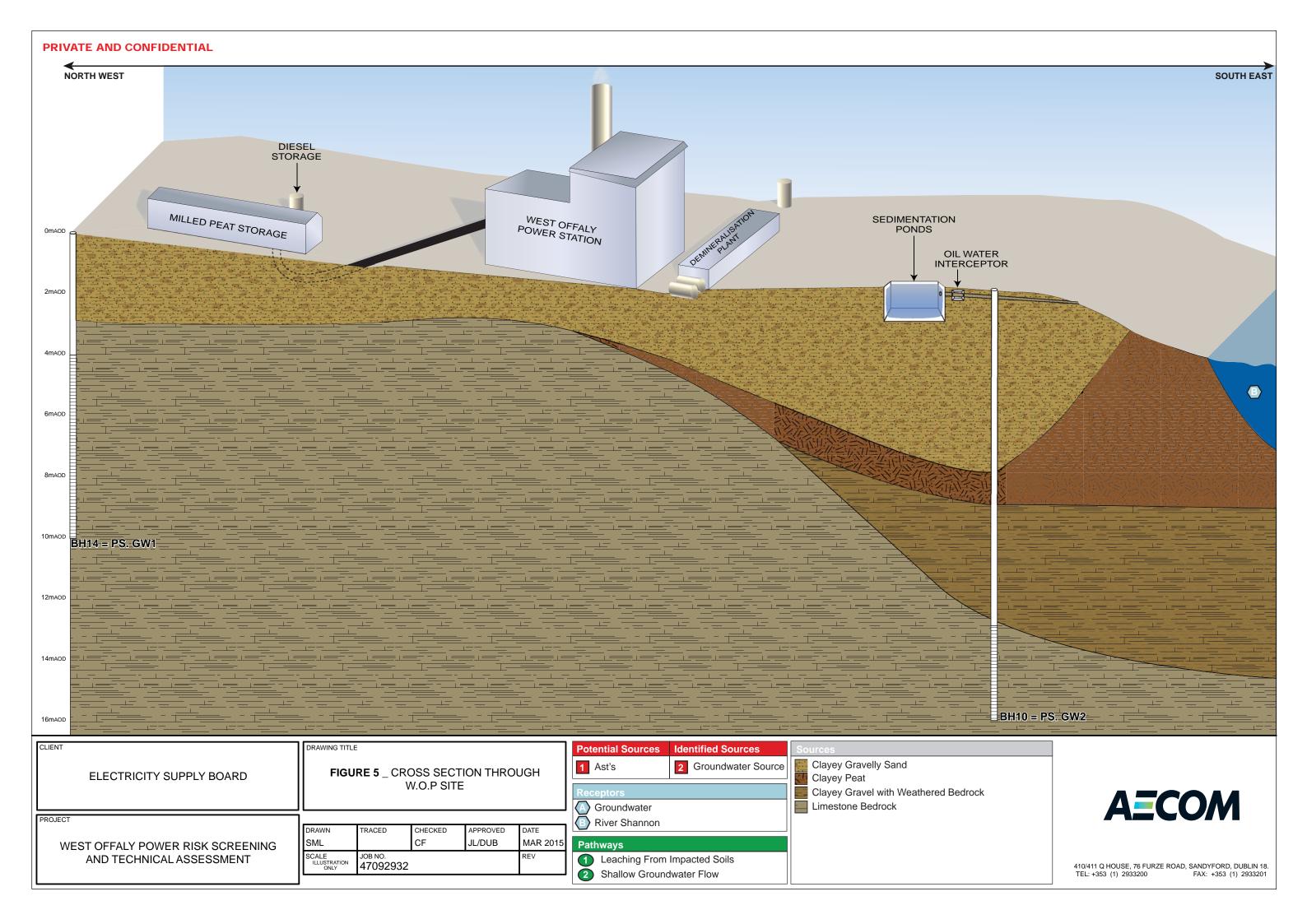
MONITORING POINTS AND KEY FEATURES

	DRAWN	TRACED	CHECKED	APPROVED	DATE
	SML		CF	JL/DUB	MAR 2015
н	SCALE	JOB NO.			REV
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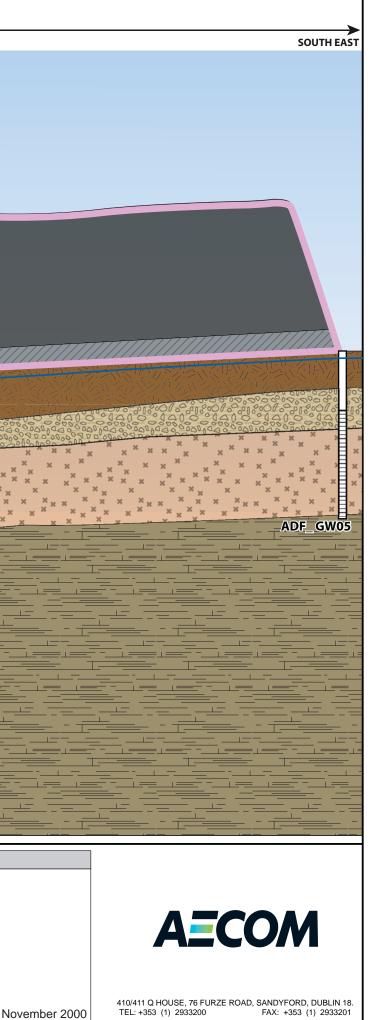








NORTH WEST		
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LIENT	DRAWING TITLE Potential Sources Identified Sources	
ELECTRICITY SUPPLY BOARD	DRAWING TITLE       FIGURE 6 _ CROSS SECTION THROUGH ADF SITE       Potential Sources       Identified Sources         Image: Checken Chec	Composite Drainage Layer  Composite Drainage Layer  Clay / Boulder Clay
WEST OFFALY POWER RISK SCREENING AND TECHNICAL ASSESSMENT	DRAWN       TRACED       CHECKED       APPROVED       DATE         SML       CF       JL/DUB       MAR 2015         SCALE       JOB NO.       47092932       REV         V       REV       1       Leaching From Impacted Soils         Q       Shallow Groundwater Flow	Silt Limestone Bedrock Geosynthetic Clay Liner Inferred Groundwater Flow Direction Groundwater Elevation - Measured In



## **TABLES**

WEST OFFALY POWER/P0611-02 August 2015

#### Table 1 - 2014 Groundwater Monitoring Results

West Offaly Power

Risk Screening and Technical Assessment

Sample Identity				PS-0	GW1			PS-0	GW2			ADF	-GW3			ADF	-GW4			ADF	-GW5			ADF	-GW6	
Year				20	14			20	14			20	14			20	14			20	14			20	14	
Monitoring Round			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Analyte	Unit	GAC																								
Aluminuim	ug/l	150 <sup>+</sup>	2.9	-	-	-	<2.9	-	-	-	9.82	-	-	-	2.9	-	-	-	2.9	-	-	-	2.9	-	-	-
Arsenic	ug/l	7.5*	0.615	-	-	-	2.27	-	-	-	1.44		-	-	5.09	-	-	-	18.1	-	-	-	1.93	-	-	-
Molybdenum	ug/l	nc	0.757	-	-	-	0.777	-	-	-	0.284	-	-	-	0.393	-	-	-	5.73	-	-	-	1.05	-	-	-
Iron	ug/l	200"	19	-	-	-	0.019	-	-	-	0.345	-	-	-	0.181	-	-	-	0.019	-	-	-	0.168	-	-	-
Cadmium	ug/l	3.75 <sup>+</sup>	0.1	-	-	-	0.1	-	-	-	0.109	-	-	-	0.1	-	-	-	0.1	-	-	-	0.1	-	-	-
Selenium	ug/l	nc	0.39	-	-	-	3.4	-	-	-	0.39	-	-	-	6.46	-	-	-	0.39	-	-	-	0.498	-	-	-
Copper	ug/l	1500 <sup>+</sup>	2.54	-	-	-	1.83	-	-	-	2.51	-	-	-	2	-	-	-	1.81	-	-	-	0.85	-	-	-
Nickel	ug/l	15 <sup>+</sup>	<0.15	-	-	-	0.15	-	-	-	0.493	-	-	-	0.289	-	-	-	15.3	-	-	-	1.62	-	-	-
Zinc	ug/l	100"	2.1	-	-	-	3.48	-	-	-	16.2	-	-	-	0.951	-	-	-	2.55	-	-	-	2.43	-	-	-
Boron	ug/l	750+	9.4	-	-	-	13.3	-	-	-	9.4	-	-	-	9.4	-	-	-	9.4	-	-	-	9.4	-	-	-
Chromium	ug/l	37.5 <sup>+</sup>	6.89	-	-	-	5.71	-	-	-	4.41		-	-	6.17	-	-	-	6.87	-	-	-	4.19	-	-	-
Lead	ug/l	18.75 <sup>+</sup>	0.105	-	-	-	0.047	-	-	-	0.593		-	-	0.354	-	-	-	0.076	-	-	-	0.183	-	-	-
Manganese	ug/l	50#	0.483	-	-	-	550	-	-	-	58.3	-	-	-	96.9	-	-	-	95.1	-	-	-	242	-	-	-
Magnesium	mg/l	50#	11.7	-	-	-	27.4	-	-	-	5.35	-	-	-	3.5	-	-	-	1.84	-	-	-	6.83	-	-	-
Mercury	ug/l	0.75*	0.01	-	-	-	0.01	-	-	-	0.01		-	-	0.01	-	-	-	0.01	-	-	-	0.01	-	-	-
Calcium	mg/l	200"	133	-	-	-	92	-	-	-	71	-	-	-	104	-	-	-	138	-	-	-	110	-	-	-
Sodium	mg/l	150 <sup>+</sup>	19.4	-	-	-	127	-	-	-	10.3	-	-	-	50.7	-	-	-	10	-	-	-	11.3	-	-	-
Potassium	mg/l	5#	1.28	-	-	-	24.9	-	-	-	1.84	-	-	-	26.7	-	-	-	2.01	-	-	-	2.99	-	-	-
Chloride	mg/l	187.5 <sup>+</sup>	40.2	24.6	22	17.9	67.2	58.9	59.1	57.3	18.4	17.1	18.2	11.3	102	135	140	20.1	11.3	9.6	10.6	10.6	10.6	10.7	10.6	10.4
Hydrocarbons (TPH)	mg/l	0.01#	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ammonia	mg/l	175 <sup>+</sup>	0.2	-	-	-	6.3	-	-	-	0.262	-	-	-	2.83	-	-	-	7.42	-	-	-	3.87	-	-	-
Conductivity	us/cm	1875+	795	833	816	828	1244	785	1312	734	275	360	364	241	679	945	1018	733	676	704	669	679	640	647	628	695
pН	pH units	nc	7.9	7.5	7.5	7.1	7.6	7.5	7.6	7.2	7.4	7.6	7.7	7.2	7.1	7.5	7.1	6.9	7.3	7.1	7.1	7	7.4	7.3	7.2	7.4
COD	mg/l	nc	13.9	-	-	-	14.6	-	-	-	67.4				76.3				29.8				49.2			<b></b>
Sulphate (SO <sub>4</sub> )	mg/l	187.5 <sup>+</sup>	52.1	45.3	47.1	38.9	273	289	290	282	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Phosphate (PO <sub>4</sub> )	mg/l	nc	0.05	-	-	-	0.314	-	-	-	0.05	-	-	-	0.05	-	-	-	0.05	-	-	-	0.05	-	-	-
Nitrate (NO <sub>3</sub> )	mg/l	37.5+	0.342	-	-	-	0.3	-	-	-	0.3	-	-	-	0.3	-	-	-	0.461	-	-	-	0.3	-	-	-
Total Oxidised Nitrigen	mg/l	nc	0.1	-	-	-	0.1	-	-	-	0.1	-	-	-	0.1	-	-	-	0.116	-	-	-	0.1	-	-	-
Nitrogen	mg/l	nc	1	-	-	-	6.42	-	-	-	1.03	-	-	-	3.31	-	-	-	7.71	-	-	-	4.48	-	-	-
Total Nitrogen	mg/l	nc	1	-	-	-	6.42	-	-	-	1.03	-	-	-	3.31	-	-	-	7.71	-	-	-	4.48	-	-	-

#### Notes:

X exceeds GAC

nc - no criteria available

MDL - Method Detection Limit

+ Irish Groundwater Threshold values (GTVs) 2010

# Irish Interim Guideline values (IGVs) 2003

Sample Identity	1						PS-	GW1									PS-0	GW2									ADF-	GW3				
Date of Sample	1		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Analyte	Unit	GAC																														
Arsenic	ug/l	7.5*	1.1	1.1	1	1	4	5	1	1	1	0.615	<1	<1	2	2	6	8	3	5	2	2.27	<2	<2	2	2	4	3	0.2	2	2	1.44
Nickel	ug/l	15 <sup>+</sup>	<10	<10	1	1	14	3	3	3	2	<0.15	<10	<10	2	49	2	2	1.5	1	1	0.15	<10	<10	2	<1	1	2.5	4	4	3	0.493
Manganese	ug/l	50"	-	-	-	-	-	-	-	-	-	0.483	-	-	-	-	-	-	-	-	-	550	-	-	-	-	-	-	-	-	-	58.3
Potassium	mg/l	5#	-	-	-	-	-	-	-	-		1.28	-			-	-	-		-	-	24.9	-	-			-	-		-	-	1.84
Chloride	mg/l	187.5 <sup>+</sup>	91	40	30	30	29	23	17	15	17	40.2	130	180	130	130	96	82	70	77	72	67.2	18	18	22	22	15	13	13	11	17	18.4
Sulphate (SO <sub>4</sub> )	mg/l	187.5 <sup>+</sup>	-	-	-	-	-	-	-	-	27	52.1	-	-	-	-	-	-	-	-	<10	273	-	-	-	-	-	-	-	-	265	2

Notes:

X exceeds GAC

nc - no criteria available

MDL - Method Detection Limit

+ Irish Groundwater Threshold values (GTVs) 2010

# Irish Interim Guideline values (IGVs) 2003

Sample Identity							ADF	-GW4									ADF-	GW5									ADF	GW6				
Date of Sample			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Analyte	Unit	GAC																														
Arsenic	ug/l	7.5*	<2	<2	1	1	4	1.4	23	33	11	5.09	4	4	2	2	4	6	2	3	3	18.1	<2	<2	1	1	2	0.4	0.2	1.3	1	1.93
Nickel	ug/l	15 <sup>+</sup>	<10	<10	2	5	1	1.7	5	6	2	0.289	<10	<10	9	<1	9	5.5	7	10	7	15.3	<10	<10	1	<1	1	2.0	2	2	2	1.62
Manganese	ug/l	50"	-	-	-	-	-	-	-	-	-	96.9	-	-	-	-	-	-	-	-	-	95.1	-	-	-	-	-	-	-	-	-	242
Potassium	mg/l	5	-	-	-	-	-	-	-	-	-	26.7	-	-	-	-	-	-	-	-	-	2.01	-	-	-	-	-	-	-	-	-	2.99
Chloride	mg/l	187.5 <sup>+</sup>	18	18	21	21	23	74	891	848	358	102	11	11	14	14	14	10	10	11	10	11.3	13	13	32	32	12	12	12	12	12	10.6
Sulphate (SO <sub>4</sub> )	mg/l	187.5 <sup>+</sup>	-	-	-	-	-	-	-	-	6.6	2	-	-	-	-	-	-	-	-	<2	2	-	-	-	-	-	-	-	-	<2	2

Notes:

X exceeds GAC

nc - no criteria available

MDL - Method Detection Limit

+ Irish Groundwater Threshold values (GTVs) 2010

# Irish Interim Guideline values (IGVs) 2003

Sample Identity	٦													PS-	GW1											
Date of Sample				20	09			20	10			20	11			20	12			20	13			20	14	
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Analyte	Unit	GAC																								
Chloride Quartely	mg/l	187.5 <sup>+</sup>	29	36	15	19	26	35	12	17	20	16	21	11	20	15	14	10	17	19.8	16.6	10.3	40.2	24.6	22	17.9
Sulphate (SO <sub>4</sub> )	mg/l	187.5*	-	-	-	-	-	•	-	-	-	-	-	-	-	•	-	-	-	-	-	27	52.1	45.3	47.1	38.9

Notes:

X exceeds GAC

nc - no criteria available

MDL - Method Detection Limit

+ Irish Groundwater Threshold values (GTVs) 2010

# Irish Interim Guideline values (IGVs) 2003

Sample Identity	1													PS-0	GW2											
Date of Sample				20	009			20	010			20	11			20	12			20	13			20	14	
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Analyte	Unit	GAC																								
Chloride Quartely	mg/l	187.5 <sup>+</sup>	96	88	111	79	98	89	73	66	66	61	73	81	80	78	73	75	72	69.2	66.5	19.4	67.2	58.9	59.1	57.3
Sulphate (SO <sub>4</sub> )	mg/l	187.5*	-		-	-	-	-	-	-		-		-	-		-	-	-	-	-	<10	273	289	290	282

Notes:

X exceeds GAC

nc - no criteria available

MDL - Method Detection Limit

+ Irish Groundwater Threshold values (GTVs) 2010

# Irish Interim Guideline values (IGVs) 2003

Sample Identity	٦	1												ADF	GW3											1
Date of Sample				20	109			20	10			20	11			20	12			20	13			20	)14	
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Analyte	Unit	GAC																								
Chloride Quartely	mg/l	187.5 <sup>+</sup>	15.0	16.0	14.5	-	12	14	12	15	10	14	16	11	15	10	10	8	17	14.4	14.9	66.0	18.4	17.1	18.2	11.3
Sulphate (SO <sub>4</sub> )	mg/l	187.5*	-	-	•	•			-	-		-	-	-	-		-	-	-	-	-	265	2	2	2	2

Notes:

X exceeds GAC

nc - no criteria available

MDL - Method Detection Limit

+ Irish Groundwater Threshold values (GTVs) 2010

# Irish Interim Guideline values (IGVs) 2003

Sample Identity	1													ADF	-GW4											
Date of Sample				20	009			20	010			20	11			20	12			20	13			20	14	
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Analyte	Unit	GAC																								
Chloride Quartely	mg/l	187.5 <sup>+</sup>	23	19	19	-	10	10	9	9	375	687	1110	1390	1390	751	778	471	358	324	324	116	102	135	140	20.1
Sulphate (SO <sub>4</sub> )	mg/l	187.5*	-	-	-	-	-		-	•	-	-	-	-	-	-	-	-	-	-	-	6.6	2	2	2	2

Notes:

X exceeds GAC

nc - no criteria available

MDL - Method Detection Limit

+ Irish Groundwater Threshold values (GTVs) 2010

# Irish Interim Guideline values (IGVs) 2003

Sample Identity	٦													ADF	-GW5											
Date of Sample				20	009			20	010			20	)11			20	12			20	13			20	14	
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Analyte	Unit	GAC																								
Chloride Quartely	mg/l	187.5 <sup>+</sup>	14	12	12	-	10	10	9	9	9	11	10	9	12	10	10	10	10	9.3	9.1	9.1	11.3	9.6	10.6	10.8
Sulphate (SO <sub>4</sub> )	mg/l	187.5*	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-		-	<2	2	2	2	2

Notes:

X exceeds GAC

nc - no criteria available

MDL - Method Detection Limit

+ Irish Groundwater Threshold values (GTVs) 2010

# Irish Interim Guideline values (IGVs) 2003

Sample Identity	1													ADF	-GW6											
Date of Sample				20	009			20	010			20	)11			20	12			20	13			20	14	
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Analyte	Unit	GAC																								
Chloride Quartely	mg/l	187.5 <sup>+</sup>	12	13	13	-	12	12	12	12	12	11	12	12	12	12	11	11	12	11.3	1.1	10.7	10.6	10.7	10.6	10.4
Sulphate (SO <sub>4</sub> )	mg/l	187.5*	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-		<2	2	2	2	2

Notes:

X exceeds GAC

nc - no criteria available

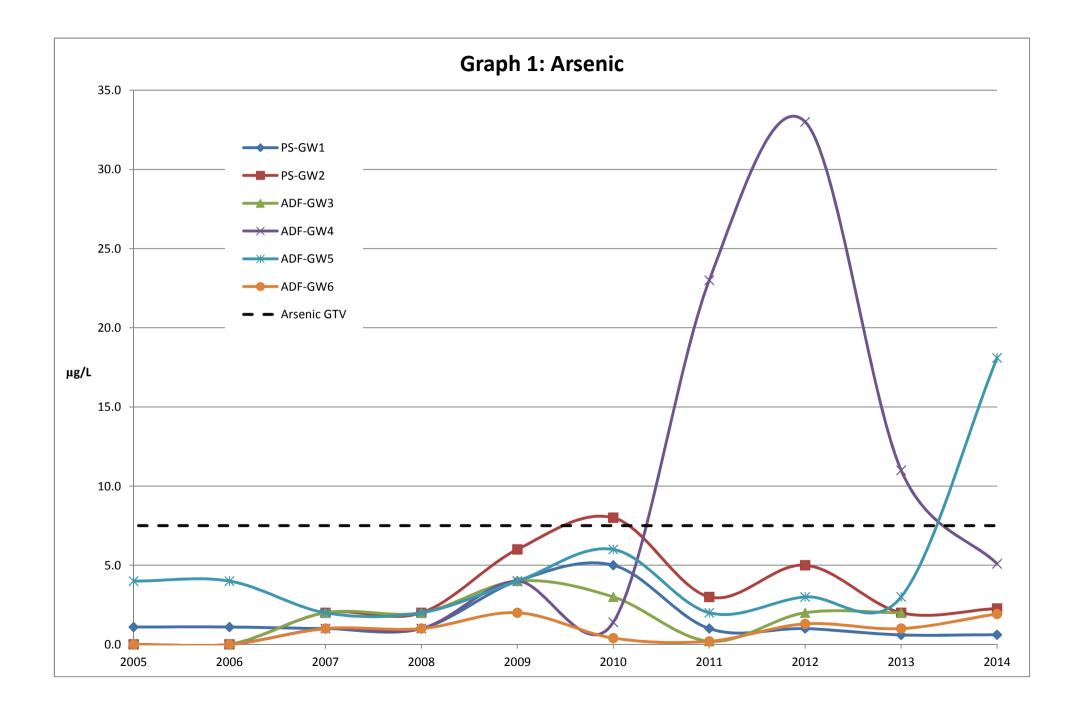
MDL - Method Detection Limit

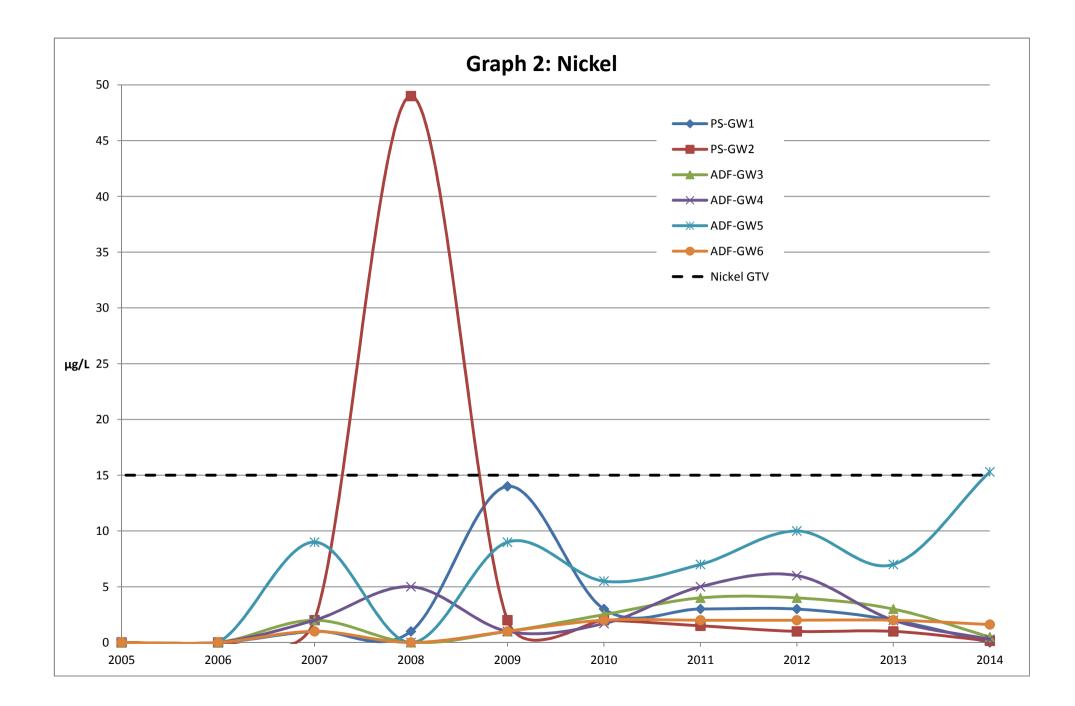
+ Irish Groundwater Threshold values (GTVs) 2010

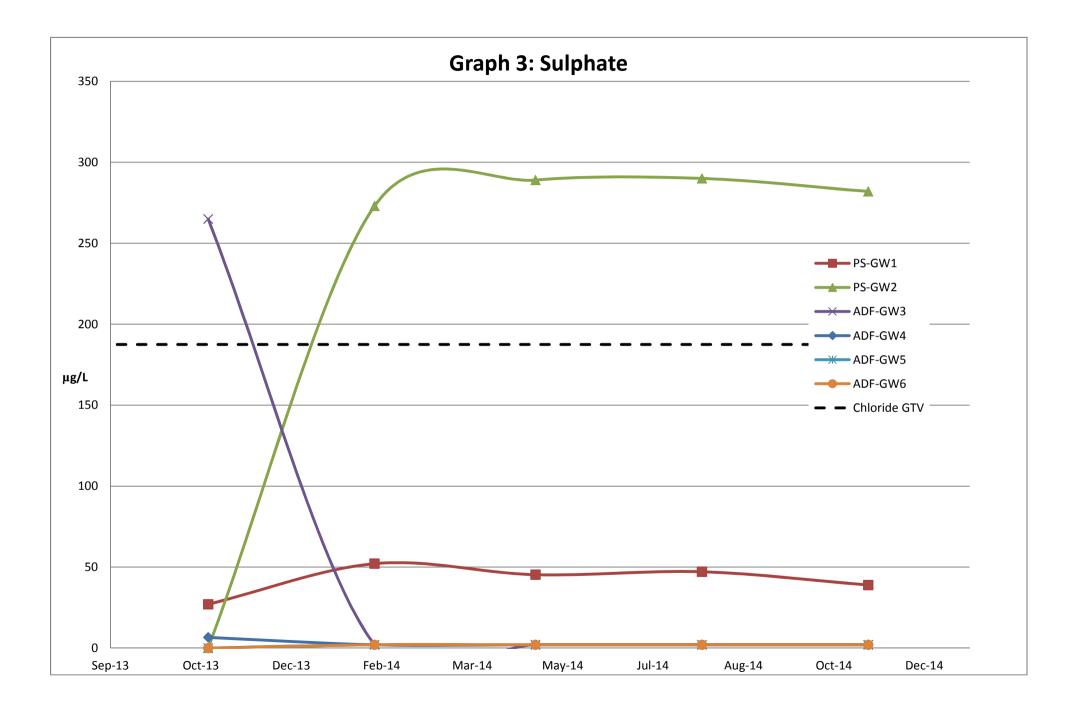
# Irish Interim Guideline values (IGVs) 2003

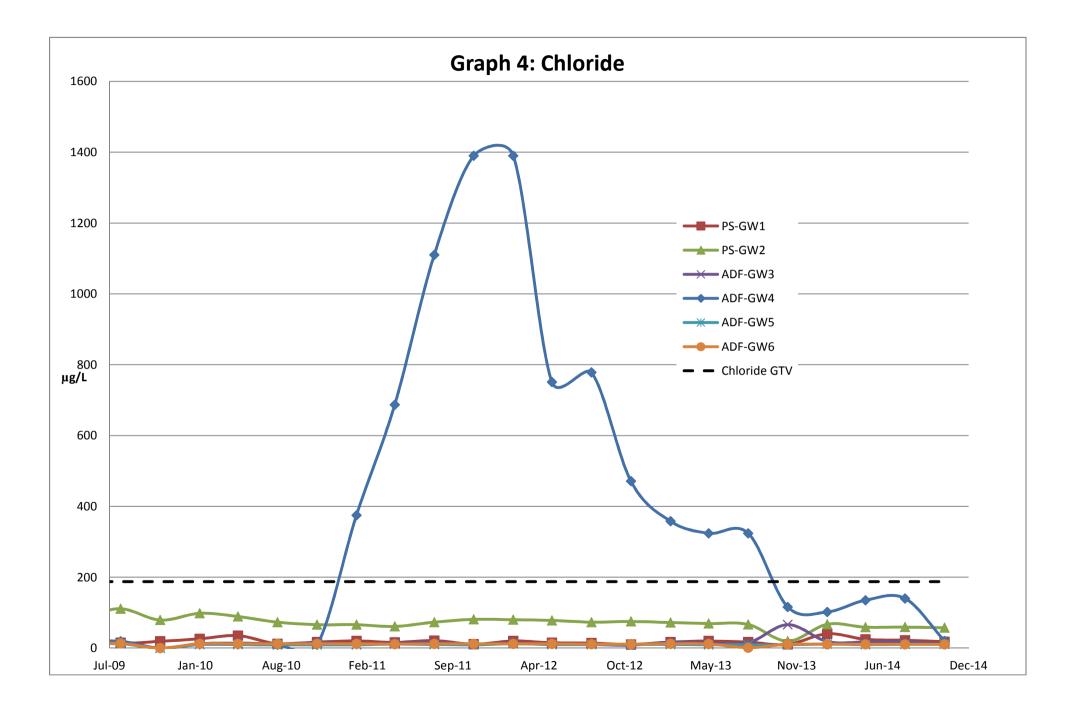
## **GRAPHS**

WEST OFFALY POWER/P0611-02 August 2015









# **APPENDIX A – BOREHOLE LOGS**

BOREHOLE CONSTRUCTION	SAMPL	E	PID READING (ppm)	GROUNDWATER			BOREHOLE NUMBER: 10		PAGE	1 of 1					
CTI	(0		5 NG	VAT			DRILLING DATES: 22-Nov-04	DRILLING ME	THODS :	Air Rotary					
RU RU	ANALYTES		AD		<u> </u>	GEOLOGY	DRILLER : Stephan Peterson			R : 152.4 mm					
30F VST	٦٢	ш	RE	Inc.		oro	LOGGED BY : Ryan Rafferty			1: HDPE 50 mi	m				
COL	ANA	TYPE	DID	GR(	DEPTH (m)	Э СЕ	CHECKED BY :	SCREEN SLO	OT SIZE: 2	2.5 mm					
					0.0		DESCRIPTION	N	C	OMMENTS /	0.0				
				-IK Stight	0.0 1.0 2.0 3.0 4.0 5.0		Madeground Black-brown Clayey Gravelly Sand Madeground	d			0.0				
						leavy -i∬ Slight			6.0 7.0 8.0 9.0		Sand and clayey gravel with cobbl <b>PEAT</b> Very soft light brown clayey PEAT <b>Clayey GRAVEL</b> Grey very clayey GRAVEL with pic limestone	with sea shells	d	6 - - -	6.0 7.0 8.0 9.0
				¥	11.0_ 12.0_ 13.0_ 14.0_		Bedrock Clean grey LIMESTONE Bedrock Dark black cherty LIMESTONE Becoming harder			1* 12	1.0 2.0 3.0 4.0				
					15.0		EOH @ 14.0 m				5.0				
NEC= No	LOCATIC Devidence of						Undisturbed Sample       Location: €         ★       PID Headspace Analysis         ↓       Down Borehole Analysis	TRS AP	p'd: awn : RR ale: As Shown g. Size: A4	Date: November 20 Ref: RR/CG/DUB	9				

Z	SAMPLI	=	PID READING (ppm)	Ř			BOREHOLE NUMBER: 14		PAGE	1 of 1	
BOREHOLE CONSTRUCTION											
	ËS			M	Ξ	Σ		RILLING METH			
BOREHOLE CONSTRUCTION ANALYTES ANALYTES ANALYTES ANALYTES FID READING (pp GROUNDWATER DEPTH (m)		ŏ		OREHOLE DIA							
<sup>m</sup> N <sub>O</sub>	NAI	TYPE	₫	RO	Ē	GEOLOGY			EEN TYPE & DIAM: HDPE 50 m EEN SLOT SIZE: 2.5 mm		
0	<	F	С.	0		0		UREEN SLUT		<u>.</u>	
					0.0_	***	DESCRIPTION			OMMENTS	0.0_
						$\otimes$	Madeground Vegetation				
					-	$\otimes$	Madeground				
					1.0	$\bigotimes$	Clayey gravelly sand				1.0
					2.0	***					2.0
					2.0	$\propto$	We all a sead Da due all				2.0
					=		Weathered Bedrock Weathered light grey LIMESTONE fragme	ents			
					3.0						3.0
							Bedrock				
							Solid grey LIMESTONE		Dr	у	
				Ā	4.0						4.0
					=						
					5.0_		Bedrock Solid black LIMESTONE				5.0_
							Solid Diack LIMESTONE				
					6.0				Ve	ery wet	6.0_
					7.0						7.0
					=						
					8.0						8.0
					9.0_						9.0
					=						
					10.0						10.0
							EOH @ 10.0 m				
					11.0_						11.0
			NOTEO		1.0_						11.0_
NEC= No	LOCATIO Evidence c	of Co	ntaminat	ion			LEGEND Job Title: Monitoring W		TE L(	JG	
N-4 - 1 -	af						Undisturbed Sample Location: Shannonbrid				
NOT A IOT	of water e	enco	untered				➡ PID Headspace Analysis Client: ESB	• ت ب			
							Down Borehole Analysis	App'd:		Date: November	
							Groundwater Table	Scale:	: RR As Shown	Ref: RR/CG/DUE Job No: 44871-0	
							♀ Perched Water Table	Drg. Si		BOREHOLE	

#### ■ 2: BOREHOLE GROUND AND GROUNDWATER CONDITIONS

			a terre and angenera Markita da da	Denel				
	BH1	BH2	BH3	BH4	holes BH5	BH6	BH7	BH8
Ground level mOD	37.7	35.5	36.2	38.9	38.3	40.2	40	39.4
Peat thickness Clay/Boulder clay thickness Silt thickness Silty gravel thickness Boulder clay thickness	2.6 0.3 2.1 -	1 0.6 - 3.3 2.7	1 0.3 - 0.8 0.9+	0.9 2 1.6	1.2 1.9 - 3.5 -	1.8 2.2 2 -	0.9 1 2.4 -	1.3 0.2 - 2.9 -
Refusal depth Refusal mOD	5.3 32.4	- "	3 33.2	-	-	-	-	-
Rockhead depth Rockhead mOD Borehole base depth	- - 5.3	7.6 27.9 15.5	- - 3	4.5 34.4 12	5.4 32.9 5.9	6 34.2 12	4.3 35.7 5.9	4.4 35 9.1
Standpipe Response Zone Length Top - Bottom depth Bottom mOD	1.55 3.2 to 4.75 32.95	6.3 9.2 to 15.5 20	1 1.5 to 2.5 33.7	4 8 to 12 26.9	2.2 2.4 to 4.6 33.7	3.8 8.2 to 12 28.2	2.2 1.7 to 3.9 36.1	3.5 5.6 to 9.1 30.3
Groundwater depth (1/11/00) Groundwater mOD (1/11/00)	0.68 37.02	-	2.5 33.7	1.2 37.7	0.2 38.1	0.12 40.08	0.15 39.85	0.1 39.3
Field Permeabilities Test-top Test bottom Value (m/s)*	3.9 4.3 8.8 x 10 <sup>-7</sup>	9 10.2 2.3 x 10 <sup>-7</sup>	1.2 2.1 7.8 x 10 <sup>-7</sup>	5 9.01 1.9 x 10 <sup>-6</sup>	1.4 1.9 7.6 x 10 <sup>-7</sup>	7.2 7.2 4.1 x 10 <sup>-4</sup>	1.5 1.7 7 x 10 <sup>-7</sup>	4.4 7.05 2.1 x 10 <sup>-5</sup>

Notes:

All depths in m unless otherwise stated

Note:

\*= field permeability were calculated using variable head test data in accordance with BS5930.

### APPENDIX B – MATERIAL SAFETY DATA SHEETS

## APPENDIX C – INVENTORY OF CHEMICALS STORED ON-SITE

<table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row><table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row></table-row>					Quantity	Annual Usage
1 GADD ARL QUTTING FULUmemMemBulk headMemMemMem273 SprakowCleaterin400123 Sprakow7.04.0273 SprakowCleaterin400123 Sprakow7.04.0200 Gold InfibiaCleaterin50017.07.04.0200 Gold InfibiaCleaterin50017.07.04.0200 Gold InfibiaCleaterin60018.05.05.04.04.0200 Gold Infibia8.05.00Stand Standarbay7.04.04.0200 Gold Infibia8.05.00Stand Standarbay7.04.07.0200 Gold Infibia8.02.00A.002.07.07.0200 Gold Infibia8.07.0A.002.07.07.0200 Gold Infibia7.07.02.02.07.07.0201 Gold Infibia7.07.07.07.07.07.07.0201 Gold Infibia7.07.07.07.07.07.07.07.07.0201 Gold Infibia7.0	Chemical	Manufacturer	Pack size	Product name		
388 synthetic tapping had (about 5 sports)0950 million of the sport 1 and sports and s	"Bakers" Soldering fluid 3	Frytech	250ml	Bakers no.3 250ml	1	0
721 Sprenkom0.5640ml0.500ml73 Parame barenes (Associal Associal Ass	#1 GOLD METAL CUTTING FLUID	morgan	500ml	(Bulk liquid)	1	0
7557557507		Chesterton	500ml	388 synthetic tapping fluid (Bulk)	0	0
S00 Gold DataCenter200 p80 Gold Patha00Att Special AdversorNotel900 p7argl Att Special adversor00Att Special AdversorNotel900 p7argl Att Special adversor00Balanci Ga800 n1000 hBalanci Ga000Balanci Ga800 n1000 hBalanci Ga000Balanci Ga800 n1000 hBalanci Ga000Caller Spectra Particip800 h4000 h000	723 Sprasolvo	Chesterton	400ml	723 sprasolvo	7	3
Ass solari Alloys and Ass social Alloys and Ass a	785 Lubricant	Chesterton	500g	787 parting lubricant (Aerosol)	0	0
Alis Special AndreamHendie660 gTorug Alis Special andream00Glamo 108RSS GraugMooreRSB NA 105700Glamo 108RSS GraugMooreRSB NA 105700Glamo 108RSS GraugMooreRSB NA 105700Glamo 108RSS GraugMooreCalving gent 7577.000Glamo 108RSS RSS RSS RSS RSS RSS RSS RSS RSS RSS	900 Gold End Paste	Chesterton	200 g	900 Goldend r Paste	0	0
AND 0.100mlAND 0.100mlAND 0.0.00.0Burne Gis65.0ml50mlBurne Gis0.00.0Burne Gis65.0ml100mlBurne Gis0.00.0Calva gent 97171Mengel1.0.Calva gent 97171.0.00.0Calva gent 97171Mengel2.3.Calva gent 97171.0.00.0Calva and furk SpainAccord and furk Spain0.00.00.0Calva and furk SpainCalva and furk Spain0.0	ABS solvent Cement	Glynwed	500ml	B-25	0	0
Distant of SoSomSomJohnJohnJohnJohnJohnCaking agert 5771HengelT.K.Caking agert 5771NoNoNoCaking agert 5771HengelT.K.Caking agert 5771NoNoNoCaking agert 5771HengelALKCaking agert 5771NoNoNoCalin and Three SprayAucual400mlKotain and Three SprayNoNoNoCalin adord free SprayCarina Calin SprayNoNoNoNoNoNoNoCalin adord free SprayCalin Calin SprayNoN	ABS Special Adhesive	Henkel	650 g	Tangit ABS special adhesive	0	0
Dutine GainSolutionSolutionColong gater 3771000Caling gater 3771sengel7.34.Caling gater 3771000Caling gater 3771sengel7.34.Caling gater 3771000Caling dater 3772SecolAboutCaling Caling Stray000Caling Caling StraySecol40001Caling Caling Stray000Caling Caling Calin	ARBO XL 1075 Fire resistant Sealent	ARBO	310 ml	ARBO XL 1075	0	0
Chang gent 9771Permel7.3.Chang gent 9773ColOChan and Drive SprayBocol4001Kotol Chan and Drive SprayColOCold Galvanniang SyrayBocol4001Cold Chan and Drive SprayColOContractor General Purpose SilconeCorningSorningDoriniContractor General Purpose SilconeOContractor General Purpose SilconeCorningSorninContractor General Purpose SilconeOOEvanin SecolToolDorin Tractor General Purpose SilconeOOOEvanin SecolSorninLooDorin Contractor General Purpose SilconeOOEvanin SecolSornin LooDorin Contractor General Purpose SilconeOOEvanin SecolSornin LooDorin Contractor General Purpose SilconeOOEvanin SecolSornin LooDorin Contractor General Purpose SilconeOOContractor General Purpose SilconeDorin Contractor General Purpose SilconeDOContractor General Purpose SilconeDorin Contractor General Purpose SilconeDOContractor General Purpose SilconeDorin Contractor General Purpose SilconeDDContractor General Purpose SilconeDorin Contractor General Purpose SilconeDDContractor General Purpose SilconeDDDDContractor General Purpose SilconeDDDDContractor General Purpose SilconeDDDDContractor General P	Gleitmo 165	BSS Group	500ml	Gleitmo 165	0	0
Caleng gene 19271Color0.000.000.00Cold Stand Dres Spray0.000.00Cold Stand Dres Spray0.000.00Cold Stand Dres Spray0.000.00Cold Stand Dres Spray0.000.00Cold Stand Dres Spray0.000.00Dry PTF Lancant8ccol40000.07147 SPRAY0.00Dry Dry Dres Stand0.000.0000.0000.000Dry Dry Dres Stand0.0000.0000.0000.000Drash Taeva Dry Dreg Stand0.0000.0000.0000.000Drash Taeva Dreg Stand0.0000.0000.0000.000Drash Taeva Dreg Stand0.0000.0000.0000.000Drash Taeva Dreg Stand0.0000.0000.0000.000Drash Stand Dreg Stand0.0000.0000.0000.000Drash Stand Dreg Stand0.0000.0000.0000.000Drash Stand Dreg Stand0.0000.0000.0000.000Drash Stand Dreg Stand D	Butane Gas	R5	200ml	Butane Gas	0	0
Dam and Drive SparyexcilADDMSocial Samania Spary00Odd Glavasiania Spary00000Contractor General Purposa Silicone0000StryPTT balancia80.0300070000EnglineEatas80071000000EnglineEatas800710000000EnglineEatas8007100 </td <td>Caking agent 97371</td> <td>Hempel</td> <td>17L</td> <td>Caking agent 97371</td> <td>0</td> <td>0</td>	Caking agent 97371	Hempel	17L	Caking agent 97371	0	0
Cold Galaxaning SergerExcilADDADDADDADDDY, PTT HahcantRocalADDContractor General Purpore Silone0.00.0DY, PTT HahcantRocalADDCANTLAC General Purpore Silone0.00.0EpsileExolASDNE EDSC-ALL COLOURS0.00.0EpsileExolN.E.Sil0.00.0EpsileExolN.E.N.E.0.00.0EpsileSoudal3100mlReprint Reprint0.00.0Finery Fine salSoudal100mlReprint Reprint0.00.0Finery Fine salSoudal400gFOLICA SURA RAD P/C.0.00.0OphotatioPrint ReprintNonexcin0.00.00.0OphotatioPrint ReprintNonexcin0.000.00.0OphotatioPrint ReprintNonexcin0.000.00.0Or NonexcinNonexcin2.00ACMACASIAS FIC0.00.0Or NonexcinSoudalSoudalNonexcin0.00.0OphotatioContra Carlon SoudalNonexcin0.00.0OphotationContra Carlon SoudalNonexcin0.00.0OphotationContra Carlon SoudalNonexcin0.00.0OphotationContra Carlon SoudalNonexcin0.00.0OphotationContra Carlon SoudalNonexcin0.00.0OphotationContra Carlon SoudalNonexcin0.00.0<	Caking agent 97371	Hempel	2.5L	Caking agent 97371	0	0
Contractor General Purpore SilverOOODeryTT burderRecol00010777 STPATV00DeryIneBarka800410010777 STPATV00DeryIneBarka80041001000DeryIneBarka80041001000DeryIneDeryIne00000DeryIneSocial3101HereyIne000Disc Superret Doring CompoundRocc40020000Disc Superret Doring CompoundRocc000000Disc Superret Doring CompoundRock10MyDrotatic Condit Cost00 <t< td=""><td>Chain and Drive Spray</td><td>Rocol</td><td>400ml</td><td>Rocol Chain and Drive Spray</td><td>0</td><td>0</td></t<>	Chain and Drive Spray	Rocol	400ml	Rocol Chain and Drive Spray	0	0
Dy. PTT SIMUANI         Col.         ADDIM         DIVER SIGNATION         O         O         O           Display         Earlis         SOUDI         DAYILLE COLL         O         O           Display         Earlis         SOUDI         DAYILLE COLL         O         O           Display for seal         Soudal         Jano         Recry (FR         O         O           Display for seal         Soudal         Jano         Recry (FR         O         O           Display for seal         Cond         AUD         Cond         O         O           Display         Cond         AUD         Cond         O         O         O           Charlower         Statu         Display         Cond         AUD         O         O         O           Charlower         Statu         Display         Display AUD         Display AUD         Display	Cold Galvanising Spray	Rocol	400ml	Gold Galvanising Spray.	0	0
ExpineFacial250mlALVILE EDEC. ALL COLONES0.0Davis Marcy Uxip Degresser.Tek5.1Ht0.0Davis Marcy Uxip Degresser.Tek5.1Ht0.0Strep FristelSoudil1.001000Strep FristelSoudil1.001000Strep FristelSoudil1.001000Strep FristelSoudil1.001000Strep FristelNovieth2.0010040.00Strep FristelNovieth2.0010040.00Strep FristelNovieth2.0010040.00Strep FristelNovieth2.0010040.00Grind Strep FristelNovieth2.001000.00Grind Strep FristelNovieth2.001000.00Grind Strep FristelNovieth2.001000.00Grind Strep FristelNovieth2.001000.00Strep FristelNovieth2.001001000.00Strep FristelNovieth2.001.000.000.00Strep FristelNovieth2.001.000.000.00Strep FristelNovieth2.001.000.000.00Strep FristelNovieth2.001.000.000.00Strep FristelNovieth2.001.000.000.00Strep FristelNovieth2.001.000.000.00Strep FristelNovieth2.001.00	Contractor General Purpose Silicone	Corning	300 ml	Contractor General Purpose Silicone	0	0
proynierLanassummsummImageSumm <td>Dry PTTF lubricant</td> <td>Rocol</td> <td>400ml</td> <td>DRY PTFE SPRAY</td> <td>0</td> <td>0</td>	Dry PTTF lubricant	Rocol	400ml	DRY PTFE SPRAY	0	0
Funcy IntroTitleS.L.Iff.Iff.00Furcy IntroSoudal310mlFurcy Intra00 <t< td=""><td>Easyline</td><td>Rocol</td><td>750ml</td><td>EASYLINE EDGE - ALL COLOURS</td><td>0</td><td>0</td></t<>	Easyline	Rocol	750ml	EASYLINE EDGE - ALL COLOURS	0	0
Precy Price and Proce PrintSoudalSoudalSoudalPrecy Print00Folze Supered Juniting CompoundRecol400 RecolCOLAC SURR RED PIC00Folze Supered Juniting CompoundRecol400 RecolColace SURR RED PIC00Clambo AssClambo AssClambo Ass000Clambo AssClambo Ass400 Molyhotast (Credit DS7)000Clambo AssSoudalMOXINGTER (S A RUS PART)00Clambo AssSoudalMOXINGTER (S A RUS PART)100Clambo AssSoudalNotates000Rece MarkSoudal00000InterSouring CompoundRocal0000Clambo AssSoudal000000Clambo AssClambo Ass000000Clambo AssClambo Ass000000Clambo AssClambo Ass0000000Clambo AssClambo Ass000	Epoxylite	Elantas	800ml	Epoxy monocomponent resin.	1	0
Fisce FubinDiverselp5.1.Foor Public0.0.0.0.Grieks Supered Guings CompoundFub.is Liversel Superselp Control Stars0.0.0.0.Grieks Liss Superselp Control Stars0.0.0.0.0.0.Grieks Liss Superselp Control Stars0.0.0.0.0.0.Grieks Liss Superselp Control Stars0.0.0.0.0.0.Grieks Liss Superselp Control Stars0.0.0.0.0.0.Grieks Liss Stars750ml1.0.0.0.0.0.Grieks Liss Stars750ml1.0.0.0.0.0.Stars Stars2.0.1.8.7.0.0.0.0.0.Stars Stars2.0.1.8.7.0.0.0.0.0.Stars Stars Stars2.0.1.8.7.0.0.0.0.0.Liss Stars Stars Stars2.0.2.0.2.0.0.0.0.0.Liss Stars Stars Stars Stars2.0.1.0.2.0.0.0.0.0.Liss Stars	Evan's Heavy Duty Degreaser	Tick	5 L	Lift	0	0
Fight SystemsGoodGoodGOULAS SUPER RED PIC00Grietmo 105Cuita AbacCuita Abac00Grietmo 105Cuita AbacNo00Grietmo 105NoNo00GT Moisterre regelientNovatech200mlAT No20102000 GT700GUI AbacNovatech200mlAT No20102000 GT7000Need MarkeNoveSite750ml10/ STG NU APPLICI FORMAN000Need MarkeNoveSite350ml10/ STG NU APPLICI FORMAN000Need MarkeNoveSite30ml10/ STG NU APPLICI FORMAN000Need MarkeNoveSite30ml10/ STG NU APPLICI FORMAN0000Need MarkeNoveSite30ml10/ STG NU APPLICI FORMAN00000Need MarkeNoveSite30ml10/ STG NU APPLICI FORMAN00000000000000000000000000000000000 <td>Firecryl Fire seal</td> <td>Soudal</td> <td>310 ml</td> <td>firecryl FR</td> <td>0</td> <td>0</td>	Firecryl Fire seal	Soudal	310 ml	firecryl FR	0	0
DistLuck subrels200ml0 gettern 15600ChyphostarCink AccCity Account Corell DS710.00.0Chypia Assemble/Lunning - in partelMolyAote1.0MOLYAOTER(IS GAP LUS PASTE0.00.0Chypia Assemble/Lunning - in partelMolyAote1.0MOLYAOTER(IS GAP LUS PASTE0.00.0Chypia Assemble/Lunning - in partelNorstein C 20000.00.00.00.00.0Chypia Assemble/Lunning - in partelNorstein C 20000.0<	Floor Polish	Diversey	5 L	Floor Polish	0	0
Org. plackasemb(runne)Oline AgeOline AgeOline Age077 Motisyner regellentNoratech200mlAr No. 230102000 GT70071 Motisyner regellentNoratech200mlAr No. 230102000 GT70071 Motisyner regellentNoratech200mlAr No. 230102000 GT701081 MarkEverbuild300mlHEAT MATE SEALANT- ALL COLOURS121081 MarkEverbuild300mlHEAT MATE SEALANT- ALL COLOURS121081 MarkEverbuild300mlArter MATE SEALANT- ALL COLOURS01081 MarkEverbuild300mlArter MATE SEALANT- ALL COLOURS01081 MarkMarkSolidArter BASE321081 MarkMarkSolidArter BASE001081 MarkSolidArter BASE10001081 MarkMarkSolidArter BASE001081 MarkMarkSolidArter BASE001081 MarkSolidArter BASE0<	Foliac Superred Jointing Compound	Rocol	400 g	FOLIAC SUPER RED PJC	0	0
Gr. pite. Assemble/.nmmg inpate         Modysor         Jig.         MOCVNOT(R) 6.4 PULS PARTS         0         0           Gun Agaled Gas Expanding Form         Evo Silk         7.50ml         EVO SITE GUN APPLID FDAM         0         0           Gun Agaled Gas Expanding Form         Evo Silk         7.50ml         EVID AVID S20120000 (TACLOUNS)         122         6           Bitter         Everbuid         200ml         HEAR MARK SEAUXF-1ALCOUNSS         0         0           Disting compound         Eva Silk         7.50ml         CBB J22R MANSARSPPC         0         0           Ligging Compound         Carborndom         50ml         Applie Compound         0         0         0           Locitle 20 Treadlocker         Locitle 20 Signing Compound         0         0         0         0           Locitle 20 Treadlocker         Locitle 20 Signing Compound         0         0         0         0           Locitle 20 Treadlocker         Locitle 20 Signing Compound         Locitle 20 Signing Compound         0         0         0         0           Locitle 20 Treadlocker         Locitle 20 Signing Compound         Locitle 20 Signing Compound         0         0         0         0           Locitle 20 Signis Compound         Locitle 20 Signing Compoun		Fuchs Lubritech	_		0	0
Gr / Mojskum regellent         Noveshith         200ml         Art No. 23012000 677         0         0           Neet Mate         Sversbild         500ml         HCAT MATE SLAMART -ALL COLOURS         12           Ibir regenspring         Sversbild         500ml         HCAT MATE SLAMART -ALL COLOURS         12           Ibir regenspring         Sversbild         500ml         HCAT MATE SLAMART -ALL COLOURS         12           Ibir regenspring         Sversbild         Adop         FQUACK MANGANESE PIC         1         0           Lapping Compound         Carbor undrum         500ml         Actite 20 Treadicater         0         0           Locitie 43 Treadicater         Locitie         20 ml         Actite 400 Frium         0         0           Locitie 44 Ge Admenvie         Locitie         20 gl         Locitie 454 Ge Admenvie         0         0           Locitie 757 Tread Sealent         Locitie         Soml         Locitie 573         6         6           Locitie 757 Tread Sealent         Locitie         Soml         Locitie 703         4         1           Locitie 750 SomlAct Cleaner         Locitie 700         4         1         Locitie 703         5         11           Locitie 750 SomlAct Cleaner         Locitie 7	Glyphosate	Clinic Ace		Glyphosate (Credit DST)	0	0
Gan Agained Gas Expanding Team         Everbalid         Synth         TST CUM APPLID FOAM         0           Iter More         Swertgal         25t.         DEB JIZER         0         0           Diving compound         Roof         25t.         DEB JIZER         0         0           Lapping Compound         Carbornubarn         1800         Japine Compound         0         0           Lapping Compound         Carbornubarn         1800         Japine Compound         0         0           Lapping Compound         Carbornubarnubarnubarnubarnubarnubarnubarnuba	G-n plus Assemble/running - in paste	Molykote	1kg	MOLYKOTE(R) G-N PLUS PASTE	0	0
Heat Marke         Swarfaga         S00.ml         HAT MATE SHANART - ALL COLOURS         12         6           Diritri compound         Bool         400g         COLAC MANGANES P/C.         1         0           Lapping Compound         Bool         400g         COLAC MANGANES P/C.         1         0           Longing EAT readiocker         Loctite         Somit         Jontite Compound         0         0           Loctite 2AT readiocker         Loctite         Somit         Jontite 270         0         0           Loctite 3AS Treadiocker         Loctite         Somit         Jontite 3AS Response         0         0           Loctite 3AS Treadiocker         Loctite         Somit         Jontite SAT Response         0         0           Loctite 3AS Treadiocker         Loctite         Somit         Jontite SAT Response         0         0           Loctite 705 Somitact Cleaner         Loctite         Somit         Jontite SAT Response         0         0           Loctite 705 Somitact Cleaner         Loctite         Moment         Jontite 700         A         1           Loctite 705 Somitact Cleaner         Loctite 700         Jontite 700         Jontite 700         Jontite 700         Jontitactite 700         Jontite 700	GT7 Moisture repellent	Novatech	200ml	Art No. 230102000 GT7	0	0
literSwartsga25LDFR JIZR00Lapping CompoundCarbonudumSODJapping Compound00Lapping CompoundCarbonudumSODapping Compound00Lapping CompoundLottiteSOMActite 2312Lottite 23 Dr readlockerLottiteSOMActite 23800Lottite 240Lottite20.gLottite 320 K1 component00Lottite 347Lottite20.gLottite 542000Lottite 547SOMLottite 542000Lottite 547SomLottite 542000Lottite 547SomLottite 547SOM00Lottite 571SomLottite 577666Lottite 7307SomLottite 57710211Lottite 7308LottiteSomLottite 7010000Lottite 7030GateMODenLottite 703041110Lottite 7030SateLottite 700244Map/Dro GasBothenperger1LMAPP GAS (Pertoleum Gas, MAPD)00Lottite 705Lottite 705Lottite 7051024Map/Dro GasBothenperger1LMAPP GAS (Pertoleum Gas, MAPD)00Map/Dro GasBothenperger1LMAPP GAS (Pertoleum Gas, MAPD)00Map/Dro GasBothenperger1LMAPP GAS (Pertoleum	Gun Applied Gas Expanding Foam	Evo-Stik	750ml	EVO-STIK GUN APPLIED FOAM	0	0
Ionting compoundIondiIondiIondiIondiLapping CompoundCarbornubumSolpapping CompoundSolOLocitle 240CarbornubumIontile 240SolSolSolLocitle 240Iontile 240Iontile 240SolOOLocitle 240Locitle 240Iontile 240SolOOLocitle 4440Locitle 240Iontile 540SolOOLocitle 454Locitle ComponentOOODLocitle 547 Fange SelontLocitle 547Locitle 547GGGLocitle 547 Fange SelontLocitle 574GGGDDLocitle 577 Frand SealentLocitle 574GGGDD <td>Heat Mate</td> <td>Everbuild</td> <td>300 ml</td> <td>HEAT MATE SEALANT - ALL COLOURS</td> <td>12</td> <td>6</td>	Heat Mate	Everbuild	300 ml	HEAT MATE SEALANT - ALL COLOURS	12	6
Johning compoundRootPUAL AMMSANES P/C10Logning CompoundCarborndomCompoundCompoundCompoundCompoundCompoundLocitle 23 TeaditockerLocitleSomiActile 2310SomiCompoundCompoundLocitle 3410LocitleA andLocitle 2416CompoundCompoundCompoundCompoundLocitle 3430LocitleA andLocitle 3430Kits compoundCompound<	Jizer	Swarfega	25L	DEB JIZER	0	0
Lapping Compound         Carbon with 243 Teach         0         0           Locitie 230 Treditoker         Locitie 350m         Locitie 2430         3         2           Locitie 230 Treditoker         Locitie 3430         Locitie 3430         0         0           Locitie 3430         Locitie 4330         Locitie 4340         0         0           Locitie 434         Locitie 4340         0         0         0           Locitie 434         Contie 454         Contie 454         0         0         0           Locitie 454         Contie 454         Contie 454         Contie 454         Contie 577         Contie 577         Contie 577         Contie 577         Contie 577         Contie 500m         Locitie 7030         A         Contie 7030         A         Contie 7030         Locitie 7040         Locitie 7040         Locitie 7040         Locitie 7043         S         11           Locitie 7040         Locitie 7040         Locitie 7040         Locitie 7045         Locitie 7040         Locitie 70	Jointing compound		400g	FOLIAC MANGANESE PJC	1	0
Locitie 27D Treadlocker         Locitie         Symp         Locitie 24 and         Locitie 2406 (Instant Adhesive         Locitie         24 nd         Locitie 4306 (Instant Adhesive         0         0           Locitie 406 (Instant Adhesive         Locitie         20 g         Locitie 4307 (Instant Adhesive         0         0           Locitie 4307 (Instant Adhesive         Locitie         20 g         Locitie 547 (Instant Adhesive         0         0           Locitie 547 (Instant Adhesive         Locitie         50ml         Locitie 577         66         6           Locitie 557 (Instant Sealent)         Locitie         50ml         Locitie 7033         4         6           Locitie 7035 super clean         Locitie         400ml         Locitie 7033         5         11           Locitie 7030 Gaket remover         Locitie         400ml         Locitie 7033         2         2           Locitie 7049         Locitie         100ml         Locitie 7255         10         2         4           Map/PorGas         Rotitie 7459 400ML         3         3         3         4           Locitie 7049         Locitie 700         Locitie 700         0         0         0           Map/PorGas         Rotineherger         11 <td< td=""><td></td><td>Carborundum</td><td>500 g</td><td>Lapping Compound</td><td>0</td><td>0</td></td<>		Carborundum	500 g	Lapping Compound	0	0
Locitie 3430         Locitie         2 Am         Locitie 436 Kit component         0         0           Locitie 454 Gel Adhesive         Locitie         20 g         Locitie 454 Gel Adhesive         0         0           Locitie 454 Gel Adhesive         Locitie         20 g         Locitie 454 Gel Adhesive         0         0           Locitie 57 Tread Sealent         Locitie         57m         Expair         5         0           Locitie 57 Tread Sealent         Locitie         50m         Repair         3         0           Locitie 500         Repair         3         0         0         0         0           Locitie 7033 contact (leaner         Locitie         400m         Locitie 7033         4         6           Locitie 7039 contact (leaner         Locitie         400m         Locitie 700         0         0         0           Locitie 7070         Locitie         100m         Locitie 7455         100         2         4           Map/For Gas         Rothenberger         11         MAP GAS (Petroleum Gas, MAPD)         0         0           Multipurpose Sitian         Rothenberger         11         MAP GAS (Petroleum Gas, MAPD)         0         0           Multipurose Sitian	Loctite 243 Treadlocker	Loctite	50ml	Loctite 243	3	2
Locitite Addite         Locitite         20 g         Locitite 454         0         0           Lacitite 454         Locitite         20 g         Locitite 454         0         0           Lacitite 454         Locitite         50ml         Locitite 547         0         0           Lacitite 574         Locitite         50ml         Locitite 577         66         66           Locitite 578         Sealent         Locitite         50ml         Locitite 7039         4         66           Locitite 7030         Locitite         400ml         Locitite 7039         4         6           Locitite 7040         Locitite         400ml         Locitite 7039         4         1           Locitite 7404         Locitite         400ml         Locitite 7405         10         2           Locitite 7404         Locitite 7405         Locitite 7405         10         2         4           Map/Pro Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         3         3           Malp Postor Philes Spray         Bost         Solonni         Bost MEC Claner         0         0           Multisoe Powder Filler         Rocol         11         MAPP GAS (Petroleum Gas, MAPD)         <	Loctite 270 Treadlocker	Loctite	50ml	Loctite 270	0	0
Locitie         20 g         Actite         54 Get         0         0           Lactite 54 Get All-Streadselent         Locitie         5 Simil         Locitie 54 Get         0         0           Locitie 57 Frand Sealent         Locitie         100mil         Locitie 577         6         6           Locitie 577 Tread Sealent         Locitie         50mil         Locitie 577         6         6           Locitie 507 Tread Sealent         Locitie         400mil         Locitie 7039         4         6           Locitie 7039 contact Cleaner         Locitie         400mil         Locitie 7003         4         6           Locitie 700 Sarkst remover         Locitie         400mil         Locitie 7000         4         1           Locitie 7200 Sarkst remover         Locitie         500mil         Locitie 7700         4         1           Locitie 720 Primer         Locitie         500mil         Locitie 7700         3         6         Locitie 770           Maly/Pro Gas         Rothenberger         11         MAP GAS (Petroleum Gas, MAPD)         0         0           Maly/Pro Gas         Rothenberger         11         MAP GAS (Petroleum Gas, MAPD)         0         0           Multiuproposestingouther Marga Gas <td>Loctite 3430</td> <td>Loctite</td> <td>24 ml</td> <td>Loctite 3430B Kit component</td> <td>0</td> <td>0</td>	Loctite 3430	Loctite	24 ml	Loctite 3430B Kit component	0	0
Locitie         SOIII         Locitie S42         0         0           Locitie 577 Frange Sealent         Locitie         180ml         Locitie 577         6         6           Locitie 577 Frange Sealent         Locitie         50ml         Locitie 577         6         6           Locitie 600 Retaining Compoul         Locitie         50ml         Repair         3         0           Locitie 7030 Super clean         Locitie         400ml         Locitie 7030         4         6           Locitie 7030 Gasket remover         Locitie         400ml         Locitie 7035         10         2           Locitie 7040 Gasket remover         Locitie         500ml         Locitie 770         2         4           Map/Pro Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         0         0           Mapf Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         0         0           Multipurpose Silicon with Funglicite         Moyote         400ml         MOLWXPT(R) METAL PROTECTOR PLUS         0         0           Multipurpose Silicon with Funglicite         Mociol         1800ml         TurifeGAS RPAY         1         0           Multiuspres pray         Rociol         1	Loctite 406 Instant Adhesive	Loctite	20 g	Loctite 406 Prism	0	0
Locitie S74 Finge Sealent         Locitie         160ml         Locitie S74         S         0           Locitie S77 Tread Sealent         Locitie         50ml         Locitie 577         6         6         6           Locitie 600 Fetaning Compoul         Locitie         50ml         Repair         3         0           Locitie 7039 contact cleaner         Locitie         400ml         Locitie 7039         4         6           Locitie 700 lask detector         Locitie         400ml         Locitie 7100         4         1           Locitie 7200 lask detector         Locitie         400ml         Locitie 7200         4         1           Locitie 720 lask detector         Locitie         100ml         Locitie 7760 sont         2         4           Map/Fro Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         0         0           Map/Gro Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         0         0           Multipurpospe Silcon with Fungicie         Moly KNOTE((N) METAL PROTECTOR PLUS         0         0         0           Multipurpospe Silcon with Fungicie         Moly KNOTE(N) METAL PROTECTOR PLUS         0         0         0           Pinu Pub Rabe	Loctite 454 Gel Adhesive	Loctite	20 g	Loctite 454	0	0
Locitie         Sorti         Acute         Sorti         Repair         6         6           Locitie         Sorti         Repair         3         0           Locitie         400ml         Locitie 7039         4         6           Locitie         400ml         Locitie 7039         4         10           Locitie         400ml         Locitie 7039         4         10           Locitie         400ml         Locitie 7439         Locitie 743         10         2           Locitie         730 mile         Locitie         10         Locitie 7439         Locitie 743         3         3           Mapi Gas         Rothenberger         11         MAP GAS (Petroleum Gas, MAPD)         0         0         0           Multipurpose Silicon with Fungicide         Molykote         400ml         MOLYKOT(RJ) METAL PROTECTOR PLUS         0         0           Multipurpose Silicon with Fungicide         Molykote         400ml         EASIC SYNTHETCOR PLU	Loctite 542 Treadsealent	Loctite	50ml	Loctite 542	0	0
Locitie         Somi         Repair         3         0           Locitie         Jocitie	Loctite 574 Flange Sealent	Loctite	160ml	Loctite 574	5	0
Lactite 7039 contact cleaner         Lactite         400ml         Lactite 7039         4         6           Lactite 7063 super clean         Lactite         400ml         Lactite 7063         5         111           Lactite 700 Gasket remover         lactite         400ml         Lactite 7100         0         0         0           Lactite 7200 Gasket remover         lactite         400ml         Lactite 710         2         4         1           Lactite 7404         Lactite 7455         100         2         4         Map/Pro Gas         6           Lactite 770         Lactite 770         2         4         4         1           Map/Pro Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         0         0           Malp Detactor Plus Spray         Boss         500 ml         Boss MEX Cleaner         0         0         0           Multiuse Powder Filler         Rocol         1 S L         MULTSOL         0 <t< td=""><td>Loctite 577 Tread Sealent</td><td>Loctite</td><td>50ml</td><td>Loctite 577</td><td>6</td><td>6</td></t<>	Loctite 577 Tread Sealent	Loctite	50ml	Loctite 577	6	6
Database         Database         Database         Database         Figure         Figure <thfigure< th=""> <thf< td=""><td>Loctite 660 Retaining Compoud</td><td>Loctite</td><td>50ml</td><td>Repair</td><td>3</td><td>0</td></thf<></thfigure<>	Loctite 660 Retaining Compoud	Loctite	50ml	Repair	3	0
Locitie 7100 leak detector         locitie         400ml         Locitie 7100         0         0           Locitie 7200 Gasket remover         locitie         400ml         Locitie 7200         4         1           Locitie 7453 scituator         locitie         150ml         Locitie 7455         10         2           Locitie 7649         Locitie 7649         Locitie 700 mg         2         4           Map/Pro Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         0         0           Map Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         3         3           Metal Protector Plus Spray         Boss         500 ml         Boss MEX (Cleaner         0         0         0           Multipurpose silicon with Fungicide         Molykote         400 ml         Astrol optimol SHF spray         4         2           Multipurpose silicon with Fungicide         Rocol         51         MULTSOL         0         0         0           Optimol SHF spray         Rocol         51         MULTSOL         0         0         0           Pine Disenfectant         Castrol         400ml         TEFPOL         0         0         0           Pinty Pius Ba	Loctite 7039 contact cleaner	Loctite	400ml	Loctite 7039	4	6
Loctile 7200 Gasket remover         loctile         400ml         Loctile 7200         4         1           Loctile 7455 activator         loctile         150ml         Loctile 720         10         2           Loctile 770 Primer         Loctile         100ml         Loctile 770         2         4           Map/Pro Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         3         3           Mapp Gas         Rothenberger         11         MAPP GAS (Petroleum Gas, MAPD)         3         3           Metal Protector Plus Spray         Boss         500 ml         BOSS MEX Cleaner         0         0           Multipurpose Silicon with Fungicide         Boolow         400 ml         MULTSOL         0         0           Open Gear Spray         Rocol         1800 g         TUFGEAR SPRAY         1         0         0           Pine Disenfectant         Castrol         400ml         TEEPOL         0         0         0           Pinty Pius Basic         Teepol         5         L         BASIC SYNTHETC PANT (Gloss-Satri-Mat         0         0           Progane         Mocykote         400ml         PR SPRAY         0         0         0           Progane	Loctite 7063 super clean	Loctite	400ml	Loctite 7063	5	11
Loctite 7455 activator         loctite         150ml         Loctite 7455         10         2           Loctite 749         Loctite         500ml         Loctite 770         2         4           Map/Pro Gas         Rothenberger         11         MAPP GAS [Petroleum Gas, MAPD]         0         0           Mapp Gas         Rothenberger         11         MAPP GAS [Petroleum Gas, MAPD]         3         3           Multipurpose Silicon with Fungicide         Molykote         400 ml         MOLYKOTE(R) META LPROTECTOR PLUS         0         0           Multipurpose Silicon with Fungicide         Rocol         5 L         MULTSOL         0         0         0           Multipurpose Silicon with Fungicide         Rocol         1 1800 g         TUFGEAR SPRAY         1         0         0         0           Multipurpose Silicon with Fungicide         Abcol         1 1800 g         TUFGEAR SPRAY         1         0 <td< td=""><td>Loctite 7100 leak detector</td><td>loctite</td><td>400ml</td><td>Loctite 7100</td><td>0</td><td>0</td></td<>	Loctite 7100 leak detector	loctite	400ml	Loctite 7100	0	0
Lactite 7649         Lactite         500ml         Lactite 7649 500 ML         3         6           Lactite 770 Primer         Loctite         10 g         Lactite 770 Primer         2         4           Map/Pro Gas         Rothenberger         11         MAPP GAS [Petroleum Gas, MAPD]         0         0           Mapp Gas         Rothenberger         11         MAPP GAS [Petroleum Gas, MAPD]         3         3           Multipurpose Silicon with Fungicide         Molykote         400 ml         BOSS MEC Cleaner         0         0           Multiuse Powder Filler         Rocol         15 L         MULTSOL         0         0           Open Gas Spray         Rocol         1800 gt         TUFGEAR SPRAY         1         0         0           Pinto Disenfectant         Castrol         400ml         TEEPOL         0         0         0           Pinto Jbins Basic         Teepol         5 L         BASIC SYNTHETIC PAINT (Giss-Satin-Mat         0         0           Pinty Dis Basic         Devcon         500ml         MOLYKOTE(R) POLYGUSS N SPRAY         0         0           Polygliss-N spray adhesive         Devcon         500ml         MOLYKOTE(R) POLYGUSS N SPRAY         0         0           PVC clean	Loctite 7200 Gasket remover	loctite	400ml	Loctite 7200	4	1
Loctite         10 g         Loctite         10 g         Loctite         770         2         4           Map/For Gas         Rothenberger         1L         MAPP GAS (Petroleum Gas, MAPD)         0         0           Mapp Gas         Rothenberger         1L         MAPP GAS (Petroleum Gas, MAPD)         3         3           Metal Protector Plus Spray         Boss         500 ml         BOSS MEK Cleaner         0         0           Multipurpose Silicon with Fungicide         Molykote         400 ml         MOLYKOTE(R) METAL PROTECTOR PLUS         0         0           Multise Powder Filler         Rocol         5 L         MULTISOL         0         0         0           Open Gars Spray         Rocol         400 ml         castrol optimol SHF spray         4         2           Pine Disenfectant         Castrol         400ml         restrol optimol SHF spray         0         0           Plastic steel S minute putty         Novasolspray         400ml         Restrol Steel S minute putty         0         0           Plastic steel S minute putty         Novaschpray         400ml         Restryer PARA         0         0           Propane         Rocol         400ml         Restryer PARA         0         0	Loctite 7455 activator	loctite	150ml	Loctite 7455	10	2
Map//Pro Gas         Rothenberger         1L         MAPP GAS (Petroleum Gas, MAPD)         0         0           Meap Gas         Rothenberger         1L         MAPP GAS (Petroleum Gas, MAPD)         3         3           Multipurpose Silicon with Fungicide         Molykote         400 ml         MOLYKOTE(R) METAL PROTECTOR PLUS         0         0           Multipurpose Silicon with Fungicide         Molykote         400 ml         MOLYKOTE(R) METAL PROTECTOR PLUS         0         0           Multipurpose Silicon with Fungicide         Molykote         400 ml         Inidi         0         0           Open Gear Spray         Rocol         1800 g         TUFGEAR SPRAY         1         0         0           Pinto Disenfectant         Castrol         400 ml         castrol optimol SHF spray         4         2         2           Pinto Disenfectant         Castrol         400 ml         TEFOL         O         0         0         0           Polygilis-N spray adhesive         Devcon         500 ml         NoLYKOTE(R) POLYGLISS N SPRAY         0         0         0           Pur 1 - component isolation foam         Rothenberger         450 g         PUR 7         0         0         0           RXD-2 Devcorn         250ml	Loctite 7649	Loctite	500ml	Loctite 7649 500 ML	3	6
Mapp Gas         Rothenberger         1L         MAPP GAS (Petroleum Gas, MAPD         3         3           Metal Protector Plus Spray         Boss         500 ml         BOSS MEK Cleaner         0         0           Multipurpose Silicon with Fungicide         Molykote         400 ml         MULTSUL PROTECTOR PLUS         0         0           Multipurpose Silicon with Fungicide         Molykote         400 ml         MULTSUL         0         0           Multuse Powder Filler         Rocol         1 B00 g         TUFGEAR SPRAY         1         0           Open Gear Spray         Rocol         400 ml         Castrol optimol SHF spray         4         2           Pine Disenfectant         Castrol optimol SHF spray         4         2         0         0           Pine Disenfectant         Castrol optimol SHF spray         0         0         0         0           Pings Basic         Teepol         5 L         BASIC SYNTHETIC PAINT (Gloss-Satin-Mat         0         0         0           Pings Pary         Molykote         400ml         Pastic steel 5 minute putty         0         0         0           Progane         Rocol         400ml         Acetylene-Propadiene Mixture         0         0         0	Loctite 770 Primer	Loctite	10 g	Loctite 770	2	4
Metal Protector Plus Spray         Boss         500 ml         BOSS MEK Cleaner         0         0           Multipurpose Silicon with Fungicide         Molykote         400 ml         MULTXOTE(R) METAL PROTECTOR PLUS         0         0           Multipurpose Silicon with Fungicide         Molykote         400 ml         MULTSOL         0         0         0           Multipurpose Silicon with Fungicide         Rocol         1800 g         TURGEAR SPRAY         1         0         0         0           Multipurpose Silicon with Fungicide         Rocol         400 ml         TURGEAR SPRAY         1         0	Map//Pro Gas	Rothenberger	1L	MAPP GAS (Petroleum Gas, MAPD)	0	0
Multipurpose Silicon with Fungicide         Molykote         400 ml         MOLYKOTE(R) METAL PROTECTOR PLUS         0         0           fluid         Sealants         300 ml         fluid         0         0         0           Multiuse Powder Filler         Rocol         5 L         MULTSOL         0         0         0           Open Gear Spray         Rocol         1800 g         TUFGEAR SPRAY         1         0         0           Pine Disenfectant         Castrol d400ml         TEEPDL         0         0         0         0           Pine Disenfectant         Castrol d400ml         TEEPDL         0         0         0         0           Plastic steel 5 minute putty         Novasolspray         400ml         PRESPO         0         0         0           Propane         Rocol         400ml         Acetylene-Propadiene Mixture         0         0         0           PVC cleaner         Novatech         750ml         Tangit Cleanser PVC-U/C ABS         0         0         0           SKC-S Developer         Magnaflux         300g         SKC-S Aerosol         0         0         0         0           Skts-SP1 Penetrant         Magnaflux         300g         SKC-S Aerosol	Mapp Gas	Rothenberger	1L	MAPP GAS (Petroleum Gas, MAPD	3	3
fluid         Sealants         300 ml         fluid         0         0           Multisse Powder Filler         Rocol         5 L         MULTSQL         0         0           Open Gear Spray         Rocol         1800 g         TUFGEAR SPRAY         1         0           Optimol SHF spray         Rocol         400 ml         castrol optimol SHF spray         4         2           Pine Disenfectant         Castrol         400 ml         castrol optimol SHF spray         4         2           Pine Disenfectant         Castrol         400 ml         rEsPol         5 L         BASIC SVNTHETIC PAINT (Gloss-Satin-Matt         0         0           Plastic steel 5 minute putty         Novasolspray         400 ml         PR Stray         0         0         0           Proygles-N spray adhesive         Devcon         500 ml         MOLYKOTE(R) POLYGLISS N SPRAY         0         0           Proy Par adhesive         Rocol         400 ml         Aretylene-Propadeen Mixture         0         0         0           PVC cleaner         Novatech         750ml         Tangit Cleanser PVC-U/C ABS         0         0           RUD Adhesive         Rocol         250ml         SKC-S Aerosol         0         0         0<	Metal Protector Plus Spray	Boss	500 ml	BOSS MEK Cleaner	0	0
Multiuse Powder Filler         Rocol         5 L         MULTISOL         0         0           Open Gar Spray         Rocol         1800 g         TUFGEAR SPRAY         1         0           Optimol SHF spray         Rocol         400 ml         castrol optimol SHF spray         4         2           Pine Disenfectant         Castrol         400 ml         TEEPOL         0         0         0           Pinty Pius Basic         Teepol         5 L         BASIC SYNTHETIC PAINT (Gloss-Satin-Mat         0         0           Polyglis-N spray adhesive         Devcon         500ml         MOLYKOTE(R) POLYGLISS N SPRAY         0         0           Propane         Rocol         400ml         Pastist steel 5 minute putty         0         0           PVC cleaner         Novatech         750ml         Rangt Cleaner PVC-U/C ABS         0         0           RYL Cleaner         Novatech         750ml         Tangt Cleaner PVC-U/C ABS         0         0           SKC-S Cleaner/Remover         Devcon         250ml         SKC-S Aerosol         0         0           SKL-SE Developer         Magnaflux         300g         SKD-S2 Aerosol         0         0           Skten fon uPVC         Fusetitte         25	Multipurpose Silicon with Fungicide	Molykote	400 ml	MOLYKOTE(R) METAL PROTECTOR PLUS	0	0
Open Gear Spray         Rocol         1800 g         TUFGEAR SPRAY         1         0           Optimol SHF spray         Rocol         400 ml         Castrol Quinnol SHF spray         4         2           Pine Disenfectant         Castrol Quinnol SHF spray         4         2           Pine Disenfectant         Castrol Quinnol SHF spray         0         0           Pints Plastic steel S minute putty         Novasolspray         400ml         Plastic steel S minute putty         0         0           Polygliss-N spray adhesive         Devcon         500ml         MOLYKOTE(R) POLYGLISS N SPRAY         0         0           Propane         Rocol         400ml         Acetylene-Propadiene Mixture         0         0         0           PVC Cleaner         Novatech         TSOml <tangit abs<="" c="" cleanser="" pvc-u="" td="">         0         0         0           RKDS Adhesive         Rocol         400g         RU BER CKENT         0         0         0           SKC-S Cleaner/Remover         Devcon         250ml         SKC-S Aerosol         0         0         0           SKC-S Penestrant         Magnaflux         300g         SKD-S2 Aerosol         0         0         0           Special Adhesive for uPVC         Fusetite</tangit>	fluid	Sealants	300 ml	fluid	0	0
Optimal SHF sprayRocol400 mlcastrol optimal SHF spray42Pine DisenfectantCastrol400 mlTEEPOL00Pinty Pius BasicTeepol5 LBASIC SYNTHETC PAINT (Gloss-Satin-Mat00Plastic steel 5 minute puttyNovasolspray400mlPlastic steel 5 minute putty00Polyglis-N spray adhesiveDevcon500mlMOLYKOTE(R) POLYSCISS N SPRAY00PropaneRocol400mlPR SPRAY000PropaneRocol400mlAcetylene-Propadiene Mixture000PVC cleanerNovatech750mlTangit Cleanser PVC-U/C ABS000Rubber AdhesiveRocol400gRU BBER CEMENT000SKC-S Cleaner/RemoverDevcon250mlSKC-SA cerosol000SKC-S Cleaner/RemoverMagnaflux300gSKD-S2 Aerosol000SKL-SP1 PenetrantMagnaflux300gSKD-S2 Aerosol000System foam cleaningCH500mlEVO-STIK PU FOAM CLEANER000System foam cleaningCH500mlTangit PUC-USpecial Adhesive555TetraborHenkel650g0000Tangit ABS special adhesiveSS5555TetraborHenkel650g0000Tangit ABS special adhesiveS5 <t< td=""><td>Multiuse Powder Filler</td><td>Rocol</td><td>5 L</td><td>MULTISOL</td><td>0</td><td>0</td></t<>	Multiuse Powder Filler	Rocol	5 L	MULTISOL	0	0
Prine DisenfectantCastrol400mlTEEPOL00Pinty Plus BasicTeepol5 LBASIC SYNTHETIC PAINT (Gloss-Satin-Mat00Plastic steel 5 minute puttyNovasolspray400mlPlastic steel 5 minute putty00Plastic steel 5 minute puttyDevcon500mlMOLYKOTE(R) POLYGLISS N SPRAY00PropaneRocol400mlPR SPRAY000PropaneRocol400mlAcetylene-Propadiene Mixture000PVC cleanerNovatech750mlTangit Cleanser PVC-U/C ABS000RCS Cleaner/RemoverDevcon250mlSKC-S Aerosol000SKC-S Leener/RemoverDevcon250mlSKC-S Aerosol000SKC-S DeveloperMagnaflux300gSKD-S2 Aerosol000SkC-S DeveloperMagnaflux300gSKD-S2 Aerosol000Special Adhesive for uPVCFusetite250mlTangit PVC-U Special Adhesive000System foam cleaningCH500mlEVO-STIR PU FOAM CLEANER0000Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive555TerbabHenkel650g00000Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive555TerbaboBoss500gTangit AB	Open Gear Spray	Rocol	1800 g	TUFGEAR SPRAY	1	0
Pinty Plus BasicTeepol5 LBASIC SYNTHETIC PAINT (Gloss-Satin-Mat)00Plastic steel 5 minute puttyNovasolspray400mlPlastic steel 5 minute putty00Polygliss-N spray adhesiveDevcon500mlMOLYKOTE(R) POLYGLISS N SPRAY00PropaneRocol400mlAcetylene-Propadiene Mixture00Pur 7 1- component isolation foamRothenberger450gPUR 700PVC cleanerNovatech750mlTangit Cleanser PVC-U/C ABS00Rubber AdhesiveRocol400gRU BBER CEMENT000Rubber AdhesiveRocol400gRU BBER CEMENT000SKC-52 DeveloperMagnaflux300gSKC-52 Aerosol000SKL-521 DeveloperMagnaflux300gSKC-52 Aerosol000System foar uleaningCH250mlTangit PVC-U Special Adhesive000Task hard PVC solvent cementESK500mlGriffon T 88000Task hard PVC solvent cementESK100gTangit ABS special adhesive555TetraborHenkel650g1Tangit ABS special adhesive555TetraborHenkel650g00000Tangit ABS special adhesive555555TetraborHenkel650g00000 <td>Optimol SHF spray</td> <td>Rocol</td> <td>400 ml</td> <td>castrol optimol SHF spray</td> <td>4</td> <td>2</td>	Optimol SHF spray	Rocol	400 ml	castrol optimol SHF spray	4	2
Plastic steel 5 minute puttyNovasolspray400mlPlastic steel 5 minute putty00Polygils-N spray adhesiveDevcon500mlMOLYKOTE(R) POLYGUSS N SPRAY00PR sprayMolykote400mlPR SPRAY00PropaneRocol400mlPR SPRAY00Pur 7 1- component isolation foamRothenberger450gPUR 700PVC cleanerNovatech750mlTangit Cleanser PVC-U/C ABS00RU DiquidTangit11RTD LiQuiD000Rubber AdhesiveRocol400gRU BBER CEMENT00SKC-S Cleaner/RemoverDevcon250mlSKC-S Aerosol00SKL-SP1 PenetrantMagnaflux300gSKD-S2 Aerosol00SkL-SP1 PenetrantMagnaflux300gfusetite solvent cement00System foam cleaningCH500mlEVO-STIK PU FOAM CLEANER00Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive55TeraborHenkel650g0000Turbo Gasdeb4 LTurbo Gas000Valve Grinding CompoundTurbo Gas0000Turbo Gasdeb4 LValve Grinding Compound00Turbo Gasdeb4 LValve Grinding Compound00Turbo Gasdeb4 LValve Grinding C					0	0
Polygliss-N spray adhesiveDevcon500mlMOLYKOTE(R) POLYGLISS N SPRAY00PR sprayMolykote400mlPR SPRAY00PropaneRocol400mlAcetylene-Propadiene Mixture00Pur 7 1- component isolation foamRothenberger450gPUR 700PVC cleanerNovatech750mlTangit Cleanser PVC-U/C ABS00RUbber AdhesiveRocol400gRU BBER CEMENT00Rubber AdhesiveRocol400gRU BBER CEMENT00SKC-S Cleaner/RemoverDevcon250mlSKC-S Acrosol00SKC-S DeveloperMagnaflux300gSKD-S2 Aerosol00SkL-SP1 PenetrantMagnaflux300gfusetite solvent cement00Special Adhesive for uPVCFusetite250mlTangit PVC-U Special Adhesive00System foam cleaningCH500mlEVO-STIK PU FOAM CLEANER00Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive55TetraborHenkel650g000Tangit ABS special adhesiveGriffon250ml00Transit MB Special adhesiveGriffon250ml00Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive5TetraborHenkel650g000Tangit ABS Special adhesiveGriffon250ml <td>Pinty Plus Basic</td> <td>Teepol</td> <td>5 L</td> <td>BASIC SYNTHETIC PAINT (Gloss-Satin-Mat</td> <td>0</td> <td>0</td>	Pinty Plus Basic	Teepol	5 L	BASIC SYNTHETIC PAINT (Gloss-Satin-Mat	0	0
PR sprayMolykote400mlPR SPRAY00PropaneRocol400mlAcetylene-Propadiene Mixture00Pur 7 1- component isolation foamRothenberger450gPUR 700PVC cleanerNovatech750mlTangit Cleanser PVC-U/C ABS00Rubber AdhesiveRocol400gRU BBER CEMENT000Rubber AdhesiveRocol400gRU BBER CEMENT000SKD-S2 DeveloperMagnaflux300gSKD-S2 Aerosol000SkL-SP1 PenetrantMagnaflux300gfusetite solvent cement000System foam CleaningCH500mlFusetite solvent cement000System foam CleaningCH500mlEvO-STIK PU FOAM CLEANER000Trangit ABS special adhesiveGriffon250mlTangit ABS special adhesive555TetraborHenkel650g00000Trangit ABS special adhesiveG0000Transit S00Boss500 gtransit S00,000Transit S00Boss500 gtransit S00,000Turbuo Gasdeb4 LTurbu Gas000Valve Grinding CompoundTurbotorch1 LValve Grinding Compound00Uranega Organge Hand CleanerTremco310 mlTUFANEGA ORANGE<	Plastic steel 5 minute putty	Novasolspray	400ml	Plastic steel 5 minute putty	0	0
PropaneRocol400mlAcetylene-Propadiene Mixture00Pur 7 1- component isolation foamRothenberger450gPUR 700PVC clearerNovatech750mlTangit Cleanser PVC-U/C ABS00RtD LiquidTangit11RTD LIQUID000Rubber AdhesiveRocol400gRU BBER CEMENT000SKC-S Cleaner/RemoverDevcon250mlSKC-S Aerosol000SKL-SD DeveloperMagnaflux300gSKD-S2 Aerosol000SkL-SP1 PenetrantMagnaflux300gfusetite solvent cement000Special Adhesive for uPVCFusetite250 mlTangit PVC-U Special Adhesive000System foam cleaningCH500mlEVO-STIK PU FOAM CLEANER0000Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive555TeraborHenkel650gTangit ABS special adhesive0000Trafinum HP Putty Epoxy ResinESK100 gTTANIUM PUTTY RESIN000Turánega Organge Hand CleanerTremco310 mlTUFANEGA ORANGE000Turánega Organge Hand CleanerTremco310 mlTUFANEGA ORANGE000Valve Grinding CompoundTurbotorch1Valve Grinding Compound000Valve Grinding Compound<	Polygliss-N spray adhesive	Devcon	500ml	MOLYKOTE(R) POLYGLISS N SPRAY	0	0
Pur 7 1- component isolation foamRothenberger450gPUR 700PVC cleanerNovatech750mlTangit Cleanser PVC-U/C ABS00RTD LiquidTangit11RTD LIQUID00RTD LiquidRu BBER CEMENT000SKC-S Cleaner/RemoverDevcon250mlSKC-S Aerosol00SKD-S2 DeveloperMagnaflux300gSKD-S2 Aerosol00SKL-SP PenetrantMagnaflux300gSKD-S2 Aerosol00Skl-SP PenetrantMagnaflux300gfusetite solvent cement00System foam cleaningCH500mlEVO-STIK PU FOAM CLEANER00System foam cleaningCH500mlEVO-STIK PU FOAM CLEANER00Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive55TetraborHenkel650g0000Titanium HP Putty Epoxy ResinESK100 gTTANIUM PUTTY RESIN00Turbo Gasdeb4 LTurbo Gas000Valve Grinding CompoundTurbotorch1 LValve Grinding Compound00Valve Grinding CompoundTurbotorch1 LValve Grinding Compound00Utrbo Gasdeb4 LTurbo Gas000Valve Grinding CompoundTurbotorch1 LValve Grinding Compound00Wolfrakote top pasteM	PR spray	Molykote	400ml	PR SPRAY	0	0
PVC cleanerNovatech750mlTangit Cleanser PVC-U/C ABS00RTD LiquidTangit1.RTD LIQUID00Rubber AdhesiveRocol400gRU BBER CEMENT00Rubber AdhesiveRocol400gRU BBER CEMENT00SKC-S Cleaner/RemoverDevcon250mlSKC-S Carcosol00SKD-S2 DeveloperMagnaflux300gSKD-S2 Aerosol00SkD-S2 DeveloperMagnaflux300gfusetite solvent cement00Solvent CementMagnaflux300gfusetite solvent cement00Special Adhesive for uPVCFusetite250mlTangit PVC-U Special Adhesive00System foam cleaningCH500mlGriffon T 88000Tangit ABS special adhesiveG5555TetraborHenkel650g000Tangit ABS special adhesiveG0000Transili SOOBoss500gtremsil 500,000Turba Gasdeb4TurbANIUM PUTTY RESIN000Valve Grinding CompoundTurbotoch1Valve Grinding Compound00Valve Grinding CompoundTurbotoch1Valve Grinding Compound00Valve Grinding CompoundTurbotoch1Valve Grinding Compound00White SpiritFleetwood4MANGERS White Sp	Propane	Rocol	400ml			
RTD Liquid       Tangit       1L       RTD LiQUID       0       0         Rubber Adhesive       Rocol       400g       RU BBER CEMENT       0       0         SKC-S Cleaner/Remover       Devcon       250ml       SKC-S Aerosol       0       0         SKD-S2 Developer       Magnaflux       300g       SKD-S2 Aerosol       0       0         SkL-SP1 Penetrant       Magnaflux       300g       fusetite solvent cement       0       0         Solvent Cement       Magnaflux       300g       fusetite solvent cement       0       0         System foam cleaning       CH       500ml       EVC-U Special Adhesive       0       0         Tangit ABS special adhesive       Griffon       250ml       Tangit ABS special adhesive       5       5         Terabor       Henkel       650g       0       0       0       0         Transit ABS special adhesive       S       500 g       0       0       0       0         Transit ABS special adhesive       Griffon       250ml       Tangit ABS special adhesive       5       5         Terabor       Henkel       650g       0       0       0       0       0         Tufanega Organge Hand Cleaner <td></td> <td>-</td> <td>-</td> <td></td> <td></td> <td></td>		-	-			
Rubber AdhesiveRocol400gRU BBER CEMENT00SKC-S Cleaner/RemoverDevcon250mlSKC-S Aerosol00SKD-S2 DeveloperMagnaflux300gSKD-S2 Aerosol00SKL-SP1 PenetrantMagnaflux300gSKD-S2 Aerosol00SkL-SP1 PenetrantMagnaflux300gfusetite solvent cement00Special Adhesive for uPVCFusetite250 mlTangit PVC-U Special Adhesive00Special Adhesive for uPVCFusetite250 mlTangit PVC-U Special Adhesive00System foam cleaningCH500mlGriffon T 88000Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive55TetraborHenkel650g000Titanium HP Putty Epoxy ResinESK100 gTtrANIUM PUTTY RESIN00Turánega Organge Hand CleanerTremco310 mlTUFANEGA ORANGE00Turánega Organge Hand CleanerTurbotorch1 LValve Grinding Compound00Valve Grinding CompoundTurbotorch1 LValve Grinding Compound00Wolt-40Carborrundum500 gWOH40 AEROSOL555White SpiritWD-40250mlWHITE SPIRIT46White SpiritWD-40250mlWHITE SPIRIT46Wolfrakote top pasteMangers LTD2LWOLFRAKOTE TOP PASTE						
SKC-S Cleaner/RemoverDevcon250mlSKC-S Aerosol00SKD-S2 DeveloperMagnaflux300gSKD-S2 Aerosol00SKL-SP1 PenetrantMagnaflux300gSKD-S2 Aerosol00SKL-SP1 PenetrantMagnaflux300gSKD-S2 Aerosol00SkD-S2 Merosol0000Special Adhesive for uPVCFusetite250 mlTangit PVC-U Special Adhesive00System foam cleaningCH500mlEVO-STIK PU FOAM CLEANER000T-88 hard PVC solvent cementEvo-Stik500mlGriffon T 88000Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive55TetraborHenkel650g0000Titanium HP Putty Epoxy ResinESK100 gTITANIUM PUTTY RESIN00Turba Gasdeb4 LTurbo Gas000Valve Grinding CompoundTurbotorch1 LValve Grinding Compound00White SpiritWD-40250mlWHITE SPirit466Wolfrakote top pasteMangers LTD2 LWOLFRAKOTE TOP PASTE00Wolfrakote top pasteKluber Iubricatio600gEVO-STIK WOD ADHESIVE INTERIOR00Zip Patch adhesiveEvo-Stik11 LZIS Super Gasket remover00Zip Patch ActivatorCorium400mlZIP PATCH ACTIVATOR<		-		~~·		
SKD-S2 DeveloperMagnaflux300gSKD-S2 Aerosol00SKL-SP PenetrantMagnaflux300gSKD-S2 Aerosol00Solvent CementMagnaflux300gfusetite solvent cement00Solvent CementMagnaflux300gfusetite solvent cement00Special Adhesive for uPVCFusetite250mlTangit PVC-U Special Adhesive00System foam cleaningCH500mlEVO-STIK PU FOAM CLEANER00T-88 hard PVC solvent cementEvo-Stik500mlGriffon T 88000Tangit ABS special adhesiveGriffon250mlTangit ABS special adhesive555TetraborHenkel650g000000Titanium HP Putty Epoxy ResinESK100 gTITANIUM PUTTY RESIN0000Tufanga Organge Hand CleanerTremco310 mlTufANEGA ORANGE0000Valve Grinding CompoundTurbotorch1 LValve Grinding Compound000WD-40Carborrundum500 gWD40 AEROSOL5555White SpiritWD-40250mlWHITE SPIRIT4660Wolfrakote top pasteMangers LTD2LWOLFRAKOTE TOP PASTE0002Wold adhesiveKD-41LSS Super Gasket remover60022187 Super Gasket remover00 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td></t<>						
SKL-SP1 Penetrant     Magnafilux     300g     SKD-52 Aerosol     0     0       Solvent Cement     Magnafilux     300g     fusetite solvent cement     0     0       Special Adhesive for uPVC     Fusetite     250 ml     Tangit PVC-U Special Adhesive     0     0       System foam cleaning     CH     500ml     EVO-STIK PU FOAM CLEANER     0     0       Tangit ABS special adhesive     Griffon     250ml     Tangit ABS special adhesive     5     5       Tetrabor     Henkel     650g     0     0     0       Titanium HP Putty Epoxy Resin     ESK     100 g     TITANIUM PUTTY RESIN     0     0       Turanga Organge Hand Cleaner     Tremco     310 ml     TUFANEGA ORANGE     0     0       Turanga Organge Hand Cleaner     Turbotorch     1 L     Valve Grinding Compound     0     0       Valve Grinding Compound     Turbotorch     1 L     Valve Grinding Compound     0     0       White Spirit     WD-40     Carborundum     500 g     WO40 AEROSOL     5     5       White Spirit     WD-40     250ml     WHITE Spirit     0     0     0       Wolfrakote top paste     Mangers LTD     2 L     WOLFRAKOTE TOP PASTE     0     0       Wolfrakote top past						
Solvent Cement     Magnaflux     300g     fusetite solvent cement     0     0       Special Adhesive for uPVC     Fusetite     250 ml     Tangit PVC-U Special Adhesive     0     0       System foam cleaning     CH     500ml     EVC-U Special Adhesive     0     0       Task hard PVC solvent cement     Evo-Stik     500ml     Griffon T 88     0     0       Tangit ABS special adhesive     Griffon     250ml     Tangit ABS special adhesive     5     5       Tetrabor     Henkel     650g     0     0     0       Titanium HP Putty Epoxy Resin     ESK     100 g     TITANIUM PUTTY RESIN     0     0       Turánega Organge Hand Cleaner     Tremco     310 ml     TUFANEGA ORANGE     0     0       Turánega Organge Hand Cleaner     Tremco     310 ml     Turbo Gas     0     0       Valve Grinding Compound     Turbotorch     1 L     Valve Grinding Compound     0     0       White Spirit     WD-40     250ml     WD40 AEROSOL     5     5       White Spirit     WD-40     250ml     WHITE Spirit     4     6       White Spirit     Feetwood     4L     MANGERS White Spirit     0     0       Wolfrakote top paste     Mangers LTD     2L     WOLF		-	-			
Special Adhesive for uPVC     Fusetite     250 ml     Tangit PVC-U Special Adhesive     0     0       System foam cleaning     CH     500ml     EVO-STIK PU FOAM CLEANER     0     0       T-88 hard PVC solvent cement     Evo-Stik     500ml     Griffon T 88     0     0       Tangit ABS special adhesive     Griffon     250ml     Tangit ABS special adhesive     5     5       Tetrabor     Henkel     650g     0     0     0       Titanium HP Putty Epoxy Resin     ESK     100 g     TITANIUM PUTTY RESIN     0     0       Tremsil 500     Boss     500 g     tremsil 500,     0     0       Turba Gas     deb     4 L     Turbo Gas     0     0       Valve Grinding Compound     Turbotorch     1 L     Valve Grinding Compound     0     0       White Spirit     WD-40     250ml     WHTE SPIRIT     4     6       Wolfrakote top paste     Mangers LTD     2 L     WOLFRAKOTE TOP PASTE     0     0       Wold adhesive     Kluber Iubricatio     600g     EVO-STIK WOD ADHSIVE INTERIOR     0     0       Zip Patch adhesive     Kluber Iubricatio     600g     EVO-STIK WOD ADHSIVE INTERIOR     0     0		-	300g			
System foam cleaning         CH         500ml         EVO-STIK PU FOAM CLEANER         0         0           T-88 hard PVC solvent cement         Evo-Stik         500ml         Griffon T 88         0         0         0           Tangit ABS special adhesive         Griffon         250ml         Tangit ABS special adhesive         5         5           Tetrabor         Henkel         650g         0         0         0           Titanium HP Putty Epoxy Resin         ESK         100 g         TITANIUM PUTTY RESIN         0         0           Termsill 500         Boss         500 g         tremsil 500,         0         0         0           Tufanega Organge Hand Cleaner         Tremco         310 ml         TUFANEGA ORANGE         0         0         0           Valve Grinding Compound         Turbotoch         1 L         Valve Grinding Compound         0         0         0           WD-40         Carborundum         500 g         WD40 AEROSOL         5         5         5           White Spirit         Fleetwood         4 L         MANGERS White Spirit         0         0         0           Wolfrakote top paste         Mangers LTD         2 Wolf AEROSOL         5         5         5			-			
T-88 hard PVC solvent cement         Evo-Stik         500ml         Griffon T 88         0         0           Tangit ABS special adhesive         Griffon         250ml         Tangit ABS special adhesive         5         5           Tetrabor         Henkel         650g         0         0         0           Titanium HP Putty Epoxy Resin         ESK         100 g         TITANIUM PUTTY RESIN         0         0           Turemsill 500         Boss         500 g         tremsill 500,         0         0           Turba Gas         deb         4 L         Turbo Gas         0         0           Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0           Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0           Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0           White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           Wolfrakote top paste         Mangers LTD         2L         WOLFRAKOTE TOP PAS						
Tangit ABS special adhesive         Griffon         250ml         Tangit ABS special adhesive         5         5           Tetrabor         Henkel         650g         0         0         0           Titanium HP Putty Epoxy Resin         ESK         100 g         TITANIUM PUTTY RESIN         0         0         0           Tremsill 500         Boss         500 g         tremsil 500,         0         0         0           Turanega Organge Hand Cleaner         Tremco         310 ml         TUFANEGA ORANGE         0         0         0           Turbo Gas         deb         4 L         Turbo Gas         0         0         0           Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0         0           White Spirit         WD-40         Carborundum         500 g         WD40 AEROSOL         5         5         5           White Spirit         WD-40         250ml         WHITE Spirit         4         6           White Spirit         WD-40         250ml         WHITE Spirit         0         0         0           Wolfrakote top paste         Mangers LTD         2 L         WOLFRAKOTE TOP PASTE         0         0						
Tetrabor         Henkel         650g         0         0           Titanium HP Putty Epoxy Resin         ESK         100 g         TITANIUM PUTTY RESIN         0         0           Tremsill 500         Boss         500 g         tremsil 500,         0         0           Trensill 500         Boss         500 g         tremsil 500,         0         0           Turanega Organge Hand Cleaner         Tremco         310 ml         TUFANEGA ORANGE         0         0           Turbo Gas         deb         4 L         Turbo Gas         0         0         0           Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0         0           WD-40         Carborundum         500 g         WD40 AEROSOL         5         5         5           White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           Wolfrakote top paste         Mangers LTD         2 L         WOLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber Iubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           Z1P PATCH ACTIVATOR         0         0         0         0 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Titanium HP Putty Epoxy Resin         ESK         100 g         TITANIUM PUTTY RESIN         0         0           Tremsill S00         Boss         500 g         tremsil S00,         0         0         0           Tufanega Organge Hand Cleaner         Tremco         310 ml         TUFANEGA ORANGE         0         0           Turbo Gas         deb         4 L         Turbo Gas         0         0           Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0           WD-40         Carborundum         500 g         WD40 AEROSOL         5         5         5           White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           Wolfrakote top paste         Mangers LTD         2L         WOLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber Iubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           Z187 Super Gasket remover         Evo-Stik         11         Z187 Super Gasket remover         0         0           Z1p Patch Adhesive         Devcon         ZIP PATCH ACTIVATOR         0         0				Tangit ABS special adhesive		
Tremsill 500         Boss         500 g         tremsil 500,         0         0         0           Tufanega Organge Hand Cleaner         Tremco         310 ml         TUFANEGA ORANGE         0         0         0           Turbo Gas         deb         4 L         Turbo Gas         0         0         0         0           Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0         0           WD-40         Carborundum         500 g         WD40 AEROSOL         5         5         5           White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           Wolfrakote top paste         Mangers LTD         2 L         WOLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber Iubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           Z187 Super Gasket remover         Evo-Stik         1 L         Z187 Super Gasket remover         0         0           Z1p Patch Activator         Corium         400ml         ZIP PATCH ACTIVATOR         0         0						
Tufanega Organge Hand Cleaner         Tremco         310 ml         TUFANEGA ORANGE         0         0           Turbo Gas         deb         4 L         Turbo Gas         0         0           Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0           WD-40         Carborundum         500 g         WD40 AEROSOL         5         5           White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           White Spirit         Fleetwood         4L         MANGERS White Spirit         0         0           Wolfrakote top paste         Mangers LTD         2L         WOLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber lubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           Z187 Super Gasket remover         Evo-Stik         1L         Z187 Super Gasket remover         0         0           Z1p Patch adhesive         Devcon         Z1P PATCH ACTIVATOR         0         0						
Turbo Gas         deb         4 L         Turbo Gas         0         0           Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0         0           WD-40         Carborundum         500 g         WD40 AEROSOL         5         5           White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           White Spirit         WD-40         250ml         WHITE SPIRIT         0         0           Wolfakote top paste         Mangers LTD         2L         WOLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber Iubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           Z187 Super Gasket remover         Evo-Stik         11         Z187 Super Gasket remover         0         0           Zip Patch adhesive         Devcon         ZiP PATCH ADHESIVE         6         4			_			
Valve Grinding Compound         Turbotorch         1 L         Valve Grinding Compound         0         0           WD-40         Carborundum         500 g         WD40 AEROSOL         5         5           White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           White Spirit         Fleetwood         4L         MANGERS White Spirit         0         0           Wolfrakote top paste         Mangers LTD         2L         WOLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber Iubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           2187 Super Gasket remover         Evo-Stik         1 L         ZIP Super Gasket remover         0         0           Zip Patch adhesive         Devcon         ZIP PATCH ACTIVATOR         0         0						
WD-40         Carborundum         500 g         WD40 AEROSOL         5         5           White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           White Spirit         Fleetwood         4L         MANGERS White Spirit         0         0           Wolfrakote top paste         Mangers LTD         2L         WOLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber lubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           ZI87 Super Gasket remover         Evo-Stik         1L         Z187 Super Gasket remover         0         0           Zip Patch activator         Corium         400ml         ZIP PATCH ADHESIVE         6         4						
White Spirit         WD-40         250ml         WHITE SPIRIT         4         6           White Spirit         Fleetwood         4L         MANGERS White Spirit         0         0           Wolfrakote top paste         Mangers LTD         2L         WDLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber lubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           Z187 Super Gasket remover         Evo-Stik         1L         Z187 Super Gasket remover         0         0           Zip Patch activator         Corium         400ml         ZIP PATCH ACTIVATOR         0         0           Zip Patch adhesive         Devcon         ZIP PATCH ADHESIVE         6         4						
White Spirit         Fleetwood         4L         MANGERS White Spirit         0         0           Wolfrakote top paste         Mangers LTD         2L         WOLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber lubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           2187 Super Gasket remover         Evo-Stik         1L         Z187 Super Gasket remover         0         0           21p Patch adhesive         Corium         400ml         ZIP PATCH ACTIVATOR         0         0           Zip Patch adhesive         Devcon         ZIP PATCH ADHESIVE         6         4						
Wolfrakote top paste         Mangers LTD         2L         WOLFRAKOTE TOP PASTE         0         0           Wood adhesive         Kluber lubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           Z187 Super Gasket remover         Evo-Stik         1L         Z187 Super Gasket remover         0         0           Z1p Patch adhesive         Corium         400ml         ZIP PATCH ACTIVATOR         0         0           Z1p Patch adhesive         Devcon         ZIP PATCH ADHESIVE         6         4						
Wood adhesive         Kluber lubricatio         600g         EVO-STIK WOOD ADHESIVE INTERIOR         0         0           Z187 Super Gasket remover         Evo-Stik         1L         Z187 Super Gasket remover         0         0           Z187 August Activator         Corium         400ml         ZIP PATCH ACTIVATOR         0         0           Zip Patch adhesive         Devcon         ZIP PATCH ADHESIVE         6         4	White Spirit					
Z187 Super Gasket remover         Evo-Stik         1L         Z187 Super Gasket remover         0         0           Zip Patch activator         Corium         400ml         ZIP PATCH ACTIVATOR         0         0           Zip Patch adhesive         Devcon         ZIP PATCH ADHESIVE         6         4		Mangers LTD	2L			
Zip Patch activator         Corium         400ml         ZIP PATCH ACTIVATOR         0         0           Zip Patch adhesive         Devcon         ZIP PATCH ADHESIVE         6         4				EVO STIK WOOD ADHESIVE INTERIOR	0	0
Zip Patch adhesive Devcon ZIP PATCH ADHESIVE 6 4	Wood adhesive					
	Wood adhesive Z187 Super Gasket remover	Evo-Stik	1L	Z187 Super Gasket remover	0	0
	Wood adhesive Z187 Super Gasket remover Zip Patch activator	Evo-Stik Corium	1L	Z187 Super Gasket remover ZIP PATCH ACTIVATOR	0 0	0 0

# **APPENDIX D – AER REPORTS (2005 – 2013)**

#### ABOUT AECOM

In a complex and unpredictable world, where growing demands have to be met with finite resources, AECOM brings experience gained from improving quality of life

brings experience gained from improving quality of life in hundreds of places. We bring together economists, planners, engineers, designers and project managers to work on projects at every scale. We engineer energy efficient buildings and we build new links between cities. We design new communities and regenerate existing ones. We are the first whole environments business, going beyond buildings and infrastructure. Our Europe teams form an important part of our

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