Tracey for filing, Thanks Marie

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**Kevin Motherway,**
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**Regional Inspectorate,**
**Inniscarra,**
**Co. Cork**



**9th May 2008**

**License No: W0041-01**

**REF: TECHNICAL AMENDMENT C: MASS EMISSIONS AT X1**

Dear Kevin,

thank you for agreeing to meet with us recently in relation to the mass emission and ELV limits set out in Technical Amendment C of our license. Please find below our arguments in relation to the issue as discussed on Friday and as submitted previously to other departments of the Agency.

The current situation needs to be put in the context of past arrangements and agreements as have been previously been submitted to the Agency;

In relation to sewer emissions at X1 our submission was that our license had allowed for agreement of license ELV's between the Agency and the licensee, subject to acceptability of the sanitary authority. This agreed set of ELVs would therefore exist in place of those limits set out in schedule G.2 of the license (the "note 1" which permits this appears in both columns of Table G.2). Agreement was accordingly made between all relevant parties in August 2000 to a higher set of ELVs apparently until such time as the anticipated upgrade of the Tradaree plant would be in place. This anticipated upgrade was deferred and accordingly the period of validity of the agreed set of ELVs was extended each year until and including 2008.



One issue which could not be resolved at the time was in relation to daily flowrates. The limit of 150 m3/day was not set out in Table G.2 but in another part of that section and was not strictly subject to the "note 1" permission. Hence, although the sanitary authorities were prepared to permit 250 $m^3$/day from the beginning, this could not be easily permitted by the Agency at the time.

Thus the situation was that, while there was no explicit imposition of mass emissions within the license or the agreement, there was an effective daily mass emission which can be determined by applying the daily flowrate of 150$m^3$ to each of the parameters' ELVs set out in the agreed set of ELVs. The agreed set of ELVs and effective mass emission is set out in Table 1 below. These are the limits within which Enva/Shannon Environmental Services has been working since commencement of the ELV agreement in 11th August 2000.

Our request was for the Agency to permit the higher daily flowrate value as part of a Technical Amendment on the basis that this value was permissible by the sanitary authority. This arrangement could in any case be reviewed in the eventuality of the Tradaree upgrade being completed.

*Table 1: Existing license arrangement prior to Technical Amendment C*

| Parameter | ELV (mg/l) | Effective Mass Emission Limit [flowrate 150 m3/day] (kg) |
|---|---|---|
| COD | 3,000 | 450 |
| BOD | 2,000 | 300 |
| Suspended Solids | 400 | 60 |
| Sulphides (as S) | 10 | 1.5 |
| Sulphates (as $SO_4$) | 1,500 | 225 |
| Detergents | 80 | 12 |
| Phosphorous (as P) | 50 | 7.5 |
| Phenols | 3 | 0.45 |
| Ammonia (Total) | 250 | 37.5 |
| Nitrates | 100 | 15 |
| Silver | 2 | 0.3 |
| Aluminium | 10 | 1.5 |
| Cadmium | 0.5 | 0.075 |
| Cobalt | 10 | 1.5 |
| Chromium (III) | 10 | 1.5 |
| Chromium (VI) | 0.05 | 0.0075 |
| Total Chromium*** | 10.05 | 1.5075 |
| Copper | 10 | 1.5 |
| Mercury | 0.05 | 0.0075 |
| Iron | 20 | 3 |
| Nickel | 20 | 3 |
| Lead | 0.5 | 0.075 |
| Tin | 2.0 | 0.3 |
| Zinc | 20 | 3 |
| Arsenic | 1 | 0.15 |
| Cyanide | 0.5 | 0.075 |
| Chlorides | 3,000 | 450 |
| Fluoride | 10 | 1.5 |
| Organohalogens | 0.15 | 0.0225 |
| Fats,Oils and Grease** | 50 | 7.5 |

*pH, toxicity, temperature and colour are not shown here as they are not relevant to this discussion.
**Fats, Oils and Grease ELV was originally agreed as 200 mg/l and was reduced subsequently to 50 mg/l. The lower limit is shown here.
*** Total Chromium limit shown is an effective limit as this parameter was not explicitly referred to in the license or agreement originally.



Upon receipt of Technical Amendment C it was noted that mass emission limits had been set out therein and these were considerably lower than the effective mass emission limits previously agreed (as shown in Table 1). No discussion had taken place with the Agency in relation to the imposition of mass emission limits for sewer discharges only in relation to air emissions. A comparison of the situation before and after is set out in Table 2 below.

As can be seen from Table 2 the majority of licensed parameters have been severely restricted as a result of the amendment. The extent of restriction varies from a reduction of just under one fifth up to more than nine tenths compared to the previously applicable limits. The variations appear to be inconsistent in so far as certain heavy metals (such as cadmium and lead) are permitted to increase substantially despite being generally regarded as of more significant environmental concern. Other parameters such as chlorides are restricted by nearly a third even though these eventually enter saline water in the Shannon estuary where environmental chloride levels are several times higher.

For the reasons set out on the following pages we would like to show that this imposition will have profound implications for Enva's future ability to provide

waste treatment services to Irish industry. In short, Enva will not be able to maintain current levels of waste treatment let alone expand its offering. The result will be that waste which would otherwise be treated in Ireland will be exported for similar treatment abroad resulting in a considerable net environmental loss.

*Table 2: Comparison of Mass Emission Limits before and after amendment.*

| Parameter | Mass Emission prior to amendment (kg) | Technical Amendment C Mass Emission (kg) | %age change. |
|---|---|---|---|
| COD | 450 | | |
| BOD | 300 | | |
| Suspended Solids | 60 | | |
| Sulphides (as S) | 1.5 | | |
| Sulphates (as $SO_4$) | 225 | 250 | + 11% |
| Detergents | 12 | | |
| Phosphorous (as P) | 7.5 | 5 | - 33% |
| Phenols | 0.45 | 0.2 | - 56% |
| Ammonia (Total) | 37.5 | 25 | - 33% |
| Nitrates | 15 | 17.5 | + 17% |
| Silver | 0.3 | 0.025 | - 92% |
| Aluminium | 1.5 | 0.25 | - 83% |
| Cadmium | 0.075 | | |
| Cobalt | 1.5 | 0.25 | - 83% |
| Chromium (III) | 1.5 | | |
| Chromium (VI) | 0.0075 | | |
| Total Chromium*** | 1.5075 | 0.25 | - 83% |
| Copper | 1.5 | 1.25 | - 17% |
| Mercury | 0.0075 | | |
| Iron | 3 | 2.5 | - 17% |
| Nickel | 3 | 1.25 | - 58% |
| Lead | 0.075 | | |
| Tin | 0.3 | | |
| Zinc | 3 | 1.25 | - 58% |
| Arsenic | 0.15 | 0.15 | 0% |
| Cyanide | 0.075 | | |
| Chlorides | 450 | 375 | - 17% |
| Fluoride | 1.5 | | |
| Organohalogens | 0.0225 | 0.03 | + 33% |
| Fats,Oils and Grease** | 7.5 | | |

*pH, toxicity, temperature and colour are not shown here as they are not relevant to this discussion.
**Fats, Oils and Grease ELV was originally agreed as 200 mg/l and was reduced subsequently to 50 mg/l. The lower limit is used here.
*** Total Chromium limit shown prior to amendment is an effective limit as this parameter was not explicitly referred to in the license or agreement originally.



<u>Chlorides</u>

In relation to mass emission limits for chlorides it is difficult to see a justification for a 17% lowering of this limit given that effluent from Enva is discharged via a further physiochemical treatment at Tradaree to sea where chloride levels will be 35,000 ppm. Indeed, we are strongly of the opinion, for the reasons set out below, that chlorides should be exempt from mass emission limits and should only be subject to concentration limits as are COD, BOD and SS.

Chloride arises principally from the treatment of ferrous chloride (from pickling acids used in the galvanising industry) or indeed its use as a flocculant in the treatment of metal bearing liquors. The iron content of this waste is removed through treatment and contained in filtercake from the neutralization process. Chloride anions remain in solution and will not precipitate due to their high solubility. This is an inherent nature of chloride and there is no technical means of removing it to concentrations below those at which we operate. The reduction in

the limit for chloride effectively means a reduction in the quantity of ferrous chloride we can treat. Given that scenario the only alternative will be to export the waste abroad for similar treatment outside Ireland. Given the environmental impacts and risks attached to additional transport of the waste the net impact on the environment will be negative.
In Enva's extensive experience within the water and waste-water treatment industry adverse affects of chloride on a biological treatment system only begin to arise at approximately 10,000 ppm, well above the 3,000 ppm at which Enva have been allowed discharge to date. Microorganisms only become stressed by sudden and substantial changes in chloride concentration. Enva's discharges are relatively constant in their chloride concentration and will not lead to stess in a biological treatment system. In any case, the adverse affects of chloride are more relevant to discharges to freshwater environments than to seawater.

By way of comparison with similar scenarios we would like to cite Kerry Ingredients as an example. They discharge to the river Feale which is tidal to a point approximately 2 kilometers downstream of their discharge point. Their license concentration is 1750mg/l for chloride however their volume discharges are up to 12,000 m3 per day in the summer months and 10,000 m3/day in the winter months. Their Licensed daily dicharge mass of Chloride is 21,000 kg in the summer months and 16,625 kg in the winter months. The river Feale is a designated salmonoid river with flow rates significantly less than those of the Shannon estuary.



*Ammonia*
In relation to ammonia mass emission limits the restriction of these by one third will similarly impact on treatment of wastes at Enva. Ammonia arises in low concentrations in a variety of waste streams/processes including waste photographic developing solution (~ 1000 ppm), galvanizing industry (~800 ppm), leachate waste, nickel recovery process and many others. Only the ammonia recovery process is specifically designed for significant reduction of ammonia concentrations. Although the other physicochemical processes reduce ammonia somewhat, for the volumes and concentrations involved no viable technology exists to significantly reduce the weaker portions of ammonia that add up in our final discharge. With the advance of ammonia recovery process on site Enva aims to remove ammonia content from high strength ammonia wastes and the earlier trail indicated a removal efficiency of 93%. With the imposition of this lower mass emission for effluent there will be no spare capacity for discharge of the remaining 7% from the ammonia recovery process. As with many processes it is not technically feasible to substantially increase recovery efficiencies due to the law of diminishing returns. For example our trials of the ammonia recovery process during 2007 showed that high strength ammonia waste at concentrations of approximately 10,000ppm can be reduced to approximately 1,500 ppm in 24 to 48 hours. It then takes a further 192 hours (8 days) to reduce the concentration from 1,500 ppm to 600 ppm. All in all it takes 10 days to treat 18,000 litres of high strength ammonia waste. Thus it is easy to see that treatment of the high volume of low strength wastes through this process would be inefficient and unviable.

The levels of ammonia discharged from the Enva facility are not considered to be detrimental due to the levels of assimilation and further downstream treatment. We therefore feel that a concentration limit for ammonia is more appropriate than a mass emission limit.

*Heavy Metals*

Nickel and Zinc mass emission levels have been reduced by 58% each and the Iron mass emission limit has been reduced by 17%. These metals and others are all present in many waste streams and particularly pickling acids from galvanizing industries. Their concentration will vary depending on which metals have been processed by the galvanizer. In treating this waste each of these metals precipitate out a different optimum pH level. Furthermore, adjusting the pH too high will result in license exceedance and reducing it too low will cause some of the metals to go back into solution. In view of these competing technical and environmental demands we already select optimum pH levels to achieve maximum precipitation of metals depending on the various concentrations of metals present in a batch. Thus the efficiency of this process is already optimized from the point of view of removal of nickel, zinc and iron. The only other way to achieve lower limits would essentially mean treatment optimized at each metal in turn which is not feasible. If this were to be done it would effectively mean doubling or trebling the treatment time making the process inefficient and uneconomic.

In relation to Silver the limit has been reduced by over 90%. Enva has already investigated the optimization of our silver recovery process previously and has concluded that there is no further scope for improvement.

*Treatment Efficiencies*

Enva already achieves a high level of efficiency in removing pollutants from our customer's wastes. Our position is different from that of an industrial/commercial waste producer in that our core function is to reduce the potential environmental impact of waste that others produce. Typical efficiency values achieved at Enva are set out in Table 3 below.



*Table 3: Typical Efficiencies by emission parameter achieved at Enva.*

| PARAMETER | Concentration in waste received at Enva. | Current percentage reduction achieved after treatment. |
|---|---|---|
| COD | 40,000 mg/l | 97.85% |
| BOD | 60,000 mg/l | 96.66% |
| Nickel | 40,000 mg/l | 99.95% |
| Zinc | 50,000 mg/l | 99.96% |
| Iron | 155,000 mg/l | 99.99% |
| Silver | 3,000 mg/l | 99.93% |
| Copper | 5,190 mg/l | 99.80% |
| Phosphate | 500,000 mg/l | 99.99% |
| Sulphate | 600,000 mg/l | 99.75% |
| Fluoride | 100,000 mg/l | 99.99% |

In view of the above concerns we ask the Agency to reconsider the mass emission limits set out in Technical Amendment C with a view to restoring the previously agreed mass emission limits. .

The following are examples of typical waste reductions achieved for specific waste types:

*Acid Plating Etching Solutions*

| | |
|---|---|
| Nickel | 35,000 ppm reduced to <10ppm |
| Chromium VI | 10,000 ppm reduced to <0.01 ppm |
| Copper | 3,000 ppm reduced to <5ppm |

*Spent acid solutions:*

| | |
|---|---|
| Phosphate | 10,000 ppm reduced to <50ppm |
| Sulphate | 10,000 ppm reduced to <2,000 ppm |
| Fluoride | 50,000 ppm reduced to <10ppm |

*Adhesive waste water solutions*

| | |
|---|---|
| Organohalogens | 10,000 ppm reduced to <0.05ppm |
| COD | 150,000 ppm reduced to <3,000ppm |

*Paint Wastes*

| | |
|---|---|
| COD | 130,000 ppm reduced to <5,000 ppm |

*Water containing trace phenols*

| | |
|---|---|
| Phenol | 150 ppm reduced to <2ppm |

*Agreements Concerning ELVs*

In relation to the applicability of the ELVs set out in the original license and the agreement of the Agency to alter these, the following letter was submitted to Peter Cunningham of the Agency's enforcement division on 9th January 2008 for the purposes of clarification following our Annual EPA audit in December 2007.

***Text of Letter to Peter Cunningham – Agency EEA Division, 9th January 2008.***

*Further to your recent Annual Audit of our facility during which you requested a copy of the full trail of agreements concerning ELVs for effluent discharge from our discharge point X1, please find enclosed copies of all relevant correspondence.*

*As you will see from the enclosed correspondence the sequence of events is as follows:*

- *The Agency granted the license in May 2000 which included two sets of license ELVs. One to apply up to 1 September 2000 and a revised set to apply from 1 September 2000 forward. The license also specifically provided that these ELVs could be altered with the agreement of the Agency.*
- *Enva (then known as "SES") initiated discussions with Shannon Development (the then operator of the effluent treatment facility at Tradaree to which Enva discharges) and Clare County Council (the sanitary authority). These both agreed to more flexible ELVs. In July 2000 Shannon Development therefore issued a revised set of "effluent control regulations" which in turn set out two sets of ELVs. One set was to apply until 1st September 2001 and the second set of more restrictive ELVs was to apply thereafter.*
- *The above agreement with Shannon Development was proposed to the Agency in June 2000 and the ELVs were duly accepted by the Agency in correspondence dated 11th August 2000. (Note: changes to maximum daily volume were not permitted as "Note 1" of our license does not directly apply to this parameter.)*
- *Prior to the commencement of the more restrictive ELVs, Enva agreed with Shannon Development to extend the period of applicability of the less restrictive limits for another year to 31st August 2002 pending a further review at that time. Correspondence to this effect was forwarded to the Agency in November 2001.*

- *Shannon Development subsequently extended the period for the less restrictive limits to 31st August 2003 and again to 31st August 2004. Again this was communicated to the Agency in September 2002 and September 2003 respectively.*
- *In September 2004 Clare County Council took over the operation of the Tradaree effluent treatment facility and subsequently confirmed their agreement to extend the applicability of the less restrictive limits until 31st December 2006 (see email from Cathal Brodie to Gareth Kelly 19th January 2005).*
- *Again Clare County Council agreed to extend the existing arrangement throughout 2006 with a single adjustment to one parameter (fats, oil & greases limit was reduced from 200 mg/l to 50 mg/l). Once again these were extended by Clare County Council for the calendar year 2007. Copies of these communications were last submitted to the Agency on 31st October 2007.*

*The basis for permitting higher ELVs rather than more restrictive ones in each case is related to the continued operation of existing infrastructure at Tradaree. Following a long anticipated upgrade of the Tradaree facility (dating back more than 10 years now) permitted ELVs may be revised due to technical requirements of the anticipated new infrastructure when it is eventually installed and commissioned. This situation remains unchanged to date and we are awaiting confirmation from Clare County Council that these arrangements are to be extended for 2008.*

As discussed at our recent meeting a summary of our arguments in relation to each relevant ELV parameter is set out in the attached table. Also the attachments referred to above in the letter submitted to Peter Cunningham are included.

We also wish to make the point that our main physicochemical treatment process is not uni-stream. The composition of wastes arriving for treatment varies continually (as Irelands industrial base changes or new production lines are set up) and accordingly waste is analysed upon receipt at Enva and batches are made up based on the outcomes of this on-site laboratory analysis. Thus each batch is optimised for throughput and resource usage. A laboratory scale trial run of each batch is carried out to ensure reaction times and final concentrations of parameters can be pre-determined. This helps to ensure final effluent discharge will be within our license ELVs. Considerable on site analysis is carried out daily to ensure all relavant parameters are within ELVs and daily records are maintained to demonstrate this.

We would also like to point out that a proportion of our effluent discharge is as a result of our obligation to extract groundwater from beneath the site and to treat and discharge this through our effluent discharge point. This obligation has arisen as a result of contamination caused by others for which Enva is now paying the costs of cleaning. While it was originally intended that this water be used as make-up water in batches the imposition of having to extract, clean and discharge this through our effluent discharge point remains even at times when the water is not required for our processes.

We trust you will find the information enclosed satisfactory and we look forward to a swift resolution of this issue. In the meantime if you have any further queries or if you require clarification of the above please do not hesitate to contact us.

Yours sincerely,

David Burke,
**HSE & Compliance Manager.**

**ENCL:**

- Table comparing ELVs and mass emissions and rationale of Enva's concerns in relation to each as discussed on Friday 25th April 2008.
- SES letter of 9th June 2000 re discussions with Shannon Development and Clare County Council.
- SES letter of 17th July 2000 proposing limits as agreed with Shannon Development and enclosing their Effluent Control Regulations and letter of 11th July 2000.
- EPA letter of 11th August 2000 accepting proposal to vary the ELVs as per the Shannon Development agreement.
- SES letter of 26th November 2001 enclosing Shannon Development letter of 16th November 2001 extending higher limits for one year.
- SES letter of 3rd September 2002 enclosing Shannon Development letter of 29th August 2002 extending higher limits for one year.
- SES letter of 2nd September 2003 enclosing Shannon Development letter of 1st September 2003 extending higher limits for one year.
- Shannon Development letter of 20th August 2004 setting out Clare County Council take over of Tradaree etc.
- SES letter of 12th December 2004 to Clare County Council seeking clarification re ELVs.
- Clare County Council letter of 12th January 2005 re flow rate limits.
- Email correspondence between Clare County Council and SES in January 2005 confirming agreement to extend limits for another year.
- SES letter of 29th November 2005 re on-site discussions re agreed ELVs.
- Clare County Council letter of 2nd December 2005 re extension of ELVs to end of 2006 and lowering of FOG limit to 50 mg/l.
- SES letter of 1st February 2007 requesting extension of ELVs for 2007.
- Clare County Council letter of 6th March 2007 granting extension of ELV for 2007.

| PARAMETER | DEFUNCT ELV from Sept 2000 in W0041-01 | ELV in Technical Amendment C | Mass emission in Tech. Amend. C | ELV agreed by Clare Co Co & Shn Dev. | Effective Mass Emission per Clare Co Co/Shn Dev agreement | Typical concentrations released at X1 | Comments |
|---|---|---|---|---|---|---|---|
| COD | 1500 | 3,000 | na | 3,000 | 750 | 348 to 2505 | Considered achievable |
| BOD | 1000 | 2,000 | na | 2,000 | 500 | 156 to 874 | Considered achievable |
| Suspended Solids | 400 | 400 | na | 400 | 100 | 9 to 312 | Considered achievable |
| Sulphides (as S) | 10 | 10 | na | 10 | 2.5 | 0 to 0.13 | Considered achievable |
| Sulphates (as $SO_4$) | 1000 | 1,500 | 250 | 1,500 | 375 | 100 to 1400 | Considered achievable |
| Detergents | 80 | 80 | na | 80 | 20 | 0 to 1.8 | Considered achievable |
| Phosphorous (as P) | 20 | 50 | 5 | 50 | 12.5 | 0 to 20 | Considered achievable |
| Phenols | 0.5 | 3 | 0.2 | 3 | 0.75 | 0 to 0.78 | Considered achievable |
| Ammonia (Total) | 50 | 250 | 25 | 250 | 62.5 | 0 to 138 | Significant difficulty in achieving this. Ammonia arises in almost all processes including the Ammonia recovery plant, Silver waste recovery, Main Physicochemical treatment, Nickel recovery etc. Only the ammonia recovery process is designed for significant reduction of ammonia process (10,000ppm down to 600ppm in approx 10 days). Laws of diminishing returns mean that greater reduction of ammonia will mean significantly more energy input, time etc and will make the process unviable. |
| Nitrates | 70 | 100 | 17.5 | 100 | 25 | 0 to 87 | Considered achievable |
| Silver | 0.1 | 2 | 0.025 | 2 | 0.5 | 0 to 1.2 | Significant difficulty in achieving this. The silver process is already optimised for efficiency. Photographic waste containing silver at between 1,500ppm and 3,000ppm is reduced relatively easily to approximately 200ppm. The process becomes less efficient after that due to laws of diminishing returns untill a value of 20ppm is reached. It is not economically possible for technical reasons to reduce the concentration below 20ppm. |
| Aluminium | 1 | 10 | 0.25 | 10 | 2.5 | 0 to 7 | The same argument as for Iron applies (see below). |
| Cadmium | 0.5 | 0.5 | na | 0.5 | 0.125 | 0 to 0.015 | Considered achievable |
| Cobalt | 1 | 10 | 0.25 | 10 | 2.5 | 0 to 0.5 | The same argument as for Iron applies (see below). |
| Chromium (III) | not specified | 10 | not specified | 10 | 2.5 | 0 to 0.6 | The same argument as for Iron applies (see below). |
| Chromium (VI) | not specified | 0.05 | not specified | 0.05 | 0.0125 | 0.01 | The same argument as for Iron applies (see below). |
| total Chromium | 1 | not specified | 0.25 | not specified | 2.5125 | 0 to 0.6 | The same argument as for Iron applies (see below). |
| Copper | 3 | 10 | 1.25 | 10 | 2.5 | 0 to 0.3 | The same argument as for Iron applies (see below). |
| Mercury | 0.005 | 0.05 | na | 0.05 | 0.0125 | 0 approx | Not a problem for Enva. |
| Iron | 10 | 20 | 2.5 | 20 | 5 | 0 to 3.8 | Significant difficulty in achieving this. Iron is contained in varying quantities in waste particularly from the metal industry. Each batch is optimised for removal of maximum possible quantity of a range of metals (ie pH for precipitation). For example a batch may typically contain Iron at 120,000ppm, Nickel at 150 ppm and Zinc at up to 5,000ppm. Varying this process to increase removal of one metal will mean less efficient removal of others as these will return to solution. |

| PARAMETER | DEFUNCT ELV from Sept 2000 In W0041-01 | ELV In Technical Amendment C | Mass emission In Tech. Amend. C | ELV agreed by Clare Co Co & Shn Dev. | Effective Mass Emission per Clare Co Co/Shn Dev agreement | Typical concentrations released at X1 | Comments |
|---|---|---|---|---|---|---|---|
| Nickel | 3 | 20 | 1.25 | 20 | 5 | 0 to 1.4 | Significant difficulty achieving this. Nickel is contained in varying quantities in waste from the galvanising industry. (see comments for Iron above.) Each batch is optimised for removal of maximum possible quantity of a range of metals. Varying this process to increase removal of one metal will mean less efficient removal of others. There is an on-site nickel recovery process for removal of high nickel concentration from a specific customer waste stream. |
| Lead | 0.5 | 0.5 | na | 0.5 | 0.125 | 0 to 0.5 | Considered achievable |
| Tin | 1 | 2 | na | 2 | 0.5 | 0 approx | Considered achievable |
| Zinc | 3 | 20 | 1.25 | 20 | 5 | 0 to 6 | Significant problem for Enva. See comments for Iron. |
| Arsenic | 0.5 | 1 | 0.15 | 1 | 0.25 | 0 to 0.1 | Considered achievable |
| Cyanide | 0.5 | 0.5 | na | 0.5 | 0.125 | 0 to 0.1 | Considered achievable; Cyanide no longer processed. |
| Chlorides | 1000 | 3,000 | 375 | 3,000 | 750 | 10 to 2550 | Significant difficulty achieving this. Chlorides are present in waste from the galvanising industry and cannot practically be reduced significantly below current levels. The chloride anions remain in solution after removal of metals and other parameters and there is no technical means of significantly reducing the concentration from existing levels. Discharge is to sewer and via municipal WWTP to Shannon Estuary which is a saline environment. Levels of chloride in Enva's discharge are well below levels which could cause osmotic shock (~10,000ppm) and microorganisms adapt to constant concentrations but suffer stress under changing concentrations. No environmental or technical benefit to limiting chloride to this level, a mass emission limit is considered inappropriate. |
| Fluoride | 10 | 10 | na | 10 | 2.5 | 0 to 6.8 | Considered achievable |
| Organohalogens | 0.1 | 0.15 | 0.03 | 0.15 | 0.0375 | 0 to 0.266 | Considered achievable |
| Fats,Oils and Grease | 200 | 50 | na | 50 | 12.5 | 16 to 33 | Considered achievable |
| pH | 6-9 | 6-10 | na | 6-10 | n/a | 6.0 to 9.5 | No issue. |
| Daily flowrate | 150 m3/day | 250 m3/day | na | 250 m3/day | n/a | n/a | No issue. |