Technical Publication TP#1

AES System Venting

Maintaining airflow through AES pipes is the critical part of the aerobic microbial wastewater treatment process within AES pipes and within the surrounding sand. This aerobic microbial activity does not generate any appreciable smell. Untreated influent and primary treated effluent from the septic tank can. This publication focuses on how effective venting can be provided without the opportunity for venting air to come in contact with untreated or primary treated effluent.

The manner in which AES venting airflow is provided requires specific consideration from designers but also from the subsequent installers to ensure that there are no effects from undesirable odours. We now require that all submitted plans show with sufficient detail how attention has been given to these issues: -

1 The positioning of high and low vents with regard to the living spaces of the property.

2 The manner in which venting is designed to minimise the inclusion of air from untreated influent pipework and from the septic tank and pipework to the AES system.

The first consideration is where these vents are to be positioned: -

Consideration is required to be given to the prevailing wind patterns on the site and the likely airflow in the immediate vicinity of the high vent. We are aware of an installation where the high vent is 8 metres above the low vent, 25 metres distant from the AES bed which has the air inlet at the end of the bed. The airflow from this bed is required to pass along the way through a 2- chambered septic tank to the 80mm terminal 'high' vent on the house directly above the house front door. The door is opposite from the prevailing wind direction and below the gable roof ridge. This combination of design and site factors meant unpleasant odour was an issue at the house until a separate high vent close to the AES bed was installed.

Presby Environmental, Advanced Enviro-septic manufacturers in the US, have recently commissioned research into the actual volume of air required for optimum AES performance. Until the results of this are available we require that the established parameters of two 50mm diameter or one 80mm diameter high vent(s) 3m above the low vent are the minimum vent sizes required.

The second consideration is of venting air including odour from within the venting pipe system itself: -

The elimination of this can be best achieved by positioning both the high and low vents immediately at either end of the AES pipe system. When this venting method is adopted and to ensure complete effectiveness it is also necessary to prevent air from being drawn through the pipe from the septic tank. The most effective way of achieving this is to incorporate a water trap immediately upstream from the vent pipe connection on the inlet end of the AES bed, towards the septic tank. See drawing 1604A. This trap only needs the minimum of water head.

We have a preference for the low vent to be at the inlet end of the AES bed and the high vent at the far end. The reason for this arrangement is to ensure the airflow through the bed - and therefore treatment quality - is not compromised by any unsealed upstream features such as a distribution box or septic tank lid.

High and low vents can be positioned away from the bed itself by extending the venting pipe underground to bring the vent to the surface adjacent to a hedge or the wall of a building.

Venting using the terminal vent on the house is not our favoured option, and our recommendation is to avoid having the venting airflow pass through the septic tank. If a designer opts to use the terminal vent as the high vent an air bypass around the septic tank is recommended, and the septic tank must be sealed for air ingress. Designs need to detail how sealing of the septic tank system is to be achieved. Draft excluder tape can be useful for providing a 'sealing washer' between concrete lids and concrete risers on concrete tanks. If plastic tankage is chosen then effective sealing must be shown to be achieved.

Drawing number ET1611 shows one method of preventing airflow from the septic tank by extending a 100 DWV pipe from the top of the outlet tee up through the top of the septic tank and screw capping this off. There are other solutions possible to achieve this within the tank.

Where the AES bed is required to be elevated above the level of the outlet to the septic tank as a consequence of a high water table or a disposal area up-hill from the influent source, intuitively it may be better to have the high vent at the inlet end of the AES pipe system. The sudden introduction of effluent from the pump may otherwise reverse the airflow so that the low vent at the inlet may be the path of least resistance and create a reverse air flow. Drawing ET1606A provides some detail of a pumped system.

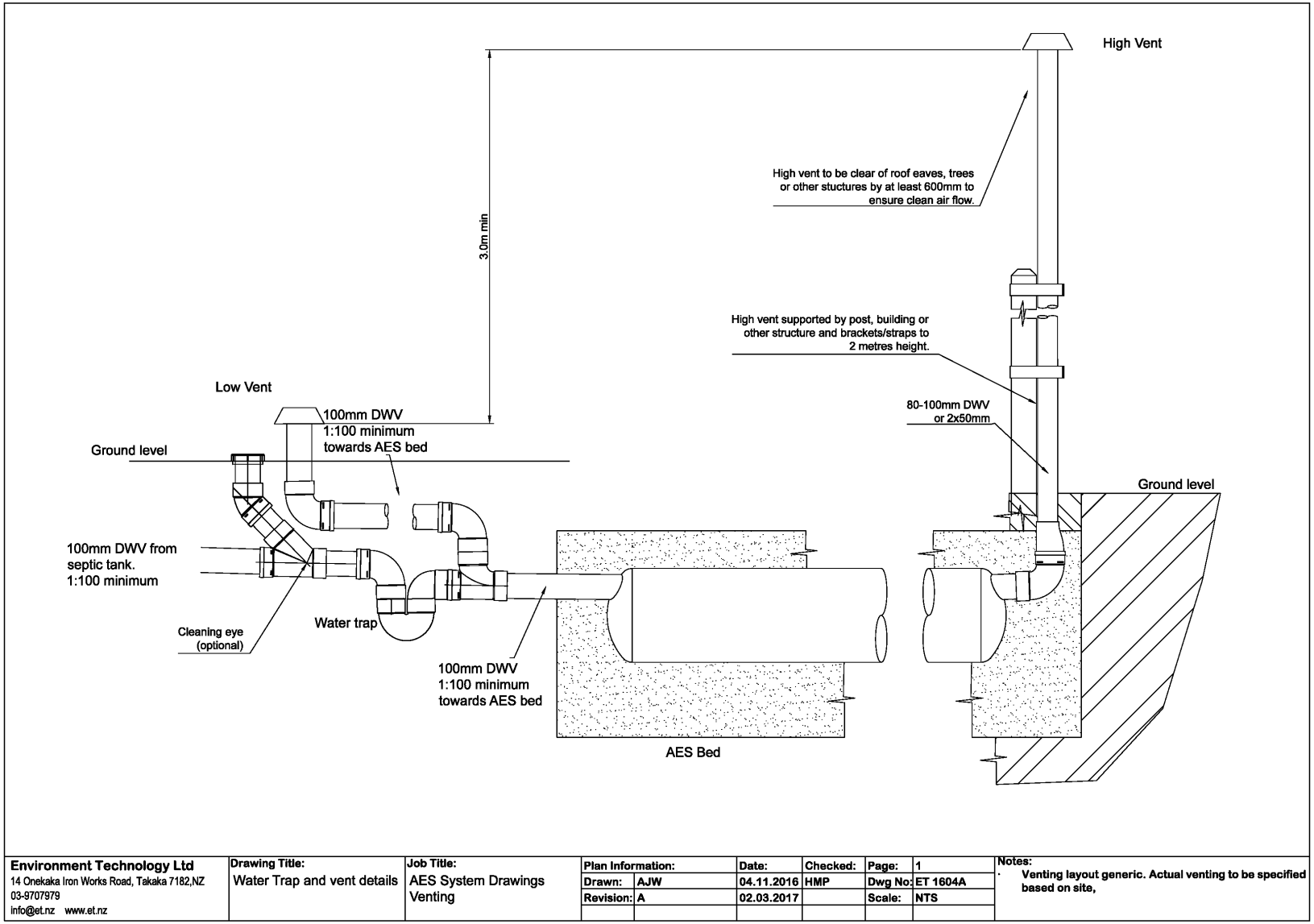
Designers please ensure your plans clearly address your pipework solutions for minimising any potential for these effects.

In summary, when we review designs we now require that site specific factors and the venting design layout are considered and clearly shown in your design. Note the prevailing wind direction on the site plan, the high vent clearly positioned away from downwind windows and doors, and show that the potential for septic tank odour to be introduced to the airflow has been minimised or eliminated.

We have drawings of different venting arrangements available on our website, and will be pleased to add more where necessary.

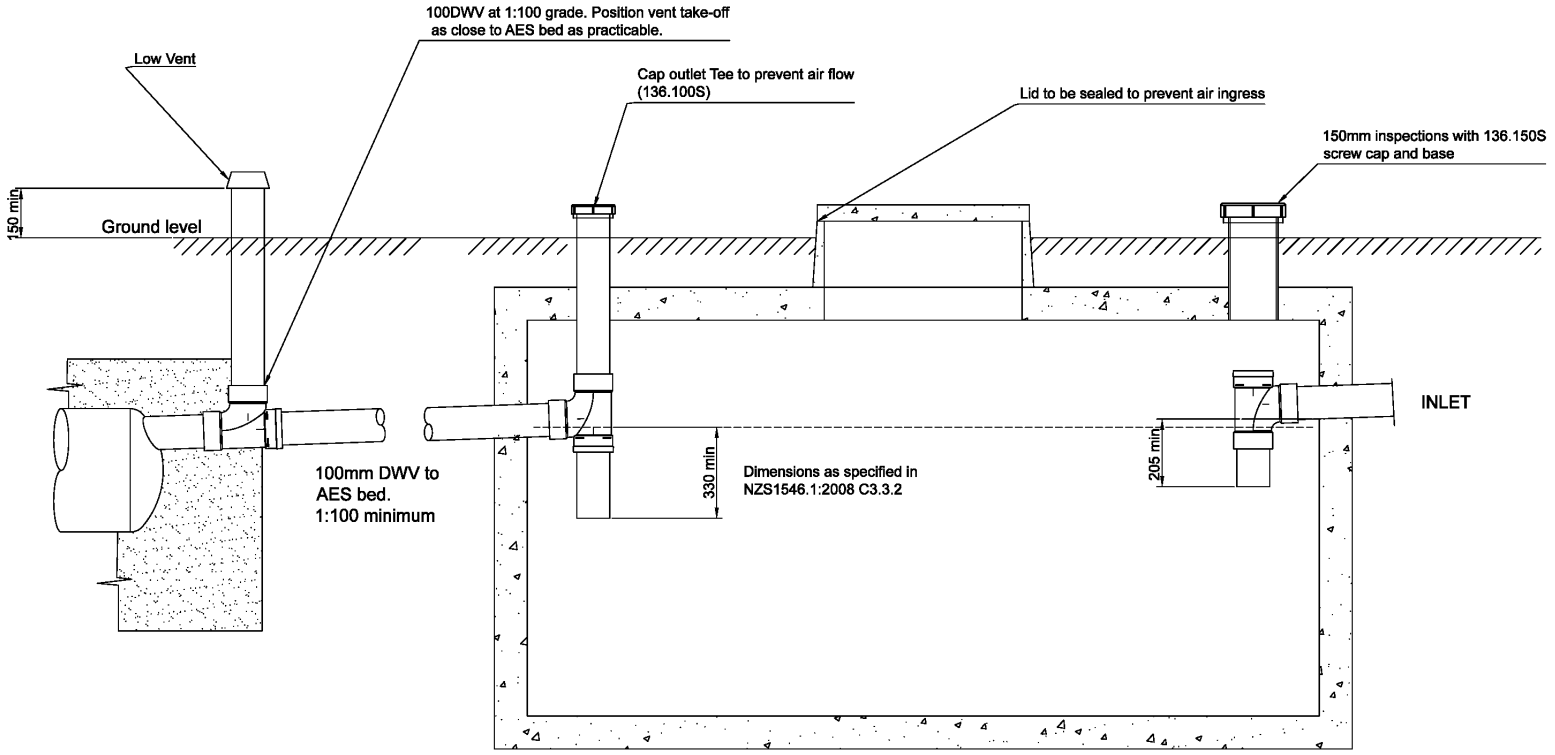
If you have questions or suggestions of how best to design these venting systems, any information that you can provide is appreciated. Call or email us 03 9707979, 0800 WASTE H2O (0800 927 834), info@et.nz.

As before, any feedback you provide is much appreciated.



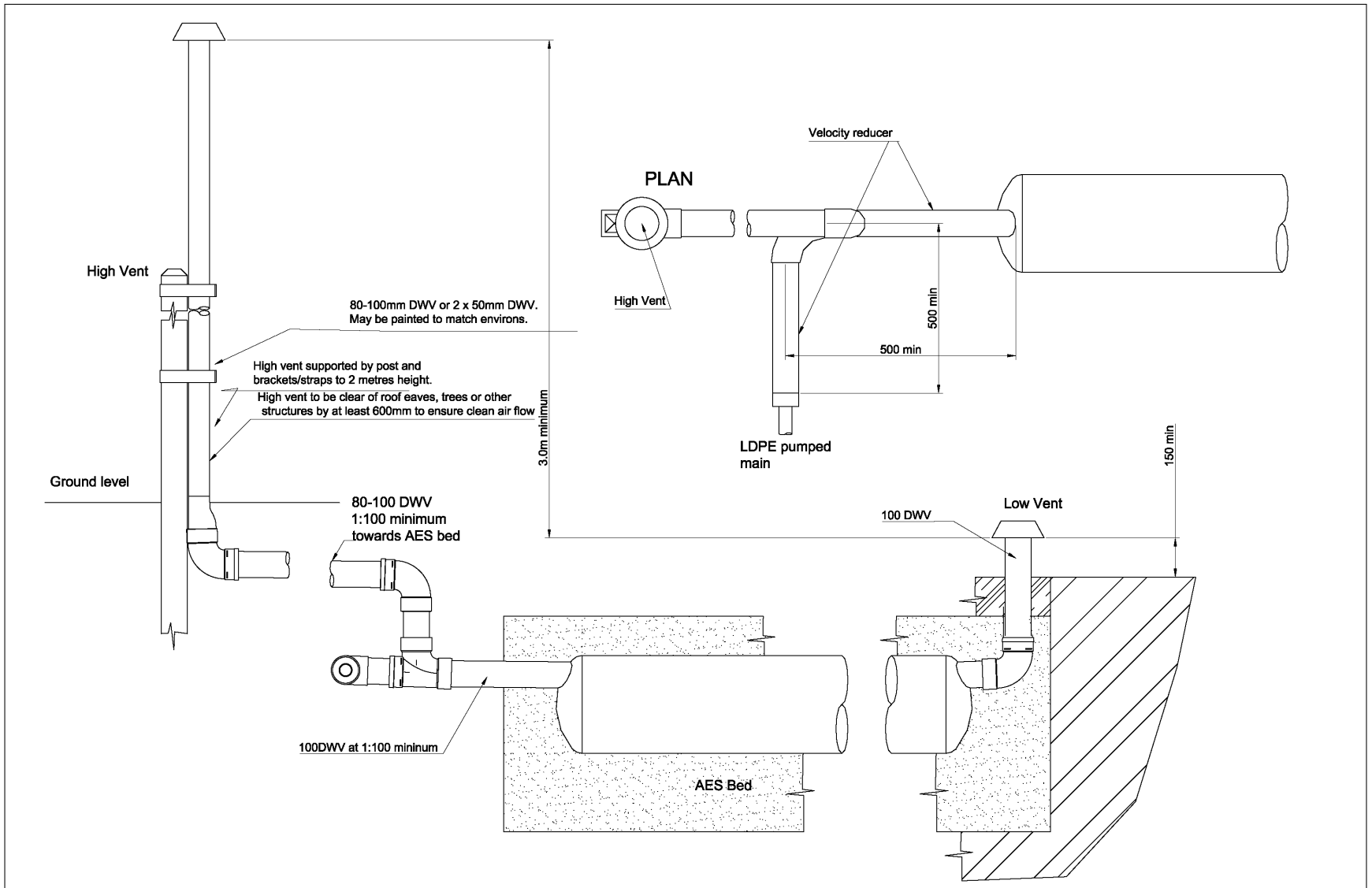
Environment Technology Ltd 14 Onekaka Iron Works Road, Takaka 7182,NZ 03-9707979 info@et.nz www.et.nz	**Drawing Title:** Water Trap and vent details	**Job Title:** AES System Drawings Venting	**Plan Information:**		**Date:**	**Checked:**	**Page:**	1
			Drawn:	AJW	04.11.2016	HMP	**Dwg No:**	ET 1604A
			Revision:	A	02.03.2017		**Scale:**	NTS

Notes:
- **Venting layout generic. Actual venting to be specified based on site,**



Environment Technology Ltd 14 Onekaka Iron Works Road, Takaka 7182,NZ 03-9707979 info@et.nz www.et.nz	**Drawing Title:** Low Vent and capped outlet Tee.	**Job Title:** AES System Drawings Venting	**Plan Information:**		**Date:**	**Checked:**	**Page:**	1
			Drawn:	AJW	28.02.2017	HMP	**Dwg No:**	ET 1611
			Revision:				**Scale:**	NTS

Notes:
- All AES componants and venting to be in accordance with AES installation manuals.
- All pipework and septic tank to be in accordance with G13 Foul Water - NZ Building Code - Compliance Document.



Environment Technology Ltd 14 Onekaka Iron Works Road, Takaka 7182,NZ 03-9707979 info@et.nz www.et.nz	**Drawing Title:** Velocity Reducer and High/Low vent details for pumped systems	**Job Title:** AES System Drawings	**Plan Information:**		**Date:**	**Checked:**	**Page:**	1	**Notes:** · Venting layout generic. Actual venting to be specified based on site.
			Drawn:	AJW	12.12.2016	HMP	**Dwg No:**	ET 1606A	
			Revision:	A	02.03.2017		**Scale:**	NTS	