 REPORT TO EXECUTIVE			
PORTFOLIO AREA: ENVIRONMENT, INFRASTRUCTURE AND TRANSPORT			
Date of Meeting:		29th September 2003	
Public			
Key Decision:	Yes	Recorded in Forward Plan:	Yes
Inside/Outside Policy Framework			

Title: SANDYSIKE SEWAGE TREATMENT WORKS

Report of: Head of Commercial and Technical Services

Report reference: CTS 23/03

Summary:

The treatment works at Sandysike serve 12 properties, 4 are owned by Carlisle Housing Association the remaining houses being in private ownership. As part of the transfer from Carlisle City Council during 2002 it had been established that there were operational problems at the treatment plant and that improvement works to the plant were needed. It was therefore agreed that the City Council would retain responsibility for this treatment works and report on options for its improvement. This report details options for improving the plant.

Recommendations:

1. It is recommended that a package sewage treatment plant with telemetry is installed in replacement of the existing filter bed and settlement tank. This can be achieved within the identified budget of £75,000.00.
2. That Council note that the provision set aside as part of the LSVT settlement for upgrading the Sandysike sewage treatment works and not required for that purpose (£217,000) be paid over to CHA as a further contribution towards meeting the pension fund deficit at the time of transfer.

Contact Officer: Keith Poole

Ext: 5101

1.

2. BACKGROUND INFORMATION AND OPTIONS

1.1 Carlisle City Council purchased the twelve houses at Sandysike during the early 1970's. The houses had previously been the RAF married quarters. Due to their remote location these properties when constructed were not connected to mains sewers and a small sewage effluent treatment plant that had been sized to accommodate flows from the twelve houses and other RAF premises, served the properties. The other RAF premises have since been removed and as a consequence the treatment plant is oversized which results in operational problems.

During 2002 Carlisle City Council transferred its housing stock to Carlisle Housing Association (CHA). This transfer included the remaining four properties at Sandysike. Eight of the properties have been sold under the 'Right to Buy' scheme. At the time of the transfer it had been established that there were operational problems at the treatment plant. A budget of £75,000 has been allocated for this work.

During the transfer of the 8 properties to private owners under right to buy standard clauses were included to cover the recharging of sewerage contributions on some of the conveyancing documents. Five properties contained a standard sewage treatment clause, one contained the standard clause plus a clause relating to the proportion to be paid and the remaining two had no sewage treatment clause. However, to date none of the private owners have been asked to make a contribution for sewage treatment. In the future it is intended that a charge for sewage treatment will be levied on all 12 properties to cover the costs involved in operating and maintaining the new plant.

Discussions with United Utilities during 2002 also indicated that they would have very little interest in adopting the plant, due to its small size.

1.2 Problems identified at the treatment plant

Several problems have been identified at the site including health and safety issues such as heavy manhole covers and concrete slab covers. Due to the low flows the rotating filter arms do not operate as they should and have caused problems for several years.

1.3 Options for the Future

Option 1 – modification of the existing sewage treatment plant including adjusting the jetting system on the rotating filter arms and improving the watertightness of the settlement tank to try to increase the water pressure to the

filter arms. The existing sewage treatment plant is shown on the photographs attached in the appendix to this report. Due to the low water flow into the plant the rotating filter arms have insufficient pressure to work correctly. Also due to the age and general condition of the plant leakage appears to be occurring in the various elements. It would be possible to repair the equipment but the cost is difficult to estimate, as it is not possible to fully identify the existing situation. It is however extremely unlikely that this existing equipment can be made to work as efficiently as more modern plant would. This option is not recommended, as there is no guarantee that the work would solve the problems with the plant, because of the lack of water flow and leakage from the existing system.

Option 2 – Installation of a package treatment plant. This involves installation of a package treatment plant, installation of a telemetry system and associated works. Initial budget estimates including contingencies show that this project can be achieved within the identified budget of £75,000.00. It would be proposed to recharge the maintenance costs to the 12 properties at Sandysike in lieu of the normal sewage charge which residents would normally pay if connected to a public sewer. A brochure is attached in the appendix to this report giving details of a typical package treatment plant. Under this option the treatment plant would remain the responsibility of Carlisle City Council, as this size of plant is not normally adopted by United Utilities. The equipment is mostly underground and is described in the brochure is very low maintenance and will be specifically sized to suit the low incoming flow.

Option 3 – Pumping station to the nearest public sewer. This option involves the construction of a new pumping station and rising main to take foul flows from the 12 houses to the nearest public sewer. The capital cost of this option would be £631,777.00. If this was constructed to adoptable standards it would then be possible to approach United Utilities to have the pumping station and rising main adopted. However, there is the problem of septicity in the rising main to be overcome because of the distance the effluent is to be pumped and the low flows in the system. The nearest public sewer to Sandysike is approximately 3.5km. Once the pumping station and rising main were adopted maintenance costs would pass to UU who would charge owners and occupiers sewerage charges based on their property's rateable value.

1.4 Preferred Option

It is suggested that Option 2 as described above, should be implemented. This option offers a very cost efficient solution to the problem, which should be reliable in operation and low maintenance. Option 3 is very expensive particularly in view of the small number of properties that will be served. Option 1 has many uncertainties and it is not certain that the existing equipment can be made to work effectively.

3. CONSULTATION

1. Consultation to Date.

Consultation has already taken place with the Environment Agency (EA) to discuss the proposal of installing a package sewage treatment plant. Their response was encouraging. The EA welcomes this improvement, as it will lessen the risk of failing the consent to discharge. This consent is required for any discharge from the treatment works to a watercourse. A copy of correspondence with the EA is attached in the appendix.

A request has been issued to Planning Services to identify whether planning permission will be required for the change to a package plant. Although there has been no response to date it is envisaged that planning permission will not be required to install a package treatment plant, which is largely underground.

Enquiries were also made to United Utilities (UU) during autumn 2002 regarding the possible adoption of the treatment works. UU stated that they would not be interested in adopting the treatment works due to the very small size of the treatment works. However, a further option of the construction of a pumping station to convey effluent to the nearest public sewer were discussed as detailed in the report above.

2. Consultation proposed.

As soon as a decision is made on which option is to be adopted then consultation will take place with Carlisle Housing Association and the residents who will be affected informing them of the proposals and the potential financial implications.

1. RECOMMENDATIONS

It is recommended that option 2, a package treatment plant with telemetry be installed in replacement of the existing filter bed and settlement tank. This can be achieved within the identified budget of £75,000.00. Annual maintenance costs will be recovered from householders/owners.

2. REASONS FOR RECOMMENDATIONS

Improvement in effluent quality reducing risk of possible prosecution from the Environment Agency.

Treatment plant will be up to date, of a reliable construction and suitably sized to

meet the needs of the population.

3. IMPLICATIONS

- Staffing/Resources – decrease in the amount of time required for regular maintenance. At present there is a regime of fortnightly checks. With the installation of a telemetry system this could be reduced to 2-4 services per year.
- Financial – Finance for this work was retained by the City Council as part of the stock transfer process. The budget of £75,000 referred to in para 1.1 has been allocated as part of the post LSVT arrangements with CHA. This sum comprises up to £50,000 to be contributed by the City Council together with a £25,000 (one third) maximum payment from CHA reflecting the ownership proportions of the 12 properties at Sandysike. Budget provision has been made in the current financial year to meet the costs of the works described in Option 2 (the preferred option) of para 1.3.

However, the £75,000 budgeted cost does represent a substantial reduction from the original estimate of £400,000 for these works that was forecast at the time of the LSVT and reported to the Executive on 27 January 2003 (report FM 2002/03 No 91). To this end, £267,000 (ie 2/3 of £400,000) was retained as part of the actual transfer settlement with CHA in December 2002.

It is now clear that the City Council's liability will be no more than £50,000. The balance of £217,000 can therefore be released, subject to Council approval and paid over to CHA as a further contribution to the pension fund deficit in respect of the staff transferring to CHA on both 9th December 2002 and 1st October 2003. Provision for this payment was made as part of the 2002/03 closure of accounts process. It will have the effect of expediting payment over the total pension fund deficit which is being met pro term by CHA retaining the proceeds of Right to Buy sales that would otherwise have been paid over to the City Council.

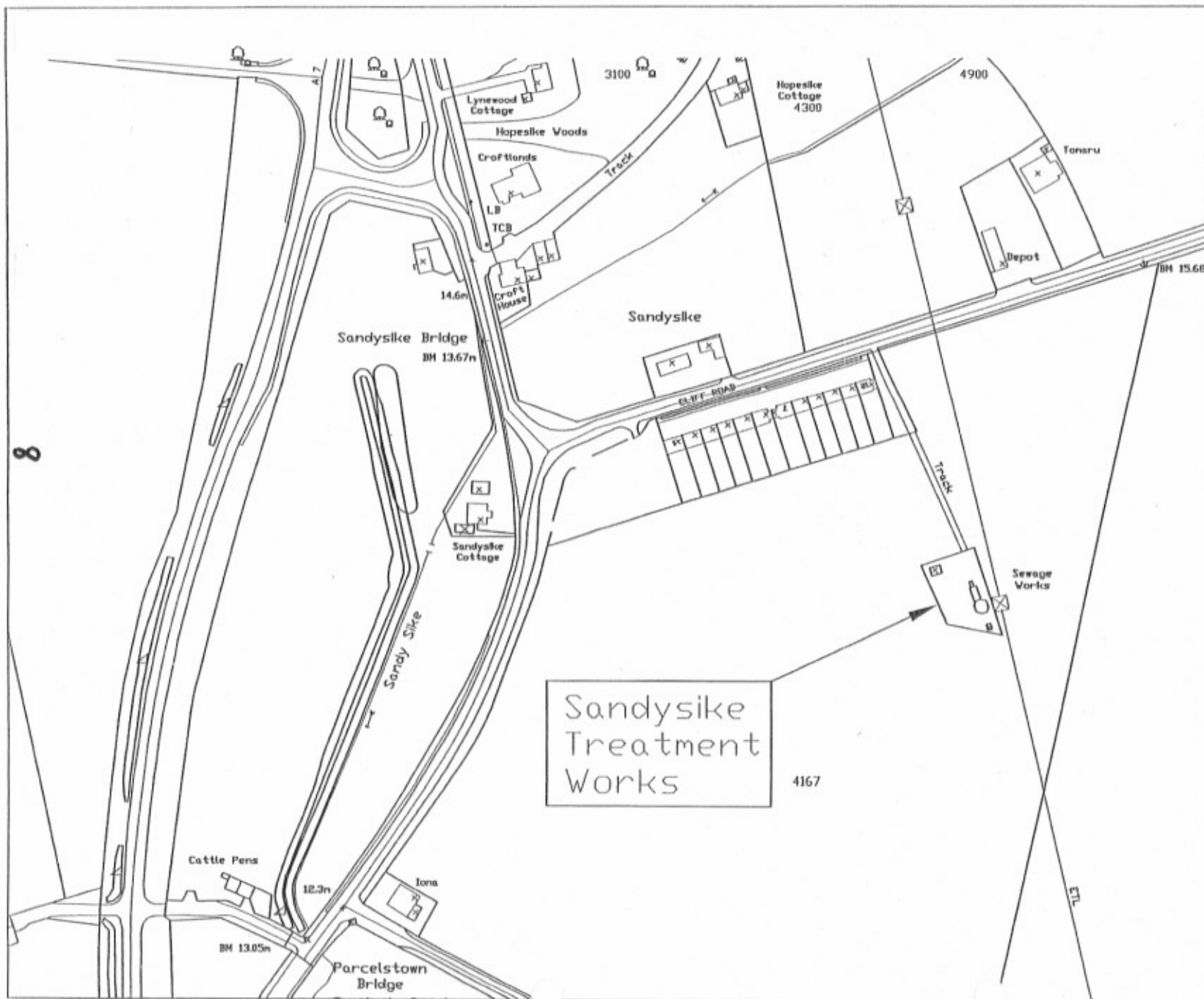
- Legal – Increased ability to meet with the requirements of the EA's consent to discharge.
- Corporate – Not applicable
- Risk Management – Option 2 offers a well-tested system that is reliable thus reducing the risk of prosecution from the EA. This option involves civil engineering works but the works will be carried out by tried and trusted methods, using competent contractors, again reducing risks.
- Equality Issues – Not applicable
- Environmental – Improvement in ability of the treatment plant to produce a higher

standard of effluent and therefore reduce the risk of pollution to the receiving watercourse.

- Crime and Disorder – Not applicable

Appendix

- Location Plan
- Photographs of existing sewage treatment works
- Brochure of proposed package treatment plant
- Correspondence with Environment Agency



NOTES

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CARLISLE CITY COUNCIL



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The Civic Centre, Carlisle, CA3 8QQ
Tel: (01228) 817000 Fax (01228) 817413

Drawing Title:

Location of treatment works
at Sandysike

Project Title:

LSVT Transfer

Scale:

1:2500

Date:

May 2002

Drawn: JDH

Approved:

Project No.
LSVT

Drawing No.
DA6

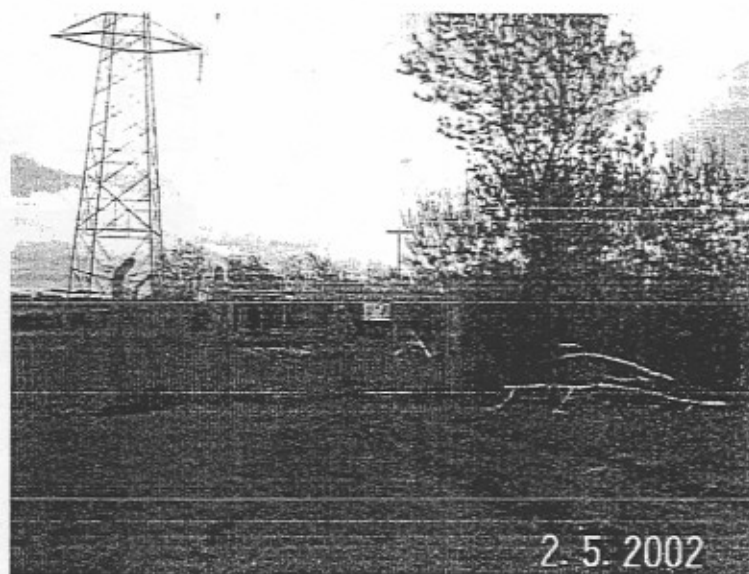
Revision

SANDYSIKE TREATMENT WORKS

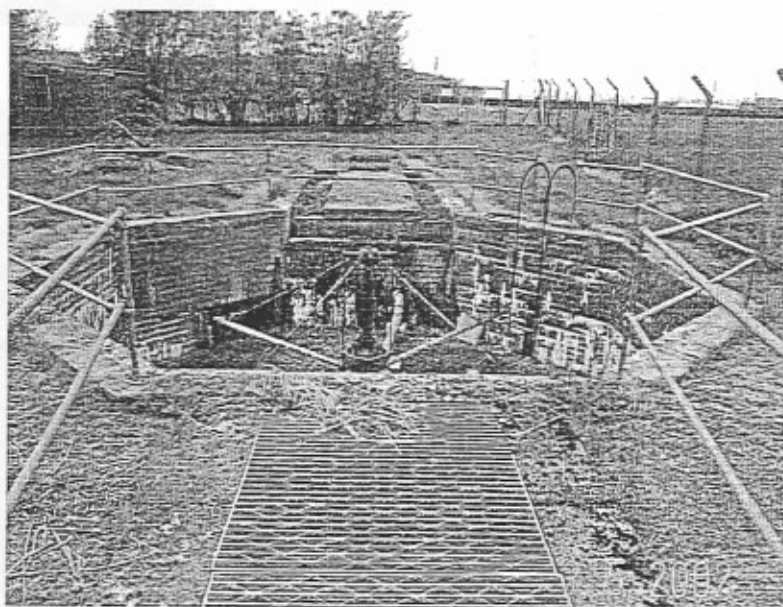
Access Track from public highway

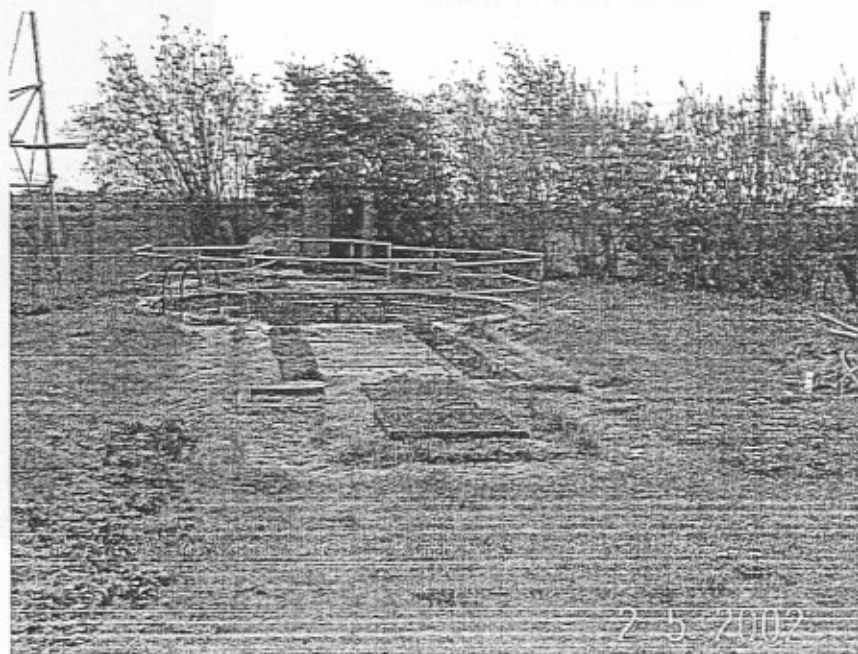
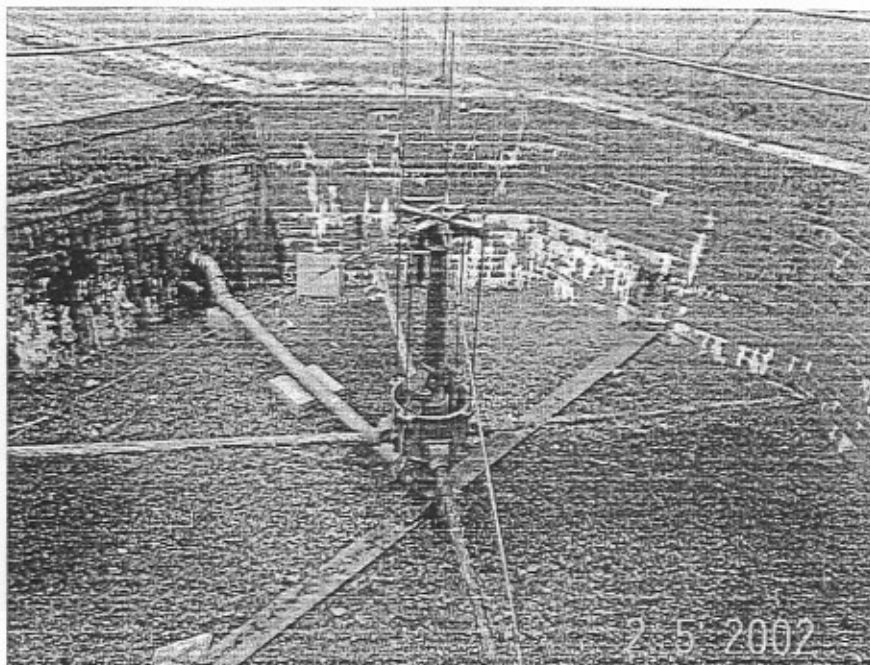


Compound Area at end of track.



Inside view of works

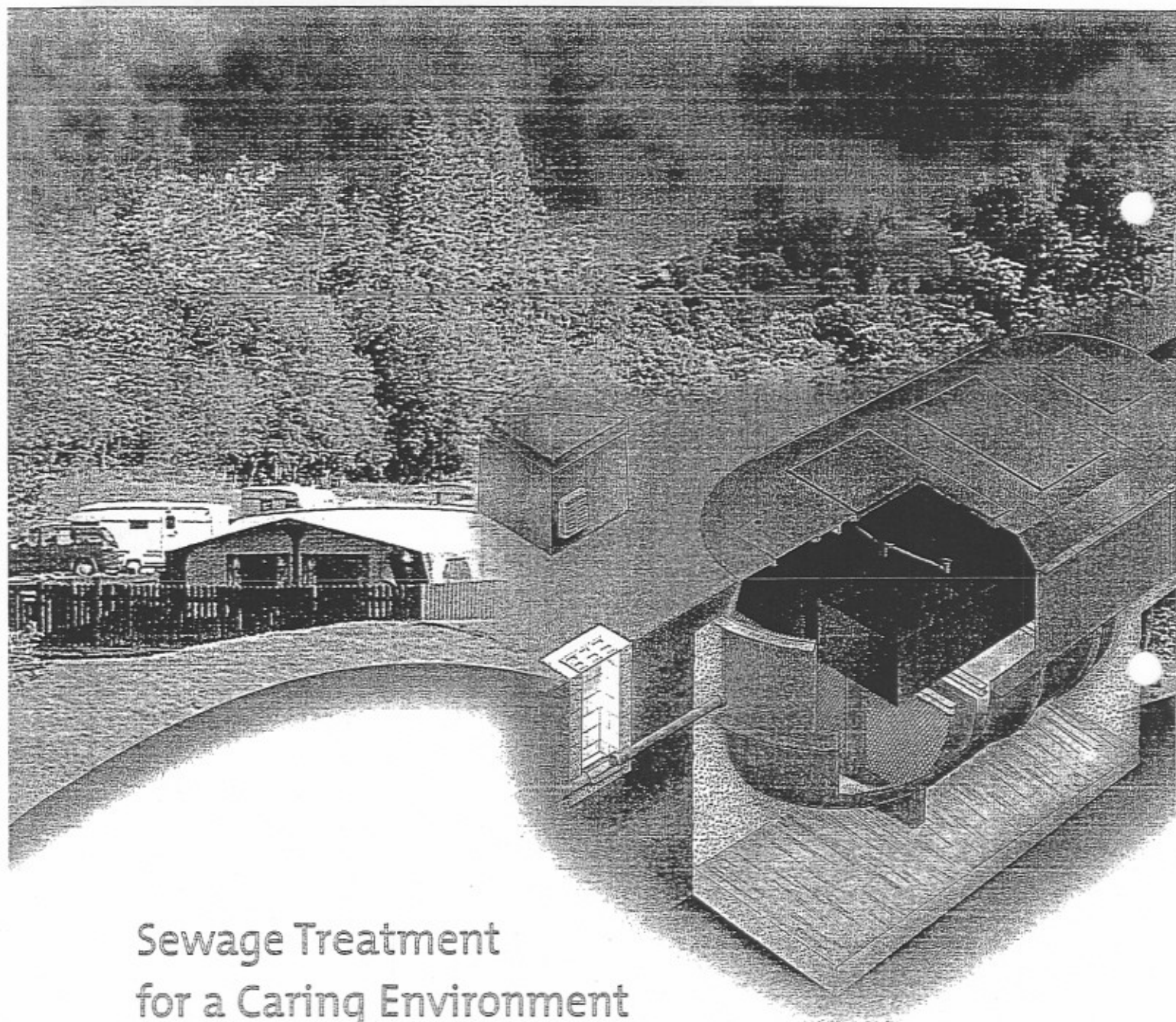




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Treatment Systems

Sewage Treatment for a caring environment.

The Klargester AirFlow series of package sewage treatment plant is designed to treat the sewage from a whole range of developments where access to the main sewer is not possible.

Housing estates, camping and caravan sites, rest homes, schools, construction sites, hotels, country clubs, public houses, restaurants.

Features

- Below ground installation, minimises visual impact
- The cover has been specifically designed to blend with surroundings. Generous access for maintenance
- Efficient air blower is quiet and ensures low running and maintenance costs
- Casing construction to BS4994 (1987) in GRP (Glass Reinforced Plastic)
- Built in surge flow control
- No moving mechanical parts or electrical components within the plant
- All Klargester products are manufactured under the quality procedures of BS EN ISO 9002

Design

AirFlow sewage treatment plants are available as standard or high level nitrification plants. They employ a development of the well proven aerobic biological process for the purification of sewage and waste water.

This process takes place in four distinct stages:-

Primary Screening and Settlement Running

This is the initial stage of treatment and simply involves the retention of coarse solids present in raw sewage and waste water for subsequent gradual breakdown.

Carbonaceous Biological Treatment

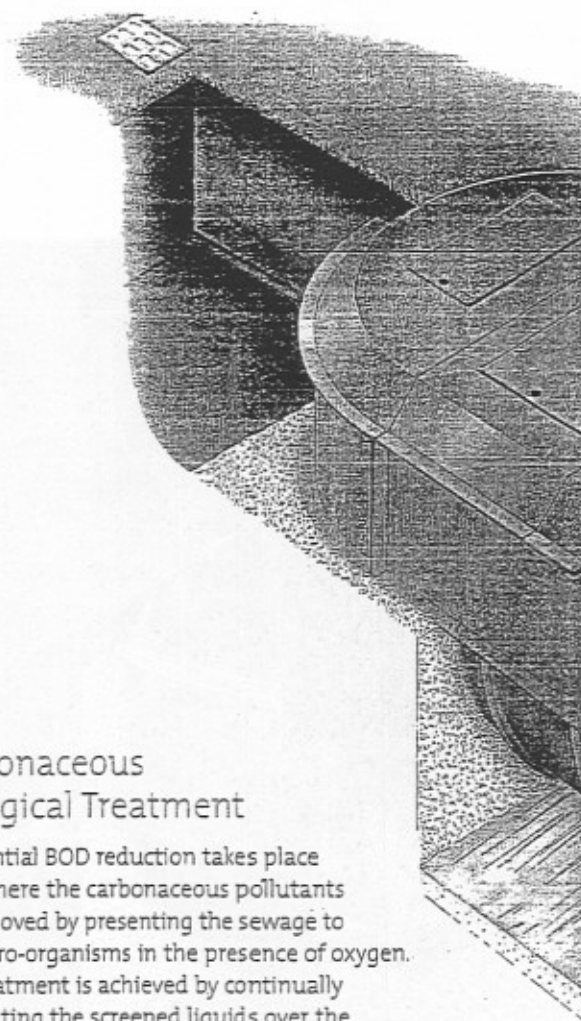
Substantial BOD reduction takes place here, where the carbonaceous pollutants are removed by presenting the sewage to the micro-organisms in the presence of oxygen. The treatment is achieved by continually distributing the screened liquids over the biological media.

Nitrifying Biological Treatment

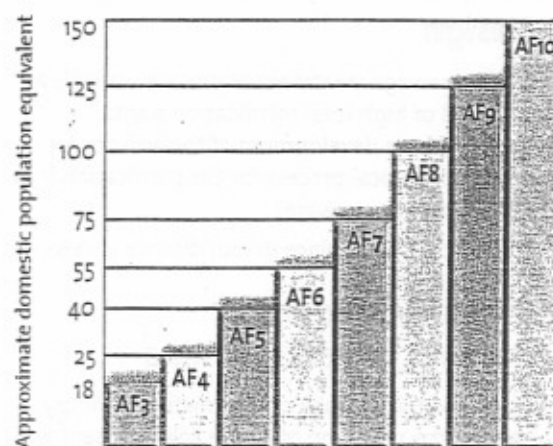
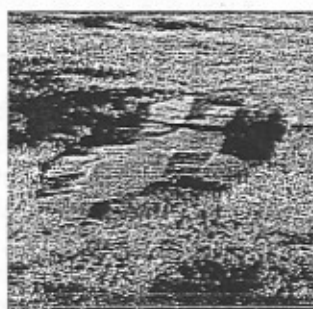
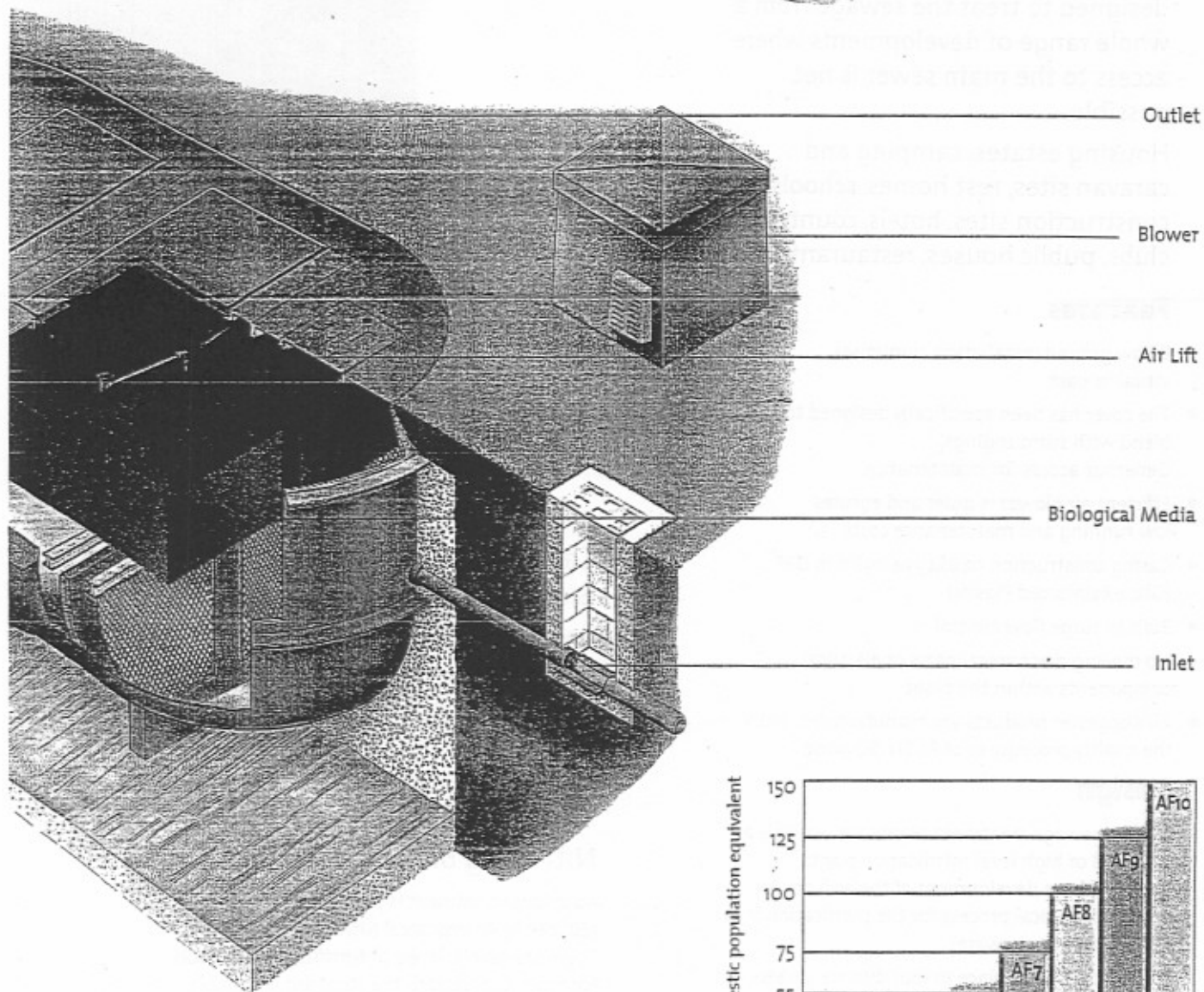
Additional treatment is provided in order to reduce the Ammoniacal Nitrogen. There are several levels of Nitrification available. For most applications the standard is suitable. However, for particularly sensitive applications a high level unit can be selected.

Final Settlement

A natural by-product of biological treatment is humus sludge and this is separated for further treatment. The treated effluent is discharged via the outlet. Under normal domestic conditions 20mg/L BOD, 30mg/L SS, 20mg/L Ammonia can be achieved with standard plants and 10mg/L Ammonia can be achieved with high rate plants.



AirFlow Unit Size		AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10
Weight	kg	300	320	1080	1100	1500	2000	2500	2900
Length	m			4.9	4.9	6.8	7.6	8.1	9.9
Width	m	2.6	2.6	2.8	2.8	2.8	2.8	2.8	2.8
Depth	m	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5
Motor Rating	kw	0.15	0.15	0.37	0.37	0.55	0.55	0.55	0.75



Average Flow m³/day

3.6	5	8	11	15	20	25	30
1.08	1.5	2.4	3.3	4.5	6.0	7.5	9.0

BOD Load kg/day

Installation

The unit is normally installed below ground with the cover flush, however it can protrude above ground if required by site levels. Ideally siting should be under a pedestrian area no closer than 15m from the nearest house. The tank should be vented independently or back through a local building vent stack.

Installation is quick and economical, the plant requiring only to be seated on a concrete base with a surround of concrete.

The blower housing can be sited anywhere with access to mains electricity within a 15m radius of the plant itself.

Maintenance

AirFlow sewage treatment plant are designed for minimum low cost maintenance.

Klargester offers a full commissioning and after sales service involving planned maintenance visits on the UK mainland.

Under normal usage the plant will require periodic emptying to prevent excessive build up of surplus sludge.

Options

- Pumpsets - where the treated effluent has to be dispersed to a higher area because of site levels or ground water.
- Sample Chambers - for accurate and convenient effluent sampling, as required by the Environment Agency.

Legal Requirements

Prior to installation, there is a legal requirement to obtain a Consent to Discharge from the Environment Agency. Klargester offer full assistance in this respect.

Other products from Klargester

- BioDisc® Treatment Plant
- Septic Tanks
- Cesspools
- Pumping Equipment
- Grease Traps
- Reed Beds
- Silage Effluent Tanks
- Light Liquid Separators
- Rainwater Harvesting



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Commercial & Technical Services

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Environment Agency
Ghyll Mount
Gillan Way
Penrith 40 Business Park
Penrith
CA11 9BP

Please ask for: Mrs Helen Renyard
Direct Line: 01228 625104
E-mail: HelenRe@carlisle-city.gov.uk
Your ref:
Our ref: HR/1/374-16

22 July, 2003

For Attn: Hugh Taylor

Dear Hugh,

Sandysike Sewage Treatment Works
Consent no: 017790016

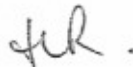
Further to our telephone conversation at the beginning of June 2003 regarding the installation of a package treatment plant and the removal of the existing plant at Sandysike.

As part of an upgrading scheme the City Council are proposing to install at Sandysike a Klargestair airflow AF6 and remove the existing settlement and filtration system. Can you please confirm that there will be no changes to the existing consent if this were to happen.

I enclose a location plan showing the position of the treatment works.

If you require any further information please do not hesitate to contact me.

Yours sincerely



H Renyard
Drainage Engineer



ENVIRONMENT
AGENCY

Our Ref: HT/EMNC23/RiverLyne/HO
Your Ref: HR/1/374-16

Date: 1 August 2003

Carlisle City Council
Commercial & Technical Services
Bousteads Grassing
Carlisle
CA2 5LG

For the attention of Mrs Helen Renyard

Dear Helen

SANDYSIKE SEWAGE TREATMENT WORKS

Thank you for your letter of 22 July regarding the replacement of the existing sewage works at Sandysike with a modern treatment plant.

I can confirm that the Agency welcomes this improvement, and provided that the effluent sampling point and outfall to stream remain at the same locations, then the existing consent will not require to be varied.

Please do not hesitate to contact me at the Penrith office if I can be of any further assistance in water quality matters.

Yours sincerely

HUGH TAYLOR
Environment Officer

