SLR

17th September 2009

Angela Watts
Planning Applications Group
Kent County Council
1st Floor, Invicta House
Maidstone
ME14 1XX

Our Ref: 409.1376.00002
Your Ref: SH/08/124

Dear Angela,

RE: SUBMISSION OF AN ENVIRONMENTAL STATEMENT TO SUPPORT PLANNING APPLICATION SH/08/124 PROPOSED CONSTRUCTION AND OPERATION OF A MATERIALS RECYCLING FACILITY, ANAEROBIC DIGESTION PLANT AND ASSOCIATED OFFICE AND PARKING FACILITIES, OTTERPOOL QUARRY, ASHFORD RAOD, SELLINDGE, KENT.

Following the decision of the Government Office for the South East that the proposed development at Otterpool Quarry is EIA development, an Environmental Statement (ES) has been produced to assess the likely impact of the development on the environment. The ES accompanies planning application Ref SH/08/124.

The ES has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended 2000, 2006 and 2008) and presents the following information;

- A description of the development;
- Data necessary to assess the likely environmental impacts;
- A description of measures to avoid, reduce or remedy any significant adverse effects;
- An outline of the main alternative sites considered by the developer;
- A non technical summary of the above information.

The technical assessments have considered the likely direct and indirect effects on humans, flora, fauna, soil, air and landscape and also the cumulative effects of the development.

Volume 1 contains all the information submitted to Kent County Council following the registration of the planning application; and

Volume 2 contains the application drawings and Environmental Statement.

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It should be noted that the proposed development remains fundamentally the same as currently proposed and is within the same planning application boundary.

The submission of the Environmental Statement has been advertised by means of a public notice in the Kentish Express on the 17th September 2009 and a notice posted at the site. A copy of the press advert is attached to certify that it has been published.

Note on Air Quality Monitoring

Kent County Council CC have stated in their letter of 11th Feb 2009 that they have received insufficient information to allow them to determine whether or not emissions from the operations to the atmosphere would cause harmful effects to humans, animals, plants or the environment. SLR's Technical Director for Air Quality has reviewed the Air Quality assessment that was submitted with the planning application and has confirmed that the appropriate assessments had been undertaken.

The Air Quality assessment identified the following as sources with the potential to impact on air quality:

- Emissions from vehicle movements on local link roads associated with construction and operation;
- Deposited dust resulting from construction and operational activities;
- Potential odour generating sources during operation associated with waste received at the MRF/AD plant; and
- Combustion emissions from gas plant associated with the AD plant.

The assessment was undertaken in a phased manner, whereby an initial screening was undertaken to gauge the potential significance of any impact and further (more detailed) assessment undertaken if necessary. Mitigation measures were also described.

We consider that the sources assessed and the approach to assessment were appropriate for this scheme. We do not believe that any additional assessments would need to be undertaken if we were preparing an Environmental Permit for this application (such as a detailed odour impact assessment or full traffic exhaust modelling) as the assessments undertaken indicate that the mitigated scenario would not lead to a significant risk of impact.

It is likely that a Dust and Odour Management plan (or similar) would be required for the site as a planning condition and / or a Permitting Improvement Condition (or pre-operational condition)'. In the light of these comments, it is not considered that any additional air quality monitoring is statutorily required to assess the potential impacts of this proposal.

It has been agreed with Kent County Council that the Environmental Statement will be sent to the Environment Agency for consultation and that they will determine whether any further assessment is required.

I hope that the determination of the planning application can now continue.

Yours sincerely

SLR Consulting Limited

Jo Freyther
Senior Planner

cc Countrystyle Recycling Ltd
Enc Environmental Statement Volume 1 and 2

VOLUME 1

CONTENTS

6th April 2009

Angela Watts
Planning Applications Group
First Floor, Invicta House
County Hall
Maidstone
Kent
ME14 1XX

Our Ref: 409.1376.00002
Your Ref:

Dear Ms Watts,

RE: PLANNING APPLICATION SH/08/124 AT OTTERPOOL QUARRY.

I write in response to your request for additional information on dust and odour mitigation from the proposed Anaerobic Digestion facility at Otterpool Quarry.

The attached note provides detail on the proposed AD plant and also a summary of the air quality assessments which have been carried out so far. Please could you confirm that the note supplies you with all the information you need on these matters?

In terms of the information requested for the Alternative Site Assessment, please could we request that you delay the determination of this application until at least the 1st May 2009, to allow us time to prepare this information?

Yours sincerely
SLR Consulting Limited

Jo Freyther
Senior Planner

Enc - Otterpool Anaerobic Digestion Facility – Additional information on Odour and Dust Management.

Otterpool Anaerobic Digestion Facility –

Additional Information on Odour and Dust Management.

Kent County Council has asked for additional information to be provided relating to the intended management controls at the proposed Anaerobic Digestion (AD) plant at Otterpool Quarry and specifically, how the risk of potential environmental impacts will be controlled in order not to impact on the Café property directly opposite the development site (refer to File Ref. B0593400/57A e-mail request from Marina Tzima to Angela Watts date 3 June 2008).

The following information explains how the proposed AD system at Otterpool will manage this risk in line with the numerous facilities operating in a small number of UK locations together with a much larger number of mainland European operations.

It is intended to install the KOMPOGAS Process, (one of Europe's leading AD suppliers), for the organic waste treatment system at Otterpool. This choice has been made following a technical review by SLR Consulting of several AD technology providers currently available to the market. This type of process based on a horizontal digester and all storage of waste inside the building was chosen based on the evaluation of different potential feedstocks planned for this site.

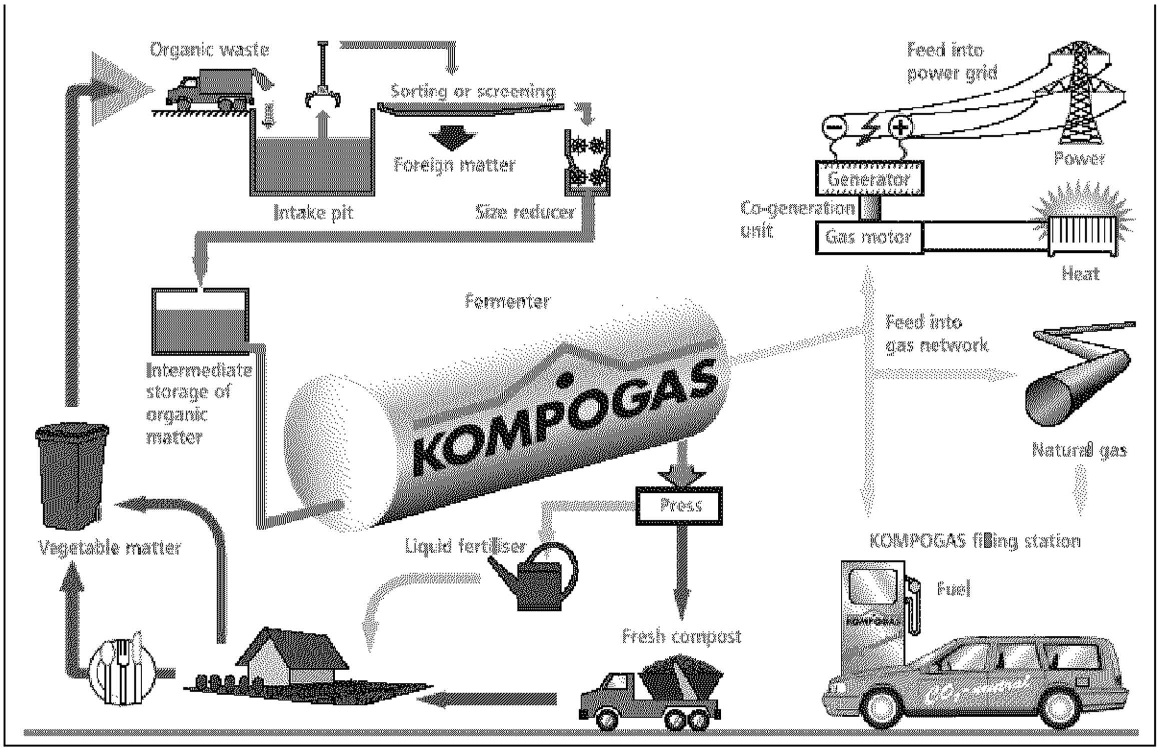
The anaerobic digestion plant is designed to treat organic waste streams, for example garden and kitchen waste. Organic waste is always collected separately and will not come into contact with other waste streams using the MRF facility.

Tipping of waste from vehicles will not be allowed until they have entered the building and doors in the reception hall are closed. Materials once tipped within the AD tipping hall are processed by shredding and screening before transported into the digester feed hopper. Any materials found to be outside of the operating parameters of the facility or in breach of permitted waste types (specified by the regulatory permit) will be stored within an allocated area until onward transportation can be arranged. At all times, such materials will be held within the enclosed building.

Organic material from the feed hopper is pumped to the fermenter in a fully automated system. Digestion of waste takes place in a fully sealed and insulated tank. Bacteria use organic material as their food source, thereby removing those components with the potential for unpleasant odour formation and releasing biogas. Biogas, a high value product, is collected from the headroom of the digester and used in a gas engine for power production.

The fermentation residue is dewatered into a cake and liquid phase. The liquid phase is partially recycled and any surplus liquid is stored in covered tanks and used as liquid fertilizer. The digestate cake is laid out in composting rows inside a different part of the enclosed building. Active aeration starts a conventional composting process which leads to further stabilisation of remaining organic material.

An overview of the KOMPOGAS process is shown in below.



Ventilation

As the AD plant is an enclosed waste treatment facility, a ventilation system will be required to manage odour, operator health and safety, dust and particulate emissions.

The Kompogas ventilation system is designed to provide frequent exchanges of air in enclosed buildings and to maintain negative air pressure within enclosed buildings (i.e. the air pressure inside the building is lower than outside) so as to prevent air emissions to the atmosphere from doors etc. The ventilation system will include the standard ducting and fans leading to a biofilter for odour removal.

All air from the reception hall is directly diverted to the biofilter system. Compounds causing odour are used by microbes in the biofilter as food source. Microbes reduce these compounds in the presence of oxygen to carbon dioxide and water and as such remove potential odour from released air. The biofilter, always kept wet, works in addition as an efficient dust treatment system for airborne particles from the reception hall.

During anaerobic digestion, proteins in the organic material have been degraded and thereby some ammonia has been released into the liquor. During composting a part of ammonia will be evaporated. Therefore the composting area is kept under negative pressure and all air is treated in the biofilter before released into the environment. The slightly acid conditions in the biofilter are favourable for removal of ammonia, allowing for high treatment efficiency.

After 2 to 3 weeks aeration of the digestate cake, the material has changed to a well stabilised compost. Bacterial activity is low and heat release gradually slows down to leave a mildly warm compost material. At this stage the compost will be transported for further maturation in the enclosed maturation hall.

Final maturation for another 2 to 3 weeks is a process dominated by humus formation, giving the material the typical compost properties. The process takes place without further aeration. The final product has the same properties as compost from conventional treatment processes. No odour formation is expected from the storage of mature compost. Refinement of the material takes place inside the maturation building.

Kompogas recommend that an AD plant receiving 20,000 tonnes of waste per annum has a Receiving Hall area including Conditioning and Intermediate Storage Area in the order of 900m^2.

The proposed dimensions of the AD buildings at Otterpool are in line with those recommended by Kompogas. The ventilation and odour control systems set out in the Kompogas report would be used at Otterpool, consequently, odour should not be a problem.

Due to the internalisation of all waste treatment, both in the AD and MRF buildings, it is not envisaged that air borne dust should be created by the operating procedures at the site and that any dust created within the buildings will be managed as part of the daily housekeeping regime.

Externally, further design aspects including the hard-standing areas that surround the buildings, will limit the creation of air borne dust from traffic movements associated with the operations.

In the event, however, that any dust is created and becomes visibly airborne, then the operator will use adequate dust suppression measures to dampen the yard areas and prevent this escaping the operational site. This will be controlled by standard measures that will include a tractor mounted water bowser that will utilise rain water collected from the roof and site drainage systems.

SLR CONSULTING

23rd December 2008

Angela Watts
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Maidstone
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ME14 1XX

Our Ref: 409-1376-00002
Your Ref: PAG/AW/SH/08/124

Dear Ms Watts,

RE: PLANNING APPLICATION SH/08/124 – PROPOSED CONSTRUCTION AND OPERATION OF A MATERIALS RECYCLING FACILITY, ANAEROBIC DIGESTION PLANT AND ASSOCIATED OFFICE AND PARKING FACILITIES – OTTERPOOL QUARRY, ASHFORD ROAD, SELLINDGE, KENT.

Thank you for your letter dated 6th August 2008. I have answered the questions raised in your letter and attach a copy of the site drainage arrangement, landscape cross sections, a landscaping scheme and aftercare details, additional highway information and a contaminated land assessment (one hard copy and one CD).

Plans OP/4 and OP/10, submitted with the planning application, have been revised to include the attenuation ponds.

I have also responded to the questions raised by Sellindge and District Residents Association, in an annex to this letter.

I hope these provide all the outstanding information required to determine the application.

Traffic and Access

It is anticipated that the facility will generate an average of 152 vehicle movements per day. However, it is recognised that HGV movements may, at times of peak demand, rise above average levels. Therefore, a 10% increase in daily HGV movements i.e. 168 vehicle movements, is considered a worst case scenario. The 168 vehicle figure was used in the traffic assessments to provide a robust picture of potential traffic impact.

The figure of 152 vehicles includes all vehicles importing waste to the site AND vehicles leaving the site with the processed material. Of the 152 vehicle movements, 128 will be associated with the Materials Recycling Facility (MRF) and 24 with the Anaerobic Digestion (AD) plant.

Transport of Waste

All food waste will be brought to site in sealed/enclosed trade waste collection vehicles. Waste material for the MRF will be transported on appropriately sheeted skip and roll on/off vehicles. The MRF waste vehicles will have a capacity of 24 tonnes per load and the AD waste vehicles, a capacity of 22 tonnes per load.

No vehicle will be unloaded until it is inside the MRF or AD building. Once in the building, the vehicles will tip the waste into agreed areas.

The MRF waste vehicles will import waste collected from Kerbside Collections and Household Recycling Centres thus will contain cardboard and paper, mixed plastics, glass, wood, textiles, mixed metals, construction and demolition waste and soils. Waste collected from other sources i.e. commercial or industrial sites will be broadly the same in nature.

Green waste for the AD plant will include waste collected from Kerbside Collections, Household Waste Recycling Centres and municipal parks and gardens. As Kent has no household food collection system at present, the majority of the food waste will come from supermarkets, restaurants and catering businesses/canteens in east Kent.

The AD plant will accept raw and cooked meat products.

The sorted and baled waste material from the MRF e.g. glass, plastics, metals etc will go onwards to specialist recycling facilities. Secondary aggregates will go to industrial & domestic construction sites and the soils to restoration projects.

Digestate (fibrous compost product) from the AD plant will either go onto further processing to achieve a higher quality product or direct to surrounding farm land and used as a soil conditioner/ compost product, to improve soil structure and crop growing yield. Biogas will be directed through an engine in the ancillary gas utilisation plant where it will drive a turbine to generate electricity for the National Grid.

The site operator intends the facility to be used for waste sourced from east Kent; primarily the districts of Ashford, Dover and Shepway, where a need has been identified in the Kent Waste Strategy 2007 for additional composting facilities.

Given the location of the site in relation to the anticipated sources of waste, the M20 via Junction 11 is the most likely route for waste imports. All vehicles will travel east from the site on the A20 to reach Junction 11. Exports are also likely to access the M20 via Junction 11.

Whilst the site is hard surfaced and operations are unlikely to lead to muddy or dusty conditions, a pressure washer will be available on site for HGV drivers to wash tyres down before leaving the site. In addition, all vehicles accessing the AD plant will have to have their wheels disinfected as they enter and leave the site, to prevent contamination entering the composting process.

Transfer/sorting/disposal

Food waste will be processed within 24 hours of receipt at the site. Material for the MRF will be processed within 48 hours of receipt.

External Lighting

Subdued external lighting is likely to be required. It is not considered that flood lighting will be necessary as neither the MRF or AD plant has any operations outside the buildings; all unloading or reloading takes place within the building.

Builder's waste

The site will accept and sort builder's skip waste i.e. construction and demolition waste, wood and plastics.

Noise, Dust and Odour

Following construction of the MRF and AD plant, all operations will take place within these buildings, which will significantly reduce the potential for noise, dust and odour nuisance.

Noise

The noise assessment concluded that the predicted changes in ambient noise levels will lead to a negligible impact at all receptors considered, with the exception of Upper Otterpool and Otterpool Manor, where a slight/barely perceptible impact is predicted during the day. Ensuring the MRF building is designed to achieve attenuation of 35dB will ensure that nearby properties are not adversely affected by the operations.

To help contain noise within the site, the doors of the MRF will open into the site, rather than out towards the site boundaries.

The AD plant is not a noisy operation, although the operations do require the use of a screener and shredder within the building and a loading shovel to transport waste around the building. The facility will have automatic doors which close 10 seconds after a vehicle has entered or left the building, thus, for the majority of the time, all operations will take place within a fully enclosed building.

Dust

The Air Quality Assessment, submitted with the planning application, stated that a number of mitigation measures will be put in place during the construction and operation of the site to suppress potential dust emissions. These include dampening of haul roads with water or dust suppressants in dry conditions and the storage and processing of all wastes within buildings. The haul roads are hard surfaced which will greatly reduce the potential for dust and wheel washing facilities will be available on site to prevent mud and dust being tracked onto the highway. Additional tree and shrub planting will provide extra protection from dust to properties south and west of the site.

Odour

As the MRF will deal purely with inert materials, it is not anticipated that it will give rise to odour. The AD plant will be fully enclosed and the method of waste treatment in an AD plant results in limited potential for odour generation. The AD facility is designed with systems to contain, treat and extract odours in dedicated biofilters. These measures are designed to ensure that the potential impact from these sources is reduced to a negligible level.

The design and operation of the ancillary gas utilisation plant will be regulated by a PPC licence which will include specific emission limits in order to minimise the potential for off site health effects.

The proposed odour mitigation is set out in the submitted Air Quality Assessment dated December 2007.

Other matters raised for clarification.

In terms of the need for the facility in the face of public campaigns to produce less food waste, a report produced by Eunomia Research for WRAP (Waste and Resources Action) entitled 'Dealing with Food Waste in the UK' states that food waste is one of the largest single fractions of the UK waste stream.

Although waste food makes up approximately 18% of UK household waste (around 216 kg per household per annum), at present, only 2% of the food waste produced in the UK is collected separately for composting or anaerobic digestion.

Home composting is on the increase and will have an impact on the amount of food left in the waste stream, however, a significant amount of food will remain to be managed. The report considers that campaigns to reduce food waste can reduce waste by up to 10% but this reduction will not happen overnight.

The AD plant will have a capacity of 20,000 tpa and at least half of the throughput will be non food waste i.e. grass cuttings and hedge trimmings etc. As a result, it is highly unlikely that there will be a shortfall in food and green waste in East Kent required to maintain the AD plant.

In summary, the quantity of food waste within the UK waste stream is likely to remain significant for the foreseeable future, therefore, the need for alternative management facilities is clear. Anaerobic Digestion has strong backing in the Waste Strategy 2007 however, there is an acute lack of AD facilities in the UK at present. AD offers a facility to generate 100% renewable energy from biodegradable waste and research undertaken by Friends of the Earth clearly indicates that it is the most sustainable way to treat our food waste.

Control of vermin

The storage of waste materials for anaerobic digestion will be confined to the interior of buildings or contained at all times to prevent attraction of birds and vermin.

As with the applicant's In Vessel Composting facility at Ridham, the AD plant will have a very strict housekeeping routine. Bait boxes will be placed around the exterior of the building and regularly checked. A procedure is set out in the site Hazard Analysis Critical Control Points (HACCP) and this will be implemented at the Otterpool site.

Contaminated Land

The contaminated land assessment, attached to this letter (one hard copy and one CD) , has been prepared in response to a request by the KCC that certain tasks relating to the assessment of ground and groundwater contamination were undertaken prior to a grant of planning permission. Specifically, and in the context of PPS23, SLR has constructed the report such that sufficient evidence is included to demonstrate that the development can, in due course, be considered "suitable for use" and that any further works required due to contamination identified at the site are not likely to be so significant such that the development is compromised due to timescale or cost.

The assessment concluded that no remediation of soil or groundwater is considered to be required based on the site's future use as a MRF and AD plant. The assessment did, however, make two recommendations based on the findings of this report and that should be considered following receipt of grant of planning permission and close to commencement of the development itself. These recommendations are as follows:

1. Upon commencement of ground works at the site any remaining infrastructure associated with buried tanks in the area of BH2 and BH3 should be removed.

2. In the context of the ongoing development of the site, a "watching brief" should be maintained such that should any significantly contaminated soils be identified during the development of the site, the services of a qualified Environmental Consultant are employed and action taken as necessary.

Contextual elevation drawings

The attached cross sections (Drawing 001) demonstrate how the proposed development will 'sit' within the site and also the extent to which the development will be visible from outside of the site.

Surface water and foul water drainage

The Environment Agency stated that discharging foul and surface water to groundwater will be unacceptable. The attached surface water drainage plan and supporting text demonstrates how foul and surface water will be managed, to avoid pollution of groundwater.

Landscaping

The attached document dated May 2008 responds to the landscaping questions raised by Helen Bradley on the 22nd April 2008. The document includes a planting schedule and outline maintenance proposal. The existing soil bund around the site will remain in place and will be planted with native trees to mitigate the visual impact of the site.

Yours sincerely
SLR Consulting Limited

Joanna Freyther
Senior Planner

cc Countrystyle Recycling Ltd.

Enc Response to comments on Transport Assessment dated 18th March 2008.
Response to comments on Landscaping dated May 2008.
Contamination Assessment – October 2008.
Proposed Site Drainage Arrangement – December 2008.
Visual Impact Cross Sections – Drawing No. 001 October 2008.

Annex 1

Response to comments from Sellindge and District Resident's Association

Physical Appearance

The contextual visual elevations submitted with this letter show the buildings within the surrounding context and should provide the information sought by Sellindge and District Residents Association (SDRA).

A review of the proposal by the KCC landscape officer has confirmed that as a result of the site's location, earth bund and existing vegetation, they do not consider the proposal will have any significant impact on the AONB. The officer added that they considered the site suitable in terms of using a derelict site and that the industrial park to the south sets a precedent for integrating large buildings into the landscape.

However, the officer recommended that native shrub planting is reinstated where it has been removed within the site boundary and below the overhead cables. The submitted landscaping information presents the proposals for additional landscaping and addresses these recommendations.

The site is not intended to be a local waste management facility for the surrounding communities but will provide a strategic facility for East Kent, the need for which has been identified in the Kent Waste Strategy.

Traffic and Access

The additional traffic information dated 18th March 2008, and contained within this letter respond to the traffic queries raised by SDRA.

Operational Activities

The submitted noise and air quality surveys show that the operations will not have an adverse impact on the amenity and health of the local environment and local communities.

Like most waste treatment processes, AD will generate some emissions. However, air emissions are low due to the enclosed nature of the process and are lower from AD than from other forms of waste disposal.

The MRF and AD plant will be covered by an Environment Agency permit, which will require stringent controls on emissions. The technical information on emissions will be provided as part of the permit application and thus should not be replicated in the planning application. Even if planning permission is granted, the facilities will not be able to operate without a permit.

Environmental and Ecological Impact

The additional information relating to contaminated land covers the issues raised by SDRA.

In terms of the impact on the geological SSSI adjacent to the site, the Hydrological Assessment concluded there will be no impact as the proposed development is at a lower elevation than the SSSI and is separated by a 2-3m rockface. Hence, there is no likelihood of surface water runoff from the proposed development reaching the SSSI and affecting the geology in any way.

Bringing food waste to the plant will generate vehicle movements, however, these will be generated if the waste was being taken to landfill. With AD, the waste is diverted from landfill and is used to generate energy and an end product which can be used to improve soils. The methane produced by landfilled food will be far more significant in terms of climate change than the processing of food waste by AD.

Water supply and waste water disposal

The surface water and foul drainage scheme submitted with this letter cover the points raised by SDRA.

Noise, odour and dust

These concerns are covered in the submitted Air Quality Assessments which confirm that the proposed waste management facilities are tried and tested, highly regulated operations, which will not have an adverse impact on the local environment or communities.

All operations are carried out within buildings, therefore, it is considered unlikely that noise, odour and dust will cause a nuisance.

Local Economic Impact

The proposed mitigation measures and additional planting will ensure that the operations do not have a significantly adverse effect on the local environment or communities. The effect on property prices is not a material planning issue which can be taken into consideration when determining an application.

As all operations will be contained within standard, industrial looking buildings, it is difficult to see how their presence will dissuade people from visiting businesses or tourist sites in the area. It is considered that The Airport Café is likely to benefit from the anticipated 25 employees and additional HGV drivers visiting the site.

Governance

The requirement for additional composting capacity and the need to increase recycling and composting rates in Kent is set out in the Kent Waste Management Strategy 2007. It is proposed that the plant will serve the East Kent area, which produces sufficient waste to operate the plant. It is not anticipated that waste will have to be imported to make up any shortfall required to operate the MRF or AD plant.

The waste management processes proposed for this site are tried and tested and highly regulated. Many European countries process the majority of their food waste by AD with no adverse impacts on public health. This facility will be closely monitored thus there is no reason why risks to health should present themselves.

The financial and business affairs of the applicant are not a material consideration. The applicant is an established waste management company with a number of sites operating in Kent.

Neither the MRF or AD plant will be 'some of the biggest in Europe'. They are medium sized enterprises, designed to source waste from East Kent.
Mainland Europe, and indeed the UK, has a number of facilities which have the design capacity to manage over four times the tonnages proposed at Otterpool.

Sustainability

We believe that AD and MRF represent sustainable waste management, in line with PPS10. The site is previously used land, well located in terms of the primary road network and the main sources of waste. The site is also in an area identified as having an acute shortfall in waste management facilities and capacity.

If Otterpool is not granted permission, the nearest facility for composting food waste will be Ridham; a considerable distance from Shepway District. Transporting waste further from its source than necessary is not considered to be sustainable.

Anaerobic Digestion offers a facility to generate 100% renewable energy from biodegradable waste and research undertaken by Friends of the Earth clearly indicates that it is the most sustainable way to treat our food waste.

SLR

Proposed Materials Recycling Facility and Anaerobic Digestion Plant
Land at Otterpool Quarry, Sellindge, Kent

Surface Water and Foul Drainage Scheme

December 2008

COUNTRYstyle RECYCLING
WASTE MANAGEMENT SOLUTIONS

SLR Ref: 409.1376.00002

solutions for today's environment

Introduction

This document has been prepared in response to questions raised by Kent County Council on the 6th August 2008.

How do the applications propose to discharge surface and foul water from the site given that the EA have previously stated that discharge to groundwater would be unacceptable?

The site currently benefits from a Consented surface water discharge (Ref. P2136/11/89). The drainage system on site collects rainfall runoff shed from the site and passes this through an oil interceptor prior to a surface water drain and off-site disposal.

The current drainage system provides very limited opportunity for attenuation of storm water flows prior to off-site discharge and it is proposed to replace this system with one which meets current guidance and regulatory standards as part of the site re-development. Development principles were presented in the Environmental Impact Assessment which accompanied the planning application.

Current guidance promotes sustainable water management through the use of Sustainable Drainage Systems (SuDS). A hierarchy of techniques is identified:

1. **Prevention** – the use of good site design and housekeeping measures on individual sites to prevent runoff and pollution (e.g. minimise areas of hard standing).

2. **Source Control** – control of runoff at or very near its source (such as the use of rainwater harvesting).

3. **Site Control** – management of water from several sub-catchments (including routing water from roofs and car parks to one/several large soakaways for the whole site).

4. **Regional Control** – management of runoff from several sites, typically in a retention pond or wetland.

The proposed development has incorporated prevention, source control and site control techniques to ensure all water generated on site is managed within the site; further details are given below.

It is generally accepted that the implementation of SuDS as opposed to conventional drainage systems, provides several benefits by:

- reducing peak flows to watercourses or sewers and potentially reducing the risk of flooding downstream;

- reducing the volumes and frequency of water flowing directly to watercourses or sewers from developed sites;

- improving water quality over conventional surface water sewers by removing pollutants from diffuse pollutant sources;

- reducing potable water demand through rainwater harvesting;
- improving amenity through the provision of public open spaces and wildlife habitat; and
- replicating natural drainage patterns, including the recharge of groundwater so that base flows are maintained.

Sustainable drainage techniques include the following:

- prevention measures / source control measures including sedum (green) roof technology;
- source control measures including rainwater harvesting;
- infiltration devices to allow water to soak into the ground, that can include individual soakaways and communal facilities;
- filter strips and swales, which are vegetated features that hold and drain water downhill mimicking natural drainage patterns;
- filter drains and porous pavements to allow rainwater and run-off to infiltrate into permeable material below ground and provide storage if needed; and
- basins and ponds to hold excess water after rain and allow controlled discharge that avoids flooding.

The aforementioned approaches all offer significant advantages in reducing flood risk when compared to conventional piped methods by attenuating the rate and quantity of surface water runoff from site.

Proposed SuDS Design Statement

Information provided in the Ground Condition Report[1] and site observations gathered by SLR as part of this study show that the site is underlain by made ground and green-grey gravelly clay to depths between ~4mbgl and ~8mbgl. As a consequence the use of infiltration techniques for the disposal of surface water runoff is deemed inappropriate given the low bulk infiltration capacity of the near surface deposits.

A surface water management scheme has been developed which utilises the current discharge point from site. It is proposed that the current drainage system is replaced with one which meets current and best practice guidance; examples of measures incorporated in the proposed design include:

- collection of all surface water runoff generated at site;
- providing roofs to potentially 'dirty' operations thus minimising the volume of dirty water generated on site;

[1] White, Young and Green, Ground Condition Report, June 2005.

- providing positive and sealed drainage to building floors which drain to sealed tanks prior to disposal (by tanker) off site;

- provision to attenuate on site all rainwater runoff to the existing 2-year rate of runoff; and

- an allowance / contingency for the potential effects of climate change for the proposed life of the development.

The current rate of runoff has been determined using the current ‘industry best practice’ guidance as outlined in the Interim Code of Practice for SuDS[2]. The recommended methodology for sites up to 50 hectares in area is the Institute of Hydrology Report 124 method (IoH124) and has been calculated using the Micro Drainage WinDES software suite. The following parameters have been incorporated into the runoff calculations. The results are detailed in Table 1 below:

- Catchment Area: 2.047Ha (measured using AutoCad from site survey);

- Average Annual Rainfall (SAAR): 795mm/year (from Flood Estimation Handbook CD-ROM);

- Soil: 0.3;

- Paved Area: 10%; and

- Region No.: 7.

Table 1
Site Runoff Characteristics

Annual Probability (Return Period, years)	Pre-development site runoff (l/s)
50% (2)	4.7
20% (5)	6.7
10% (10)	8.4
5% (20)	10.2
2% (50)	12.8
1% (100)	15.3
1% + Climate Change	18.4

Notes: 20% added to rainfall data to account for long-term climate change in accordance with PPS25
Runoff rates scaled from a 50Ha donor catchment

In order to minimise the potential flood risk on site and to nearby property it is proposed that the runoff from the developed site be restricted to the 2-year current rate of runoff (e.g. an equivalent rate of 2.3l/s/Ha). This is a precautionary approach which affords the greatest protection to the site and nearby property.

The Micro Drainage WinDes software suite and site specific rainfall duration / intensity curves detailed in the Flood Estimation Handbook have been used to

[2] Office of the Deputy Prime Minister, National SuDS Working Group, July 2004, Interim Code of Practice for Sustainable Drainage Systems

assess the volume of attenuation that needs to be provided at site to limit flows to the existing rate of runoff.

The proposed scheme, shown in Drawing No.OP/11, is detailed below:

- Attenuation Pond 1 primarily attenuates surface water shed from the roof of the MRF and AD Plant buildings connected in series to Attenuation Pond 2 by a piped discharge point; and

- Attenuation Pond 2 which will attenuate surface water shed from the Finished Product building roof and areas of hardstanding. All water from the areas of hardstanding will be discharged to Attenuation Pond 2 via a hydrocarbon / silt interceptor.

The simulated attenuation pond requirements are summarised in Table 2.

Table 2
Summary of Attenuation Requirements for areas of Hardstanding

Facet	Attenuation Pond 1	Attenuation Pond 2
Area draining to pond (Ha)	0.513	0.633
Diameter of pipe discharging to Attenuation Pond 2 (m)	0.1	N/A
Permitted 2-yr Greenfield rate of runoff (l/sec)	N/A	4.7
Simulated required attenuation volume (m^3)	250	950

The critical storm duration was found to be 1440 minutes. WinDES calculation sheets are attached to this document The simulated peak rate of discharge from site is 4.7l/sec.

It is noted that the current site Discharge Consent may need to be varied as part of the site re-development and it is confirmed that appropriate consent would be obtained from the Environment Agency prior to any works being undertaken at site.

In addition, it is proposed that prior to any works being undertaken at site a drainage / infrastructure plan is prepared for LPA / EA review and approval. It is recommended that the drainage plan makes provision for access for routine inspection / sampling of the site discharge.

The proposed surface water management system provides significant betterment to the drainage system currently incorporated at site. Provision has been made as part of the scheme proposals to collect, manage and attenuate flows generated on site prior to controlled discharge. The proposed SuDS techniques, in addition to addressing potential flooding concerns, would ensure that the quality of water discharge from site is appropriate; this would be confirmed by routine monitoring and conditions specified in the site Discharge Consent.

Foul Drainage Collection System

Given that the operations within the Materials Recycling/Transfer Station, Anaerobic Digestion facility and Finished Product buildings are all covered, there will be very low quantities of leachate generated on site. Drainage channels will however be installed inside each building to collect any leachate, this will be contained with impermeable ground floor slabs and directed into a sealed drainage collection system. The foul drainage system will then be directed into a holding tank for subsequent tankering off site to a licenced disposal destination. Foul water from the welfare/administration office and weighbridge office will also be directed to the holding tank for disposal in a similar manner.

Given there is no main or drainage sewer, what plans are there to address problems already suffered in the locality?

See above.

Currently the discharge from the system in place at site is limited by the outlet from the interceptor, noted to be 300mm diameter. The maximum discharge from this pipe is likely to be within the range of 110l/s assuming a slope of 1:100.

The proposed surface water scheme will limit discharge off site to 4.7l/s therefore providing a significant decrease in the rate of water discharged off site.

NOTES

LEGEND

APPLICATION BOUNDARY

FOUL DRAINAGE COLLECTION SYSTEM

Revision	Issue Date	Issued By	Comments
0	DEC 08	CH	

COUNTRYstyle RECYCLING
WASTE MANAGEMENT SOLUTIONS

Site	OTTERPOOL QUARRY
Project	PLANNING APPLICATION

Drawing
Proposed Site Drainage Arrangement

Date	DECEMBER 2008	Drawing No.
Scale	1:1,000	OP/11

Paper Size: ISO A3 OP/11_409-1376-00002_0_PL 402JD

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Cascade Summary of Results for 081218 409.1376.00001 w mfr and ad roof attenuation with pipe.src

Upstream Structures	Outflow To	Overflow To
(None)	081218 409.1376.00001 w fp and hardstanding.src	(None)

Storm Duration (mins)	Maximum Control (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
15 Summer	10.2	10.2	99.3912	0.3912	156.4	O K
30 Summer	10.3	10.3	99.4442	0.4442	177.8	O K
60 Summer	10.4	10.4	99.4888	0.4887	195.6	O K
120 Summer	10.5	10.5	99.5063	0.5062	202.4	O K
180 Summer	10.4	10.4	99.4908	0.4907	196.2	O K
240 Summer	10.4	10.4	99.4742	0.4742	189.7	O K
360 Summer	10.3	10.3	99.4488	0.4487	179.5	O K
480 Summer	10.2	10.2	99.4257	0.4257	170.4	O K
600 Summer	10.2	10.2	99.4032	0.4032	161.3	O K
720 Summer	10.1	10.1	99.3807	0.3807	152.3	O K
960 Summer	10.0	10.0	99.3427	0.3427	137.1	O K
1440 Summer	9.8	9.8	99.2693	0.2692	107.6	O K
2160 Summer	9.6	9.6	99.1743	0.1742	69.7	O K
2880 Summer	9.4	9.4	99.1023	0.1023	40.9	O K
4320 Summer	9.1	9.1	99.0108	0.0108	4.4	O K
5760 Summer	7.9	7.9	99.0000	0.0000	0.0	O K
7200 Summer	6.6	6.6	99.0000	0.0000	0.0	O K
8640 Summer	5.7	5.7	99.0000	0.0000	0.0	O K
10080 Summer	5.0	5.0	99.0000	0.0000	0.0	O K
15 Winter	10.3	10.3	99.4418	0.4417	176.6	O K
30 Winter	10.4	10.4	99.5042	0.5042	201.7	O K
60 Winter	10.6	10.6	99.5598	0.5597	224.0	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	144.82	18
30 Summer	85.29	33
60 Summer	50.23	62
120 Summer	29.58	120
180 Summer	21.70	162
240 Summer	17.42	192
360 Summer	12.78	258
480 Summer	10.26	326
600 Summer	8.65	394
720 Summer	7.53	462
960 Summer	6.10	598
1440 Summer	4.54	864
2160 Summer	3.37	1232
2880 Summer	2.73	1584
4320 Summer	1.97	2208
5760 Summer	1.57	0
7200 Summer	1.31	0
8640 Summer	1.13	0
10080 Summer	1.00	0
15 Winter	144.82	18
30 Winter	85.29	32
60 Winter	50.23	62

(c)1982-2006 Micro Drainage

Cascade Summary of Results for 081218 409.1376.00001 w mfr and ad roof attenuation with pipe.src

Storm Duration (mins)	Maximum Control (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
120 Winter	10.7	10.7	99.5913	0.5913	236.5	O K
180 Winter	10.7	10.7	99.5853	0.5853	234.1	O K
240 Winter	10.6	10.6	99.5653	0.5652	226.1	O K
360 Winter	10.5	10.5	99.5268	0.5267	210.8	O K
480 Winter	10.4	10.4	99.4937	0.4937	197.5	O K
600 Winter	10.3	10.3	99.4588	0.4587	183.5	O K
720 Winter	10.2	10.2	99.4233	0.4232	169.4	O K
960 Winter	10.1	10.1	99.3618	0.3617	144.7	O K
1440 Winter	9.8	9.8	99.2468	0.2467	98.8	O K
2160 Winter	9.4	9.4	99.1093	0.1093	43.8	O K
2880 Winter	9.1	9.1	99.0203	0.0202	8.2	O K
4320 Winter	7.2	7.2	99.0000	0.0000	0.0	O K
5760 Winter	5.7	5.7	99.0000	0.0000	0.0	O K
7200 Winter	4.8	4.8	99.0000	0.0000	0.0	O K
8640 Winter	4.1	4.1	99.0000	0.0000	0.0	O K
10080 Winter	3.6	3.6	99.0000	0.0000	0.0	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
120 Winter	29.58	118
180 Winter	21.70	172
240 Winter	17.42	222
360 Winter	12.78	276
480 Winter	10.26	354
600 Winter	8.65	430
720 Winter	7.53	504
960 Winter	6.10	646
1440 Winter	4.54	910
2160 Winter	3.37	1276
2880 Winter	2.73	1560
4320 Winter	1.97	0
5760 Winter	1.57	0
7200 Winter	1.31	0
8640 Winter	1.13	0
10080 Winter	1.00	0

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Cascade Rainfall Details for 081218 409.1376.00001 w mfr and ad roof attenuation with pipe.src

Region	FEH Rainfall Model	F (1km)	2.486
Return Period (years)	100	Cv (Summer)	0.750
Site Location	(Unknown)	Cv (Winter)	0.840
C (1km)	-0.023	Shortest Storm (mins)	15
D1 (1km)	0.342	Longest Storm (mins)	10080
D2 (1km)	0.375	Summer Storms	Yes
D3 (1km)	0.302	Winter Storms	Yes
E (1km)	0.311	Climate Change %	+20

Time / Area Diagram

Total Area (ha) = 0.513

Time from:	**(mins) to:**	**Area (ha)**
0	4	0.513

Cascade Storage Controls for 081218 409.1376.00001 w mfr and ad roof attenuation with pipe.src

Tank/Pond Details

Invert Level (m) 99.000 Ground Level (m) 100.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	400.0	0.60	400.0	1.20	400.0	1.80	400.0	2.40	400.0
0.10	400.0	0.70	400.0	1.30	400.0	1.90	400.0	2.50	400.0
0.20	400.0	0.80	400.0	1.40	400.0	2.00	400.0		
0.30	400.0	0.90	400.0	1.50	400.0	2.10	400.0		
0.40	400.0	1.00	400.0	1.60	400.0	2.20	400.0		
0.50	400.0	1.10	400.0	1.70	400.0	2.30	400.0		

Pipe Outflow Control

Pipe Diameter (m)	0.100	Entry Loss Coef	0.500
Slope (1:x)	100.0	Coef of Contraction	0.600
Length (m)	65.000	Invert Level (m)	98.000
Roughness (mm)	0.600		

Cascade Summary of Results for 081218 409.1376.00001 w fp and hardstanding.src

Upstream Structures	Outflow To	Overflow To
081218 409.1376.00001 w mfr and ad roof attenuation with pipe.src	(None)	(None)

Storm Duration (mins)	Maximum Control (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
15 Summer	3.9	3.9	99.2557	0.2557	306.7	O K
30 Summer	4.0	4.0	99.3007	0.3007	360.8	O K
60 Summer	4.1	4.1	99.3532	0.3532	423.8	O K
120 Summer	4.1	4.1	99.4152	0.4152	498.5	O K
180 Summer	4.2	4.2	99.4562	0.4562	547.5	O K
240 Summer	4.2	4.2	99.4867	0.4867	584.3	O K
360 Summer	4.3	4.3	99.5308	0.5307	637.1	O K
480 Summer	4.4	4.4	99.5628	0.5628	675.1	O K
600 Summer	4.4	4.4	99.5873	0.5873	704.7	O K
720 Summer	4.4	4.4	99.6073	0.6073	728.5	O K
960 Summer	4.5	4.5	99.6433	0.6433	772.0	O K
1440 Summer	4.5	4.5	99.6508	0.6508	780.8	O K
2160 Summer	4.5	4.5	99.6343	0.6343	761.2	O K
2880 Summer	4.4	4.4	99.6193	0.6193	743.4	O K
4320 Summer	4.4	4.4	99.5673	0.5673	680.7	O K
5760 Summer	4.3	4.3	99.5217	0.5217	626.0	O K
7200 Summer	4.2	4.2	99.4787	0.4787	574.7	O K
8640 Summer	4.2	4.2	99.4387	0.4387	526.2	O K
10080 Summer	4.1	4.1	99.4003	0.4002	480.3	O K
15 Winter	3.9	3.9	99.2857	0.2857	343.1	O K
30 Winter	4.0	4.0	99.3362	0.3362	403.5	O K
60 Winter	4.1	4.1	99.3952	0.3952	474.5	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	144.82	291
30 Summer	85.29	340
60 Summer	50.23	398
120 Summer	29.58	470
180 Summer	21.70	518
240 Summer	17.42	560
360 Summer	12.78	638
480 Summer	10.26	712
600 Summer	8.65	784
720 Summer	7.53	854
960 Summer	6.10	994
1440 Summer	4.54	1370
2160 Summer	3.37	1712
2880 Summer	2.73	2104
4320 Summer	1.97	2936
5760 Summer	1.57	3744
7200 Summer	1.31	4544
8640 Summer	1.13	5360
10080 Summer	1.00	6152
15 Winter	144.82	323
30 Winter	85.29	378
60 Winter	50.23	444

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Cascade Summary of Results for 081218 409.1376.00001 w fp and hardstanding.src

Storm Duration (mins)	Maximum Control (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
120 Winter	4.2	4.2	99.4637	0.4637	556.8	O K
180 Winter	4.3	4.3	99.5102	0.5102	612.2	O K
240 Winter	4.3	4.3	99.5448	0.5447	653.8	O K
360 Winter	4.4	4.4	99.5963	0.5963	715.3	O K
480 Winter	4.5	4.5	99.6333	0.6333	760.0	O K
600 Winter	4.5	4.5	99.6628	0.6628	795.1	O K
720 Winter	4.5	4.5	99.6868	0.6868	823.9	O K
960 Winter	4.6	4.6	99.7308	0.7308	877.0	O K
1440 Winter	4.6	4.6	99.7668	0.7668	920.3	O K
2160 Winter	4.6	4.6	99.7528	0.7528	903.2	O K
2880 Winter	4.6	4.6	99.7308	0.7308	876.9	O K
4320 Winter	4.5	4.5	99.6573	0.6573	788.5	O K
5760 Winter	4.4	4.4	99.5903	0.5903	708.2	O K
7200 Winter	4.3	4.3	99.5263	0.5262	631.3	O K
8640 Winter	4.2	4.2	99.4652	0.4652	558.5	O K
10080 Winter	4.1	4.1	99.4087	0.4087	490.3	O K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
120 Winter	29.58	520
180 Winter	21.70	576
240 Winter	17.42	620
360 Winter	12.78	696
480 Winter	10.26	770
600 Winter	8.65	840
720 Winter	7.53	908
960 Winter	6.10	1042
1440 Winter	4.54	1382
2160 Winter	3.37	1988
2880 Winter	2.73	2248
4320 Winter	1.97	3156
5760 Winter	1.57	4088
7200 Winter	1.31	4968
8640 Winter	1.13	5792
10080 Winter	1.00	6648

(c)1982-2006 Micro Drainage

Cascade Rainfall Details for 081218 409.1376.00001 w fp and hardstanding.src

Region	FEH Rainfall Model	F (1km)	2.486
Return Period (years)	100	Cv (Summer)	0.750
Site Location	(Unknown)	Cv (Winter)	0.840
C (1km)	-0.023	Shortest Storm (mins)	15
D1 (1km)	0.342	Longest Storm (mins)	10080
D2 (1km)	0.375	Summer Storms	Yes
D3 (1km)	0.302	Winter Storms	Yes
E (1km)	0.311	Climate Change %	+20

Time / Area Diagram

Total Area (ha) = 0.633

Time from:	**(mins) to:**	**Area (ha)**
0	4	0.633

(c)1982-2006 Micro Drainage

Cascade Storage Controls for 081218 409.1376.00001 w fp and hardstanding.src

Tank/Pond Details

Invert Level (m) 99.000 Ground Level (m) 100.000

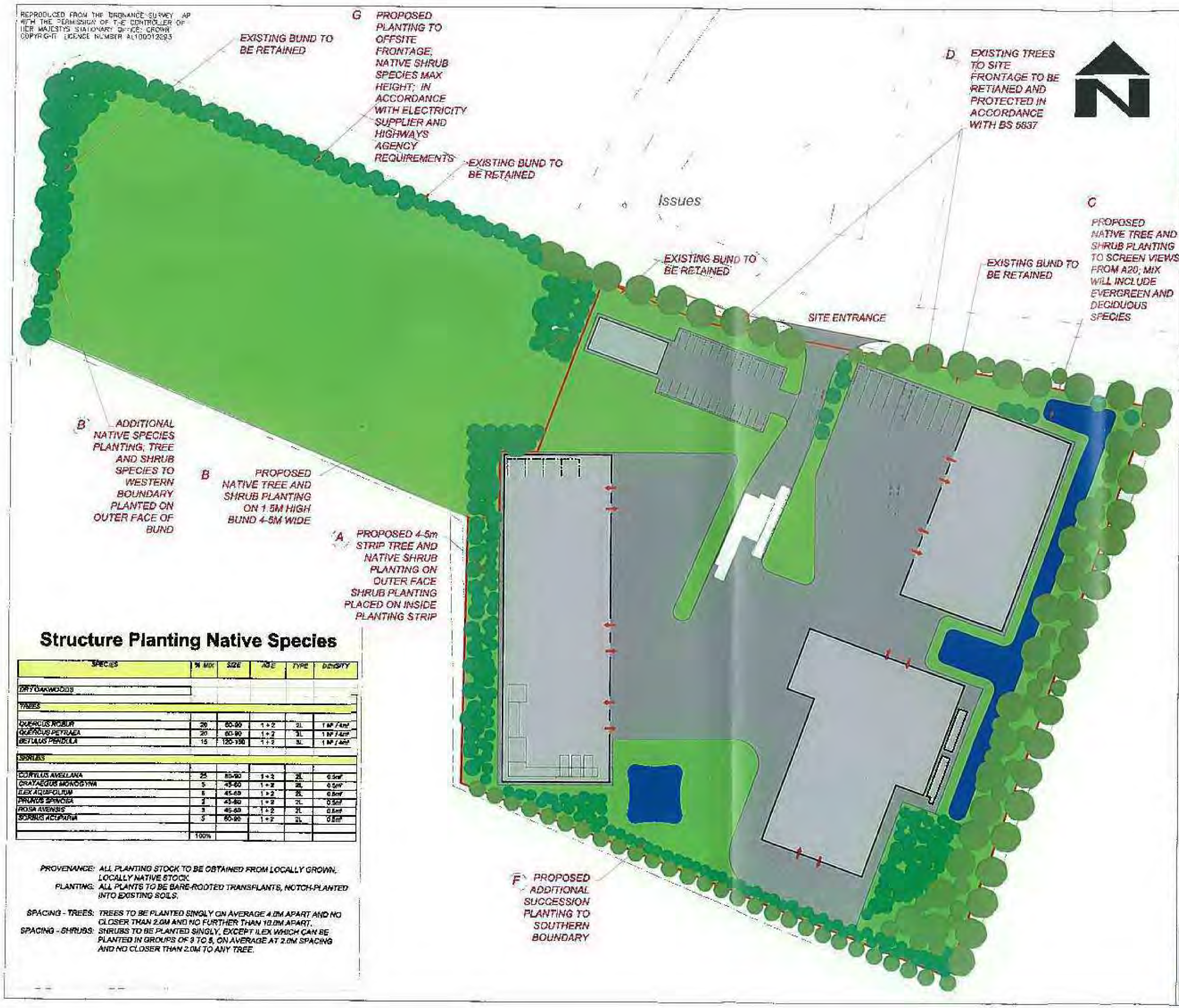
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.00	1200.0	0.60	1200.0	1.20	1200.0	1.80	1200.0	2.40	1200.0
0.10	1200.0	0.70	1200.0	1.30	1200.0	1.90	1200.0	2.50	1200.0
0.20	1200.0	0.80	1200.0	1.40	1200.0	2.00	1200.0		
0.30	1200.0	0.90	1200.0	1.50	1200.0	2.10	1200.0		
0.40	1200.0	1.00	1200.0	1.60	1200.0	2.20	1200.0		
0.50	1200.0	1.10	1200.0	1.70	1200.0	2.30	1200.0		

Orifice Outflow Control

Diameter (m) 0.041 Invert Level (m) 98.000
Discharge Coefficient 0.600

(c)1982-2006 Micro Drainage

DRAWING OP/1



Structure Planting Native Species

SPECIES	% MIX	SIZE	AGE	TYPE	DENSITY
DRY OAKWOODS					
TREES					
QUERCUS ROBUR	20	60-90	1 + 2	2L	1 № / 4m²
QUERCUS PETRAEA	20	60-90	1 + 2	3L	1 № / 4m²
BETULUS PENDULA	15	120-150	1 + 2	3L	1 № / 4m²
SHRUBS					
CORYLUS AVELLANA	25	60-90	1 + 2	2L	0.5m²
CRATAEGUS MONOGYNA	5	45-60	1 + 2	2L	0.5m²
ILEX AQUIFOLIUM	5	45-60	1 + 2	2L	0.5m²
PRUNUS SPINOSA	2	45-60	1 + 2	2L	0.5m²
ROSA AVENSIS	3	45-60	1 + 2	2L	0.5m²
SORBUS ACUPARIA	5	60-90	1 + 2	2L	0.5m²
	100%				

PROVENANCE: ALL PLANTING STOCK TO BE OBTAINED FROM LOCALLY GROWN, LOCALLY NATIVE STOCK.
PLANTING: ALL PLANTS TO BE BARE-ROOTED TRANSPLANTS, NOTCH-PLANTED INTO EXISTING SOILS.

SPACING - TREES: TREES TO BE PLANTED SINGLY ON AVERAGE 4.0M APART AND NO CLOSER THAN 2.0M AND NO FURTHER THAN 10.0M APART.
SPACING - SHRUBS: SHRUBS TO BE PLANTED SINGLY, EXCEPT ILEX WHICH CAN BE PLANTED IN GROUPS OF 3 TO 5, ON AVERAGE AT 2.0M SPACING AND NO CLOSER THAN 2.0M TO ANY TREE.

NOTES

LEGEND

APPLICATION BOUNDARY

EXISTING TREES TO BE RETAINED

PROPOSED TREE AND SHRUB PLANTING

Revision	Issue Date	Issued By	Comments
0	MAY 08	DE	

COUNTRYstyle

Site: OTTERPOOL QUARRY

Project: PLANNING APPLICATION

Drawing: **Proposed Landscape Layout**

Date: NOVEMBER 2007

Scale: 1:1,000

Drawing No. **OP/11**

Paper Size: ISO A3 OP-4_409-1378-00002_3_PL 402JD

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SLR

Proposed Materials Recycling Facility and Anaerobic Digestion Plant
Land at Otterpool Quarry, Sellindge, Kent

Landscape Design and Visual Impact

May 2008

COUNTRYstyle RECYCLING

WASTE MANAGEMENT SOLUTIONS

SLR Ref: 409.1376.00002

solutions for today's environment

CONTENTS

APPENDICES

DRAWINGS

1.0 INTRODUCTION

1.1 Instructions

SLR Consulting Ltd was commissioned in April 2008 by Countrystyle Recycling to prepare a response to the queries raised by Shepway District Council on the planning application papers in relation to landscape design and visual impact of the proposed recycling scheme. The site visit was carried out on the 1st and 2nd of May 2008. The weather conditions were bright with excellent visibility.

This report has been prepared by SLR Consulting Limited (SLR) on behalf of Countrystyle Recycling.

1.2 Introduction

The site is a brownfield site occupying an area of 2.52ha to the south of the village of Barrow Hill in Kent. Situated on the A20 the proposal would utilise the existing site entrance and works with the existing landform to set the buildings close to the existing ground level. The use of the site for this proposed recycling plant purpose represents a permanent measure. To the northern boundary of the site there is an existing bund which has been substantially cleared of vegetation to the west end; vegetation in front of the main entrance has been retained; removals have been carried out by others in association with the highways improvements work to the junction of the A20 with the Otterpool Lane To the eastern boundary there is a substantial belt of woodland planting which has been reduced to the north east corner of the site boundary by maintenance activity by the electricity supplier. To the southern boundary there is a line of coniferous planting; presumably a screen to the former use. This planting is at a level some 2.0m higher than the ground levels to the site situated on the top of an existing embankment. To the western boundary of the site adjacent to the Otterpool Lane there is an existing bund which is currently partially grassed and of an uneven surface.

The queries raised by the landscape advisers to Kent County Council (KCC) during the planning application process as either specific questions or comments are addressed below. They relate to both the landscape design of the proposal and the visual impact of the proposal on the local landscape context.

Q1; Raised by KCC; *Helen Bradley writes; "Since my original comments, dated 11th February 2008, there has been a significant amount of vegetation removal on land outside the site boundary to the north west in connection with forthcoming highway improvements. There has also been some vegetation removal within the site boundary to the north east, beneath overhead power lines".*

Response 1; The vegetation removal has been in respect of clearance by the electricity supplier within the easement of the overhead power cables and the Highways Agency in respect of current junction improvements. In this respect the current condition represents the designed appearance of the site boundary. The easement is a designated width either side of the telegraph poles. We have established that there is sufficient space to create some replacement planting along this length of the site frontage outwith the easement, this would be proposed as hedgerow planting due to the proximity of the road and would be subject to consideration in respect of the highways improvement project currently underway on site. We understand that the electricity supplier requirements allow for low groundcover planting within an easement and this would be achieved by planting a mix of native deciduous shrubs beneath the overhead wires [refer to point G on OP/11].

Q2; Raised by KCC; *"In addition, landscape objections have been raised by Shepway District Council and the Kent Downs Area of Outstanding Natural Beauty (AONB) Unit, regarding views from, and the impact on, the AONB with regard to the proposals. These comments re-assess the landscape and visual implications of the proposal, in light of the recent vegetation removal and concerns raised with regard to the impact on the AONB".*

Visual Impact

"We have concerns with the submitted Proposed Site Layout (SLR No. OP/4), and accompanying cross section (SLR No. OP/4), and feel that they do not provide enough detail to assess the impacts of the proposals. We would like clarity over the retention of existing vegetation and earth bunds, which provide a significant level of visual screening for surrounding visual receptors. These comments on visual impact therefore assume the retention of these earth bunds and existing vegetation to the south and east of the site".

Response 2; The existing earth bunds will be retained as current around the site boundaries; existing vegetation proposed to be retained is illustrated on the enclosed site plan. We propose to introduce some additional site planting which would provide a greater depth of screening to the site boundary compared with the coniferous hedging which is aligned on the southern boundary. The coniferous hedging will of course be retained however our proposal now provides succession screening for the future [refer to point F on OP/11].

Q3; Raised by KCC; *"Mink Farm to the north east forms the closest residential visual receptor which could potentially be affected by the recent vegetation removal, which took place within the site boundary to the north east. Whilst removed vegetation within the application boundary would not increase views into the site itself because of the existing earth bund, glimpses of tall structures would be available through the gap. There would be no significant impact on other residential properties, vehicle travellers along the A20, or walkers along Public Rights of Way to the east because of the height of the existing bund".*

Response 3; We consider that whilst it will not be possible to replace the planting like for like in the area beneath the overhead wires in the north east corner of the site there is an opportunity to provide a layer of planting which would effectively screen the glimpsed views into the site from the A20. Given the oblique angle of view into the site from the Mink Farm this is a relatively small gap to fill and we will be able to screen this with a mix of native deciduous and evergreen species [refer to point C on OP/11].

Q4 Raised by KCC; *"The recently removed vegetation to the north west of the site, outside the applicant's boundary, was located on an existing bund which extends from the site westward along the A20, turning southward along Otterpool Lane. Although a narrow belt of vegetation remains along part of the A20 embankment west of the site, the bund becomes shallower to the west which would allow glimpses of taller proposed structures from Barrow Hill Farm and the southernmost houses east of the A20 at Barrow Hill. Whilst Barrow Hill Farm Cottages are set within a slight dip and mature evergreen garden conifer trees screen direct views of the site itself, the removed vegetation would reveal glimpses at oblique angles from upper windows of taller structures within the site".*

Response 4; We propose that these glimpses at oblique angles from upper windows of the houses to the southern most point of Barrow Hill Farm cottages would be screened by the introduction of an internal bund to the site which would be planted with native deciduous species. This proposal seeks to provide immediate internal screening of the proposed development by returning planting across the site in a north south alignment whilst maintaining access to the remainder of the site [refer to point B on OP/11].

Q5 Raised by KCC; *"We do not consider that the vegetation removal outside the site would cause any significant adverse visual impact on vehicle travellers along the A20 and Otterpool Lane because of the remaining earth bund and the fact that Otterpool Lane runs within a slight depression where it meets the A20. There would be glimpses of taller structures from the Public Footpath which links the A20 with Otterpool Lane, which is situated on raised ground".*

Response 5; We consider that the introduction of an internal bund to the site will minimise views from the footpath to the west of the site that runs from A20 to Upper Otterpool. In addition to this the existing land to the western end of the site outwith the easement of the overhead power cables would be planted to give foreground screening from both the road and particularly the footpath [refer to point B on OP/11].

Q6 Raised by KCC; *"The recently removed vegetation would be unlikely to cause any significant increase in visual impact from the 'Airport Café' situated opposite the site entrance. However, as stated in our previous comments, we would like clarification as to whether the existing evergreen vegetation surrounding the site entrance would be removed or retained as part of the scheme in order to clarify the visual impact on the Café".*

Q6 Response 6; The trees and vegetation to the site entrance will be retained and protected in accordance with BS5837 [refer to point D on OP/11].

Q7 Raised by KCC; *"Land to the south of the site is flat pasture with no visual receptors other than the residential property Upper Otterpool. A mature dense strip of evergreen planting is located along the southern boundary of the site, screening views of the proposals from Upper Otterpool. Whilst this existing vegetation is not particularly characteristic of the landscape, it does perform a useful screening role. The recently removed vegetation would not affect views from the south, including Upper Otterpool".*

Q7 Response 7; We consider that this screening would be supported with a native species mix to provide depth of planting and succession planting to this boundary. We agree that the current screening is not typical of the area however it does provide useful screening role and in the long term will be replaced by the planting more indigenous to the area that would establish behind it [refer to point F on OP/11].

Landscape Impact

Commentary from KCC; *"Our previous opinion regarding the potential impact on the Kent Downs AONB remains valid. The Kent Downs Area of Outstanding Natural Beauty (AONB) is located to the south, east and north of the site, approximately 1.3km away at the nearest point. To the south, the land within the AONB descends southward, preventing views of the site. To the east, clear views of the site from within the AONB are prevented by intervening vegetation and existing development along Stone Street. Whilst the site may be visible from higher ground within the AONB to the north, views would be distant and set within the context of Folkestone Racecourse, the M20 and railway line. Therefore, we do not consider the proposals to have any significant impact on the AONB".*

"We feel that the location of the proposal is suitable in terms of utilising an existing, and derelict, site. We also feel that the industrial park to the south sets a precedent for integrating large scale buildings into the landscape within the broader area. However, we do consider that the proposals are slightly out of scale with the landscape immediately surrounding the site".

We respond as follows; In terms of scale we consider that the proposed buildings are of an industrial scale and that there are other industrial scale buildings including the barns at Barrow Hall farm (20M x 30m). There are also large buildings developed at Folkestone race course including a stand currently undergoing construction/ refurbishment. The barns at Upper Otterpool farm are also at a similar scale to those at Barrow Hall. The industrial estate to the south of the site is visually separate from this site and the buildings here are of a similar scale than that proposed for the recycling facility. The proposal whilst reintroducing industrial use to the site is not increasing the density of this scale of development to the area.

KCC comment; *"We recommend that the applicant proposes to reinstate native shrub planting where vegetation has been removed within the site boundary, health and safety and statutory undertaker (energy) constraints permitting, below the overhead cables. This would provide a continuation of the significant band of existing vegetation along the bund. We would like to see more detail regarding the landscape proposals than is illustrated on the Proposed Site Layout, drawing number OP/4".*

Please refer to the Landscape layout proposal OP/ 11 which illustrates widened landscape planting to the western boundary and includes for reinstatement of shrub planting to the northern bund subject to electricity supplier easements and current highways improvement requirements. The proposal drawing indicates a possible shrub mix appropriate for the northern boundary and a tree and shrub mix appropriate for the western boundary.

KCC comment; *"We approve in principle to the proposals for native tree and shrub planting around the perimeter of the site and alongside the A20 to the junction with the B2067, however we query the width of planting which is 2m. This is very narrow and would be more of a hedgerow than a broad vegetation strip, the latter of which would be more desirable both for landscape and visual benefit. We recommend that proposed planting is revised to allow for wider vegetation belts, and that proposed species and size specification is indicated".*

On proposal drawing OP/ 11; we have illustrated wider planting belts and the type of planting proposed within a planting schedule. Within the site we have proposed an internal planting area which will enclose the office building and the recycling facility to prevent glimpsed views from the southern end of Barrow Hill. This would provide a wrap around to the western edge of the development; within the core of the site we do not envisage providing planting however adjacent the main entrance we can provide a hedgerow to screen the lorry parking area from glimpsed views through the main entrance.

KCC comment; *"We query the potential to integrate further planting within the site, rather than just around the site boundary. We would like to see the relationship between existing vegetation and proposed planting which, in combination, may provide wider planting strips around the site than appear on the Proposed Site Layout. We would also like clarification regarding the proposed planting on land outside the applicant's boundary to the west".*

Please refer to drawing OP/ 11; this illustrates the potential of integration of proposed planting with existing; including the existing woodland areas, screen planting and ruderal communities. This proposal will be developed in detail during the course of the detailed design proposals.

Conclusions of KCC;

"In order to clarify both landscape and visual impacts, we recommend that the applicant submits clarification of the levels, to ensure the existing screening bunds surrounding the site are to be retained[. These, and vegetation retention and replacement planting proposals are critical in assessing the visual impact. We would like to see a plan which illustrates existing vegetation to be removed and retained please refer to enclosed plan in order to fully assess the visual impact of the proposal, as well as the impact on trees. If proposed vegetation removal is extensive, we may also request a tree survey to BS5837: 2005 Trees in Relation to Construction. We recommend that planting is proposed in wider strips and suggest that vegetation is integrated within the site; see enclosed plan. We would also like to see proposed planting species and size specification, refer to enclosed schedule. as well as the relationship between proposed planting and existing, retained, vegetation both within the site and on the adjacent land to the west. Finally, we would like to see maintenance proposals for existing vegetation and proposed planting refer to the enclosed specification; both within the site and on the adjacent land to the west".

"We do not consider that the proposals would have any significant adverse impact on views from the Kent Downs AONB, or impact significantly on its landscape quality, because of the distance of the site from the AONB, intervening landform, vegetation and development from any available views".

In response to the conclusions drawn by KCC we enclose the maintenance proposals as far as we can foresee at this stage of the project; this would be updated as the project progresses and as more detail is applied to the scheme proposals. We also enclose drawing number OP/11 REV 0 in response to the recommendations drawn out within the conclusions of KCC.

2.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Countrystyle Recycling; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

APPENDICES

APPENDIX 1

OUTLINE MAINTENANCE PROPOSAL

To be read with Preliminaries/ General conditions.

GENERALLY

110 NOTICE
- Give notice before:
- Application of herbicide.
- Application of fertilizer.
- Watering.
- Each site maintenance visit.
- Period of notice: 7 days.

130 REINSTATEMENT
- Damage or disturbance to soil structure, planting, grass, fencing, hard landscaping, structures or buildings: Reinstate to original condition.

140 CONTROL OF MAMMALIAN PESTS
- Specialist firms: Submit proposals.
- Method: Submit proposals.

155 WATERING
- Supply: Recycled, treated grey water.
- Quantity: Wet to field capacity .
- Application: Do not damage or loosen plants.
- Compacted soil: Loosen or scoop out, to direct water to rootzone.
- Frequency: As necessary for the continued thriving of all planting.

160 WATER RESTRICTIONS
General: If water supply is, or is likely to be, restricted by emergency legislation, submit proposals for an alternative suitable source of water. Obtain instructions before proceeding.

170 DISPOSAL OF ARISINGS
- General: Unless specified otherwise, dispose of arisings as follows:
- Biodegradable arisings: Remove to recycling facility.
- Grass cuttings: Remove to recycling facility.
- Tree roots and stumps: Remove from site.
- Shrub and tree prunings: Remove to recycling facility.
- Litter and nonbiodegradable arisings: Remove from site.

181 MECHANICAL EQUIPMENT
- General: Minimize.
- Prohibited equipment: Chippers.
- Timing: Use of mechanical equipment allowed between the hours of 10:00 am and 4:00 pm only.

190 LITTER
- Extraneous rubbish not arising from the contract work: Collect and remove from site.

195 PROTECTION OF EXISTING GRASS
- General: Protect areas affected by maintenance operations using boards/tarpaulins. Do not place excavated or imported materials directly on grass.

197 CLEANLINESS
- Soil and arisings: Remove from hard surfaces.
- General: Leave the works in a clean, tidy condition at completion and after any maintenance operations.

GRASSED AREAS

210 MAINTENANCE OF GRASSED AREAS

- General: Maintain turf in a manner appropriate to the intended use.
- Soil and grass:
- Condition: Maintain a healthy vigorous sward, free from disease, fungal growth, discolouration, scorch or wilt.
- Waterlogging and compaction: Prevent.
- Damage: Repair trampling, abrasion or scalping.
- Ornamental lawns: Maintain reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills.
- Edges: Neat and well defined, in clean straight lines or smooth flowing curves.
- Litter and fallen leaves: Remove regularly to maintain a neat appearance.

220 GRASS CUTTING GENERALLY

- Before mowing: Remove litter, rubbish and debris.
- Finish: Neat and even, without surface rutting, compaction or damage to grass.
- Edges: Leave neat and well defined. Neatly trim around obstructions.
- Adjoining hard areas: Sweep clear and remove arisings.
- Drought or wet conditions: Obtain instructions.

225 TREE STEMS

- Precautions: Do not use mowing machinery closer than 100 mm to tree stems. Use nylon filament rotary cutters and other hand held mechanical tools carefully to avoid damage to bark.

226 TREE STEMS

- Precautions: Do not allow nylon filament rotary cutters and other mechanical tools closer than 100 mm to the stem of any tree.
- Operations close to stems: Complete using hand tools.

235 BULBS AND CORMS IN GRASSED AREAS

- Before flowering: Do not cut.
- Interval between end of flowering and start of grass cutting (minimum): 6 weeks.

250 LEAF REMOVAL

- Operations: Collect fallen leaves.
- Special requirements: None.
- Disposal: Remove from site for recycling.

265 MOWING GENERAL AREAS

- Grass height: Maintain between 50 and 75 mm.
- Arisings: Remove.

325 RELIEVING SURFACE COMPACTION IN TURF

- Standard: To BS 7370-3.
- Method: Spiking.
- Top dressing: Medium to fine sand.
- Depth: 2-3 mm.

330 SELECTIVE HERBICIDE

- Location: Road verges.
- Herbicide: Contractor's choice.

- Areas not to be sprayed: Wildflower areas.

340 SPOT WEEDKILLING IN ROUGH GRASS AREAS
- Herbicide: Non-selective contact type.
- Operations: Spot treat all broad leaved weeds.

380 REINSTATEMENT OF DAMAGED TURF AREAS
- Damaged turf: Remove to a depth of 40 mm.
- Preparation: Cultivate substrate to a fine tilth.
- Reinstatement: Contractor's choice of returfing or topsoiling and reseeding:
- Returfing: Quality and appearance to match existing.
- Reseeding: Fill with fine topsoil to BS 3882 general purpose grade, free from stones, debris and weeds. Reseed with a seed mix to match existing grass in quality and appearance.
- Protection and watering: Provide as necessary to promote successful germination and/ or establishment.

SHRUBS/TREES/HEDGES

500 ESTABLISHMENT OF NEW PLANTING
- Duration: Two full growing seasons from the date of planting.
- Weed control:
- Method: Keep planting beds clear of weeds by maintaining full thickness of mulch.
- Area: Maintain a weed free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of the original planting pit.
- Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
- Trees: When in leaf, spray crowns during warm weather.
- Timing: After dusk.
- Watering: Contractor's choice.

502 ESTABLISHMENT OF NEW PLANTING - FERTILIZER
- Time of year: March or April.
- Type: Slow release.
- Spreading: Spread evenly. Carefully lift and replace any mulch materials.
- Application rate: As manufacturer's recommendations.

510 TREE STAKES AND TIES
- Inspection/ Maintenance times: As scheduled and immediately after strong winds.
- Stakes:
- Replace loose, broken or decayed stakes to original specification.
- If longer than half of clear tree stem height, cut to this height in spring. Retie to tree firmly but not tightly with a single tie.
- Ties: Adjust, refix or replace loose or defective ties, allowing for growth and to prevent chafing.
- Where chafing has occurred, reposition or replace ties to prevent further chafing.
- Removal of stakes and ties: During spring when no longer required to support the tree.
- Fill stake holes with lightly compacted soil.

515 TREE GUY WIRES
- Inspection/ Maintenance times: Immediately after strong winds.
- Operations:
- Replace or resecure loose or missing guy wires.
- Adjust to suit stem growth and to provide correct and uniform tension.
- Removal: During spring when no longer required to support the tree.

520 REFIRMING OF TREES AND SHRUBS
- Timing: After strong winds, frost heave and other disturbances.
- Refirming: Tread around the base until firmly bedded.
- Collars in soil at base of tree stems, created by tree movement: Break up by fork,

avoiding damage to roots. Backfill with topsoil and refirm.

530 TREE SHELTERS

- Loose or defective shelters: Adjust, refix or replace to original specification and to prevent chafing.
- Removal: During spring when no longer required to protect the tree.

540 PRUNING GENERALLY

- Pruning: In accordance with good horticultural and arboricultural practice.
  - Removing branches: Do not damage or tear the stem or bark.
  - Wounds: Keep as small as possible and cut cleanly back to sound wood.
  - Cutting: Make cuts above and sloping away from an outward facing healthy bud, angled so that water will not collect on cut area.
  - Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide.
- Appearance: Thin, trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well balanced natural appearance.
- Tools: Use clean sharp secateurs, hand saws or other approved tools. Trim off ragged edges of bark or wood with a sharp knife.
- Disease or infection: Give notice if detected.
- Growth retardants, fungicide or pruning sealant: Do not use unless instructed.

545 PRUNING OF EXCESSIVE OVERHANG

- Timing: As instructed .
- Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.
- Special requirements: None.

555 PRUNING TREES AND SHRUBS

- Standard: To BS 7370-4.
- Special requirements: Growth retardents not permitted.

570 FORMATIVE PRUNING OF YOUNG TREES

- Standard: Type and timing of pruning operations to suit the plant species.
- Time of year: Do not prune during the late winter/ early spring sap flow period.
- Young trees up to 4 m high:
  - Crown prune by removing dead branches and reducing selected side branches by one third to preserve a well balanced head and ensure the development of a single strong leader.
  - Remove duplicated branches and potentially weak or tight forks. In each case cut back to live wood.
- Whips or feathered trees: Do not prune.
- Operatives: Approved specialist contractor.

605 TRIMMING SLOWLY ESTABLISHING HEDGES

- Operations:
  - Timing: Cut back hard in June and September to encourage bushy growth down to ground level.
  - Form: Allow to reach planned dimensions only by gradual degrees, depending on growth rate and habit.

615 TRIMMING FIELD HEDGES

- Operations: Trim to specified height and profile using suitable mechanical cutters.

620 REMOVAL OF DEAD PLANT MATERIAL

- Operations: At the end of the growing season, check all shrubs and remove all dead foliage, dead wood, and broken or damaged branches and stems.

625 CLIMBING PLANTS

- Pruning: Remove excess growth, to ensure that signs, light fittings, doors and windows are kept clear at all times.
- Insecure growth: Attach to supporting wires or structures using Stainless steel wire.
- Supporting structures: Check and repair as necessary.

640 THINNING BY REMOVAL OF SURPLUS PLANTS

- Plants to be thinned: As schedule xx.
- Standard: BS 7370-4.
- Timing: When foliage of adjacent plants has begun to touch.
- Roots:
- Disturbance to adjacent plants: Minimise.
- Soil: Refill holes with topsoil to leave an even graded surface.
- Mulch: Maintain mulch as original specification.
- Adjacent plants: Make good any minor damage immediately.
- Plants for retention: Select plants with a strong healthy habit.
- Mature planting density: As schedule xx.

645 WEED CONTROL GENERALLY

- Weed tolerance: At all times, weed cover less than 5% and no weed to exceed 100 mm high.
- Adjacent plants, trees and grass: Do not damage.

655 WEED CUTTING BY HAND OR MACHINE

- Undesirable grass, brambles and herbaceous growth: Cut down cleanly to a maximum height of 25 mm.
- Herbicides: Do not use.

680 SOIL AERATION

- Compacted soil surfaces:
- Prick up: To aerate the soil of root areas and break surface crust.
- Size of lumps: Reduce to crumb and level off.
- Damage: Do not damage plants and their roots.

685 SOIL LEVEL ADJUSTMENT

- Level of soil/mulch at edges of beds: Reduce to 50 mm below adjacent grass or hard surface.
- Arisings (if any): Spread evenly over the bed.

690 MAINTENANCE OF LOOSE MULCH

- Thickness (minimum): 75 mm.
- Top up: Twice per year.
- Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
- Weeding: Remove weeds growing on or in mulch by hand weeding.

700 SNOW REMOVAL FROM SHRUBS/ TREES

- Standard: To BS 7370-4.
- Plants subject to snow removal: All evergreens.
- Timing: Within 24 hours of snowfall.

705 WINTER LEAF REMOVAL

- Operations: Take down temporary leaf fences. Collect accumulations of drifted leavesfrom the vicinity and from planting beds.
- Arisings: Remove to recycling facility.

710 WOODLAND PLANTING MAINTENANCE

- Watering: In exceptional circumstances to prevent plants dying.
- Loose plants: Refirm surrounding soil, without compacting.
- Vegetation: Except trees and coppice shoots to be retained, cut down to 100 mm above ground level within the plantation area.

- Arisings: Leave between rows.
- Ditches and drains: Keep clear.

715 WOODLAND THINNING
- Mature planting density: As schedule 401.1319.00002 xx.
- Timing: Thin in stages in accordance with the agreed management plan.

720 COPPICING
- Material to be coppiced Coryllus species.
- Standard: Good forestry practice.
- Cut stems: As low as possible, or to previous coppice level.
- Finish: Leave sloping upward towards the centre to promote rainwater runoff.
- Brash: Stack around coppice stool to alleviate deer damage.
- Coppiced timber: Extract.

TREE WORK

810 TREE WORK GENERALLY
- Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
- Protection: As section A34.
- Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and Arboriculture safety leaflets'.
- Removing branches: Cut as Arboricultural Association Leaflet 'Mature tree management'.
  Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
- Appearance: Leave trees with a well balanced natural appearance.
- Chain saw work: Operatives must hold a Certificate of Competence.
- Tree work: To be carried out by an approved member of the Arboricultural ` Association.

815 ADDITIONAL WORK
- Defective, diseased, unsafe or weak parts of trees additional to those scheduled for attention: Give notice if detected.

820 PREVENTION OF WOUND BLEEDING
- Standard: To BS 3998, clause 8.

825 PREVENTION OF DISEASE TRANSMISSION
- Standard: To BS 3998, clause 9 and Appendix B.

830 CLEANING OUT AND DEADWOODING
- Remove:
- Dead, dying, or diseased wood, broken branches and stubs.
- Fungal growths and fruiting bodies.
- Rubbish, wind blown or accumulated in branch forks.
- Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
- Other unwanted objects, e.g. tree houses, swings.

835 CUTTING AND PRUNING GENERALLY
- Tools: Appropriate, well maintained and sharp.
- Final pruning cuts:
- Chainsaws: Do not use on branches of less than 50 mm diameter.
- Hand saws: Form a smooth cut surface.
- Anvil type secateurs: Do not use.
- Removing branches: Do not damage or tear the stem.
- Wounds: Keep as small as possible, cut cleanly back to sound wood leaving a smooth surface, and angled so that water will not collect on the cut area.

- Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible.
  Large branches: Remove only with prior approval.
- Remove in small sections and lower to ground with ropes and slings.
- Dead branches and stubs: When removing, do not cut into live wood.
- Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
- Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

855 CUTTING TREE ROOTS

- Excavating: Use hand tools only.
- Protected area: Do not cut roots within an area which is the larger of:
- The branch spread of the tree.
- An area with a radius of half the tree's height, measured from the trunk.
- outside protected area: Give notice of roots exceeding 50 mm in diameter. Do not cut without approval.
- Cutting: with clean sharp sand.
- Material: Backfill with original topsoil.

860 REMOVING TREES, SHRUBS AND HEDGES

- Standards: To BS 3998, Appendix A and Health & Safety Executive (HSE)/ Arboricultural and Forestry Advisory Group Safety Leaflets.
- Existing services: Check for below and above ground services. Give notice if they may be affected.
- Shrubs and smaller trees: Cut down and grub up roots.
- Tree stumps:
- Removal: Remove mechanically to a minimum depth of 300 mm below ground level.
- Removal by winching: Give notice. Do not use other trees as supports or anchors.
- Protection: As section A34.
- Work near retained trees: Where tree canopies overlap and in confined spaces generally, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Filling holes:
- Material: Use as-dug material and/ or imported soil as required.
  Finishing: Consolidate and grade to marry in with surrounding ground level.

865 BARK DAMAGE

- Wounds:
- Do not attempt to stop sap bleeding.
- Bark: Remove ragged edges using a sharp knife.
- Wood: Remove splintered wood from deep wounds.
- Size: Keep wounds as small as possible.
- Liquid or flux oozing from apparently healthy bark: Give notice.

870 CAVITIES IN TREES

- Investigation: Remove rubbish and rotten wood. Probe the cavity to find the extent of any decay, and give notice.
- Water filled cavities: Do not drain.
- Sound wood inside cavities: Do not remove.
- Cavity openings: Cover, as scheduled, with galvanized wire mesh, lightly secured.

SLR CONSULTING

18th March 2008

Richard Smith
Senior Development Control Engineer
Kent Highway Services
East Kent Division
2 Beer Cart Lane
Canterbury
Kent CT1 2NN

Our Ref: 409-1376-00002

Dear Richard

RE: PLANNING APPLICATION: SH/07/TEMP/0046 - OTTERPOOL QUARRY, ASHFORD ROAD, SELLINDGE

I write in response to your comments on the Transport Assessment (TA) and request for additional information in connection with the above planning application.

I understand the Appendices to the TA were not submitted with the planning application and I would therefore like to apologise for this omission. Please find Appendices 1-4 enclosed.

Taking each issue in turn:

1. HGV TRIP GENERATION

I can confirm that the anticipated daily maximum number of HGV movements to and from the application site is 152, and not 135 as stated in the Supporting Statement.

2. HGV ROUTING

I note your comments requiring greater detail regarding the source and destination of imports and exports. The TA assumes that the majority of the HGVs generated by the proposed development would be routed east on the A20 from the site access to join the M20 at Junction 11. The site operator intends the facility to be used for waste sourced from East Kent, primarily the districts of Ashford, Dover and Shepway. As detailed in the Supporting Statement to this application, Material Recycling Facilities (MRF) are key elements in delivering recycling capacity within Kent. SLR are not aware of any facilities currently available to pre-treat, either by segregation or sorting, commercial waste within the districts of Ashford, Dover and Shepway. Furthermore, a clear need has been demonstrated for additional composting facilities within East Kent and Anaerobic Digestion (AD) can be considered an alternative to composting. No additional relevant facilities have been consented in the East Kent area since 2004.

A clear need for both MRF and AD facilities has therefore been demonstrated in East Kent and it can be assumed with a good degree of certainty that waste would be imported from the districts of Ashford, Dover and Shepway. Given the location of the site in relation to the anticipated waste arisings, the M20 via Junction 11 is clearly the most likely route for imports. Even though the town of Ashford is located to the west of the site, the most likely, and suggested route would be on the M20 via Junction 11. Exports are likely to be transported over a greater distance and would therefore also use the M20 via Junction 11.

Waste would be imported to the proposed facility from commercial / industrial and municipal sources. HGVs using the site are therefore likely to comprise a combination of vehicles owned by the site operator, local waste collection authorities and third parties. It is not the intention to implement a formal routing agreement to direct 100% of HGVs via the M20, as a small number of vehicles would require access from the A20 West or the A261 Hythe Road, particularly local waste collections. A restriction only permitting left in / right out movements from the site access to Junction 11 would go against the principles of sustainable travel; local collections would be better served accessing the site directly. Notwithstanding this, given that the large proportion of HGVs would travel via Junction 11, additional HGV movements on the A20 West and A261 Hythe Road would be negligible. The TA states that the development proposals would generate around 16 HGV movements per hour; assuming, robustly, that 20% of movements travel via the A20 West or A261, an additional 3 HGV movements per hour on either link can be expected. It is considered that the A20 West and A261 Hythe Road are of a sufficient standard to accommodate such an increase. Notwithstanding the above, practical measures would be implemented to direct HGVs via the strategic road network, wherever possible. The following measures are proposed:

- A Site Users Guide to be issued to all HGV drivers accessing the site, which will include details regarding the preferred routes of access; and
- Advisory HGV route sign to be provided within the site access layout, directing HGVs in the direction of the M20 Junction 11.

It should also be noted that the TA provides sensitivity analysis when assessing the operation of the site access junction. The junction has been assessed for all HGV traffic travelling east on the A20, as well as an even split of HGV traffic at the junction. It was demonstrated that the site access junction would operate with significant reserve capacity in both scenarios.

3. PEAK DEMAND

The site would be operational 0700 to 1800 Monday to Friday and 0700 to 1300 on Saturdays, with no operations on Sundays or Public Holidays. Average daily vehicle movements have therefore been based on 278 operational days per year, which assumes a 5 ½ day working, minus bank holidays. The principal waste stream to the site would comprise recyclables, which are unlikely to vary significantly seasonally, or from day to day. The AD facility would accept green waste and organics, of which green waste may peak seasonally during spring, summer and autumn months when compared to winter months. However, HGV movements generated by green imports, in comparison to other waste streams, is low and therefore any seasonal variation would be limited. Assuming an even split between green and organic imports, average daily HGV movements generated by green imports would total around 10, which is less than 7% of overall site HGV movements. Seasonal variation would therefore have negligible impact on the daily trip generation.

The above argument can also be applied to the theoretical maximum daily capacity of the facility. It is likely that a large proportion of recyclable and green / organic waste would be imported on a contract basis, either by local waste collection authorities or commercial waste transporters collecting waste on a weekly or fortnightly basis. Imports (and subsequently exports) are therefore likely to be evenly distributed and a significant peak above the average daily operating capacity is unlikely.

However, it is recognised that HGV movements may, at times of peak demand, rise above average levels and therefore a 10% increase in daily HGV movements is considered a worst-case scenario. The aforementioned increase would give rise to a maximum 168 HGV movements per day. To provide a robust assessment of traffic impact, these figures have been used within the assessments detailed in Section 4 below.

It has been assumed in the TA that imports and exports would be evenly spread throughout the operational period, giving rise to 16 HGV movements per hour. Experience of similar waste management sites suggests that this is a valid assumption and movements do not peak significantly at any one time. To provide some background data regarding the timing of movements at waste management facilities, the TRICS database has been interrogated for landfill sites; the TRICS database does not hold data for either AD or MRF. It is recognised that the proposed facility is not a landfill; however, landfills can be considered similar in that they receive waste from kerbside collections, waste transfer stations and household waste recycling centres. The assessment showed that HGV movements generated by landfills are relatively evenly spread throughout the day, peaking during the period 14:00 to 15:00 with 13% of overall daily movements. Peak hour HGV movements were low, with 10% of all daily movements occurring from 0800 to 0900 and just 1% occurring from 1700 to 1800.

A similar profile assigned to the proposed facility would generate at most 22 HGV movements in any one hour, with 17 movements during the AM peak and 2 movements during the PM peak. It should be noted these figures are based on the worst-case scenario of 168 daily HGV movements, as discussed above. To provide a robust assessment, the maximum hourly figure of 22 movements has been used for both peak hour flows within the assessments detailed in Section 4 below.

4. COMMITTED DEVELOPMENT - LINK PARK

It is noted that the committed development at Link Park will increase traffic flows on the A20 and therefore increase traffic through the proposed site access junction. A Transport Assessment, prepared by Peter Brett Associates, was submitted with the Link Park planning application (ref: Y06/0552/SH) and this contains proposed traffic movements generated by the previously approved, but not yet built, developments at Link Park, and the approved proposal for an additional of 52,000m^2 of B1, B2 and B8 floor space. The forecast traffic movements have been incorporated into the assessment of the proposed site access junction and the revised RFC and maximum queue values are provided in Tables 1 and 2. The Link Park proposals are not expected to be operational until 2010 and therefore the additional traffic has only been included for the assessment year 2018. Peak hour HGV traffic generated by the proposed AD / MRF facility has been based upon the theoretical ‘worst case’ figure of 22 movements, as described in Section 3. As with the original TA, assessments have been undertaken for all HGV traffic accessing / leaving the site from the A20 East (Scenario 1) and an even split of HGV traffic at the site access junction (Scenario 2). Turning movements at the site access junction are included in Appendix A to this letter and the PICADY output files are included in Appendix B.

Table 1
Scenario 1 - Site Access Capacity Assessment including Link Park Traffic

Arm	AM Peak		PM Peak	
	RFC	Max Q (veh)	RFC	Max Q (veh)
2008				
Site Access	0.068	0.07	0.103	0.11
Transport Café	0.140	0.16	0.142	0.16
A20 Eastbound	0.032	0.04	0.000	0.00
A20 Westbound	0.071	0.12	0.067	0.11
2018				
Site Access	0.094	0.10	0.133	0.15
Transport Café	0.196	0.24	0.214	0.27
A20 Eastbound	0.040	0.06	0.000	0.00
A20 Westbound	0.115	0.26	0.100	0.21

Table 2
Scenario 2 - Site Access Capacity Assessment including Link Park Traffic

Arm	AM Peak		PM Peak	
	RFC	Max Q (veh)	RFC	Max Q (veh)
2008				
Site Access	0.039	0.04	0.072	0.08
Transport Café	0.141	0.16	0.143	0.17
A20 Eastbound	0.060	0.10	0.029	0.04
A20 Westbound	0.071	0.12	0.067	0.11
2018				
Site Access	0.054	0.06	0.093	0.10
Transport Café	0.198	0.25	0.216	0.27
A20 Eastbound	0.078	0.14	0.041	0.06
A20 Westbound	0.115	0.26	0.100	0.21

The analysis demonstrates that the junction would operate adequately in the future situation, with minimal queuing and driver delay expected. The level of RFC generally considered acceptable for junctions is 0.850[1]; RFC values on all arms are considerably lower than this figure, indicating significant reserve capacity.

It is also noted that the A20 / Otterpool Lane junction will be signalised as part of the Link Park development, with a 50mph speed limit commencing just to the east of the proposed access location. As previously stated, the majority of development traffic would access the

[1] TA23/81 'Junctions and Accesses: Determination of Size of Roundabouts and Major / Minor Junctions', from Volume 6, Section 2, Part 7 of the Design Manual for Roads and Bridges

site from the east and therefore the impact of the development proposals at this junction would be minimal. In terms of infrastructure, the proposed access layout, as submitted with the original TA, would be largely unaffected by the signalisation and associated works. The proposed signing scheme of the junction improvement may need modifying, to ensure that adequate visibility is achievable for vehicles turning from the AD / MRF facility.

5. TRAFFIC GROWTH RATES

Baseline flows on the A20 have been modelled for growth using the TEMPRO data set for Shepway (Southeast_Version53_05/10/06_P/A) and National Road Traffic Forecasting (NRTF) medium growth rates. The rates used to growth the baseline data recorded in 2007 are shown in Table 3 below.

Table 3
Traffic Growth Rates

	2007 to 2008	2007 to 2018
AM Peak	1.3%	15.2%
PM Peak	1.2%	15.5%

6. QUEUEING CAPACITY

As stated in the original TA, the development would provide separate weighbridges for incoming and outgoing traffic, thus meaning that incoming vehicles would not be delayed by outgoing traffic. Experience of similar waste management facilities suggests that an incoming vehicle can be weighed, registered and move off the weighbridge in a maximum of two minutes, which would therefore provide capacity for a minimum of 30 incoming HGVs per hour. As stated above, the maximum number of HGVs accessing the site in any one hour would be eleven. It is therefore concluded that all incoming movements would be adequately accommodated by the access arrangements with no queuing back on to the A20

7. WHEEL CLEANING FACILITIES

All areas of the site to be used by vehicles would be hardstanding, which would minimise the chances of dirt and waste being deposited on the public highway. It is proposed that pressure washers are provided within the waste tipping areas, and drivers would be instructed to wash the wheels of their vehicles after tipping and before proceeding to the weighbridge. Signage would be provided within the tipping areas to remind drivers of their obligations and details would also be included within a Site Users Guide, to be issued to all drivers using the site.

8. CONSTRUCTION STAGE

Subject to planning permission, it is envisaged that construction of the facility would commence in late summer 2008 and be completed within six to nine months. The main elements of the construction phase are summarised below:

- Access junction improvements;
- Earth moving operations and the removal of any waste;
- Construction of building foundations;
- Construction of building steel structure and facades;
- Installation of mechanical equipment; and
- Site groundworks and landscaping.

All access to the site would be taken from the A20, with traffic directed from / to the M20 Junction 11, where possible. It is therefore likely that construction traffic would follow a similar routing pattern to operational traffic and temporary signage would be provided at the site access to direct construction HGV traffic east towards the strategic road network. Contractors would be informed of their obligations to route HGV traffic from the east, with the exception of any local imports which may require use of the A20 West, or the A261 Hythe Road.

The number of HGV trips associated with the construction phase on a daily basis will depend on the successful contractor's preferred construction methods. However, given the scale of the construction, it is considered, on average, there would be no more than 25 HGV trips (50 movements) per day associated with construction. It should also be noted that a supply of mixed aggregate remains on site from the former Tarmac operation, which would be used in the construction and therefore reduce the number of import HGV trips required.

It is estimated that there would be up to approximately 30 construction personnel visiting the site daily, and given the proximity of the site all of these would be expected to arrive by road as a car driver or passenger.

Based on these figures, it is evident that the level of HGV trip generation would be significantly less than during the operational phase, with around the same number of light vehicle trips anticipated.

Delivery of construction materials to the site is a potential hazard to be considered. As Principal Contractor under the CDM Regulations, the contractor will have an obligation to ensure that works on site are undertaken in safe manner. This will include deliveries to the site, and the Health and Safety Plan developed by the contractor will include a requirement for all drivers delivering to the site to drive with due care and attention and with specific regard to the safety of other road users.

The principal concerns of construction traffic in relation to dust and dirt can be considered to be materials falling off the back of delivery vehicles whilst on the road network and dirt and detritus being dragged onto the public highway from the construction site. The contractor will be required to deploy the following elements of mitigation to ensure that these effects can be minimised:

- Provision of appropriate wheel cleaning facilities at the site exit;
- A regular programme of road cleaning; and
- A requirement that all vehicles carrying granular materials to / from the site are sheeted when on the public highway.

9. OTHER MATTERS

The District Council have raised the issue of providing a right-turn facility within the access layout. As discussed above, even allowing for 50% of HGV traffic accessing the site from the west, the proposed simple T-junction layout would operate adequately, with negligible queuing on the eastbound A20. Furthermore, the majority of HGV traffic would access the site from the east and therefore site vehicles would, on the most part, not impede the flow of eastbound traffic. It is therefore considered provision of a right-turn facility is not required.

10. CLOSURE

We trust that that the information provided above is satisfactory, should you require any more details please let me know. I look forward to receiving your comments.

Yours sincerely
SLR Consulting Limited

Matthew Shephard
Senior Consultant

Encs. Appendix A
Appendix B
Appendices 1 to 4 of original Transport Assessment

<u>Site Access Junction - Peak Hour Turning Movements including Link Park Traffic (Scenario 1)</u>

Arm A A20 East
Arm B Site Access
Arm C A20 West
Arm D Café

Growth Factor (TEMPRO Shepway and NRTF Medium Growth)

2007-2008	AM	1.013
	PM	1.012
2007-2018	AM	1.152
	PM	1.155

		Existing (2007)			Existing Site		Baseline		Growth to 2008		Growth to 2018		Development Traffic			Committed Traffic			Total in 2008			Total in 2018		
		Flow	HGV	% HGV	Flow	HGV	Flow	HGV	Flow	HGV	Flow	HGV	Flow	HGV	% HGV	Flow	HGV	% HGV	Flow	HGV	% HGV	Flow	HGV	% HGV
AM PEAK	A-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.5	11.0	46.8%	0.0	0.0	#DIV/0!	23.5	11.0	46.8%	23.5	11.0	46.8%
(0800-0900)	A-C	361.0	44.4	12.3%	0.0	0.0	361.0	44.4	365.7	45.0	415.9	51.1	0.0	0.0	#DIV/0!	222.0	19.0	8.6%	365.7	45.0	12.3%	637.9	70.1	11.0%
	A-D	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.8	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.8	2.9	10.0%
	B-A	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	11.0	100.0%	0.0	0.0	#DIV/0!	11.0	11.0	100.0%	11.0	11.0	100.0%
	B-C	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	B-D	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	C-A	315.4	48.6	15.4%	0.0	0.0	315.4	48.6	319.5	49.2	363.3	56.0	0.0	0.0	#DIV/0!	60.0	30.0	50.0%	319.5	49.2	15.4%	423.3	86.0	20.3%
	C-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0%	0.0	0.0	#DIV/0!	12.5	0.0	0.0%	12.5	0.0	0.0%
	C-D	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.8	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.8	2.9	10.0%
	D-A	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.8	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.8	2.9	10.0%
	D-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	D-C	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.8	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.8	2.9	10.0%
PM PEAK	A-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	11.0	100.0%	0.0	0.0	#DIV/0!	11.0	11.0	100.0%	11.0	11.0	100.0%
(1700-1800)	A-C	270.0	24.6	9.1%	0.0	0.0	270.0	24.6	273.2	24.9	311.9	28.4	0.0	0.0	#DIV/0!	61.0	34.0	55.7%	273.2	24.9	9.1%	372.9	62.4	16.7%
	A-D	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.9	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.9	2.9	10.0%
	B-A	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.5	11.0	46.8%	0.0	0.0	#DIV/0!	23.5	11.0	46.8%	23.5	11.0	46.8%
	B-C	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0%	0.0	0.0	#DIV/0!	12.5	0.0	0.0%	12.5	0.0	0.0%
	B-D	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	C-A	409.0	32.6	8.0%	0.0	0.0	409.0	32.6	413.9	33.0	472.4	37.7	0.0	0.0	#DIV/0!	228.0	10.0	4.4%	413.9	33.0	8.0%	700.4	47.7	6.8%
	C-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	C-D	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.9	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.9	2.9	10.0%
	D-A	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.9	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.9	2.9	10.0%
	D-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	D-C	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.9	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.9	2.9	10.0%

2008 AM
Traffic

	A	B	C	D
A		24	366	25
B	11		0	0
C	320	13		25
D	25	0	25	

2018 AM
Traffic

	A	B	C	D
A		24	638	29
B	11		0	0
C	423	13		29
D	29	0	29	

% HGV

	A	B	C	D
A		46.8%	12.3%	10.0%
B	100.0%		#DIV/0!	#DIV/0!
C	15.4%	0.0%		10.0%
D	10.0%	#DIV/0!	10.0%	

% HGV

	A	B	C	D
A		46.8%	11.0%	10.0%
B	100.0%		#DIV/0!	#DIV/0!
C	20.3%	0.0%		10.0%
D	10.0%	#DIV/0!	10.0%	

2008 PM
Traffic

	A	B	C	D
A		11	273	25
B	24		13	0
C	414	0		25
D	25	0	25	

2018 PM
Traffic

	A	B	C	D
A		11	373	29
B	24		13	0
C	700	0		29
D	29	0	29	

% HGV

	A	B	C	D
A		100.0%	9.1%	10.0%
B	46.8%		0.0%	#DIV/0!
C	8.0%	#DIV/0!		10.0%
D	10.0%	#DIV/0!	10.0%	

% HGV

	A	B	C	D
A		100.0%	16.7%	10.0%
B	46.8%		0.0%	#DIV/0!
C	6.8%	#DIV/0!		10.0%
D	10.0%	#DIV/0!	10.0%	

Site Access Junction - Peak Hour Turning Movements including Link Park Traffic (Scenario 2)

Arm A	A20 East	Growth Factor (TEMPRO Shepway and NRTF Medium Growth)		
Arm B	Site Access	2007-2008	AM	1.013
Arm C	A20 West		PM	1.012
Arm D	Café			
		2007-2018	AM	1.152
			PM	1.155

		Existing (2007)			Existing Site		Baseline		Growth to 2008		Growth to 2018		Development Traffic			Committed Traffic			Total in 2008			Total in 2018		
		Flow	HGV	% HGV	Flow	HGV	Flow	HGV	Flow	HGV	Flow	HGV	Flow	HGV	% HGV	Flow	HGV	% HGV	Flow	HGV	% HGV	Flow	HGV	% HGV
AM PEAK	A-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	5.5	30.6%	0.0	0.0	#DIV/0!	18.0	5.5	30.6%	18.0	5.5	30.6%
(0800-0900)	A-C	361.0	44.4	12.3%	0.0	0.0	361.0	44.4	365.7	45.0	415.9	51.1	0.0	0.0	#DIV/0!	222.0	19.0	8.6%	365.7	45.0	12.3%	637.9	70.1	11.0%
	A-D	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.8	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.8	2.9	10.0%
	B-A	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.5	100.0%	0.0	0.0	#DIV/0!	5.5	5.5	100.0%	5.5	5.5	100.0%
	B-C	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.5	100.0%	0.0	0.0	#DIV/0!	5.5	5.5	100.0%	5.5	5.5	100.0%
	B-D	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	C-A	315.4	48.6	15.4%	0.0	0.0	315.4	48.6	319.5	49.2	363.3	56.0	0.0	0.0	#DIV/0!	60.0	30.0	50.0%	319.5	49.2	15.4%	423.3	86.0	20.3%
	C-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	5.5	30.6%	0.0	0.0	#DIV/0!	18.0	5.5	30.6%	18.0	5.5	30.6%
	C-D	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.8	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.8	2.9	10.0%
	D-A	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.8	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.8	2.9	10.0%
	D-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	D-C	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.8	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.8	2.9	10.0%
PM PEAK	A-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.5	100.0%	0.0	0.0	#DIV/0!	5.5	5.5	100.0%	5.5	5.5	100.0%
(1700-1800)	A-C	270.0	24.6	9.1%	0.0	0.0	270.0	24.6	273.2	24.9	311.9	28.4	0.0	0.0	#DIV/0!	61.0	34.0	55.7%	273.2	24.9	9.1%	372.9	62.4	16.7%
	A-D	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.9	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.9	2.9	10.0%
	B-A	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	5.5	30.6%	0.0	0.0	#DIV/0!	18.0	5.5	30.6%	18.0	5.5	30.6%
	B-C	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	5.5	30.6%	0.0	0.0	#DIV/0!	18.0	5.5	30.6%	18.0	5.5	30.6%
	B-D	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	C-A	409.0	32.6	8.0%	0.0	0.0	409.0	32.6	413.9	33.0	472.4	37.7	0.0	0.0	#DIV/0!	228.0	10.0	4.4%	413.9	33.0	8.0%	700.4	47.7	6.8%
	C-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.5	100.0%	0.0	0.0	#DIV/0!	5.5	5.5	100.0%	5.5	5.5	100.0%
	C-D	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.9	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.9	2.9	10.0%
	D-A	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.9	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.9	2.9	10.0%
	D-B	0.0	0.0	#DIV/0!	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!
	D-C	25.0	2.5	10.0%	0.0	0.0	25.0	2.5	25.3	2.5	28.9	2.9	0.0	0.0	#DIV/0!	0.0	0.0	#DIV/0!	25.3	2.5	10.0%	28.9	2.9	10.0%

2008 AM
Traffic

	A	B	C	D
A		18	366	25
B	6		6	0
C	320	18		25
D	25	0	25	

2018 AM
Traffic

	A	B	C	D
A		18	638	29
B	6		6	0
C	423	18		29
D	29	0	29	

% HGV

	A	B	C	D
A		30.6%	12.3%	10.0%
B	100.0%		100.0%	#DIV/0!
C	15.4%	30.6%		10.0%
D	10.0%	#DIV/0!	10.0%	

% HGV

	A	B	C	D
A		30.6%	11.0%	10.0%
B	100.0%		100.0%	#DIV/0!
C	20.3%	30.6%		10.0%
D	10.0%	#DIV/0!	10.0%	

2008 PM
Traffic

	A	B	C	D
A		6	273	25
B	18		18	0
C	414	6		25
D	25	0	25	

2018 PM
Traffic

	A	B	C	D
A		6	373	29
B	18		18	0
C	700	6		29
D	29	0	29	

% HGV

	A	B	C	D
A		100.0%	9.1%	10.0%
B	30.6%		30.6%	#DIV/0!
C	8.0%	100.0%		10.0%
D	10.0%	#DIV/0!	10.0%	

% HGV

	A	B	C	D
A		100.0%	16.7%	10.0%
B	30.6%		30.6%	#DIV/0!
C	6.8%	100.0%		10.0%
D	10.0%	#DIV/0!	10.0%	

```
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   CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

                       PICADY 5.0  ANALYSIS PROGRAM
                          RELEASE 3.0        (JUNE 2006)

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                TEL: CROWTHORNE (01344) 770758, FAX: 770864
                      EMAIL: SoftwareBureau@trl.co.uk
           --------------------------------------------------------


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 Run with file:-
 "C:\TRL Files\Junction\PICADY 5\409-1376-00002 Otterpool\Scenario 1 - Max Trips\AM Peak 2008.vpi"
(drive-on-the-left ) at 14:24:23 on Monday, 17 March 2008


.RUN INFORMATION
 ***************

   RUN TITLE: Scenario 1 - AM Peak 2008
    LOCATION: A20 Site Access Junction
        DATE: 01/11/07
      CLIENT: Countrystyle Recycling
  ENUMERATOR: mshephard [000473_LAP]
  JOB NUMBER: 409.1376.00002
      STATUS: TIA
 DESCRIPTION:

 .MAJOR/MINOR JUNCTION CAPACITY AND DELAY
  ***************************************

  INPUT DATA
  ----------

                                           MINOR ROAD (ARM D)
                                               I
                                               I
                                               I
                                               I
                                               I
                                               I
                    MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                                               I
                                               I
                                               I
                                               I
                                               I
                                               I
                                           MINOR ROAD (ARM B)

 ARM A IS A20 East
 ARM B IS Site Access
 ARM C IS A20 West
 ARM D IS Transport Cafe


 STREAM LABELLING CONVENTION
 --------------------------

        STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

        STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

        ETC.
```

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 8.00 M.	(W) 8.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 200.0 M.	(VA-D) 200.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 12.0 M.	(VD-A) 10.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 10.0 M.
- LANE 1 WIDTH	(WB-C) -	(WD-A) 3.65 M.
- LANE 2 WIDTH	(WB-A) -	(WD-C) 0.00 M.
- WIDTH AT 0 M FROM JUNC.	10.00 M.	-
- WIDTH AT 5 M FROM JUNC.	5.00 M.	-
- WIDTH AT 10 M FROM JUNC.	3.65 M.	-
- WIDTH AT 15 M FROM JUNC.	3.65 M.	-
- WIDTH AT 20 M FROM JUNC.	3.65 M.	-
- LENGTH OF FLARED SECTION	DERIVED: 1 PCU	

.SLOPES AND INTERCPET

(NB:Streams may be combined, in which case capacity

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
579.75	0.21	0.08

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
671.24	0.24	0.09

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
447.53	0.19	0.19	0.19	0.19

	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
	0.07	0.12	0.27	0.09

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
517.47	0.22	0.22	0.22	0.22

	Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
	0.09	0.14	0.31	0.11

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
689.79	0.24	0.35

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
689.79	0.24	0.35

B-D Stream From Left Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

B-D Stream From Right Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

D-B Stream From Left Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

D-B Stream From Right Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

.

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

Demand set: AM Peak 2008

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.19	7.78	5.19
ARM B	15.00	45.00	75.00	0.14	0.21	0.14
ARM C	15.00	45.00	75.00	4.47	6.71	4.47
ARM D	15.00	45.00	75.00	0.63	0.94	0.63

.

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)			
07.45 - 09.15					
	ARM A	0.000	0.058	0.882	0.060
		0.0	24.0	366.0	25.0
		(0.0)	(46.8)	(12.3)	(10.0)
	ARM B	1.000	0.000	0.000	0.000
		11.0	0.0	0.0	0.0
		(100.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.894	0.036	0.000	0.070
		320.0	13.0	0.0	25.0
		(15.4)	(0.0)	(0.0)	(10.0)
	ARM D	0.500	0.000	0.500	0.000
		25.0	0.0	25.0	0.0
		(10.0)	(0.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-CD	0.00	7.96	0.000		0.00	0.00	0.0		0.00
B-AD	0.14	3.47	0.040		0.00	0.04	0.6		0.30
A-BCD	0.50	12.37	0.040		0.00	0.06	0.8		0.08
A-B	0.29								
A-C	4.42								
D-ABC	0.63	7.32	0.086		0.00	0.09	1.3		0.15
C-ABD	0.24	12.64	0.019		0.00	0.02	0.3		0.08
C-D	0.31								
C-A	3.94								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-CD	0.00	7.74	0.000		0.00	0.00	0.0		0.00
B-AD	0.16	3.26	0.051		0.04	0.05	0.8		0.32
A-BCD	0.65	12.76	0.051		0.06	0.08	1.2		0.08
A-B	0.34								
A-C	5.23								
D-ABC	0.75	7.01	0.107		0.09	0.12	1.7		0.16
C-ABD	0.31	12.89	0.024		0.02	0.03	0.4		0.08
C-D	0.37								
C-A	4.69								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-CD	0.00	7.44	0.000		0.00	0.00	0.0		0.00
B-AD	0.20	2.97	0.068		0.05	0.07	1.0		0.36
A-BCD	0.95	13.46	0.071		0.08	0.12	1.9		0.08
A-B	0.41								
A-C	6.25								
D-ABC	0.92	6.57	0.140		0.12	0.16	2.3		0.18
C-ABD	0.42	13.25	0.032		0.03	0.04	0.6		0.08
C-D	0.45								
C-A	5.70								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-CD	0.00	7.44	0.000		0.00	0.00	0.0		0.00
B-AD	0.20	2.97	0.068		0.07	0.07	1.1		0.36
A-BCD	0.95	13.46	0.071		0.12	0.12	1.9		0.08
A-B	0.41								
A-C	6.25								
D-ABC	0.92	6.57	0.140		0.16	0.16	2.4		0.18
C-ABD	0.42	13.25	0.032		0.04	0.04	0.6		0.08
C-D	0.45								
C-A	5.70								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-CD	0.00	7.74	0.000		0.00	0.00	0.0		0.00
B-AD	0.16	3.26	0.051		0.07	0.05	0.8		0.32
A-BCD	0.65	12.76	0.051		0.12	0.08	1.2		0.08
A-B	0.34								
A-C	5.23								
D-ABC	0.75	7.00	0.107		0.16	0.12	1.9		0.16
C-ABD	0.31	12.89	0.024		0.04	0.03	0.5		0.08
C-D	0.37								
C-A	4.69								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-CD	0.00	7.96	0.000		0.00	0.00	0.0		0.00
B-AD	0.14	3.47	0.040		0.05	0.04	0.7		0.30
A-BCD	0.50	12.37	0.040		0.08	0.06	0.9		0.08
A-B	0.29								
A-C	4.42								
D-ABC	0.63	7.31	0.086		0.12	0.09	1.5		0.15
C-ABD	0.24	12.64	0.019		0.03	0.02	0.3		0.08
C-D	0.31								
C-A	3.94								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.2
08.45	0.2
09.00	0.1
09.15	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-CD	0.0	0.0	0.0	0.00	0.0	0.00
B-AD	15.1	10.1	4.9	0.33	4.9	0.33
A-BCD	62.9	41.9	7.8	0.12	7.8	0.12
A-B	31.3	20.9				
A-C	477.0	318.0				
D-ABC	68.8	45.9	11.1	0.16	11.1	0.16
C-ABD	29.2	19.5	2.8	0.10	2.8	0.10
C-D	33.6	22.4				
C-A	430.0	286.6				
ALL	1147.9	765.3	26.7	0.02	26.7	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0 (JUNE 2006)

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Run with file:-
"C:\TRL Files\Junction\PICADY 5\409-1376-00002 Otterpool\Scenario 1 - Max Trips\PM Peak 2008.vpi"
(drive-on-the-left) at 14:24:09 on Monday, 17 March 2008

.RUN INFORMATION
****

```
   RUN TITLE: Scenario 1 - PM Peak 2008
    LOCATION: A20 Site Access Junction
        DATE: 01/11/07
      CLIENT: Countrystyle Recycling
  ENUMERATOR: mshephard [000473_LAP]
  JOB NUMBER: 409.1376.00002
      STATUS: TIA
 DESCRIPTION:
```

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

```
                                    MINOR ROAD (ARM D)
                                        I
                                        I
                                        I
                                        I
                                        I
                                        I
          MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                                        I
                                        I
                                        I
                                        I
                                        I
                                        I
                                    MINOR ROAD (ARM B)
```

ARM A IS A20 East
ARM B IS Site Access
ARM C IS A20 West
ARM D IS Transport Cafe

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 8.00 M.	(W) 8.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 200.0 M.	(VA-D) 200.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 12.0 M.	(VD-A) 10.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 10.0 M.
- LANE 1 WIDTH	(WB-C) -	(WD-A) 3.65 M.
- LANE 2 WIDTH	(WB-A) -	(WD-C) 0.00 M.
- WIDTH AT 0 M FROM JUNC.	10.00 M.	-
- WIDTH AT 5 M FROM JUNC.	5.00 M.	-
- WIDTH AT 10 M FROM JUNC.	3.65 M.	-
- WIDTH AT 15 M FROM JUNC.	3.65 M.	-
- WIDTH AT 20 M FROM JUNC.	3.65 M.	-
- LENGTH OF FLARED SECTION	DERIVED: 1 PCU	

.SLOPES AND INTERCPET

(NB:Streams may be combined, in which case capacity

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
579.75	0.21	0.08

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
671.24	0.24	0.09

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
447.53	0.19	0.19	0.19	0.19

	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
	0.07	0.12	0.27	0.09

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
517.47	0.22	0.22	0.22	0.22

	Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
	0.09	0.14	0.31	0.11

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
689.79	0.24	0.35

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
689.79	0.24	0.35

B-D Stream From Left Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

B-D Stream From Right Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

D-B Stream From Left Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

D-B Stream From Right Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

.

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

Demand set: AM Peak 2008

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.86	5.79	3.86
ARM B	15.00	45.00	75.00	0.46	0.69	0.46
ARM C	15.00	45.00	75.00	5.49	8.23	5.49
ARM D	15.00	45.00	75.00	0.63	0.94	0.63

.

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.45 - 18.15					
	ARM A	0.000	0.036	0.883	0.081
		0.0	11.0	273.0	25.0
		(0.0)	(100.0)	(9.1)	(10.0)
	ARM B	0.649	0.000	0.351	0.000
		24.0	0.0	13.0	0.0
		(46.8)	(0.0)	(0.0)	(0.0)
	ARM C	0.943	0.000	0.000	0.057
		414.0	0.0	0.0	25.0
		(8.0)	(0.0)	(0.0)	(10.0)
	ARM D	0.500	0.000	0.500	0.000
		25.0	0.0	25.0	0.0
		(10.0)	(0.0)	(10.0)	(0.0)

The column head over ARM A–ARM D reads: TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-CD	0.16	9.86	0.017		0.00	0.02	0.2		0.10
B-AD	0.30	4.87	0.062		0.00	0.06	0.9		0.22
A-BCD	0.45	11.44	0.039		0.00	0.05	0.8		0.09
A-B	0.13								
A-C	3.30								
D-ABC	0.63	7.22	0.087		0.00	0.09	1.4		0.15
C-ABD	0.00	9.45	0.000		0.00	0.00	0.0		0.00
C-D	0.31								
C-A	5.19								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-CD	0.19	9.64	0.020		0.02	0.02	0.3		0.11
B-AD	0.36	4.62	0.078		0.06	0.08	1.2		0.23
A-BCD	0.57	11.65	0.049		0.05	0.07	1.1		0.09
A-B	0.16								
A-C	3.90								
D-ABC	0.75	6.90	0.109		0.09	0.12	1.8		0.16
C-ABD	0.00	9.26	0.000		0.00	0.00	0.0		0.00
C-D	0.37								
C-A	6.20								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-CD	0.24	9.35	0.026		0.02	0.03	0.4		0.11
B-AD	0.44	4.27	0.103		0.08	0.11	1.6		0.26
A-BCD	0.80	12.04	0.067		0.07	0.11	1.7		0.09
A-B	0.19								
A-C	4.68								
D-ABC	0.92	6.44	0.142		0.12	0.16	2.4		0.18
C-ABD	0.00	8.99	0.000		0.00	0.00	0.0		0.00
C-D	0.46								
C-A	7.60								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-CD	0.24	9.35	0.026		0.03	0.03	0.4		0.11
B-AD	0.44	4.27	0.103		0.11	0.11	1.7		0.26
A-BCD	0.80	12.05	0.067		0.11	0.11	1.7		0.09
A-B	0.19								
A-C	4.68								
D-ABC	0.92	6.44	0.142		0.16	0.16	2.5		0.18
C-ABD	0.00	8.99	0.000		0.00	0.00	0.0		0.00
C-D	0.46								
C-A	7.60								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-CD	0.19	9.64	0.020		0.03	0.02	0.3		0.11
B-AD	0.36	4.62	0.078		0.11	0.09	1.3		0.23
A-BCD	0.57	11.66	0.049		0.11	0.08	1.1		0.09
A-B	0.16								
A-C	3.90								
D-ABC	0.75	6.90	0.109		0.16	0.12	1.9		0.16
C-ABD	0.00	9.26	0.000		0.00	0.00	0.0		0.00
C-D	0.37								
C-A	6.20								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
B-CD	0.16	9.85	0.017		0.02	0.02	0.3		0.10
B-AD	0.30	4.87	0.062		0.09	0.07	1.0		0.22
A-BCD	0.45	11.44	0.039		0.08	0.06	0.8		0.09
A-B	0.13								
A-C	3.30								
D-ABC	0.63	7.22	0.087		0.12	0.10	1.5		0.15
C-ABD	0.00	9.45	0.000		0.00	0.00	0.0		0.00
C-D	0.31								
C-A	5.19								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-CD	17.9	11.9	1.9	0.11	1.9	0.11
B-AD	33.0	22.0	7.8	0.24	7.8	0.24
A-BCD	54.7	36.4	7.3	0.13	7.3	0.13
A-B	14.4	9.6				
A-C	356.3	237.5				
D-ABC	68.8	45.9	11.4	0.16	11.4	0.16
C-ABD	0.0	0.0	0.0	0.00	0.0	0.00
C-D	34.4	22.9				
C-A	569.8	379.9				
ALL	1149.3	766.2	28.4	0.02	28.4	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRL LIMITED

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0 (JUNE 2006)

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Run with file:-
"C:\TRL Files\Junction\PICADY 5\409-1376-00002 Otterpool\Scenario 1 - With Committed\AM Peak 2018.vpi"
(drive-on-the-left) at 14:18:40 on Monday, 17 March 2008

.RUN INFORMATION
****

```
   RUN TITLE: Scenario 1 - AM Peak 2018 - With Committed Development
    LOCATION: A20 Site Access Junction
        DATE: 01/11/07
      CLIENT: Countrystyle Recycling
  ENUMERATOR: mshephard [000473_LAP]
  JOB NUMBER: 409.1376.00002
      STATUS: TIA
 DESCRIPTION:
```

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

```
                         MINOR ROAD (ARM D)
                             I
                             I
                             I
                             I
                             I
                             I
  MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                             I
                             I
                             I
                             I
                             I
                             I
                         MINOR ROAD (ARM B)
```

ARM A IS A20 East
ARM B IS Site Access
ARM C IS A20 West
ARM D IS Transport Cafe

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 8.00 M.	(W) 8.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 200.0 M.	(VA-D) 200.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 12.0 M.	(VD-A) 10.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 10.0 M.
- LANE 1 WIDTH	(WB-C) -	(WD-A) 3.65 M.
- LANE 2 WIDTH	(WB-A) -	(WD-C) 0.00 M.
- WIDTH AT 0 M FROM JUNC.	10.00 M.	-
- WIDTH AT 5 M FROM JUNC.	5.00 M.	-
- WIDTH AT 10 M FROM JUNC.	3.65 M.	-
- WIDTH AT 15 M FROM JUNC.	3.65 M.	-
- WIDTH AT 20 M FROM JUNC.	3.65 M.	-
- LENGTH OF FLARED SECTION	DERIVED: 1 PCU	

.SLOPES AND INTERCPET

(NB:Streams may be combined, in which case capacity

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
579.75	0.21	0.08

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
671.24	0.24	0.09

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
447.53	0.19	0.19	0.19	0.19

	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
	0.07	0.12	0.27	0.09

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
517.47	0.22	0.22	0.22	0.22

	Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
	0.09	0.14	0.31	0.11

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
689.79	0.24	0.35

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
689.79	0.24	0.35

B-D Stream From Left Hand Lane

I Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B I
I 447.53	0.19	0.19	0.07	0.27 I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing I
I	0.12	0.12		I

B-D Stream From Right Hand Lane

I Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B I
I 447.53	0.19	0.19	0.07	0.27 I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing I
I	0.12	0.12		I

D-B Stream From Left Hand Lane

I Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D I
I 517.47	0.22	0.22	0.09	0.31 I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing I
I	0.14	0.14		I

D-B Stream From Right Hand Lane

I Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D I
I 517.47	0.22	0.22	0.09	0.31 I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing I
I	0.14	0.14		I

.

.TRAFFIC DEMAND DATA

I ARM	I FLOW SCALE(%) I
I A	I 100 I
I B	I 100 I
I C	I 100 I
I D	I 100 I

Demand set: AM Peak 2008

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I ARM	I NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK I
I ARM A	15.00	45.00	75.00	8.64	12.96	8.64 I
I ARM B	15.00	45.00	75.00	0.14	0.21	0.14 I
I ARM C	15.00	45.00	75.00	5.81	8.72	5.81 I
I ARM D	15.00	45.00	75.00	0.73	1.09	0.73 I

.

TIME	FROM/TO	TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.035	0.923	0.042
		0.0	24.0	638.0	29.0
		(0.0)	(46.8)	(11.0)	(10.0)
	ARM B	1.000	0.000	0.000	0.000
		11.0	0.0	0.0	0.0
		(100.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.910	0.028	0.000	0.062
		423.0	13.0	0.0	29.0
		(20.3)	(0.0)	(0.0)	(10.0)
	ARM D	0.500	0.000	0.500	0.000
		29.0	0.0	29.0	0.0
		(10.0)	(0.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-CD	0.00	7.24	0.000		0.00	0.00	0.0		0.00
B-AD	0.14	2.90	0.048		0.00	0.05	0.7		0.36
A-BCD	0.82	14.32	0.058		0.00	0.09	1.4		0.07
A-B	0.28								
A-C	7.56								
D-ABC	0.73	6.58	0.111		0.00	0.12	1.8		0.17
C-ABD	0.28	12.60	0.022		0.00	0.03	0.4		0.08
C-D	0.36								
C-A	5.20								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-CD	0.00	6.87	0.000		0.00	0.00	0.0		0.00
B-AD	0.16	2.58	0.064		0.05	0.07	1.0		0.41
A-BCD	1.16	15.11	0.077		0.09	0.14	2.1		0.07
A-B	0.33								
A-C	8.86								
D-ABC	0.87	6.10	0.142		0.12	0.16	2.4		0.19
C-ABD	0.37	12.88	0.029		0.03	0.04	0.6		0.08
C-D	0.42								
C-A	6.17								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-CD	0.00	6.36	0.000		0.00	0.00	0.0		0.00
B-AD	0.20	2.14	0.094		0.07	0.10	1.4		0.51
A-BCD	1.88	16.41	0.115		0.14	0.26	3.9		0.07
A-B	0.39								
A-C	10.40								
D-ABC	1.06	5.42	0.196		0.16	0.24	3.5		0.23
C-ABD	0.53	13.27	0.040		0.04	0.06	0.8		0.08
C-D	0.51								
C-A	7.49								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-CD	0.00	6.36	0.000		0.00	0.00	0.0		0.00
B-AD	0.20	2.14	0.094		0.10	0.10	1.5		0.52
A-BCD	1.89	16.41	0.115		0.26	0.26	4.0		0.07
A-B	0.39								
A-C	10.40								
D-ABC	1.06	5.42	0.196		0.24	0.24	3.6		0.23
C-ABD	0.53	13.27	0.040		0.06	0.06	0.9		0.08
C-D	0.51								
C-A	7.49								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-CD	0.00	6.87	0.000		0.00	0.00	0.0		0.00
B-AD	0.16	2.58	0.064		0.10	0.07	1.1		0.41
A-BCD	1.16	15.11	0.077		0.26	0.14	2.2		0.07
A-B	0.33								
A-C	8.86								
D-ABC	0.87	6.10	0.142		0.24	0.17	2.6		0.19
C-ABD	0.37	12.87	0.029		0.06	0.04	0.6		0.08
C-D	0.42								
C-A	6.17								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-CD	0.00	7.24	0.000		0.00	0.00	0.0		0.00
B-AD	0.14	2.90	0.048		0.07	0.05	0.8		0.36
A-BCD	0.83	14.33	0.058		0.14	0.09	1.4		0.07
A-B	0.28								
A-C	7.56								
D-ABC	0.73	6.58	0.111		0.17	0.13	1.9		0.17
C-ABD	0.28	12.60	0.022		0.04	0.03	0.4		0.08
C-D	0.36								
C-A	5.20								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.3
08.45	0.3
09.00	0.1
09.15	0.1

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2
09.15	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.1
08.45	0.1
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-CD	0.0	0.0	0.0	0.00	0.0	0.00
B-AD	15.1	10.1	6.5	0.43	6.5	0.43
A-BCD	116.2	77.5	14.9	0.13	14.9	0.13
A-B	30.3	20.2				
A-C	804.7	536.4				
D-ABC	79.8	53.2	15.8	0.20	15.8	0.20
C-ABD	35.4	23.6	3.6	0.10	3.6	0.10
C-D	38.8	25.9				
C-A	565.8	377.2				
ALL	1686.1	1124.1	40.8	0.02	40.8	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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                              TRL LIMITED

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   CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

                       PICADY 5.0  ANALYSIS PROGRAM
                          RELEASE 3.0        (JUNE 2006)

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 Run with file:-
 "C:\TRL Files\Junction\PICADY 5\409-1376-00002 Otterpool\Scenario 1 - With Committed\PM Peak 2018.vpi"
(drive-on-the-left ) at 14:19:41 on Monday, 17 March 2008


.RUN INFORMATION
 ***************

   RUN TITLE: Scenario 1 - PM Peak 2018 - With Committed
    LOCATION: A20 Site Access Junction
        DATE: 01/11/07
      CLIENT: Countrystyle Recycling
  ENUMERATOR: mshephard [000473_LAP]
  JOB NUMBER: 409.1376.00002
      STATUS: TIA
 DESCRIPTION:

 .MAJOR/MINOR JUNCTION CAPACITY AND DELAY
  ***************************************

  INPUT DATA
  ----------

                                              MINOR ROAD (ARM D)
                                                  I
                                                  I
                                                  I
                                                  I
                                                  I
                                                  I
                    MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                                                  I
                                                  I
                                                  I
                                                  I
                                                  I
                                                  I
                                              MINOR ROAD (ARM B)

 ARM A IS A20 East
 ARM B IS Site Access
 ARM C IS A20 West
 ARM D IS Transport Cafe


 STREAM LABELLING CONVENTION
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        STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

        STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

        ETC.
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.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 8.00 M.	(W) 8.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 200.0 M.	(VA-D) 200.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 12.0 M.	(VD-A) 10.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 10.0 M.
- LANE 1 WIDTH	(WB-C) -	(WD-A) 3.65 M.
- LANE 2 WIDTH	(WB-A) -	(WD-C) 0.00 M.
- WIDTH AT 0 M FROM JUNC.	10.00 M.	-
- WIDTH AT 5 M FROM JUNC.	5.00 M.	-
- WIDTH AT 10 M FROM JUNC.	3.65 M.	-
- WIDTH AT 15 M FROM JUNC.	3.65 M.	-
- WIDTH AT 20 M FROM JUNC.	3.65 M.	-
- LENGTH OF FLARED SECTION	DERIVED: 1 PCU	

.SLOPES AND INTERCPET

(NB:Streams may be combined, in which case capacity

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
579.75	0.21	0.08

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
671.24	0.24	0.09

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
447.53	0.19	0.19	0.19	0.19

	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
	0.07	0.12	0.27	0.09

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
517.47	0.22	0.22	0.22	0.22

	Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
	0.09	0.14	0.31	0.11

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
689.79	0.24	0.35

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
689.79	0.24	0.35

B-D Stream From Left Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

B-D Stream From Right Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

D-B Stream From Left Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

D-B Stream From Right Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

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.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

Demand set: AM Peak 2008

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.16	7.74	5.16
ARM B	15.00	45.00	75.00	0.46	0.69	0.46
ARM C	15.00	45.00	75.00	9.11	13.67	9.11
ARM D	15.00	45.00	75.00	0.73	1.09	0.73

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TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
16.45 - 18.15					
	ARM A	0.000	0.027	0.903	0.070
		0.0	11.0	373.0	29.0
		(0.0)	(100.0)	(16.7)	(10.0)
	ARM B	0.649	0.000	0.351	0.000
		24.0	0.0	13.0	0.0
		(46.8)	(0.0)	(0.0)	(0.0)
	ARM C	0.960	0.000	0.000	0.040
		700.0	0.0	0.0	29.0
		(6.8)	(0.0)	(0.0)	(10.0)
	ARM D	0.500	0.000	0.500	0.000
		29.0	0.0	29.0	0.0
		(10.0)	(0.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

.   QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-CD	0.16	9.44	0.017		0.00	0.02	0.3		0.11
B-AD	0.30	4.21	0.072		0.00	0.08	1.1		0.26
A-BCD	0.60	11.44	0.052		0.00	0.08	1.2		0.09
A-B	0.13								
A-C	4.45								
D-ABC	0.73	6.25	0.116		0.00	0.13	1.9		0.18
C-ABD	0.00	9.05	0.000		0.00	0.00	0.0		0.00
C-D	0.36								
C-A	8.78								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-CD	0.19	9.14	0.021		0.02	0.02	0.3		0.11
B-AD	0.36	3.83	0.094		0.08	0.10	1.5		0.29
A-BCD	0.84	11.79	0.071		0.08	0.12	1.9		0.09
A-B	0.15								
A-C	5.20								
D-ABC	0.87	5.72	0.152		0.13	0.18	2.6		0.21
C-ABD	0.00	8.78	0.000		0.00	0.00	0.0		0.00
C-D	0.43								
C-A	10.49								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-CD	0.24	8.71	0.027		0.02	0.03	0.4		0.12
B-AD	0.44	3.31	0.133		0.10	0.15	2.1		0.35
A-BCD	1.22	12.22	0.100		0.12	0.21	3.1		0.09
A-B	0.18								
A-C	6.18								
D-ABC	1.06	4.97	0.214		0.18	0.27	3.8		0.26
C-ABD	0.00	8.40	0.000		0.00	0.00	0.0		0.00
C-D	0.53								
C-A	12.85								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-CD	0.24	8.71	0.027		0.03	0.03	0.4		0.12
B-AD	0.44	3.31	0.133		0.15	0.15	2.3		0.35
A-BCD	1.22	12.22	0.100		0.21	0.21	3.2		0.09
A-B	0.18								
A-C	6.18								
D-ABC	1.06	4.97	0.214		0.27	0.27	4.0		0.26
C-ABD	0.00	8.40	0.000		0.00	0.00	0.0		0.00
C-D	0.53								
C-A	12.85								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-CD	0.19	9.13	0.021		0.03	0.02	0.3		0.11
B-AD	0.36	3.83	0.094		0.15	0.11	1.7		0.29
A-BCD	0.84	11.79	0.071		0.21	0.13	1.9		0.09
A-B	0.15								
A-C	5.19								
D-ABC	0.87	5.72	0.152		0.27	0.18	2.8		0.21
C-ABD	0.00	8.78	0.000		0.00	0.00	0.0		0.00
C-D	0.43								
C-A	10.49								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
B-CD	0.16	9.44	0.017		0.02	0.02	0.3		0.11
B-AD	0.30	4.21	0.072		0.11	0.08	1.2		0.26
A-BCD	0.60	11.44	0.053		0.13	0.08	1.2		0.09
A-B	0.13								
A-C	4.45								
D-ABC	0.73	6.25	0.116		0.18	0.13	2.1		0.18
C-ABD	0.00	9.05	0.000		0.00	0.00	0.0		0.00
C-D	0.36								
C-A	8.78								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-CD	17.9	11.9	2.0	0.11	2.0	0.11
B-AD	33.0	22.0	9.8	0.30	9.8	0.30
A-BCD	79.7	53.2	12.5	0.16	12.5	0.16
A-B	14.0	9.3				
A-C	474.7	316.5				
D-ABC	79.8	53.2	17.2	0.22	17.2	0.22
C-ABD	0.0	0.0	0.0	0.00	0.0	0.00
C-D	39.9	26.6				
C-A	963.5	642.3				
ALL	1702.6	1135.1	41.5	0.02	41.5	0.02

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0   (JUNE 2006)

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Run with file:-
"C:\TRL Files\Junction\PICADY 5\409-1376-00002 Otterpool\Scenario 2 - Max Trips\AM Peak 2008.vpi"
(drive-on-the-left) at 14:25:40 on Monday, 17 March 2008

.RUN INFORMATION
****

```
   RUN TITLE: Scenario 2 - AM Peak 2008
    LOCATION: A20 Site Access Junction
        DATE: 01/11/07
      CLIENT: Countrystyle Recycling
  ENUMERATOR: mshephard [000473_LAP]
  JOB NUMBER: 409.1376.00002
      STATUS: TIA
 DESCRIPTION:
```

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

```
                              MINOR ROAD (ARM D)
                                  I
                                  I
                                  I
                                  I
                                  I
                                  I
  MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                                  I
                                  I
                                  I
                                  I
                                  I
                                  I
                              MINOR ROAD (ARM B)
```

ARM A IS A20 East
ARM B IS Site Access
ARM C IS A20 West
ARM D IS Transport Cafe

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 8.00 M.	(W) 8.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 200.0 M.	(VA-D) 200.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 12.0 M.	(VD-A) 10.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 10.0 M.
- LANE 1 WIDTH	(WB-C) -	(WD-A) 3.65 M.
- LANE 2 WIDTH	(WB-A) -	(WD-C) 0.00 M.
- WIDTH AT 0 M FROM JUNC.	10.00 M.	-
- WIDTH AT 5 M FROM JUNC.	5.00 M.	-
- WIDTH AT 10 M FROM JUNC.	3.65 M.	-
- WIDTH AT 15 M FROM JUNC.	3.65 M.	-
- WIDTH AT 20 M FROM JUNC.	3.65 M.	-
- LENGTH OF FLARED SECTION	DERIVED: 1 PCU	

.SLOPES AND INTERCPET

(NB:Streams may be combined, in which case capacity

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
579.75	0.21	0.08

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
671.24	0.24	0.09

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
447.53	0.19	0.19	0.19	0.19

	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
	0.07	0.12	0.27	0.09

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
517.47	0.22	0.22	0.22	0.22

	Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
	0.09	0.14	0.31	0.11

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
689.79	0.24	0.35

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
689.79	0.24	0.35

B-D Stream From Left Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

B-D Stream From Right Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

D-B Stream From Left Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

D-B Stream From Right Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

.

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

Demand set: AM Peak 2008

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN: FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN): BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.11	7.67	5.11
ARM B	15.00	45.00	75.00	0.15	0.23	0.15
ARM C	15.00	45.00	75.00	4.54	6.81	4.54
ARM D	15.00	45.00	75.00	0.63	0.94	0.63

.

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15					
	ARM A	0.000	0.044	0.895	0.061
		0.0	18.0	366.0	25.0
		(0.0)	(30.6)	(12.3)	(10.0)
	ARM B	0.500	0.000	0.500	0.000
		6.0	0.0	6.0	0.0
		(100.0)	(0.0)	(100.0)	(0.0)
	ARM C	0.882	0.050	0.000	0.069
		320.0	18.0	0.0	25.0
		(15.4)	(30.6)	(0.0)	(10.0)
	ARM D	0.500	0.000	0.500	0.000
		25.0	0.0	25.0	0.0
		(10.0)	(0.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-CD	0.08	4.99	0.015		0.00	0.02	0.2		0.20
B-AD	0.08	3.32	0.023		0.00	0.02	0.3		0.31
A-BCD	0.49	12.31	0.040		0.00	0.06	0.8		0.08
A-B	0.22								
A-C	4.42								
D-ABC	0.63	7.28	0.086		0.00	0.09	1.3		0.15
C-ABD	0.36	10.65	0.034		0.00	0.05	0.7		0.10
C-D	0.30								
C-A	3.89								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-CD	0.09	4.86	0.019		0.02	0.02	0.3		0.21
B-AD	0.09	3.11	0.029		0.02	0.03	0.4		0.33
A-BCD	0.64	12.68	0.051		0.06	0.08	1.2		0.08
A-B	0.26								
A-C	5.23								
D-ABC	0.75	6.97	0.108		0.09	0.12	1.7		0.16
C-ABD	0.48	11.02	0.043		0.05	0.06	0.9		0.09
C-D	0.36								
C-A	4.60								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-CD	0.11	4.68	0.024		0.02	0.02	0.3		0.22
B-AD	0.11	2.83	0.039		0.03	0.04	0.6		0.37
A-BCD	0.95	13.37	0.071		0.08	0.12	1.9		0.08
A-B	0.31								
A-C	6.25								
D-ABC	0.92	6.52	0.141		0.12	0.16	2.4		0.18
C-ABD	0.70	11.71	0.060		0.06	0.10	1.5		0.09
C-D	0.43								
C-A	5.53								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-CD	0.11	4.67	0.024		0.02	0.02	0.4		0.22
B-AD	0.11	2.83	0.039		0.04	0.04	0.6		0.37
A-BCD	0.95	13.37	0.071		0.12	0.12	1.9		0.08
A-B	0.31								
A-C	6.25								
D-ABC	0.92	6.52	0.141		0.16	0.16	2.4		0.18
C-ABD	0.70	11.71	0.060		0.10	0.10	1.5		0.09
C-D	0.43								
C-A	5.52								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-CD	0.09	4.85	0.019		0.02	0.02	0.3		0.21
B-AD	0.09	3.11	0.029		0.04	0.03	0.5		0.33
A-BCD	0.64	12.68	0.051		0.12	0.08	1.2		0.08
A-B	0.26								
A-C	5.23								
D-ABC	0.75	6.96	0.108		0.16	0.12	1.9		0.16
C-ABD	0.48	11.02	0.043		0.10	0.06	1.0		0.09
C-D	0.36								
C-A	4.60								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-CD	0.08	4.98	0.015		0.02	0.02	0.2		0.20
B-AD	0.08	3.32	0.023		0.03	0.02	0.4		0.31
A-BCD	0.49	12.31	0.040		0.08	0.06	0.9		0.08
A-B	0.22								
A-C	4.42								
D-ABC	0.63	7.28	0.086		0.12	0.10	1.5		0.15
C-ABD	0.37	10.65	0.034		0.06	0.05	0.7		0.10
C-D	0.30								
C-A	3.89								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.2
08.45	0.2
09.00	0.1
09.15	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-CD	8.3	5.5	1.7	0.21	1.7	0.21
B-AD	8.3	5.5	2.7	0.33	2.7	0.33
A-BCD	62.5	41.7	7.8	0.12	7.8	0.12
A-B	23.5	15.6				
A-C	477.0	318.0				
D-ABC	68.8	45.9	11.2	0.16	11.2	0.16
C-ABD	46.4	31.0	6.2	0.13	6.2	0.13
C-D	32.8	21.9				
C-A	420.4	280.2				
ALL	1147.9	765.3	29.7	0.03	29.7	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

```
                              TRL LIMITED

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   CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

                       PICADY 5.0  ANALYSIS PROGRAM
                          RELEASE 3.0        (JUNE 2006)

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                      EMAIL: SoftwareBureau@trl.co.uk
           --------------------------------------------------------


 THE USER OF THIS COMPUTER PROGRAM FOR THE SOLUTION OF AN ENGINEERING PROBLEM IS
 IN NO WAY  RELIEVED OF HIS RESPONSIBILITY  FOR THE CORRECTNESS  OF THE SOLUTION


 Run with file:-
 "C:\TRL Files\Junction\PICADY 5\409-1376-00002 Otterpool\Scenario 2 - Max Trips\PM Peak 2008.vpi"
(drive-on-the-left ) at 14:26:33 on Monday, 17 March 2008


.RUN INFORMATION
 ***************

   RUN TITLE: Scenario 2 - PM Peak 2008
    LOCATION: A20 Site Access Junction
        DATE: 01/11/07
      CLIENT: Countrystyle Recycling
  ENUMERATOR: mshephard [000473_LAP]
  JOB NUMBER: 409.1376.00002
      STATUS: TIA
 DESCRIPTION:

 .MAJOR/MINOR JUNCTION CAPACITY AND DELAY
  ***************************************

  INPUT DATA
  ----------

                                            MINOR ROAD (ARM D)
                                                I
                                                I
                                                I
                                                I
                                                I
                                                I
                     MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                                                I
                                                I
                                                I
                                                I
                                                I
                                                I
                                            MINOR ROAD (ARM B)

 ARM A IS A20 East
 ARM B IS Site Access
 ARM C IS A20 West
 ARM D IS Transport Cafe


 STREAM LABELLING CONVENTION
 --------------------------

        STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

        STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

        ETC.
```

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 8.00 M.	(W) 8.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 200.0 M.	(VA-D) 200.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 12.0 M.	(VD-A) 10.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 10.0 M.
- LANE 1 WIDTH	(WB-C) -	(WD-A) 3.65 M.
- LANE 2 WIDTH	(WB-A) -	(WD-C) 0.00 M.
- WIDTH AT 0 M FROM JUNC.	10.00 M.	-
- WIDTH AT 5 M FROM JUNC.	5.00 M.	-
- WIDTH AT 10 M FROM JUNC.	3.65 M.	-
- WIDTH AT 15 M FROM JUNC.	3.65 M.	-
- WIDTH AT 20 M FROM JUNC.	3.65 M.	-
- LENGTH OF FLARED SECTION	DERIVED: 1 PCU	

.SLOPES AND INTERCPET

(NB:Streams may be combined, in which case capacity

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
579.75	0.21	0.08

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
671.24	0.24	0.09

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
447.53	0.19	0.19	0.19	0.19

	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
	0.07	0.12	0.27	0.09

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
517.47	0.22	0.22	0.22	0.22

	Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
	0.09	0.14	0.31	0.11

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
689.79	0.24	0.35

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
689.79	0.24	0.35

B-D Stream From Left Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

B-D Stream From Right Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

D-B Stream From Left Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

D-B Stream From Right Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

.

.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

Demand set: AM Peak 2008

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	3.80	5.70	3.80
ARM B	15.00	45.00	75.00	0.45	0.67	0.45
ARM C	15.00	45.00	75.00	5.56	8.34	5.56
ARM D	15.00	45.00	75.00	0.63	0.94	0.63

.

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
16.45 - 18.15					
	ARM A	0.000	0.020	0.898	0.082
		0.0	6.0	273.0	25.0
		(0.0)	(100.0)	(9.1)	(10.0)
	ARM B	0.500	0.000	0.500	0.000
		18.0	0.0	18.0	0.0
		(30.6)	(0.0)	(30.6)	(0.0)
	ARM C	0.930	0.013	0.000	0.056
		414.0	6.0	0.0	25.0
		(8.0)	(100.0)	(0.0)	(10.0)
	ARM D	0.500	0.000	0.500	0.000
		25.0	0.0	25.0	0.0
		(10.0)	(0.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-CD	0.23	7.86	0.029		0.00	0.03	0.4		0.13
B-AD	0.23	5.26	0.043		0.00	0.04	0.6		0.20
A-BCD	0.44	11.37	0.039		0.00	0.05	0.8		0.09
A-B	0.07								
A-C	3.30								
D-ABC	0.63	7.20	0.087		0.00	0.09	1.4		0.15
C-ABD	0.16	9.43	0.017		0.00	0.02	0.3		0.11
C-D	0.31								
C-A	5.11								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-CD	0.27	7.71	0.035		0.03	0.04	0.5		0.13
B-AD	0.27	4.98	0.054		0.04	0.06	0.8		0.21
A-BCD	0.57	11.58	0.049		0.05	0.07	1.1		0.09
A-B	0.09								
A-C	3.90								
D-ABC	0.75	6.86	0.109		0.09	0.12	1.8		0.16
C-ABD	0.22	10.09	0.022		0.02	0.03	0.4		0.10
C-D	0.37								
C-A	6.08								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-CD	0.33	7.49	0.044		0.04	0.05	0.7		0.14
B-AD	0.33	4.60	0.072		0.06	0.08	1.1		0.23
A-BCD	0.80	11.95	0.067		0.07	0.11	1.7		0.09
A-B	0.10								
A-C	4.68								
D-ABC	0.92	6.40	0.143		0.12	0.17	2.4		0.18
C-ABD	0.32	10.97	0.029		0.03	0.04	0.6		0.09
C-D	0.45								
C-A	7.40								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-CD	0.33	7.49	0.044		0.05	0.05	0.7		0.14
B-AD	0.33	4.60	0.072		0.08	0.08	1.1		0.23
A-BCD	0.80	11.95	0.067		0.11	0.11	1.7		0.09
A-B	0.10								
A-C	4.68								
D-ABC	0.92	6.40	0.143		0.17	0.17	2.5		0.18
C-ABD	0.32	10.97	0.029		0.04	0.04	0.6		0.09
C-D	0.45								
C-A	7.40								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-CD	0.27	7.71	0.035		0.05	0.04	0.6		0.13
B-AD	0.27	4.98	0.054		0.08	0.06	0.9		0.21
A-BCD	0.57	11.58	0.049		0.11	0.08	1.1		0.09
A-B	0.09								
A-C	3.90								
D-ABC	0.75	6.86	0.109		0.17	0.12	1.9		0.16
C-ABD	0.22	10.09	0.022		0.04	0.03	0.4		0.10
C-D	0.37								
C-A	6.08								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
B-CD	0.23	7.86	0.029		0.04	0.03	0.5		0.13
B-AD	0.23	5.26	0.043		0.06	0.05	0.7		0.20
A-BCD	0.45	11.37	0.039		0.08	0.06	0.8		0.09
A-B	0.07								
A-C	3.30								
D-ABC	0.63	7.19	0.087		0.12	0.10	1.5		0.15
C-ABD	0.16	9.43	0.017		0.03	0.02	0.3		0.11
C-D	0.31								
C-A	5.11								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.0

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-CD	24.8	16.5	3.3	0.13	3.3	0.13
B-AD	24.8	16.5	5.3	0.21	5.3	0.21
A-BCD	54.4	36.2	7.3	0.13	7.3	0.13
A-B	7.8	5.2				
A-C	356.2	237.5				
D-ABC	68.8	45.9	11.4	0.17	11.4	0.17
C-ABD	21.0	14.0	2.5	0.12	2.5	0.12
C-D	33.7	22.5				
C-A	557.8	371.9				
ALL	1149.3	766.2	29.9	0.03	29.9	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

TRL LIMITED

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CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0 (JUNE 2006)

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Run with file:-
"C:\TRL Files\Junction\PICADY 5\409-1376-00002 Otterpool\Scenario 2 - With Committed\AM Peak 2018.vpi"
(drive-on-the-left) at 14:20:30 on Monday, 17 March 2008

.RUN INFORMATION
****

```
   RUN TITLE: Scenario 2 - AM Peak 2018 - With Committed
    LOCATION: A20 Site Access Junction
        DATE: 01/11/07
      CLIENT: Countrystyle Recycling
  ENUMERATOR: mshephard [000473_LAP]
  JOB NUMBER: 409.1376.00002
      STATUS: TIA
 DESCRIPTION:
```

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY
****

INPUT DATA

```
                                  MINOR ROAD (ARM D)
                                      I
                                      I
                                      I
                                      I
                                      I
                                      I
       MAJOR ROAD (ARM C) --------------------- MAJOR ROAD (ARM A)
                                      I
                                      I
                                      I
                                      I
                                      I
                                      I
                                  MINOR ROAD (ARM B)
```

ARM A IS A20 East
ARM B IS Site Access
ARM C IS A20 West
ARM D IS Transport Cafe

STREAM LABELLING CONVENTION

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 8.00 M.	(W) 8.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 200.0 M.	(VA-D) 200.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 12.0 M.	(VD-A) 10.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 10.0 M.
- LANE 1 WIDTH	(WB-C) -	(WD-A) 3.65 M.
- LANE 2 WIDTH	(WB-A) -	(WD-C) 0.00 M.
- WIDTH AT 0 M FROM JUNC.	10.00 M.	-
- WIDTH AT 5 M FROM JUNC.	5.00 M.	-
- WIDTH AT 10 M FROM JUNC.	3.65 M.	-
- WIDTH AT 15 M FROM JUNC.	3.65 M.	-
- WIDTH AT 20 M FROM JUNC.	3.65 M.	-
- LENGTH OF FLARED SECTION	DERIVED: 1 PCU	

.SLOPES AND INTERCPET

(NB:Streams may be combined, in which case capacity

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
579.75	0.21	0.08

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
671.24	0.24	0.09

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
447.53	0.19	0.19	0.19	0.19

	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
	0.07	0.12	0.27	0.09

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
517.47	0.22	0.22	0.22	0.22

	Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
	0.09	0.14	0.31	0.11

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
689.79	0.24	0.35

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
689.79	0.24	0.35

B-D Stream From Left Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

B-D Stream From Right Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

D-B Stream From Left Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

D-B Stream From Right Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

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.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

Demand set: AM Peak 2008

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	8.56	12.84	8.56
ARM B	15.00	45.00	75.00	0.15	0.23	0.15
ARM C	15.00	45.00	75.00	5.88	8.81	5.88
ARM D	15.00	45.00	75.00	0.73	1.09	0.73

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TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
07.45 - 09.15	ARM A	0.000	0.026	0.931	0.042
		0.0	18.0	638.0	29.0
		(0.0)	(30.6)	(11.0)	(10.0)
	ARM B	0.500	0.000	0.500	0.000
		6.0	0.0	6.0	0.0
		(100.0)	(0.0)	(100.0)	(0.0)
	ARM C	0.900	0.038	0.000	0.062
		423.0	18.0	0.0	29.0
		(20.3)	(30.6)	(0.0)	(10.0)
	ARM D	0.500	0.000	0.500	0.000
		29.0	0.0	29.0	0.0
		(10.0)	(0.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-CD	0.08	4.54	0.017		0.00	0.02	0.2		0.22
B-AD	0.08	2.77	0.027		0.00	0.03	0.4		0.37
A-BCD	0.82	14.27	0.058		0.00	0.09	1.4		0.07
A-B	0.21								
A-C	7.56								
D-ABC	0.73	6.55	0.111		0.00	0.12	1.8		0.17
C-ABD	0.43	10.89	0.040		0.00	0.06	0.8		0.10
C-D	0.35								
C-A	5.11								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-CD	0.09	4.32	0.021		0.02	0.02	0.3		0.24
B-AD	0.09	2.46	0.037		0.03	0.04	0.5		0.42
A-BCD	1.15	15.04	0.077		0.09	0.14	2.1		0.07
A-B	0.25								
A-C	8.86								
D-ABC	0.87	6.06	0.143		0.12	0.17	2.4		0.19
C-ABD	0.63	11.53	0.055		0.06	0.09	1.3		0.09
C-D	0.41								
C-A	6.00								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-CD	0.11	4.01	0.027		0.02	0.03	0.4		0.26
B-AD	0.11	2.03	0.054		0.04	0.06	0.8		0.52
A-BCD	1.87	16.33	0.115		0.14	0.26	3.9		0.07
A-B	0.29								
A-C	10.41								
D-ABC	1.06	5.37	0.198		0.17	0.24	3.5		0.23
C-ABD	0.95	12.24	0.078		0.09	0.14	2.1		0.09
C-D	0.49								
C-A	7.18								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-CD	0.11	4.01	0.027		0.03	0.03	0.4		0.26
B-AD	0.11	2.03	0.054		0.06	0.06	0.8		0.52
A-BCD	1.87	16.34	0.115		0.26	0.26	4.0		0.07
A-B	0.29								
A-C	10.40								
D-ABC	1.06	5.36	0.198		0.24	0.25	3.7		0.23
C-ABD	0.96	12.24	0.078		0.14	0.14	2.2		0.09
C-D	0.49								
C-A	7.18								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-CD	0.09	4.31	0.021		0.03	0.02	0.3		0.24
B-AD	0.09	2.46	0.037		0.06	0.04	0.6		0.42
A-BCD	1.16	15.05	0.077		0.26	0.14	2.2		0.07
A-B	0.25								
A-C	8.86								
D-ABC	0.87	6.06	0.143		0.25	0.17	2.6		0.19
C-ABD	0.63	11.53	0.055		0.14	0.09	1.3		0.09
C-D	0.41								
C-A	6.00								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-CD	0.08	4.53	0.017		0.02	0.02	0.3		0.22
B-AD	0.08	2.77	0.027		0.04	0.03	0.4		0.37
A-BCD	0.83	14.27	0.058		0.14	0.09	1.4		0.07
A-B	0.21								
A-C	7.56								
D-ABC	0.73	6.54	0.111		0.17	0.13	2.0		0.17
C-ABD	0.43	10.89	0.040		0.09	0.06	0.9		0.10
C-D	0.35								
C-A	5.11								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.1
08.45	0.1
09.00	0.0
09.15	0.0

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.3
08.45	0.3
09.00	0.1
09.15	0.1

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.2
08.30	0.2
08.45	0.2
09.00	0.2
09.15	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.1
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * * DELAY * (MIN)	* QUEUEING * * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	* INCLUSIVE QUEUEING * * DELAY * (MIN/VEH)
B-CD	8.3	5.5	2.0	0.24	2.0	0.24
B-AD	8.3	5.5	3.6	0.44	3.6	0.44
A-BCD	115.5	77.0	14.8	0.13	14.8	0.13
A-B	22.7	15.1				
A-C	804.7	536.5				
D-ABC	79.8	53.2	15.9	0.20	15.9	0.20
C-ABD	60.6	40.4	8.6	0.14	8.6	0.14
C-D	37.6	25.1				
C-A	548.7	365.8				
ALL	1686.1	1124.1	44.9	0.03	44.9	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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                              TRL LIMITED

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   CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

                        PICADY 5.0  ANALYSIS PROGRAM
                           RELEASE 3.0        (JUNE 2006)

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 Run with file:-
 "C:\TRL Files\Junction\PICADY 5\409-1376-00002 Otterpool\Scenario 2 - With Committed\PM Peak 2018.vpi"
(drive-on-the-left ) at 14:21:20 on Monday, 17 March 2008


.RUN INFORMATION
 ***************

   RUN TITLE: Scenario 2 - PM Peak 2018 - With Committed
    LOCATION: A20 Site Access Junction
        DATE: 01/11/07
      CLIENT: Countrystyle Recycling
  ENUMERATOR: mshephard [000473_LAP]
  JOB NUMBER: 409.1376.00002
      STATUS: TIA
 DESCRIPTION:

 .MAJOR/MINOR JUNCTION CAPACITY AND DELAY
  ***************************************

  INPUT DATA
  ----------

                                            MINOR ROAD (ARM D)
                                                I
                                                I
                                                I
                                                I
                                                I
                                                I
                      MAJOR ROAD (ARM C) ---------------------- MAJOR ROAD (ARM A)
                                                I
                                                I
                                                I
                                                I
                                                I
                                                I
                                            MINOR ROAD (ARM B)

 ARM A IS A20 East
 ARM B IS Site Access
 ARM C IS A20 West
 ARM D IS Transport Cafe


 STREAM LABELLING CONVENTION
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        STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B

        STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

        ETC.
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.GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 8.00 M.	(W) 8.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 200.0 M.	(VA-D) 200.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 12.0 M.	(VD-A) 10.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 10.0 M.
- LANE 1 WIDTH	(WB-C) -	(WD-A) 3.65 M.
- LANE 2 WIDTH	(WB-A) -	(WD-C) 0.00 M.
- WIDTH AT 0 M FROM JUNC.	10.00 M.	-
- WIDTH AT 5 M FROM JUNC.	5.00 M.	-
- WIDTH AT 10 M FROM JUNC.	3.65 M.	-
- WIDTH AT 15 M FROM JUNC.	3.65 M.	-
- WIDTH AT 20 M FROM JUNC.	3.65 M.	-
- LENGTH OF FLARED SECTION	DERIVED: 1 PCU	

.SLOPES AND INTERCPET

(NB:Streams may be combined, in which case capacity

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
579.75	0.21	0.08

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
671.24	0.24	0.09

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
447.53	0.19	0.19	0.19	0.19

	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
	0.07	0.12	0.27	0.09

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
517.47	0.22	0.22	0.22	0.22

	Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
	0.09	0.14	0.31	0.11

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
689.79	0.24	0.35

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
689.79	0.24	0.35

B-D Stream From Left Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

B-D Stream From Right Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
447.53	0.19	0.19	0.07	0.27

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.12	0.12		

D-B Stream From Left Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

D-B Stream From Right Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D
517.47	0.22	0.22	0.09	0.31

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.14	0.14		

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.TRAFFIC DEMAND DATA

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

Demand set: AM Peak 2008

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MINUTES.
LENGTH OF TIME SEGMENT - 15 MINUTES.

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	5.10	7.65	5.10
ARM B	15.00	45.00	75.00	0.45	0.67	0.45
ARM C	15.00	45.00	75.00	9.19	13.78	9.19
ARM D	15.00	45.00	75.00	0.73	1.09	0.73

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TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
		TURNING PROPORTIONS TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
16.45 - 18.15					
	ARM A	0.000	0.015	0.914	0.071
		0.0	6.0	373.0	29.0
		(0.0)	(100.0)	(16.7)	(10.0)
	ARM B	0.500	0.000	0.500	0.000
		18.0	0.0	18.0	0.0
		(30.6)	(0.0)	(30.6)	(0.0)
	ARM C	0.952	0.008	0.000	0.039
		700.0	6.0	0.0	29.0
		(6.8)	(100.0)	(0.0)	(10.0)
	ARM D	0.500	0.000	0.500	0.000
		29.0	0.0	29.0	0.0
		(10.0)	(0.0)	(10.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-CD	0.23	7.54	0.030		0.00	0.03	0.4		0.14
B-AD	0.23	4.55	0.050		0.00	0.05	0.7		0.23
A-BCD	0.60	11.37	0.052		0.00	0.08	1.2		0.09
A-B	0.07								
A-C	4.45								
D-ABC	0.73	6.22	0.117		0.00	0.13	1.9		0.18
C-ABD	0.23	11.71	0.020		0.00	0.02	0.4		0.09
C-D	0.36								
C-A	8.63								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-CD	0.27	7.31	0.037		0.03	0.04	0.6		0.14
B-AD	0.27	4.13	0.065		0.05	0.07	1.0		0.26
A-BCD	0.83	11.71	0.071		0.08	0.12	1.9		0.09
A-B	0.08								
A-C	5.20								
D-ABC	0.87	5.68	0.153		0.13	0.18	2.6		0.21
C-ABD	0.33	12.70	0.026		0.02	0.03	0.5		0.08
C-D	0.43								
C-A	10.26								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-CD	0.33	7.00	0.047		0.04	0.05	0.7		0.15
B-AD	0.33	3.56	0.093		0.07	0.10	1.4		0.31
A-BCD	1.21	12.12	0.100		0.12	0.21	3.1		0.09
A-B	0.10								
A-C	6.18								
D-ABC	1.06	4.92	0.216		0.18	0.27	3.9		0.26
C-ABD	0.61	15.00	0.041		0.03	0.06	0.9		0.07
C-D	0.51								
C-A	12.37								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-CD	0.33	6.99	0.047		0.05	0.05	0.7		0.15
B-AD	0.33	3.56	0.093		0.10	0.10	1.5		0.31
A-BCD	1.21	12.13	0.100		0.21	0.21	3.2		0.09
A-B	0.10								
A-C	6.17								
D-ABC	1.06	4.92	0.216		0.27	0.27	4.1		0.26
C-ABD	0.61	15.00	0.041		0.06	0.06	0.9		0.07
C-D	0.51								
C-A	12.37								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-CD	0.27	7.31	0.037		0.05	0.04	0.6		0.14
B-AD	0.27	4.13	0.065		0.10	0.07	1.1		0.26
A-BCD	0.84	11.71	0.071		0.21	0.13	1.9		0.09
A-B	0.08								
A-C	5.19								
D-ABC	0.87	5.68	0.153		0.27	0.18	2.9		0.21
C-ABD	0.33	12.70	0.026		0.06	0.03	0.5		0.08
C-D	0.42								
C-A	10.26								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
18.00-18.15									
B-CD	0.23	7.54	0.030		0.04	0.03	0.5		0.14
B-AD	0.23	4.54	0.050		0.07	0.05	0.8		0.23
A-BCD	0.60	11.37	0.053		0.13	0.08	1.2		0.09
A-B	0.07								
A-C	4.45								
D-ABC	0.73	6.22	0.117		0.18	0.13	2.1		0.18
C-ABD	0.24	11.71	0.020		0.03	0.02	0.4		0.09
C-D	0.36								
C-A	8.63								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-CD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-AD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.1

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.1
17.30	0.2
17.45	0.2
18.00	0.1
18.15	0.1

QUEUE FOR STREAM D-ABC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.1
17.15	0.2
17.30	0.3
17.45	0.3
18.00	0.2
18.15	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.1
17.45	0.1
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	(VEH/H)	* QUEUEING * * DELAY * (MIN)	(MIN/VEH)	* INCLUSIVE QUEUEING * * DELAY * (MIN)	(MIN/VEH)
B-CD	24.8	16.5	3.5	0.14	3.5	0.14
B-AD	24.8	16.5	6.6	0.27	6.6	0.27
A-BCD	79.4	52.9	12.5	0.16	12.5	0.16
A-B	7.6	5.1				
A-C	474.6	316.4				
D-ABC	79.8	53.2	17.4	0.22	17.4	0.22
C-ABD	35.2	23.5	3.4	0.10	3.4	0.10
C-D	38.8	25.9				
C-A	937.7	625.1				
ALL	1702.6	1135.1	43.5	0.03	43.5	0.03

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB