1 INTRODUCTION

1.1 BACKGROUND TO THIS REPORT

Hutchison Ports (UK) Limited (HPUK), on behalf of Harwich International Port Limited, is promoting a scheme to develop Bathside Bay, an area adjacent to Harwich International Port, as a new container facility. The location of the development within the East of England is shown in *Figure 1.1*. The completed terminal will include 1 400 m of quay and is expected eventually to have an annual capacity of around 1.7 million TEU (twenty foot equivalent units).

Legislative approval for tidal works to take place in the area of Bathside was obtained through the Harwich Parkeston Quay Act 1988. An Environmental Statement in support of an application to undertake those works was submitted by HPUK, on behalf of Harwich International Port Limited, in 2001. HPUK is now submitting a full planning application for landside and tidal works, including construction of the quay, land reclamation and development of a new rail terminal. A separate application is being submitted for a smaller adjacent development at Gas House Creek (also covered by this report).

This report presents the results of a Transport Assessment (TA) for the scheme, and is submitted in support of the two applications outlined above. The TA has been prepared by Environmental Resources Management (ERM), supported by HSL, with the aim of assisting Tendring District Council, in its role as planning authority, in arriving at a decision.

A Scoping Report has previously been prepared for the TA (in October 2002), in line with best practice. The purpose of that report was principally to establish the scope and methodology for the TA and describe the data to be collected.

This TA report relates to the whole of the Bathside Bay development, including that part of the development covered by the tidal works.

1.2 THE PROPOSED DEVELOPMENT

1.2.1 *Overview*

Bathside Bay adjoins Harwich International Port, an important multi-purpose freight and passenger port, which is strategically located in the south east of the UK, as indicated in *Figure 1.1*. Container services have been operated at this port since 1968. The port was acquired by Hutchison Port Holdings (HPH) in 1998.

Reliable port handling is vital, as ships work to very strict year round timetables. For a port to operate at optimum efficiency, it is necessary to have

a steady, continual flow of vessels so that the workforce and the equipment are fully utilised. To accommodate the current UK predictions in increased trade levels and achieve the Government's desire for competitive ports, HPUK proposes to build new facilities in the area of Bathside Bay.

The development of Bathside Bay is expected to create a significant number of job opportunities, within areas such as equipment operators, stevedores, information technology, engineering, management and operations planning.

1.2.2 Proposed Facilities

The land-based works, which are the subject of the principal planning application for the Bathside Bay development, will include the following (as further detailed in the applications):

- a 775 m rail terminal with a container transfer area linked to existing rail facilities;
- a container handling and stacking facility;
- workshops, offices, warehousing and associated facilities (including a 16 000 m^2 logistics facility offering services to shippers and cargo owners);
- HGV parking facilities; and
- a substation supplying power to the site via underground cables.

The following equipment will additionally be provided:

- 11 quayside cranes;
- 44 rubber tyred gantries (RTGs); and
- three rail gantry cranes for the site.

A masterplan for the development has been prepared, and this is included at the end of this section.

The adjacent Gas House Creek small boat harbour development will provide moorings for displaced yachts and fishing boats, and a limited number of additional moorings for visiting yachts. An additional 36 car parking spaces will be provided for public viewing facilities.

The proposed facilities are described in more detail in *Section 5* of this report.

1.2.3 Road and Rail Access

Access for the proposed development is available to both the trunk road and national rail networks. Road access is to be gained via an existing roundabout directly onto the A120, a part dual carriageway trunk road running between Harwich and Colchester, where it joins the A12.

[**Figure 1.1**]

The rail network serves Harwich Town and Harwich International, linking up with the Great Eastern Mainline (GEML) towards London and also serving destinations to the north via Ipswich.

Accessibility to the proposed development is described in more detail in *Section 4*.

1.2.4 Construction Phasing

The first phase of the development (to provide two berths) will take between 24 and 30 months to construct. The whole of the bay will be reclaimed during this phase. Phases 2 and 3 will each take around a year to construct, Phase 2 commencing during the latter stages of Phase 1, with Phase 3 following. More detailed information on construction phasing is given in *Section 5*.

1.2.5 Operation of the Development

The first two berths are expected to be operational in 2007. At this point it is estimated that the capacity available at Bathside Bay will be around 0.7 million TEU, and that demand will be around 0.3 million TEU [(1)] . Detailed descriptions of predicted capacity and demand, plus expected road and rail movements, are given in *Section 5*.

To summarise the handling of freight at the development, each imported container will be off-loaded from a ship, placed directly onto an internal movement vehicle (IMV) and transported to a designated stacking location. Outside hauliers will then collect the containers from the stack, with the transfer being made by an RTG. For the export of containers, the process works in reverse.

In excess of 20% of container moves are expected to be containers in transit. These containers will not exit the port by road or rail, but will remain temporarily within the port. Some will be transferred directly between ships, while others will be discharged from vessels and moved to a stack for loading onto appropriate vessels.

Of those containers which will be headed inland (ie after exclusion of transhipment), it is cautiously expected that some 22.5% will be moved by rail. More details of the predicted modal split are presented in *Section 5*.

1.2.6 Parking

For those people arriving by car, a total of 269 parking spaces are provided within the container port. This is to allow for the need for shift workers to access the development, and also allows for parking spaces for disabled people (eight spaces), 35 visitor spaces and for dedicated terminal vehicles (20 spaces in total, including six bays for minibuses). *Annex C* provides

(1) information provided by Ocean Shipping Consultants

justification for this parking provision, and refers to the measures developed as part of the Travel Plan to ensure that a choice of modes is available.

Provision is made adjacent to the office building for cycle parking. Substantial areas are provided for HGV parking adjacent to the Port Gateway and adjacent to the logistics facility, in locations where the potential for conflict with other forms of transport are minimised.

1.2.7 Access and Parking for the Small Boat Harbour

Access to the Small Boat Harbour is proposed via the existing junction off the A120 opposite Albemarle Street. The geometry of this junction is suitable to accommodate vehicles with trailers accessing the Fishermen's Store area, Sailing Club and slipway. Pedestrian and cyclist access will also be via this junction with suitable hard landscaping treatment within the site to encourage access to the waterfront.

Vehicle parking is provided primarily at the foot of the landscape embankment and trailer parking is accommodated in separate tender compounds for the Sailing Club and public in close proximity to the slipway.

1.3 THE TRANSPORT ASSESSMENT

The TA has been carried out principally for the operational phase of the development; however, the potential impact of the scheme on the highway network during the construction phase is also addressed. The assessment covers the whole of the masterplan area, including the Gas House Creek small boat harbour development, taking into account potential effects on the wider transport networks, as appropriate.

The assessment draws on previous work undertaken in respect of the earlier application for tidal works and channel deepening in Bathside Bay, taking on board the views of Tendring District Council, Essex County Council, the Highways Agency, the Strategic Rail Authority (SRA) and Network Rail (formerly Railtrack). Where appropriate, the views of the freight operating companies (FOCs) have also been considered.

The work has been carried out in accordance with PPG13 (1) and Circular 04/2001 (2) . Where applicable, reference has been made to proposed guidelines on TA procedures (3) and published guidelines prepared for developments in Scotland (4) , as well as guidance published by others, such as the former Institute of Environmental Assessment (5) (now the Institute of

(1) **Planning Policy Guidance Note 13: Transport**, issued in March 2001.
(2) DTLR Circular 04/2001 - Control of Development Affecting Trunk Roads and Agreements with Developers under section 278 of the Highways Act 1980.
(3) at the time of writing, these were unpublished
(4) Scottish Executive (2002) Guide to Transport Assessment for Development Proposals in Scotland, Final Report, April.
(5) Institute of Environmental Assessment (1993) **Guidelines for the Environmental Assessment of Road Traffic**, Guidance Note No. 1, IEA.

Environmental Management and Assessment, IEMA). It also embraces the principles laid down in guidance issued by the Institute of Highways of Transportation with respect to road traffic impacts [(1)] , so that proper cognisance is taken of these issues.

A more detailed description of the methodology used for the TA is given in *Section 2*.

1.4 STRUCTURE OF THE REPORT

Following this introductory section, the remainder of the report is structured as follows:

- *Section 2* gives a description of the methodology that has been adopted to undertake the assessment, including sources of information and methods of consultation;

- *Section 3* sets out the relevant national, regional and local transport policies and describes the ways in which the proposed scheme accords with these;

- *Section 4* describes current, and future baseline, accessibility in the vicinity of the development and provides details of the existing transport networks and current travel characteristics;

- *Section 5* summarises the traffic which is expected to be generated by the development, during both the construction and subsequent operational phases on the road and rail networks;

- *Section 6* provides a description of the impacts of the scheme, with respect to both the road and rail networks, and describes the measures which have been proposed by HPUK to mitigate any adverse effects and to influence travel patterns at the port; and

- *Section 7* contains the conclusions of the study.

The following maps and illustrations are provided in the main report (in addition to the masterplan at the end of this section):

- *Figure 1.1* – Location of Bathside Bay and Trunk Road Network;
- *Figure 4.1* – Rail Network;
- *Figure 5.1* – Generated Construction Traffic; and
- *Figure 5*.2 – Routeing for Topsoil Movements from Hamford Water.

A completed Transport Assessment Form is given in *Annex A*. In addition, two comprehensive, stand-alone annexes are provided, as follows:

(1) Institute of Highways and Transportation (1994) **Traffic Impact Assessment Guidelines**, IHT.

- *Annex B* comprises an appraisal of the landside transport impacts of the scheme according to the principles of the Government's New Approach to Appraisal (NATA). A description of NATA is given in *Section 2*.

- *Annex C* is a detailed assessment of the impacts of the proposed scheme on the highway network. This has been prepared by HSL and includes impacts on all road users plus mitigation measures that have been proposed and agreed by HPUK. Additional maps and figures are provided within this annex. The annex is provided as a separate volume.

In addition, a separate non-technical summary of the TA has been prepared. A version of the summary is also bound into the front of this report.

2 ASSESSMENT METHODOLOGY

2.1 SCOPE OF THE ASSESSMENT

2.1.1 The Requirements for a TA

The revised version of PPG13 was issued by the former Department of Transport, Local Government and the Regions (DTLR) in March 2001. It states that:

> "*where developments will have significant transport implications, Transport Assessments should be prepared and submitted alongside the relevant planning application*".

A definition has been proposed for a TA as being:

> "*a review of all potential transport impacts of a proposed development, with a plan to minimise any adverse consequences*" (1) .

Although, at the time of writing, no formal guidance was available on TA procedures, the key focus, based on the requirements of PPG13, is to ensure that a realistic and reasonable choice of access is available for new developments. This is primarily enabled by selecting the right location, design and layout - principles that HUPKL have adopted throughout the process of scheme development (as described in *Section 6* and elsewhere in this report). The process of site selection is described in the Environmental Statement (ES) that has been prepared for the scheme by Posford Haskoning and others .

The key differences between TA and what might be termed "conventional" traffic impact assessments (which relate principally to highway impacts) are:

- greater emphasis is given in a TA to alternative modes, with an increased stress on public transport, walking and cycling;
- a NATA (2) appraisal is incorporated into the assessment, rather than focusing individually on, for example, traffic impacts and safety issues; and

(1) Stokes G (2001) **Transport Assessments for New Developments**, at Transport Assessment for Development Proposals, 22 November, PTRC.
(2) The New Approach to Appraisal (NATA) was introduced in the White Paper on Transport, issued in July 1998. NATA includes methods for the identification and assessment of problems, the identification of options and the assessment of those options. A separate NATA appraisal is also being undertaken by HPUK for all aspects of the development, not just transport issues, in line with anticipated new ports appraisal requirements, as described in: Department of Transport, Local Government and the Regions (2001) **A Project Appraisal Framework for Ports**, December.

- Travel Plans and financial incentives are given greater emphasis as mitigation measures, rather than relying on just increasing road capacity or improving safety features.

In summary, a TA needs to provide local planning authority officers with sufficient information to be able to consider the transport aspects of the planning application. This has been the primary aim of the work undertaken.

2.1.2 The TA Process

Overview

In the absence of published guidance (which, in any case, will not be statutory), this TA has, as far as practicable, followed the procedures which are expected to be recommended. In essence, TA involves the following:

- assessment of accessibility and travel characteristics;
- consideration of measures to influence travel; and
- assessment of impacts.

The way in which these requirements have been dealt with in the TA for the Bathside Bay planning application is summarised below.

Assessment of Travel Characteristics

One of the main tenets underlying this aspect of the new TA procedures is that developments should be located on suitable sites – this is the principle that HPUK has adopted throughout its planning of the Bathside Bay development.

This part of the work covers such issues as:

- freight access to the trunk road and rail networks;
- potential catchments for users of the development; and
- existing road and public transport usage in the area.

Influencing Travel Patterns

Given the focus of this development on the movement of freight, HPUK has deployed various initiatives to ensure that containers are moved in a way that is both efficient and avoids adverse effects on the environment. To this end, a major component of the development is a new rail terminal.

The Government encourages carriage by rail or water wherever possible. In general the larger and more freight intensive a development proposal, the more important the location will be and the more scope for modes other than road.

There are various other measures, which can influence both sustainable distribution and travel patterns and which are examined in the TA. These include:

- characteristics of the surrounding area;
- the likely timing of lorry movements;
- measures to promote efficiency (eg good quality delivery logistics); and
- the scope for carriage of construction materials by modes other than road.

The way in which these issues have been considered in the context of the Bathside Bay development is described principally in *Section 6*.

Transport Impacts

This is arguably the key part of the assessment, as it is the part of the TA which determines the acceptability of the proposals. The proposed new TA requirements mean that, in addition to providing a robust assessment of road traffic and rail impacts, the results should be presented under three of the five NATA criteria (as described in *Section 2.3*, below):

- accessibility (which should also include integration);
- safety; and
- environment.

Impacts have been considered in this TA with respect to both road traffic impacts and those specific impacts arising from increased use of the rail network. These are set in the context of national, regional and local transport policies appropriate to the Bathside Bay development.

As indicated above, a full Environmental Impact Assessment (EIA) has been carried out for the scheme, covering, amongst other things, the environmental impacts of changes in traffic due to the development.

Travel Plan

Travel Plans have an important role to play in reducing the level of vehicular traffic to either new developments or existing sites. The preparation of Travel Plans is being increasingly sought as part of planning consent for new developments.

Although the TA and any Travel Plan that is developed inevitably need to be closely related, they are necessarily separate documents since the purpose of each is different. This TA report is submitted in support of the planning application, while the Travel Plan will be an evolving document, comprising at this stage only heads of terms and key initiatives. The issues covered in the TA are intended to provide the framework for the preparation of a successful Travel Plan.

Construction Impacts

As noted above, the potential impact on the highway network of the construction phase has been considered as part of this TA. The assessment considers the period during which the generation of construction HGVs is expected to be greatest, which is expected to occur during 2006 to 2007.

2.2 SOURCES OF INFORMATION

2.2.1 *Surveys*

As part of the assessment work undertaken in connection with the earlier tidal works and channel deepening application, a programme of traffic surveys was undertaken in August 2001 at 10 locations on the A120, as follows:

- Ingestre Street roundabout;
- Safeway roundabout;
- Parkeston Road roundabout;
- Ramsey Bridge roundabout;
- Harwich Road junction, Wix;
- Colchester Road junction, Wix;
- Horsley Cross roundabout;
- Little Bentley junction;
- A120/A133 interchange; and
- A120/A12/A1232 Crown Interchange, Colchester.

These counts were carried out for the period from 1600 hours to 2000 hours, in order to cover both the network PM peak hour and Harwich International Port's daily peak hours. At the request of Essex County Council, one further count was subsequently undertaken, in January 2002, at the A120/Park Road/Harwich Road junction.

Hourly automatic traffic count data, covering a 24-hour day, were provided by Essex County Council for the A120 at Wix and at Ardleigh (for the periods April 2001 to April 2002 and November 2001 to March 2002, respectively).

Following this, Essex County Council undertook a further programme of counts in the Parkeston area. These were carried out in September 2002 and are described in *Annex C*.

2.2.2 *Published Reports*

A wide range of published information has been consulted throughout the TA process. Documents to which reference has been made include (but are not necessarily limited to) the following:

- EC White Paper on European transport policy, 2001;
- EU Green Paper on Ports Infrastructure, 1997;

- UK Transport White Paper, 1998;
- *Transport 2010: The 10 Year Plan*;
- *Modern Ports: A UK Policy*;
- the SRA's *Freight Strategy*, 2001;
- the SRA's *Strategic Plan*, 2002 and 2003;
- existing and emerging Regional Planning Guidance;
- SEAPLAG's [1] *Regional Ports Strategy*, 2002;
- SEAPLAG's *Ports Demand Forecasting Report*, 2002;
- reports from Government multi-modal studies in the region;
- Essex Local Transport Plan, 2000;
- Tendring District Local Plan, 1998;
- Essex County Council's *Essex Railway Policy*, 2001;
- the Council's draft *Sustainable Distribution Strategy* (undated);
- the Council's *North West Essex Rail Study* (undated);
- the Council's *Introductory Guide to Development related Travel Plans*; and
- the Highways Agency's *A12 and A120 Route Management Strategy*, 2001.

These documents, and their applicability to the Bathside Bay development, are described in detail in *Section 3* of this report. Various internet sources have also been used, and links are provided in this report as appropriate.

2.2.3 Additional Material

A wide range of other material has been used in this assessment. This includes:

- a masterplan developed for the scheme by HPUK;
- other scheme information provided by HPUK and its consultants;
- accident records for the A120(T), provided by Essex County Council;
- details of proposed rail improvements, obtained from the SRA; and
- information on other committed developments in the area.

2.2.4 Consultation

Regular meetings have been held with Tendring District Council (as planning authority), Essex County Council and the Highways Agency (as the two highway authorities), the SRA and Network Rail. All of these bodies have been most helpful with respect to the provision of information. Informal discussions have also taken place with the key FOCs - Freightliner, GB Railfreight and EWS.

In order to address potential health concerns, there have in addition been consultations with representatives of the Colchester and Tendring Primary Care Trust. This has been undertaken primarily in respect of air quality impacts.

(1) South East and Anglian Ports Local Authority Group

2.3 *NATA PRINCIPLES*

Government objectives for transport are set out in the Transport White Paper. These form the basis for NATA, and are as follows:

- **environment** - to protect the built and natural environment;
- **safety** - to improve safety;
- **economy** - to support sustainable economic activity and get good value for money;
- **accessibility** - to improve access to facilities for those without a car and to reduce severance; and
- **integration** - to ensure that all decisions are taken in the context of the Government's integrated transport policy.

NATA methodology was developed partly for use in the programme of multi-modal studies developed to assess different transport strategies throughout the UK. The methods are reported in a two-volume guidance manual [(1)] , referred to as GOMMMS, issued by the former Department of Environment, Transport and the Regions (DETR) in March 2000.

Central to the appraisal process is the Appraisal Summary Table (AST). This records the degree to which the five objectives, and their component sub-objectives, for transport would be met and provides a summary of the impacts of an option, including whether the impact in each category is generally beneficial or adverse and how large it is.

Under the emerging new TA guidelines (and forming part of the Scottish TA guidelines [(2)]), four of the objectives are to be assessed (with integration essentially forming part of the accessibility objective), to exclude economy. The aspects to be assessed are listed in *Table 2.1*. It is important to note that the purpose of the NATA appraisal described in this report is not to assess the whole Bathside Bay development, only the generated traffic.

(1) DETR (2000**) Guidance on the Methodology for Multi-modal Studies**, March.
(2) Scottish Executive (2002) op. cit.

Table 2.1 Transport Assessment NATA Requirements

Objective	Sub-objective
Environment	Noise
	Local Air Quality
	Greenhouse Gases
	Landscape
	Townscape
	Heritage of Historic Resources
	Biodiversity
	Water Environment
	Physical Fitness
	Journey Ambience
Safety	Security
	Accidents
Accessibility	Option Values
	Severance
	Access to the Transport System
Integration	Transport Interchange
	Land use Policy
	Other Government Policy

2.4 ROAD TRAFFIC IMPACTS

A detailed assessment has been undertaken of the potential impacts of traffic generated by the Bathside Bay development on the surrounding highway network. The methodology for this and the resulting analyses are described in *Annex C*.

The methods applied have been confirmed through consultation and meetings with the Highways Agency and their consultants and Essex County Council. This has included issues such as the assessment periods, types of traffic to be examined and the use of appropriate growth factors.

Information has been gathered from a wide variety of sources to enable a detailed picture to be built up of the volumes of different categories of traffic generated by the proposed development as well as by other committed developments in the surrounding area.

2.5 RAIL IMPACTS

Given the primary function of the proposed development as a container port, and the Government's aspirations for the carriage of freight by rail (described in *Section 3.3*, below), the issue of rail movement associated with the scheme assumes great importance. The potential areas of concern relate partly to the ability of the rail network to accommodate additional trains generated by the development. However, an additional factor to be considered is the extent to

which levels of road-borne freight (principally on the A120) are themselves influenced by the amount of container traffic which is sent by rail.

With this in mind the TA has included the following analysis with respect to the rail network and its predicted usage:

- the existing network and its main characteristics have been described (see *Section 4.3*);

- an appraisal has been undertaken of committed and other likely future improvements to the rail network and the implications these will have for the Bathside Bay development and elsewhere;

- a profile is provided of the expected movement of container traffic by rail at Bathside Bay up to the year 2017 (when demand will be close to capacity, as described in *Section 5.2*); and

- the calculated levels of rail traffic are applied to the future rail network to demonstrate how the network is able to accommodate future movements by rail to and from UK inland terminals, taking into account also future traffic which is expected to be generated by improvements at the Port of Felixstowe.

2.6 OTHER MODES

Throughout the assessment consideration has been given to modes other than private car and HGV. A sustainability audit of the site has been undertaken and various means of promoting sustainable travel have been investigated, including the use of ferry and cycling facilities. This is described in *Annex C*.

The off-site impacts of the proposed development with respect to pedestrian and cycle movements have also been investigated.

Alternative modes have also been considered during the construction phase of the development, in particular the use of rail and shipping to import and export construction materials and equipment.

2.7 ENVIRONMENTAL IMPACTS

The environmental impacts of development proposals are generally outside the remit of a TA, as they should be picked up through the EIA process. In the case of the proposed Bathside Bay development, potential environmental impacts arising from traffic generated by the scheme will be associated principally with changes in noise and air quality from HGVs and other road traffic, as well as from diesel trains.

Whilst the NATA appraisal described above incorporates environmental issues into the AST, further more detailed work on the environmental impacts of changes in traffic has been undertaken by Posford Haskoning and others, and reported in the ES for the scheme.

In addition, it is understood that a separate EIA will be undertaken, on behalf of the SRA, in respect of the proposed Felixstowe to Nuneaton (F2N) Freight Upgrade. This is a scheme to improve both the gauge and capacity of the cross-country route between the Haven Ports and the West Coast Mainline (as described in *Section 4* of this report). The EIA for F2N is expected to cover, amongst other things, changes in noise and air quality brought about by increased train movements on this line.

2.8 RISK ASSESSMENT

Offloading of large containers from ships, and subsequent transport by road and rail, is a relatively low risk process in cases where containers may contain hazardous substances.

A full risk assessment for activities within the port has been undertaken and reported in the ES for the Bathside Bay scheme. For the purposes of this TA, the risk of hazardous release on the transport network has been considered.

3 RELEVANT TRANSPORT POLICIES

3.1 INTRODUCTION

Transport policy for the area is guided by a range of policies at the national, regional and local level. In some cases, this is also informed by policy set by the European Commission (EC). The way in which the proposed Bathside Bay scheme accord with transport policy is described in this section.

Particular emphasis has been placed on describing policies regarding the movement of freight, and the role which rail can play in this.

3.2 EUROPEAN TRANSPORT POLICY

3.2.1 White Paper on European Transport Policy

The White Paper, *European transport policy for 2010: time to decide* [1], proposes an Action Plan aimed at bringing about substantial improvements in the quality and efficiency of transport in Europe. It serves as the EC's transport programme for the present decade and, amongst other things, outlines proposals to shift the balance between modes of transport through actions such as transport pricing.

Among some 60 recommendations is a policy to encourage the linking-up of the different modes of transport and promote rail, maritime and inland waterway transport. Although rail transport is promoted as the key strategic sector on which the success of the efforts to shift the balance between modes will depend, the White Paper also promotes the use of short sea shipping and the development of motorways of the sea.

Amongst the initiatives proposed in the White Paper is a programme to promote intermodality (known as the Marco Polo programme). One of the objectives for this is to support measures which will lead to substantial shifts from road to other modes.

The White Paper acknowledges that, whilst it will not be possible to establish a complete rail network reserved for freight, investment must encourage the gradual development of Trans-European corridors for priority or even exclusive use for freight trains. It further acknowledges that rail access to ports provides an essential link in multi-modal corridors giving priority to freight.

(1) Commission of the European Communities (2001) White Paper, European transport policy for 2010: time to decide, COM (2001), 370 final, Brussels, 12-9-01.

3.2.2 European Union Green Paper on Ports Infrastructure

The Green Paper of December 1997 (1) is concerned with, amongst other things, the efficiency of ports and maritime infrastructure and their integration into the multi-modal Trans-European network.

The Paper notes the importance of ports as crucial connecting points, transferring goods and passengers between maritime and land-based modes. It highlights the fact that improved port efficiency will contribute to the integration of modes in a single system, on condition that there is interoperability and interconnection between systems.

3.3 NATIONAL TRANSPORT POLICY

3.3.1 The Transport White Paper

The White Paper, *A New Deal for Transport: Better for Everyone*, issued in July 1998, aims to create a better, more integrated transport system to tackle the problems of congestion and pollution. It commits to various targets and monitoring and sets out in detail the measures needed to secure change.

The Paper notes the importance of ports as a link in the supply chain and sets four key policies:

- to promote UK and regional competitiveness by encouraging reliable and efficient distribution and access to markets;
- to enhance environmental and operational performance by encouraging the provision of multi-modal access to markets;
- to make the best use of existing infrastructure, in preference to expansion wherever practicable; and
- to promote best environmental standards in the design and operation of ports, including where new development is justified.

It goes on to note that the SRA will be responsible for reviewing the scope for improving rail access to major ports and cites the work already started as part of F2N.

The White Paper strongly supports the objectives of the EC's Green Paper on ports and maritime infrastructure with respect to the integration of ports into the Trans-European network.

(1) Sea Ports and Maritime Infrastructure, European Commission Green Paper, COM (97) 678, 1997.

3.3.2 Transport 2010: The 10 Year Plan

The 10 Year Plan was published in July 2000 and picks up on a number of the themes described in the Transport White Paper. Put simply, its stated aim is to transform the UK's transport infrastructure over the next 10 years.

One of the Plan's objectives is to increase the use of the railway by freight with the aim of increasing rail freight's share of the market to 10% by 2010. This represents an increase of 80% in the total amount of freight carried by rail, or in other words a reduction of around 1 billion annual lorry trips. Gauge and capacity enhancements on F2N is highlighted as one of the projects that it is expected will be implemented during the life of the Plan.

A progress report on the 10 Year Plan was issued by the Department for Transport (DfT) in December 2002 (1) . This describes the work that has been achieved in the 18 months since April 2001. Amongst other things, the report notes the progress that has been made with respect to gauge clearance works for F2N.

3.3.3 Modern Ports: A UK Policy

Government policy for the UK's ports is guided by *Modern Ports: A UK Policy*, issued in November 2000. The aims of the ports policy are reiterated in the document, as being to promote:

- UK and regional competitiveness;
- high nationally agreed standards; and
- the best environmental practice.

The policy notes that pressure for expansion is greatest at container and ro-ro (2) ports.

It is noted that many shipping companies use UK ports for transhipping goods to or from other countries, which increases the range of markets available to UK customers and brings competitive benefits to industry. The document highlights Felixstowe (which is also operated by HPUK) as a port where over 30% of containers handled are in transhipment, thus reducing the amount of goods that have to be moved inland.

The policy recognises that port expansion will inevitably generate inland traffic and it is a stated objective to improve access by forms of transport other than road vehicles. It is also recognised that it is in a port's interest to minimise congestion and delays on the surrounding road network so as not to detrimentally affect their customers' businesses.

(1) Department for Transport (2002) **Delivering Better Transport: Progress Report**, December, DfT Publications.
(2) roll on-roll off traffic

Three factors are highlighted as being essential for customers using roads to connect with ports. These are:

- good access to port facilities;
- clear connections from the port to the main road network; and
- good access through the network to and from their businesses and markets.

Growing ports are advised in the policy to work with local authorities to ensure sufficient capacity and traffic flows.

The importance of port freight to the railways is also noted, and the policy describes the factors important for customers using rail services. Essentially these are the same as for road users, viz:

- good access to port facilities;
- clear connections to the main network; and
- means of avoiding congestion and bottlenecks on the network.

The policy document stresses the Government's aim for more freight to be moved by rail and notes that not only are ports successfully moving in this direction but that rail freight operators are keen to win more rail business. The ability of the rail network to meet growing demand is highlighted as a challenge. A programme of priority freight routes linked with the deep-sea ports is described.

3.3.4 The SRA's Freight Strategy, May 2001

The principal aim of the Freight Strategy developed by the SRA is to deliver the 80% growth in rail freight described in the Government's 10 Year Transport Plan. A number of principles are espoused in the strategy, including the following:

- that freight growth is essential, and not an optional extra;
- that the SRA's role in this context can be summarised as how they can help freight grow; and
- that the SRA needs to be proactive in the face of obstacles to growth.

The strategy highlights various constraints to securing rail freight traffic, amongst them the increasing use of 9'6" (or "S45") units, which require greater height clearance in tunnels, for example (see *Section 4.4.4*, below, for a more detailed description). The SRA, in its strategy, recognises that it must also address other important issues, including:

- the provision of new trunk route capacity;

- specific network connections; and

- the ability to respond to structural changes to freight markets, such as new port developments.

In considering enhancements for the trunk routes, the SRA's stated aim in the strategy is to provide W12 gauge, which allows all 9'6" units to be carried, thereby accommodating all deep-sea port traffic. It also notes that the network should eventually be capable of carrying trains up to a total of 775 m in length.

The strategy makes explicit reference to the capacity and gauge enhancement proposed for F2N. This is described as a Phase 1 project, which refers to schemes that are well developed and can be delivered within two to five years and which address some of the most immediate constraints for freight traffic. The scheme is designed to provide additional capacity for freight growth as well as relieving capacity on existing lines. The strategy describes the following work which is required to be undertaken:

- increasing line capacity, including some signalling and track modification;
- provision for continuous 24-hour operation; and
- gauge clearance to W12 gauge.

The scheme is described in greater detail below, in *Section 4.4*.

In general, the strategy notes that the SRA will plan ahead for the rail network (within value for money and affordability criteria) to serve new port capacity wherever this is ultimately provided.

3.3.5 The SRA's Strategic Plan, January 2002

The Strategic Plan was published eight months after the Freight Strategy. It sets out a series of projects and timescales to deliver the targets set out in the Government's 10 Year Transport Plan and, not surprisingly, takes forward many of the themes of the Freight Strategy.

The plan makes specific reference to schemes designed to provide a national network of freight routes offering access to heavier, wider and higher freight trains throughout the day. It notes that the programme for F2N is being designed to allow works to be accelerated so that the heavier and wider loads can use it at the earliest available opportunity. The plan notes that design work has begun, together with smaller scale enhancements for early delivery. The programme for the scheme shows completion as being at 2010, with implementation starting in 2003.

3.3.6 The SRA's Strategic Plan, January 2003

A revised version of the Strategic Plan was published in January 2003. It notes that freight tonne/km by rail have increased by 7.1% in the preceding year. It

also notes that the 80% growth target for rail freight, as well as general freight support, have been carried forward into the new plan.

The plan describes how the first phase of the F2N upgrade (regauging of the alternative route through London) will be implemented during 2003/4. It also highlights the fact that, in addition to Freightliner, EWS now operates out of Felixstowe. In addition, it notes that the ongoing upgrade of the West Coast Mainline (WCML) delivers the capacity for 60-70% more freight traffic.

It stresses the need to link key container ports to the WCML to make use of the capacity that is available. It notes the present priority being given to the London route from Felixstowe and Harwich and that the cross-country route (to Nuneaton) is still under development. It also notes that F2N will be upgraded for 650 m long trains, and not 775 m as described in the SRA's Freight Strategy.

3.4 REGIONAL POLICY

3.4.1 Existing Regional Planning Guidance

The current, relevant Regional Planning Guidance (RPG) for the proposed Bathside Bay development is RPG9, Regional Guidance for the South East (March 2001). The Tendring coast is identified in the guidance as one of the region's Priority Areas for Economic Regeneration.

The RPG states at paragraph 9.21 that the Government's ports policy document will develop a strategy following on from the Transport White Paper, but it is noted that "*the reliable and efficient distribution of goods depends in part upon a vigorous ports industry*". Harwich is identified as one of the regionally significant ports in the south east (paragraph 9.24) and Policy T7 states that:

> "*The sustainable development of sea ports and port facilities (including road and rail access), should be supported for international deep sea, short sea and coastal shipping*".

The existing Regional Guidance for East Anglia (RPG6, November 2000) also has some relevant comments. It states at paragraph 2.9 that:

> "*Felixstowe, together with nearby Harwich in Essex, is a port of global significance and there are a number of smaller but important ports – Great Yarmouth, Ipswich, Lowestoft, Kings Lynn and Wisbech.*"

3.4.2 Consultation on Options Leading to RPG14 for the East of England

In November 2002 the East of England Local Government Conference (EELGC) issued a consultation document for RPG14. This is the first step towards a 20 year strategy for the region covering, amongst other things,

transport and the environment. This RPG will eventually replace both RPG6 and RPG9.

EELGC have a stated target of doubling rail freight by 2010, and quadrupling it by 2020 (1) .

The consultation RPG notes (at paragraph 2.10) that the East of England's ports "*play a significant role in the movement of people and freight between the UK and the rest of the world*". Amongst its objectives is the aim:

> "*to ensure that infrastructure programmes….will meet current deficiencies and development requirements; and that the responsible agencies commit the resources needed to implement these programmes*" (paragraph 3.6).

It notes also (at paragraph 7.30) that:

> "*particular focus may be needed on the 'Haven Gateway'* [and that] *the Haven Ports are an emerging economic driver for this part of the region*".

On the specific issue of freight, the consultation RPG states that:

> "*policies will be designed to promote a fully integrated freight distribution system which makes the most efficient and effective use of road and encourages the carriage of freight by rail and water* (paragraph 10.57).

Paragraph 10.64 of the document goes on to state that:

> "*policy will be developed to support the sustainable development of seaports and ports facilities for international, deep sea and coastal shipping*".

The timing for the RPG is that a draft will be prepared in late 2002 or early 2002, with consultations late in 2003. After a public examination, the final RPG14 is expected to be issued in 2004.

3.4.3 South East and Anglia Ports Strategy, July 2002

The Regional Ports Strategy was undertaken for the South East and Anglian Ports Local Authority Group (SEAPLAG) to provide strategic planning and transport guidance for the sustainable development of ports and related infrastructure in the East of England, the South East and London (2) . The aim is to include this guidance in Regional Planning Guidance, Regional Transport Strategies and the Mayor's Spatial Development and Transport Strategies for London. The strategy provides a 15 to 30 year framework for investment and planning.

(1) Rail Freight Meeting – Haven Ports, 6 November 2002.
(2) The findings of this report were subsequently criticised by the British Ports Association (BPA) and the UK Major Ports Group Ltd (UKMPG) for, amongst other things, lack of consultation with the ports industry.

The strategy highlights as critical the availability of reliable and efficient landside transport networks. It notes that the potential role of rail at some ports is under exploited.

3.4.4 SEAPLAG Ports Demand Forecasting Report, 2002

This report analyses recent trends in usage of ports in the region and develops forecasts of future port usage for 2011 and 2016, for both freight and passenger traffic. It is based on a strategic level study and, as such, does not purport to provide a detailed analysis of demand at each individual port.

On the subject of inland traffic movements, the report notes that:

> "*The SRA aim is to focus most investment on those lines with a strong potential for rail freight growth, rather than dissipate it more thinly across access to the whole port system. That is why these investments are closely tied to three of the main container ports since these have the greatest potential for increases in rail traffic. The investments are to ensure that these growth opportunities are not lost because of rail capacity restrictions.*" (p 49)

3.4.5 Multi-modal Studies

Overview

Multi-modal studies have been undertaken by regional Government Offices throughout the UK to determine priorities for major transport investment within particular study areas or route corridors. Three such studies potentially have a bearing on the proposed Bathside Bay development, as described below.

The methods for undertaking the studies are defined in GOMMMS [(1)] , and are based on the principles of NATA. Some 35 of these studies have either been completed or, at the time of writing, are close to completion, across the country.

London to Ipswich

The London to Ipswich Multi-modal Study (LOIS) commenced in September 2000 and reported its findings at the end of 2002. The study area for LOIS is roughly bounded by the M11/A11, the A14 and the sea, with the core study area focused on the A12 from the M25 to Ipswich, the A120 between Colchester and Harwich and the GEML.

The study's four main objectives were as follows:

- to create opportunities for modal shift from the car;
- to improve the management of freight;
- to protect and enhance the built and natural environment; and

(1) DETR (2000) op. cit.

- to facilitate economic growth and regeneration.

The recommendations of the study include the following:

- dualling of the A120 between Hare Green and Harwich;
- dualling of the A120 between Braintree and the A12;
- widening the A12 to six lanes between the M25 and A120 (Ardleigh junction); and
- further widening of the A12 north of the A120 (Colchester to the Copdock roundabout).

The study also recommends road user charging along the A12 after 2011, in line with a number of other multi-modal studies.

Cambridge to Huntingdon

The Cambridge to Huntingdon Multi-modal Study (CHUMMS) was commissioned principally to address transport problems on the corridor between Cambridge and Huntingdon, concentrating on the A14. However, it was recognised that the area of influence included the axis between the east coast ports and the M1 and M6 motorways.

The study reported its findings in August 2001. Its principal recommendations include the following:

- provision of a guided bus system on the disused Cambridge to St Ives railway corridor;
- widening part of the A14 to dual-3 and improvements to selected junctions;
- construction of parallel roads along the widened section of the A14; and
- consideration to be given to an Eastern Bypass of Huntingdon.

The Final Report notes that the F2N route will be enhanced for freight, with the result that significantly more containers will be able to access the Haven Ports: this is seen as a vital contribution to the 10 Year Transport Plan's target for an 80% increase in rail freight volumes. The study declares support for the F2N proposals and calculates that lorries on the A14 could be reduced by some 4% as a result (1) .

(1) The Rail Freight Group (the representative body of the rail freight industry), in its comments on the CHUMMS Final Report, has expressed concern about the lack of encouragement given in the study to cause modal shift of freight from road to rail in the A14 corridor.

London to South Midlands

The London to South Midlands Multi-modal Study (LSMMMS) covers a very large study area from the M25 in the south, to an area just south of Rugby and Peterborough. It focuses on three major north-south corridors: the M1/WCML/Midland Mainline; the A1/East Coast Mainline (ECML); and the M11/West Anglia Mainline. Two further key corridors considered in the study are the A14 (west of Huntingdon and east of Cambridge) and the A421/A428 corridor, which also includes the proposed East-West Rail scheme.

Work on LSMMMS concluded in January 2003 and, at the time of writing, its recommendations are with the Government Office for the East of England for its consideration. Amongst the study's key recommendations are:

- a programme of motorway and trunk road widening including M1 Junctions 6a to 13, M11 Junctions 8 to 14 and A14 from M1 to east of Cambridge;
- a series of key bypasses;
- expansion of rail services on existing north-south lines, to facilitate both passenger and freight movement;
- providing new rail services between Bedford and Northampton, and between Oxford, Milton Keynes, Bedford and Cambridge; and
- additional measures to reduce over-reliance on the car and encourage use of public transport, including better bus/rail integration and new parkway stations.

3.5 LOCAL TRANSPORT POLICY

3.5.1 Essex and Southend-on-Sea Structure Plan

The Replacement Structure Plan was adopted in April 2001. Employment generation is noted as a strategic priority for Tendring.

Policy BIW10 of the structure plan states that:

> "*The port facilities at Harwich and the Thameside wharfage facilities are of national economic importance and will be supported as follows:*
>
> *1. Improved access facilities by road and rail will be provided and encouraged;*
> *2. The provision of improved port facilities at Harwich International Port within its existing site, and through the future development at Bathside Bay, will be supported;*

3 Existing and potential wharfage facilities with a Thameside frontage will be retained and safeguarded for the future needs of port related development".

3.5.2 Essex Local Transport Plan

Overview

Essex County Council's Local Transport Plan (LTP) was submitted to Government in provisional form in 1999 and was issued as a full five-year plan in 2000.

The Council's transport strategy seeks to accomplish the overall vision and aims of the LTP by carrying out five major objectives, known as Integrated Transport Themes (ITTs). These are outlined below.

Policy ITT1: Encouraging Sustainable Development and Travel Patterns

Policy ITT1 aims to reduce the need to travel via the planning process. This will be achieved by ensuring that new development or expansion of existing sites result in sustainable transport usage. As part of the sustainable transport theme, this policy aims to encourage modal shift, particularly through transport management plans.

With reference to the transport of freight, current rail freight activity in Essex comprises mainly bulk materials and involves import/export flows through Harwich International Port.

The mitigation of the effects of freight transport on the environment, safety and congestion will occur in two ways:

- through monitoring sites adjacent to the rail system and ports where there is a reasonable chance of sustainable freight activity; and
- through advice given by the Council on the potential impacts arising from new developments.

Policy ITT2: Creating an Inclusive Transport System by Providing Choice and Accessibility

This main aim of Policy ITT2 is to provide alternative choices of transport, in order to reduce the projected traffic growth from existing car based traffic generators.

As access to rail in Essex is limited, improvements need to be made for the area to become an attractive option for businesses.

Policy ITT3: Managing Overall Travel Demand and the Transport Network

The main aims of Policy ITT3 include:

- network optimisation to achieve a balance between the different forms of transport so that one mode does not dominate the system to the detriment of others; and

- maintaining existing assets such as existing highway networks and structures, to provide an effective and safe network for road users.

Policy ITT4: Expanding Transport Capacity

Policy ITT4 caters for essential and inevitable traffic. It acknowledges that new development could generate significant new travel demand. Accommodating this demand inevitably means that road and/or rail capacities will be enhanced.

The LTP recognises the significant maritime development potential at Harwich International Port, and the County Council is continually seeking improvements to the transport infrastructure.

Policy ITT5: Protecting and Enhancing Rural and Urban Environments and Communities

Policy ITT5 aims to create safe and attractive environments for communities which are free from the effects of motorised traffic that causes pollution and increases the risk of accidents.

The County Council wants to see stricter compliance with national and local regulations for protection of the environment and fair competition between operators. To achieve this, use will be made of licensing powers, as well as measured control over lorry speeds, noise, parking and load limits.

3.5.3 Tendring District Local Plan

The local plan was adopted on 14 April 1998. The reclamation and development of Bathside Bay are noted as being fundamental to the plan's strategy for Harwich. It is identified as providing land for various uses including industry, warehousing, residential and community uses. The plan notes that the 1988 Act provided the reclamation and development powers for port operations (paragraph 14.13.1).

3.5.4 Essex Railway Policy

In August 2001 Essex County Council issued a policy document, *Essex Railway Policy – on the right lines*. It notes that the County Council fully supports initiatives to divert freight traffic from the GEML and that it would also like to see improvements made to Ipswich Tunnel to take 9'6" containers. It further notes that development of the proposed East-West Rail scheme would assist rail freight movement.

3.5.5 Essex Sustainable Distribution Strategy – Consultation Draft (Undated)

This describes Essex County Council's policy for the development of an integrated, sustainable distribution system.

It notes that the A12 (between the M25 and the A14) and the A120 (from the M11 to Harwich) form of the Trans European Network, and as such cater for high volumes of traffic. It further notes that highway improvement proposals from the County Council and others should ensure that within the next decade the worst areas of congestion on the A120 and elsewhere should be improved.

It describes the use of the rail network for freight, highlighting the fact that the proposed Bathside Bay development is likely to lead to a significant increase in rail traffic.

The document defines a total of 16 "strategy elements", designed to deliver the County Council's sustainable distribution objectives. These include the creation of a co-ordinated goods vehicle route hierarchy and specific improvements to the highway network (including the A120 between the M11 and Harwich).

3.5.6 North West Essex Rail Study

This is a feasibility study to assess the viability of a new link to the GEML, with the aim of creating more northbound heavy rail and removing traffic from the southern end of the GEML.

3.5.7 A12 and A120 Route Management Strategy

The Highways Agency prepared a Route Management Strategy in June 2001 for both the A12 and A120. This is a 10-year programme, aiming to maximise the contribution of these two routes towards the Government's transport objectives. The strategy has proposed a number of high priority actions with respect to the A120, including:

- improving the A12/A120 Crown Interchange westbound off-slip to Colchester;
- signalising the A12/A120 Crown Interchange; and
- installing a roundabout at the A120 Hare Green/Harwich Road junction.

3.6 CONCLUSIONS

It is clear that efficient and reliable accessibility to a new container port is crucial. The Transport White Paper of 1998 highlights the importance of ports in the supply chain and notes in particular the need to make full use of existing infrastructure. Both the White Paper and the Government's

subsequent 10 Year Transport Plan stress the need to improve rail access to major ports and highlight the development work being done by the SRA in respect of links to the Haven Ports.

In this context, Bathside Bay enjoys a number of strategic location benefits:

- it is situated adjacent to the existing Harwich International Port, a nationally and internationally important multi-purpose freight and passenger port, strategically located in the south east of the UK;

- it has direct access onto the A120(T), part of both the national trunk road network and the European Union's Trans-European Transport Network; and

- it links directly into the national rail network, providing access to markets throughout the UK via a number of routes.

Government policy for ports is guided by *Modern Ports: A UK Policy*. This recognises that port expansion will inevitably generate inland traffic. Three factors are highlighted as being essential for port customers, with respect to both road and rail facilities:

- good access to port facilities;
- clear connections to the road and rail networks; and
- good access to markets, avoiding congestion and bottlenecks.

The proposed Bathside Bay development is in a unique position as a new container facility to take advantage of the advantages offered by its location among the Haven Ports. In addition, HPUK has given a great deal of consideration to both the siting of the development and the way in which it links into the national and local transport networks.

The SRA has a clear remit to promote the use of railways and secure the development of the network. In its Freight Strategy of 2001, the SRA promotes the provision of new trunk route capacity and recognises the need to respond to new port developments by planning ahead for the rail network. It makes specific reference to routes into and out of Harwich and Felixstowe.

The SRA's Strategic Plan was subsequently issued in 2002, and revised in 2003. This focuses on the need to link key container ports to the WCML. The stated policy of the SRA is to deliver an 80% growth in the use of rail freight by 2010/2011. The SRA's initiatives to achieve this include upgrading key routes to and from the UK's major ports, including the Haven Ports.

There are various initiatives to improve the road infrastructure linking the Haven Ports to the rest of the national trunk road network. The Highways Agency's Route Management Strategy for the A12(T) and A120(T) includes a number of high priority actions with respect to the A120(T). The London to

Ipswich Multi-modal Study also recommends a series of upgrades for the A120(T).

Local policies recognise the importance of further development at Harwich International Port and seek to improve the adjacent transport infrastructure.

4 BASELINE TRANSPORT CONDITIONS

4.1 INTRODUCTION

This section of the report is concerned with existing, and future baseline, travel characteristics associated with the proposed development. It deals primarily with accessibility to the development site by different modes, describing the existing situation as well as outlining any transport developments which are expected to take place in tandem with the proposed scheme.

Although reference is made in this section to travel characteristics that are also likely to prevail once the proposed scheme is operational, this issue is dealt with principally in *Section 5*, which describes the levels of traffic expected to be generated by the development.

Brief reference is also made herein to measures that are being developed to promote a choice of access to the site, although this subject is covered comprehensively in *Section 6*, under the heading of "Mitigation", and also in *Annex C*.

4.2 THE HIGHWAY NETWORK

4.2.1 *Role of the Highway Authorities*

The Highways Agency was formed in 1994. It is responsible on behalf of the Secretary of State for Transport for the management, maintenance and improvement of the trunk road and motorway network. The Agency's key objective is to make better use of the existing network through various measures, including active traffic management and network control measures.

Under Section 1 of the Highways Act 1980, Essex County Council are the highway authority for all highways in the county except trunk roads and motorways.

4.2.2 *The Existing Network*

The main road to be potentially affected by road vehicles associated with the development is the A120(T) (see *Figure 1.1*). From the A12(T)/A120(T) Crown Interchange to Hare Green, the road was built as a dual-carriageway as part of the Colchester Bypass in 1982. The section of road east of Hare Green is largely single carriageway, with short sections of dual-carriageway at a number of junctions. The road has been improved over the years, with single carriageway bypasses constructed, to accommodate traffic flows from Harwich and Wix.

The A120(T) carries up to around 30,000 vehicles per day on the dual carriageway section and up to 12,000 vehicles per day on the single carriageway [1]. A large proportion of these vehicles comprise HGVs and other vehicles travelling to and from the port.

The A120(T) therefore performs an important national function for the movement of freight and passenger traffic travelling between the port of Harwich and the national road network. It provides for the movement of abnormally heavy, wide and high vehicles to and from Harwich and is also the main route between Harwich and other towns in the region.

4.2.3 Baseline Traffic Flows

Typical baseline flows on indicative sections of the A120 and the adjacent part of the A12(T), plus parts of the local road network [2] , are shown in *Table 4.1*.

Table 4.1 Baseline PM Peak Traffic Flows (2-way)

Road	Section	PM peak	% HGVs
A120(T)	Ingestre St to Port Access r'bout	358	1.4
	West of Port Access r'bout	355	11.3
	East of Ramsey Bridge r'bout	678	10.9
	West of Ramsey Bridge r'bout	1120	7.1
	West of Horsley Cross r'bout	1119	9.8
A12 (T)	North of A120	1686	5.8
B1414 Oakley Road	South of Hewitt Road	183	N/A
B1352 Church Hill	South of A120(T)	793	1.1

It can be seen from the table that HGV content along the A120 remains broadly consistent, at between about 8% and 11% of the overall flow. The numbers of HGVs decrease considerably at the eastern end of the A120. Similarly, HGV content on the B1352 is very low, at around 1%.

4.2.4 Proposed Road Improvements

As noted in *Section 3*, above, the Highways Agency's A12/A120 Route Management Strategy [3] proposes, amongst other things, improvements to the A12/A120 Crown Interchange at Colchester and the A120 Hare Green/Harwich Road junction.

As also noted above, the recommendations of the LOIS study included the dualling of the A120 between Hare Green and Harwich and from Braintree to the A12. This is in addition to the various proposals for the A12. The analysis was based on a design year of 2016, but with recognition that the strategy

(1) Highways Agency (2001) **A12 and A120 Route Management Strategy**, June.
(2) this includes the B1414 and the B1352, which will be used to move topsoil from Hamford Water to Bathside Bay during part of the construction phase, as described in *Section 5.1*
(3) Ibid.

should be robust over a longer period (2031). Various Essex County Council proposals have also been put forward.

4.2.5 Accident Data

Accident records have been obtained for the A120 and relevant local roads within the study area. This is described in detail in *Annex C*.

4.2.6 Sensitive Receptors

The main receptors [(1)] in close proximity to the road network in Harwich include residential properties in the vicinity of Norway Crescent and Sweden Close, near the A120/Parkeston Road roundabout. The closest point of Sweden Close to the A120 is approximately 30 m away, while Norway Crescent is situated further from the A120, approximately 130 m away.

Other sensitive receptors identified include residential properties at Wix Road in Ramsey, which are in close proximity to the Ramsey Bridge roundabout. The closest point of these residences is approximately 15 m from the A120 route. A number of residential properties at Wix are also located in close proximity to the route, including a school, located approximately 115 m from the A120.

There are many other villages beyond Harwich. From earlier scoping work, and from discussions with the Highways Agency and Essex County Council, it is considered that roads beyond the A120 are unlikely to experience significant increases in traffic once the scheme is operational. However, the potential for "rat-running" forms part of this study.

In addition, movements of HGVs on the local road network during the construction phase have been considered. As described in *Section 5.1*, below, some HGVs bringing materials into the site are expected to travel from Hamford Water (to the south of Bathside Bay) via the B1414 and B1352, before joining the A120(T).

The B1414 is a single carriageway road with a good road surface and a number of bends. There are frequent bus stops on the road, which is generally lightly trafficked (flows are given in *Table 4.1*). Some HGVs currently use the road.

The B1352, westbound from its junction with the B1414, is slightly wider and has a dedicated cycle path (part of the Sustrans network, see *Section 4.6*). Heading east, the B1352 has a 7.5 t weight restriction. There is a school adjacent to the road before it joins the A120(T) at the Parkeston roundabout.

(1) in the context of this report, a receptor is taken to be mean residents, or others, who are likely to be sensitive to significant changes in traffic

[**plates – B1414 and B1352**]

4.3 THE RAIL NETWORK

4.3.1 Role of the Rail Authorities

The SRA was established under Section 201 of the Transport Act 2000 and became fully operational on 1 February 2001. Section 205 of the Act provides that the purposes of the SRA are to:

- promote the use of the railway network for the carriage of passengers and goods;
- secure the development of the railway network; and
- contribute to the development of an integrated system of transport passengers and goods.

Under the Transport Act, the SRA has powers to enter into agreements or other arrangements for the purpose of securing the provision, improvement or development by others of any railway services or railway assets.

Operations and maintenance of the rail network are ultimately the responsibility of Network Rail. Network Rail acquired Railtrack plc in October 2002. Railtrack is now the operating company within the Network Rail Group of companies and is responsible for maintaining the track, signals, tunnels, bridges, viaducts, level crossings and stations in the ownership of Network Rail. For network enhancement purposes, Railtrack essentially has the role of contractor and (to some extent) advisor to the SRA.

4.3.2 Overview of Existing Network

Rail movements into and out of Harwich are made via a branch line between Manningtree and Harwich Town (see *Figure 4.1*). This line is double-tracked and is electrified. The line links into both directions of the GEML at a triangular junction at Manningtree, without the need to reverse.

From Manningtree, the GEML heads generally west towards London, where it links into the North London Line, and north through Suffolk and Norfolk to Norwich. At Stowmarket, a cross-country route heads off through Bury St Edmunds, Newmarket, Ely, Peterborough and Leicester, towards Nuneaton, where it joins the West Coast Mainline (this is the principal subject of the F2N project referred to throughout this report). These lines are all shown in *Figure 4.1*.

[**Figure 4.1**]

Section 4.4, below, describes in more detail the principal components of the rail network between Harwich International Port and the main inland terminals.

4.3.3 Sensitive Receptors

Much of the Harwich to Maningtree line is abutted by open land. There is housing either side of Wrabness Station and also at Mistley. At Manningtree there are receptors on either side of the track, including housing, a church and business units.

4.4 FREIGHT DISTRIBUTION

4.4.1 Introduction

It is important for a TA to be able to address the freight and distribution aspects of a new development. Whilst this would be a key issue for any major development (with respect to deliveries, servicing etc), it is particularly so in the case of a new container port, relying as it does on significant movements of freight into and out of the development.

Government's objectives for freight are outlined in the previous section of this report. These acknowledge that good access by road and rail is essential for customers using ports. In recognition of this, gauge clearance works are currently underway on the London alternative to F2N, in order to allow for freight growth and for larger containers to be moved between the Haven Ports and WCML (which is already cleared). The gauge on the London route out of the Haven Ports (see *Section 4.4.5*, below) will be upgraded by the end of 2004 – this will enable movement of 9'6" boxes on standard wagons from Felixstowe and, eventually, Bathside Bay.

Overall, Government wishes to encourage a significant increase in the amount of freight moved by rail by 2010. As noted in *Section 3*, these objectives are supported by both regional and local policy.

4.4.2 Freight Movement by Road at Harwich

Harwich International Port is the fourth largest port in the UK in terms of passenger numbers, handling some 1.3 million international passengers. It is also a conduit for the movement of imported and exported goods by road. A significant number of ro-ro movements have recently been transferred to the port.

Typical levels of goods moved by road are as follows [(1)] :

- ro-ro 242 000 lorries
- oil 406 000 tonnes

(1) source: Harwich International Port estimates for 2002

- bulk [1] 180 000 tonnes
- other [2] 28 000 tonnes.

All vehicles associated with these products access the port via the A120(T).

4.4.3 Historic and Existing Rail Freight Movements at Harwich

Previous Usage

As noted, Harwich is a major international passenger port. Originally a railway port, train ferries operated at Harwich for around 60 years up until 1988, travelling to Zeebrugge and Dunkerque.

The rail share for freight was historically very high, reaching some 95% of all freight movements up to the mid-1980s. At its peak in around 1985, maximum usage amounted to six container trains in either direction per day, each of up to 20-plus wagons of 60', to and from locations such as Halewood and Manchester, with seven trains accessing and departing from the train ferry.

Data from the late 1990s shows the rail share for container traffic to be still reasonably robust, as illustrated in *Table 4.2*. Container services were controlled by Railfreight up until 1994, when Stena Line took over. Rail freight continued until 2000, when operations finally ceased.

Table 4.2 Historic Rail Freight Traffic at Harwich International Port

	1998	**1999**
Import units	19,497	18,780
Export units	13,600	13,200
Total	**33,097**	**31,980**
Rail usage	2,813	5,985
% rail usage	8.5%	18.7%

Source: Hutchison Ports (UK) Limited

Current Usage

Freight trains continue to use the branch line into Harwich, although much of this traffic comes into and out of the yard at Parkeston Quay rather than being brought into the port by ship. Parkeston Quay is an EWS operating base, not just for Harwich but also to facilitate the company's operations at Felixstowe (performing much the same role as that which Ipswich performs for Freightliner). It also facilitates the movement of rail infrastructure maintenance and renewal materials.

(1) grain, mainly for export, with a maximum payload of 25-28 tonnes per truck
(2) including cement

Principal traffic flows include gas condensate in tanks to North Walsham in Norfolk, for Carless refinery, and aggregates in large/heavy wagons from Acton Yard. Indications for the long term future of this traffic are good. Container traffic currently accounts for some 5 000 TEU at the port.

There is also a regular service on EWS's *Enterprise* service (1) to and from Wembley Yard, linking into the trunk service network and using a wide variety of wagons. A key traffic is paper imported for Stora. There is also a daily, direct Enterprise link with Healey Mills, in West Yorkshire.

Rail connections at the port are good and, as is the case for the Port of Felixstowe, markets can be accessed throughout the UK via a number of routes on the national network (as described below).

Table 4.3 summarises the booked freight trains that currently leave Parkeston Yard via the Harwich to Manningtree line, Monday to Friday. All trains are diesel hauled, using Class 66 locomotives.

Table 4.3 Daily Trains Departing from Parkeston Yard

Departure time	Destination	Description
0415	Felixstowe	12 x 89′ cargo vans
0420	North Walsham	18 x 60′ petroleum tanks
0948	Felixstowe	8 to 12 x 89′ cargo vans
1255	Acton	10 to 13 x 60′ aggregates
1541	Felixstowe	54 SLU (1)
2030	Temple Mills	various infrastructure
2248	Wembley	mixture tanks/containers up to 74 SLU
0900	Ipswich (2)	Freightliner

(1) SLU = standard length unit (21′)
(2) Saturday only
Source: Harwich International Port

Trains arriving at Parkeston Yard are given in *Table 4.4*.

Table 4.4 Daily Trains Arriving at Parkeston Yard

Arrival time	Origin	Code
1700	North Walsham	6A33
2027	Felixstowe	7A53
0206	Healy Mills	7L56
0400	Temple Mills	7T73
0601	Acton	6L30
0731	Wembley	7L33
1200	Sat only	6A55

Source: Harwich International Port

(1) a fleet of container wagons which meet the specific 9'6" requirements of the container haulage market from ports

[**plates – class 66 loco and different container sizes**]

The trains given in *Tables 4.2* and *4.3* are all booked trains, but various special trains are run as required, including ballast trains over the weekend.

Trains departing the port are loaded prior to the engine being hooked on. Generally speaking, freight trains will be given a clear run, on green signals, to Manningtree. This is certainly the case at night, when there are no passenger trains on the line. Passenger trains are given priority on the GEML, where it is possible for freight trains to be subject to a wait of up to around five minutes.

Passenger train services on the branch line between Harwich Town and Manningtree generally run at a frequency of one every hour in each direction (see *Section 4.5*, below).

4.4.4 Securing Rail Freight Growth

Overview

As noted elsewhere in this report, it is the expectation of both HPUK and the SRA that a significant level of future container traffic at Bathside Bay will be taken on the rail network, in line with practice at other UK ports, including the Port of Felixstowe.

There are two potential constraints to securing significant levels of additional rail freight traffic: gauge clearance and line capacity. These factors are recognised throughout the rail and ports industries and are discussed below.

Gauge Constraints

UK loading gauge cannot currently accept all deep-sea containers on standard height wagons. At present, the majority of containers in use in the UK are 8'6" in height. However, increasingly 9'6" (sometimes referred to as "S45") units are being carried. These require greater height clearance in tunnels, and sometimes increased width, and much of the rail network is not equipped to deal with them.

Data from the Port of Felixstowe for the whole of 2002 shows that some 56% of all containers processed at the port are 40 foot in length (ie 2 TEU) (1) , a figure which is growing, and of these, just over 40% were 9'6" boxes. This latter percentage is also estimated to increase over the coming years, and it has been estimated that in approximately eight years' time nearly all 40 boxes will be 9'6" (2) .

To obtain the extra height required for 9'6" boxes, it is necessary to either increase the available height above the track, for example by raising bridges or lowering track, or to use special low floor wagons. These are in short supply and are also relatively expensive to build and maintain. Furthermore, the

(1) Hutchison Ports (UK) Limited, personnel communication
(2) based on the fact that the life of a container is eight years and virtually all new 40 foot containers are 9'6"

amount of train length needed to carry larger containers increases significantly over that required for smaller boxes.

The gauge which allows 9'6" boxes, 2 500 mm wide, on standard flat wagons is termed "W10". W12 allows the same height, but wider (up to 2 600 mm). The SRA strategy gives priority to port traffic and effectively, therefore, clearance to W12. Any new or completely rebuilt structures as part of the strategy will allow for W18 ("piggyback") gauge.

For indicative purposes only, *Table 4.5* illustrates the maximum height and width of container that can be carried on a standard wagon with a deck height of 1 000 mm above rail level.

Table 4.5 Simplified Guide to Loading Gauge Categorisation

Category	Max. height	Max. width
W6	>8'0"	2 500 mm
W7	8'0"	2 500 mm
W8	8'6"	2 500 mm
W9	8'6"	2 500 mm
W10	9'6"	2 500 mm
W12	9'6"	2 600 mm

Providing for 9'6" deep-sea boxes is acknowledged to be vitally important. Conversations with FOCs have demonstrated that the ability for the rail network to accommodate 9'6" containers is a key issue with respect to rail movements to and from the Haven Ports. Similarly, the Rail Freight Group (1) have stated:

> "*The highest priority must be given to the Felixstowe Nuneaton gauge enhancements to enable 9ft 6 boxes on this route. The increase in this size of container use in the UK is driven purely from external sources and there is a real danger that container traffic of this type will be lost to rail if these gauge enhancements are not carried out promptly.*" (2)

The accommodation of larger freight vehicles and 9'6" containers upon the network is critical to the SRA's Freight Strategy for meeting the growth aspirations of the rail freight industry. The SRA's stated policy is to provide gauge cleared routes between major ports and points of consumption. As noted, in considering enhancements for the trunk routes, the aim is to provide W12 gauge, which allows 9'6" units to be carried, thereby accommodating all deep-sea port traffic, and not just the smaller containers

There are two principal components to the movements of goods between Harwich International Port (and, therefore, the adjacent Bathside Bay

(1) in its response to: East of England Local Government Conference (2001) **Regional Transport Strategy Programming and Scoping Document**, June.
(2) see: www.rfg.org.uk

development) and the inland terminals: the branch line to Manningtree and the onward routes on the national network.

As noted, the Harwich to Manningtree branch line is double-tracked. Its loading gauge at present is W8 (as shown in *Table 4.6*, below). The main network has four routeings from Harwich (as shown on *Figure 4.1*):

- the GEML and the ECML to Yorkshire and the North East;
- the cross-country route to the Midlands (which is used by GB Railfreight out of Felixstowe);
- Cardiff via the GEML, North London Line (NLL) and the Great Western Mainline (GWML); and
- the NLL and WCML to the North West and North.

Table 4.6, below, shows the present loading gauge on the Harwich to Manningtree line, F2N and elsewhere.

Table 4.6 Loading Gauges on Selected Routes

Route/section	Gauge
Harwich-Manningtree	W8
Felixstowe-Nuneaton	
Felixstowe-Ipswich	W8
Ipswich-Ely	W8
Ely-Peterborough	W9
Peterborough-Nuneaton	W7
ECML	
Peterborough-Edinburgh	W9
GEML/NLL-WCML	
Ipswich-Stratford	W8
Stratford-Willesden (NLL)	W9
Stratford-Willesden (T&H)	W8
WCML	
Willesden-Nuneaton	W10
Nuneaton-Stafford	W10
Stafford-Weaver Junction	W10
Weaver Junction-Glasgow	W10

As indicated, at present the WCML is the only line already cleared for 9'6" containers. This line has the capacity for 60% to 70% more freight traffic [(1)] . The SRA notes that, in order to make full use of this capacity, key container ports need to be linked to this route. In its Strategic Plan it states that:

"A gauge-cleared connection to Felixstowe and Harwich can be made via the Great Eastern Main Line from Ipswich to London or the cross country (Fens) route via Ely and Peterborough. Both have gauge constraints. A scheme to clear the London route is being given top priority among the freight gauge projects and is expected to start in 2003. Further schemes are under development to increase gauge on the cross-country route and to provide more capacity overall, but these will take longer."

Capacity Constraints

The measurement of spare capacity on the rail network is a complex issue and depends on a number of factors, including the time of day and the needs of other passenger and freight customers. It is generally dictated by the availability of paths on the rail network.

One of the aims of the SRA's 2002 Strategic Plan was that all key routes on the rail network should eventually be capable of carrying trains up to a total of 775 m in length [(2)] . This has since been amended to 650 m [(3)] . The 650 m length can accommodate a Freightliner train of 30 standard wagons (capacity up to 30 x 40' and 30 x 20' containers ie 30 TEU in total). A typical maximum freight train at present is 24 wagons (and some of these are wasted as low loaders can only take one 40' container).

In the absence of definitive information, estimates vary as to the extent of paths available. Essex County Council's Sustainable Distribution Strategy [(4)] notes that the GEML has:

"enough capacity for growth of between 10-15% over the high peak hour, if all available train paths were to be used and all passenger trains were to be lengthened to 12 cars….".

One of the FOCs spoken to during the course of this study considers that spare capacity is available on both the GEML and the NLL and that these paths are likely to be sufficient for Bathside Bay traffic. Even were these not to be available, current works being undertaken by the SRA and Network Rail would provide the ability for extra freight to be carried (see below).

4.4.5 Proposed F2N Improvements

Gauge Enhancements

Network Rail has been commissioned by the SRA to deliver the railway enhancements necessary to accommodate larger freight containers and increased volumes of traffic between the Haven Ports and the WCML.

(1) SRA (2003) **The Strategic Plan 2003**
(2) the only route presently to 775 m standard is Cheriton to Wembley
(3) SRA (2003) op. cit.
(4) Essex County Council (undated) **Essex Sustainable Distribution Strategy: Consultation Draft**

The proposed programme of loading gauge enhancements is the first stage of improvements. It will entail works such as knocking through tunnels, replacing bridges etc. To provide continuous route availability to the new freight traffic, the alternative London route is being cleared first for the increased gauge. This is the route from Ipswich on the GEML and NLL, which joins the WCML at Willesden (as shown in *Figure 4.1*). At the time of writing, work has commenced on the ground (early 2003), to be completed during 2004.

Development work for gauge clearance on the cross-country route is still continuing. This work is designed to be implementable at short notice. It is expected that clearance in itself would provide up to around six new paths over and above what may currently available on this route (current estimates put this at a minimum of two spare paths per day). Transport and Works Act (TWA) powers would not be required and it is understood that works could be completed by 2007/8.

The result of this is that, from 2004, all trains leaving Felixstowe which use the London route (currently around 800 containers a day are moved by Freightliner along the GEML [(1)]) will be able to travel north carrying 9'6" boxes on conventional wagons. From 2008, all trains from Felixstowe and Bathside Bay (via either London or the cross-country route) will be able to carry 9'6" boxes. At the same time, an extra six or so paths would be made available.

The benefits of the ongoing and proposed gauge enhancements are, therefore, clear: they will bring extra capacity, whilst at the same time freeing up the diversionary London route. Proposed capacity enhancements (described below) would bring significant further advantages.

Capacity Improvements

In addition to the ongoing gauge clearance work, a certain amount of development work is proceeding in respect of capacity enhancements to the cross-country route between the Haven Ports and the WCML. As part of this work, a number of bridges on this route have recently been rebuilt to W12 standard. This work remains a priority for the SRA, as outlined in their 2003 Strategic Plan.

More general studies are currently being undertaken by the SRA with respect to the amount of freight capacity that is presently available on the wider network, including the GEML, the NLL and the route between Ipswich and Nuneaton. This work is due to report during late 2003. A three-stage approach is being adopted by the SRA, taking into account the proposed Bathside Bay development and forecast growth at Felixstowe, as well as other potential developments:

(1) Essex County Council (undated) op. cit.

- identify existing unused capacity;

- assess the level of additional capacity that can be created through, for example, making changes to the present timetable; and

- identify what extra capacity is needed and how to achieve it through infrastructure enhancements, using a "step change" approach ie assessing the benefits gained for each item of cost incurred, for example providing a new loop or flyover.

Most of the works which are likely to be required would fall within Railtrack's permitted development powers. Some TWA powers would be required for the anticipated 26 additional paths that could be made available. With no TWA requirements, it is likely that around 13 extra paths could be achieved. This is in addition to the six or so paths which could be gained from the proposed F2N gauge clearance (and any existing paths that are available).

These improvements would turn F2N into a true "primary freight route", producing a step change in capacity that would bring major benefits over a substantial part of the freight network. It would also offer a solution to the movement of freight which does not require the use of London routes.

Including the six extra trains gained from gauge clearance, the works would create a minimum of 19 extra freight paths per day in each direction between Felixstowe/Harwich and Nuneaton, and a maximum of 32 paths (1) . These would be good end-to-end paths, providing excellent links with the WCML as well as ECML at Peterborough and the Midland Mainline (MML) at Leicester.

Including the gauge enhancements, the principal benefits of F2N include the following:

- the ability for the network to carry 9'6" boxes economically;

- a large increase in the number of paths available to cater for Bathside Bay as well as Felixstowe traffic, allowing for freight growth;

- more productive use of paths (through longer trains);

- the creation of a diversionary route for Bathside Bay and Felixstowe traffic via Peterborough and Leicester, which would normally be routed via London; and

- the provision of faster, more predictable journey times and continuous 24-hour operation.

It is anticipated that the works would provide capacity for 650 m trains to access the network, with no passing loops.

Overall, these conditions will provide an improved operating environment for both existing freight companies and newcomers to the market, bringing an expected increase in rail freight share and opening up markets into new areas (see *Section 6* for further description of market innovations). Indeed, one of the FOCs spoken to during the preparation of this report expressed the opinion that an increase in pathways on the wider network (that might be due, say, to the opening of the F2N route) would provide the sort of operational flexibility required to boost confidence in the network and provide further services.

At the time of writing, it is understood that, of all the schemes currently proposed by the SRA, F2N is the nearest scheme to completion. As noted, gauge enhancement work is already underway on the alternative London route. For the capacity works, the SRA expects Network Rail to take the work to "Level 4" costing, as set by Railtrack's "Project Accountability" matrix (2) , during 2004.

The SRA have expressed the view that rail traffic generated by the proposed Bathside Bay development, together with forecast growth at Felixstowe, could all be accommodated with the F2N gauge and capacity enhancements in place.

There is the potential for all the proposed F2N capacity works (including gauge clearance) to be completed by 2010/2011.

4.5 PUBLIC TRANSPORT PROVISION

4.5.1 Passenger Rail

Overview

Rail travel to and from the Tendring Peninsular is influenced by the Essex Community Rail Partnership. This is a partnership between Essex County Council, First Great Eastern, Railtrack and four District/Borough Councils. The Harwich to Manningtree line benefits from a programme of community based projects.

Manningtree to Harwich Town

The train service runs from Manningtree to Harwich Town, via Harwich International and Dovercourt. From Monday to Friday, there is generally one service per hour between 0730 and 1730. Prior to 0730 there are two services,

(1) one 650 m train can take the equivalent load of up to 60 HGVs

(2) This has been adopted as best practice across Railtrack for all projects and is recognised externally as part of the standard method of defining the process of development of Railtrack projects. The matrix contains outline descriptions of main activities and sets out key criteria for their achievement at each of six levels from inception, through feasibility to detailed design. Level 4 is the fifth level and relates to the refinement of single option and the binding commitment by the sponsor to Level 5 (the final level – pre-contract design/development). Completion of Level 4 is a major milestone in a project's development.

at 0619 and 0644. Between 1730 and 1930 there is a service approximately every hour, with the final service leaving Manningtree at 2305.

On Saturdays there is one train every hour between 0544 and 2044. After this there is a service at 2204 and the last train leaves Manningtree at 2305.
On Sundays there is a service every hour between 0815 and 2215.

Harwich Town to Manningtree

Trains travelling from Harwich Town to Manningtree, via Dovercourt and Harwich International from Monday to Friday operate approximately hourly between 0718 and 1615. There are also additional services operating at 0554, 0645, and 0800. In the afternoon and evening trains leave Harwich Town at 1645, 1745, 1825, 1852, 1935, 2010, 2115, and 2145. The journey lasts for approximately 20 minutes.

On Saturdays the service operates hourly between 0615 and 2015, with additional services at 2130 and 2230. On Sundays the service operates hourly between 0845 and 2145.

The majority of these trains originate/terminate at Manningtree with connections to Liverpool Street Station, London, and run via Ipswich, Colchester, and Chelmsford.

4.5.2 Buses

There is a fairly comprehensive bus route system operating to or from, and within, Harwich. The stops within or closest to the Port consist of Parkeston Safeway Store; Parkeston, Harwich International Station; and Harwich, Bus Station. The routes originate/terminate from Clacton, Long Meadows, Colchester and Ramsey.

In terms of public transport facilities for employees commuting to and from Harwich, buses are reasonably frequent, as they run once or twice every hour from 0720 to 2310 from Colchester to Harwich. They also run once or twice an hour from 0610 to 2200 from Harwich to Colchester. A bus service also runs on an approximately hourly basis from Harwich to Clacton from 0540 to 1827 and from Clacton to Harwich from 0637 to 1814.

4.6 PROVISION FOR CYCLISTS

Harwich is on the Sustrans (1) cycle network. The current route links Wivenhoe to Colchester, onto Elmstead Market, Tendring Heath and Great Oakley, and finally into Harwich. There are, at the time of writing, proposals to develop the network at various points along the route.

(1) the sustainable transport charity, which works on projects to encourage people to walk, cycle and use public transport in order to reduce motor traffic and its adverse effects

5 GENERATED TRAFFIC

5.1 CONSTRUCTION PHASE TRAFFIC

5.1.1 Construction Phasing

Construction of the proposed Bathside Bay development is expected to commence in January 2005 and will take place in three principal phases. The greatest amount of work will occur during Phase 1, which is due to be completed around August 2007. Phase 2 is expected to start construction in June 2006, lasting for just over two years in total; Phase 3 will be spread over a further two-year period, between January 2008 and December 2009.

Those tasks that are expected to generate the highest levels of HGV traffic include the following:

- construction of the small boat harbour, including cofferdam, division wall and landside works;
- provision of the main quay wall, including coping beam and rear crane beam;
- installation of wick drains;
- installation of services, paving and offices etc;
- completion of railway sidings and customs control building; and
- landscaping.

Some different types of construction activity will inevitably occur simultaneously (as shown in *Figure 5.1*, below).

5.1.2 Proposed Access Arrangements

During Phase 1 of the development, the main construction access is expected to be via a haul road from the A120(T) at the existing roundabout which will eventually become the principal access to the completed scheme (see *Annex C*). A proportion of the traffic will also enter the site from the existing port, to the west of Bathside Bay. In addition, some traffic will enter at the east end of the site, possibly via the existing Ingestre Street roundabout.

The majority of construction HGVs will, therefore, access the site via one of up to three junctions on the A120(T) from the A12(T). A requirement will be included in the construction contracts, in the form of a Traffic Management Plan, that all main construction traffic access to and from the site (with the

exception of traffic to and from Hamford Water, as described below) must be via this route.

As part of the mitigation works proposed by HPUK, compensation land will be provided at Hamford Water [1] . Hamford Water is located further down the Essex Coast, in the area of Walton-on–the-Naze (see *Figure 5.2*). The works will involve, amongst other things, the movement of topsoil from Hamford Water to Bathside Bay (as described below).

Before any works take place at Bathside Bay requiring movement of material from Hamford Water, HPUK will ensure that discussions take place between the appropriate consultants/contractors responsible for the Hamford Water works and Essex County Council. These discussions will confirm the routeing for movement of soil, particularly where use is made of the local road system. Appropriate routeing arrangements will be instigated, which construction traffic will be contractually required to respect as part of the Traffic Management Plan.

At present, it is expected that HGVs will travel to and from Hamford Water via the B1414 Clacton Road, heading north towards Ramsey and Upper Dovercourt, turn left along the B1352 Ramsey Road and join the A120 at the Ramsey Bridge roundabout.

5.1.3 Assumptions Made

In undertaking the assessment of construction traffic impacts, the following assumptions have been made:

- on-site working hours will generally be 0700 to 1900 Monday to Friday [2] and 0800 to 1300 on Saturday;
- construction workers will generally travel to the site between 0600 and 0700 and leave the site between 1900 and 2000 [3] (0800 to 0900 and 1200 to 1300, respectively, on Saturday), with the exception of a small number who may arrive and depart in small vans during the course of the working day;
- there will be adequate parking on-site for all construction workers and HGVs, as appropriate;
- staff accommodation, offices and welfare facilities will be provided on-site;
- temporary access roads will be installed on site;

(1) this is described in the ES for Bathside Bay and is also itself the subject of a separate ES
(2) although it is expected that many activities may work shorter hours
(3) shorter hours for some activities will result in a staggered leaving time

- a works compound for the storage of materials and equipment will be established;

- supervisors will all arrive by car, and HPUK proposes to promote the use of minibuses and/or coaches for other employees as appropriate;

- delivery and disposal vehicle arrivals and departures will be evenly distributed throughout the day;

- where practicable, construction equipment and material will be moved by sea (particularly reclamation materials and tubular piles);

- HPUK will also promote the use of rail, wherever possible, for the movement of construction equipment and material;

- there will be no movement of abnormal loads by road; and

- there will be no requirement to move contaminated material off-site.

5.1.4 HGV Traffic

The maximum estimated numbers of HGV delivery/disposal movements are based on calculations prepared by Posford Haskoning (1) . *Table 5.1* sets out the principal HGV flows during Phase 1 of construction, which will run from January 2005 through to August 2007. During this phase, HGV movements will peak broadly over a period of about a year, from July 2006 to July 2007.

The way in which the various sub-phases of Phase 1 overlap is shown in *Figure 5.1* (numbers are given for weekdays – Saturday flows will often be lower, particularly with respect to movement of topsoil, which is only moved on weekdays). From this it can be seen that up to a maximum of 204 HGV movements a day will be generated (for a six-month period between November 2006 and April 2007). At all other times the levels of HGV traffic will be lower than this, often considerably so.

Of the 204 peak daily HGV movements generated over that six-month period, some 108 will be associated with the movement of topsoil to and from Hamford Water.

(1) in their role as engineering advisors to HPUK

[**Figure 5.1**]

[**Figure 5.2**]

Table 5.1 Generated HGVs During Phase 1 Construction (based on 12 hour day)

Period	No. months	Task (1)	Days/wk	HGVs	Material
May 05 - Sep 06	5	12	5.5	100	Piles
Oct 05 – Dec 05	3	13	5.5	100	Piles
Sep 05 – Nov 05	3	15	5.5	20	Piles
Oct 05 – Dec 05	3	16	5.5	800	Rock armour (2)
"	3	"	5.5	20	Miscellaneous
May 05 – Jul 05	3	17	5.5	30	Piles
Aug 05 – Jul 06	12	32	5.5	300	Piles
Sep 05 – Aug 06	12	33	5.5	150	Piles
Nov 05 – Jun 07	15	34	5.5	1000	Concrete
"	15	"	5.5	100	Rebar
"	15	"	5.5	100	Miscellaneous
Feb 05 – Apr 05	3	37/46	5.5	400	Wick drains
May 05 – Jul 05	3	"	5.5	-	-
May 06 – Sep 06	5	54/59	5.5	500	Pipes
Nov 06 – Jun 07	8	"	5.5	-	-
Jul 06 – Dec 06	6	55/60	5.5	2000	Cement
Jan 07 – Jul 07	7	"	5.5	4600	Blocks
Jul 06 – Mar 07	9	56	5	600	Everything
Oct 06 – Jun 07	9	58	5.5	2000	Ballast
"	9	"	5.5	50	Rail
"	9	"	5.5	200	Sleepers
Oct 06 – Jun 07	9	61	5	700	Everything
Jul 06 – Aug 07	14	62	5	7000	Topsoil import
"	14	"	5	150	Plants
TOTAL	-	-	-	20920	-

(1) as defined in the Bathside Bay construction programme, compiled by Posford Haskoning
(2) some of this material is likely to be moved by sea

5.1.5 Personnel Traffic

The number of construction workers on-site during the different phases has been based on estimates made by HPUK and Posford Haskoning. Up to a total of 250 staff, including an estimated 35 supervisors, will be employed on-site during peak construction, which is taken to be October 2006 to August 2007. Throughout the remainder of the construction period there will be less than this number on site.

As indicated in the assumptions, it is expected as a worst case that managerial staff will travel by car to and from the site each day. HPUK intends to promote the use of minibuses for a proportion of workers. The catchment area for employment is difficult to predict, with sub-contractors from various locations in the UK likely to be employed. Some of these contractors are likely to find local accommodation for the duration of the works and it is expected that some 10% of workers may be locally based.

For the purposes of assessment, three scenarios have been considered (including a worst case of all workers travelling by car) for travel by the workforce. This is to allow for the fact that the actual mode of travel has not

yet been determined. This will be developed by HPUK and their contractors as part of the construction Traffic Management Plan. The scenarios assessed are as follows:

- *Scenario A* – all workers travel by car at 1.3 occupancy;
- *Scenario B* – supervisors and 50% of the remaining staff travel by car, with the remainder travelling by 15-seater minibus; and
- *Scenario C* – supervisors travel by car with all remaining staff travelling by minibus.

The levels of generated car traffic associated with each of these scenarios is as follows:

- For each of the scenarios, all supervisors travelling by private car at an occupancy of 1.3 gives rise to 27 cars in and 27 cars out.
- Scenario A – 215 workers travelling by car at an occupancy of 1.3 gives rise to 165 cars in and 165 cars out, in addition to the 27 supervisors' car movements.
- Scenario B – 50% of 215 workers travelling by car gives rise to 83 cars in/out. 50% of workers travelling by minibus gives rise to a further eight movements in and eight movements out, in addition to the 27 supervisors' car movements.
- Scenario C – if 100% of non-supervisory staff travel by minibus, there would be 15 movements in and out, in addition to the 27 supervisors' car movements.

This shows that, during peak construction, if all construction staff travel to and from the site by private car, there would be a maximum of 192 car movements inbound between 0600 and 0700, with a corresponding number outbound between 1900 and 2000. If 50% of non-supervisory staff travel by mini-bus, the total number of one-way movements would reduce to 110; with full take up of mini-buses, there would be 42 movements.

It should be noted that these movements are all expected to take place outside the normal morning and evening peak hours.

5.1.6 Combined HGV/Personnel Traffic

The HGV construction flows are expected to be relatively consistent on an hour by hour basis throughout the day, as previously described. However, at the start and end of each working day, there will be additional traffic comprising the construction workers' cars and/or minibuses, as follows:

- Weekday

  0600-0700 construction workers' vehicles inbound
  0700-0800 mini-buses outbound
  construction HGVs two-way
  0800-1800 construction HGVs two-way
  1800-1900 construction HGVs two-way
  mini-buses inbound
  1900-2000 construction workers' vehicles outbound

- Saturday

  0700-0800 construction workers' vehicles inbound
  0800-0900 mini-buses outbound
  construction HGVs two-way
  0900-1200 construction HGVs two-way
  1200-1300 construction HGVs two-way
  mini-buses inbound
  1300-1400 construction workers' vehicles outbound

The resultant weekday and Saturday flows during peak Phase 1 construction activity (when HGVs are at their highest) are shown in *Table 5.2*.

Table 5.2 Combined Construction HGV and Personnel Traffic

Time	Movement	Scenario A	Scenario B	Scenario C
Weekday				
0600-0700	Construction workers (inbound)	192	110	42
0700-0800	Minibuses outbound and HGVs (two-way flow)	17	25	32
0800-1800	HGVs (two-way flow)	17	17	17
1800-1900	HGVs and minibuses inbound (two-way flow)	17	25	32
1900-2000	Construction workers (outbound)	192	110	42
Saturday				
0700-0800	Construction workers (inbound)	192	110	42
0800-0900	Minibuses outbound and HGVs (two-way flow)	8	16	22
0900-1200	HGVs (two-way flow)	8	8	8
1200-1300	HGVs and minibuses inbound (two-way flow)	8	16	22
1300-1400	Construction workers (outbound)	192	110	42

It can be seen that, as a worst case, there will be 192 car movements, outside of the peaks, at the beginning and end of each weekday (with some of the leavers likely to be staggered), with some 17 HGV movements per hour in between these times. This reduces to eight HGV movements per hour on Saturdays. With mitigation, the staff movements in and out could reduce to 42 vehicles.

As noted, around a half of the peak HGVs generated are expected to travel on the B1414 and the B1352 (some nine HGV movements per hour) over a six month period.

Taking the case of all workers (except supervisory staff) travelling by minibus, there would be 42 cars/minibuses at the beginning and of each day, with a combined flow of 32 HGVs/minibuses in the hours adjacent to this and, again, 17 HGV movements in every other hour.

5.2 *FORECAST DEMAND AT BATHSIDE BAY*

The development of demand at Bathside Bay will be determined by:

- the pace of capacity additions (ie available handling capacity);
- the development of the overall balance of supply and demand in the UK major port market; and
- the relative competitive position of Bathside Bay versus competing terminals.

In a market study undertaken by Ocean Shipping Consultants (OSC), it is estimated that the capacity available at Bathside Bay, together with likely demand, will develop as set out in *Table 5.3*.

Table 5.3 Predicted Capacity and Demand at Bathside Bay (million TEU)

Year	Predicted Capacity	Predicted Demand
2007	0.700	0.300
2008	0.700	0.595
2009	1.200	0.808
2010	1.200	1.020
2011	1.700	1.235
2012	1.700	1.309
2013	1.700	1.382
2014	1.700	1.457
2015	1.700	1.530
2016	1.700	1.605
2017	1.700	1.680

Source: Ocean Shipping Consultants

The pace of take-up of capacity will depend on the factors outlined above, and has been calculated by OSC based upon assumptions with regard to the development of alternative capacity in other UK ports.

The estimation of traffic generation is dependent solely on the levels of hinterland traffic ie after exclusion of transhipment). For the purposes of assessment, a cautious view has been taken of the role of transhipment at Bathside Bay, placing it at 24% of all containers handled. This is lower than has been the case at Felixstowe in recent years, and means that some 76% of forecast Bathside Bay demand is robustly predicted to leave, or arrive at, the terminal by land, as a reasonable worst case.

5.3 OPERATIONAL TRAFFIC

5.3.1 Freight Modal Split

As noted above, demand at Bathside Bay is expected to build up over a number of years from its anticipated opening in 2007.

In the absence of any constraints on the movement of containers by rail, OSC has estimated the market share of rail to be 22.5%, approximately equivalent to the existing share at Felixstowe. It is understood from conversations with the SRA that they would expect this forecast rail share for Bathside Bay eventually to be exceeded, particularly in light of ongoing development work for F2N (see *Section 4*).

Based on these figures, the volumes of container traffic estimated to be moved by both road and rail are as given in *Table 5.2*.

Table 5.4 Forecast Movements by Road and Rail (million TEU)

Year	Hinterland Traffic	Moved by Rail (22.5%)	Moved by Road
2007	0.228	0.051	0.177
2008	0.452	0.102	0.350
2009	0.614	0.138	0.476
2010	0.775	0.174	0.601
2011	0.939	0.211	0.727
2012	0.995	0.224	0.771
2013	1.050	0.236	0.814
2014	1.107	0.249	0.858
2015	1.163	0.262	0.901
2016	1.220	0.274	0.945
2017	1.277	0.287	0.990

Source: ERM/Ocean Shipping Consultants

5.3.2 Road Traffic

Generated HGVs

As noted above, predicted demand at Bathside Bay is 1.68 m TEU. Assuming 24% transhipment, this implies total inland movements of 1.277 m TEU. Unconstrained rail share is forecast to be 22.5%, giving total movements by road in 2017 of 0.99 m TEU.

The current proportion of 40 foot boxes at Felixstowe is estimated at around 58%. For the purposes of calculation, it is assumed that this will stay constant in the future and will apply to Bathside Bay. In reality, as described, it is expected that there would be a greater proportion of 40 foot containers in the mix in the future, implying a smaller number of road journeys. The assessment is in this respect, therefore, a robust one.

This proportion enables the total number of boxes to be derived from the total TEU (by applying a factor of 0.633). Thus, 0.99 m TEU implies 626 670 boxes annually.

Data have been supplied by HPUK, describing different types of HGV trip in and out of the Port of Felixstowe. October 2002 has been taken to be a typical month (with respect only to the relative proportions of different types of HGV trip, which do not appear to differ significantly between months), as set out in *Table 5.5*.

Table 5.5 HGV Trips in/out of Port of Felixstowe (October 2002)

Type of trip	No. of HGVs	% of total
Empty in/1 box out	14 097	24%
1 box in/empty out	21 565	37%
Empty in/2 boxes out	1 233	2%
2 boxes in/empty out	1 466	3%
1 box in/1 box out	17 635	30%
1 box in/2 boxes out	846	1%
2 boxes in/1 box out	734	1%
2 boxes in/2 boxes out	284	0%
others	173	0%
TOTAL	58 033	100%

Source: Hutchison Ports (UK) Limited

The table shows that there are some 58 033 HGVs generated in a single month. This translates to 116 066 movements (ie one-way journeys). For that some month there are 82 206 boxes moved (1) . This implies a factor of 1.41 movements per box (regardless of size).

It is assumed that boxes are moved by road on 250 weekdays a year, with some additional movement on Saturdays. Movements on a Saturday are about a third of weekday movements, implying an additional 15 days worth of movements, or a total of 265 equivalent days a year.
Therefore, in 2017 it is expected that there will be some 883 604 HGVs a year (626 670 boxes multiplied by 1.41) and 3 334 HGV movements a day (883 604 divided by 265), giving 1 667 trips.

For all the years between opening (in 2007) and 2017, the data are as set out in *Table 5.6*.

(1) Hutchison Ports (UK) Limited data

Table 5.6 Forecast Bathside Bay Road Freight Movements

Year	TEU (m)	Boxes (m)	HGV movements a year (m)	HGV movements a day	HGV trips a day
2007	0.177	0.112	0.158	596	298
2008	0.350	0.222	0.312	1179	590
2009	0.476	0.301	0.425	1603	802
2010	0.601	0.380	0.536	2024	1012
2011	0.727	0.460	0.649	2448	1224
2012	0.771	0.488	0.688	2596	1298
2013	0.814	0.515	0.727	2742	1371
2014	0.858	0.543	0.766	2890	1445
2015	0.901	0.570	0.804	3034	1517
2016	0.945	0.598	0.843	3182	1591
2017	0.990	0.627	0.884	3334	1667

Other Road Traffic

In addition to HGVs carrying containers, further traffic associated with other elements of the development will be generated. This is described in detail in *Annex C*, and will include in summary the following:

- employee traffic;
- vehicles associated with open storage; and
- visitors to the Gas House Creek viewing area.

5.3.3 Rail Traffic

Generated Freight Rail Trips

Based on the likely modal demand figures set out in *Table 5.4*, above, annual and daily freight rail journeys have been estimated for the Bathside Bay development (shown in *Table 5.7*).

For the purposes of calculation, the mix of containers has been taken to be 1 TEU: 1 FEU; and the total TEU forecast to be carried by rail has, therefore, been deflated by 66.7%.

Daily forecast train movements are set out in *Table 5.7* for the following years:

- 2007 – this is the anticipated first full year of opening; it is assumed that all 9'6" boxes are at this stage able to be carried on standard wagons (3 TEU per wagon);

- 2010 – the point at which all construction phases are expected to have been completed; and

- 2017 – when demand at Bathside Bay is forecast to nearly match capacity.

The figures given in the table are based on 250 days a year operation, using either 30-wagon or 24-wagon trains. Although the SRA's current stated aim [1] is for 650 m trains (30 wagons) on all key routes, caution has been applied in basing the calculations additionally on 24 wagons. Similarly, despite industry's eventual expectations for a seven day a week freight railway, it has been considered prudent to opt for 250 days a year for calculation purposes.

Table 5.7 Forecast Bathside Bay Freight Rail Movements

Year	TEU (m)	Boxes (m)	30-wagon trains/yr	Trains/ day	Trains/ day (e-w)	24-wagon trains/yr	Trains/ day	Trains/ day (e-w)
2007	0.051	0.034	566	3	2	708	3	2
2010	0.174	0.116	1934	8	4	2416	10	5
2017	0.287	0.192	3200	13	7	4000	16	8

Source: ERM/Ocean Shipping Consultants

It should be noted that the proposed Bathside Bay freight rail terminal is designed to accommodate 775 m long trains, in line with earlier SRA aspirations, and includes a transfer area to link into the existing rail facilities. The type, size and configuration of rail infrastructure in ports are all crucial factors in the operational efficiency and economics of the total rail freight "product" that can be offered to customers by train operators and, therefore, their share of the inland transport market.

It should be noted that decisions on the method of inland travel generally lie with the individual shipping lines rather than with their customers or indeed the port authorities, who can influence but not control the volume of rail traffic. Whilst port authorities are responsible for the provision of rail facilities within their boundaries, they must inevitably do so without knowing in advance what use will be made of them.

Other Future Rail Traffic at Harwich

At present, it is not expected that freight rail will grow significantly at Harwich in future years. It is understood that a proportion of new cement imports (recently introduced to the port) may eventually be moved by rail. Otherwise, there may be perhaps two additional train loads per week for export/import.

5.4 ADDITIONAL RAIL TRAFFIC TO/FROM FELIXSTOWE

5.4.1 Overview

The Trinity III Extension at the Port of Felixstowe gained legislative approval through a Harbour Revision Order in October 2002. Capacity will increase by 415 000 TEU and, with additional productivity and equipment enhancements,

(1) SRA (2003) op. cit.

total capacity for Felixstowe is estimated to be around 3.7 m TEU from 2005, reaching 4.0 m TEU in 2010.

Access to and from Felixstowe by rail essentially involves the same parts of the network that are used for Harwich (the principal exception being the use of the respective branch lines for the two ports). In order to define the potential for cumulative rail impacts of the proposed development, it is necessary to estimate the level of future rail demand from current Felixstowe facilities and the Trinity III Extension.

5.4.2 Forecast Demand at Felixstowe

The projections for Felixstowe follow the same broad methodology as used for the Bathside Bay calculations, above. *Table 5.8* sets out forecast capacity and demand at Felixstowe from 2007. As noted, capacity is based on improved productivity and the Trinity III Extension (assumed to be commissioned in February 2004); demand is projected in line with anticipated UK base case development, with utilisation at up to 92% (1).

Table 5.8 Predicted Capacity and Demand at Felixstowe (million TEU)

Year	Predicted Capacity	Predicted Demand
2007	3.83	3.52
2008	3.89	3.50
2009	3.95	3.48
2010	4.00	3.60
2011	4.00	3.68
2012	4.00	3.56
2013	4.00	3.44
2014	4.00	3.44
2015	4.00	3.52
2016	4.00	3.60
2017	4.00	3.68

Source: Ocean Shipping Consultants

Future transhipment levels at Felixstowe have been forecast in line with anticipated market conditions, and range from around 26% in 2007 to approximately 30%.

5.4.3 Generated Freight Rail Trips at Felixstowe

OSC has estimated the future market share of rail at Felixstowe to be approximately 22.5%, broadly in line with the existing share at the port. Based on this, *Table 5.9* sets out the volumes of container traffic estimated to be moved by rail at Felixstowe.

(1) data supplied by Ocean Shipping Consultants

Table 5.9 Forecast Freight Rail Volumes at Felixstowe (million TEU)

Year	Hinterland Traffic	Moved by Rail (22.5%)
2007	2.61	0.59
2008	2.52	0.57
2009	2.43	0.55
2010	2.52	0.57
2011	2.58	0.58
2012	2.49	0.56
2013	2.41	0.54
2014	2.41	0.54
2015	2.46	0.55
2016	2.52	0.57
2017	2.58	0.58

Source: Ocean Shipping Consultants

From the above figures, annual and daily freight rail journeys have been calculated for Felixstowe, based on the assumptions made with respect to container mix and operation outlined above for Bathside Bay. Generated trips are shown in *Table 5.10*, for both 30-wagon and 24-wagon trains.

Table 5.10 Forecast Felixstowe Freight Rail Movements

Year	TEU (m)	Boxes (m)	30-wagon trains/yr	Trains/ day	Trains/ day (e-w)	24-wagon trains/yr	Trains/ day	Trains/ day (e-w)
2007	0.59	0.39	6500	26	13	8125	33	17
2010	0.57	0.38	6333	26	13	7916	32	16
2017	0.58	0.39	6500	26	13	8125	33	17

Source: ERM/Ocean Shipping Consultants

These figures do not show any noticeable increase on the current numbers of freight trains using Felixstowe. This is due principally to two factors:

- the calculations have been based on efficient use of trains, using standard wagons for 9'6" containers, in line with current expectations; and
- estimates of future transhipment are higher than is currently the case at Felixstowe.

In order to gauge a potential worst case, it may be useful to take the percentage increase of the 2017 throughput by rail (0.59 m TEU) over the current rail throughput (around 0.5 m TEU), and apply this to the existing numbers of rail trips (around 17) to arrive at a crude estimate of future rail movements.

This increase in TEU is 18%; applying this to the existing rail movements implies future movements of around 20 trains per day in each direction, or an increase of three trains.

6 IMPACT ASSESSMENT

6.1 PREDICTED ROAD TRAFFIC IMPACTS

6.1.1 Construction Traffic

Overview

As described in *Section 5.1*, construction traffic will enter the Bathside Bay site principally from the A120(T). Most of the construction personnel traffic and site-related HGVs will travel along the A120 from the A12(T), with a small proportion of the workforce derived locally. A certain amount of HGVs will travel to and from the A120 via the B1414 and the B1352 (carrying material from Hamford Water).

Criteria for Assessing Impacts

Changes in traffic flow, albeit temporary in duration, will occur as a result of the construction activities associated with the development. In determining the significance of potential construction traffic impacts, therefore, particular weight has been attached to the duration of impact and to the measures which HPUK will be promoting to mitigate any temporary impacts which might arise.

The following types of construction traffic impact have been considered during the study (some of which have been considered in detail only as part of the ES):

- *Conflicts with cyclists and pedestrians*. For the purposes of this assessment, it is assumed that changes in traffic flow of less than 30% are unlikely to have significant impacts on pedestrian and cycle movements [(1)] .

- *Traffic-related air quality and noise*. Detailed work has been undertaken for the Bathside Bay development in respect of both these impacts, and this is reported separately in the ES.

- *Effects on existing road traffic*. As noted, construction impacts would be temporary in nature. However, where appropriate, the impact in relation to existing flows has been determined. For long term operational impacts, a criterion of a 5% increase is often accepted as triggering more detailed studies.

Significance of Construction Traffic

Baseline traffic flows factored to 2007 have been used principally in the assessment (except in the case of the B1414).

(1) Crompton DH (1981) **Pedestrian Delay, Annoyance and Risk**, Imperial College London.

As indicated in *Section 5.1*, during peak construction (November 2006 to April 2007), there will be the following increases in traffic movements on the surrounding road network:

- before and after the peaks, there will be between 42 and 192 private vehicles for workers, principally along the A120(T);
- during normal peak hours, there will be 17 HGV movements on the A120(T) east of the Ramsey Bridge roundabout, together with a possible maximum of 15 returning minibuses;
- during the rest of the working day, there will be a total of 17 HGVs on the A120(T) east of the Ramsey Bridge roundabout;
- to the west of the Ramsey Bridge roundabout, there will be around nine HGVs per hour; and
- on the B1414 and B1352, there will also be around nine HGVs per hour.

Using the baseline flows given in *Section 4.2*, growthed to 2007, the changes in PM peak hour flows are given in *Table 6.1*.

Table 6.1 Changes in PM Peak Hour Flows from Construction Traffic

Road section	Generated traffic (total vehs)	PM base flow	PM % change
A12 (T) w. of Ramsey Bridge r'bout	24	1526	1.6
A120(T) e. of Ramsey Bridge r'bout	32	1131	2.8
B1414 Oakley Road	9	183 (1)	4.9
B1352 Church Hill	9	870	1.0

(1) existing flow ie not growthed to 2007

A maximum of nine HGVs would require to turn right from the B1352 Church Hill into the A120(T) at the Ramsey Bridge roundabout in the peak hours and throughout the working day. Some 33 vehicles would otherwise make this turn in 2007 in the peak. The same number would be expected to make the corresponding left turn into the B1352 (compared to 67 in 2007).

Overall, therefore, the additional construction vehicles will represent an increase of up to around 3% on the A120(T), less than 5% on the B1414 and around 1% on the B1352.

It is unlikely that this volume of traffic would have a material impact on the trunk road network (increases are less than 5%), and in any case these additional flows will last for just a six-month period. At all other times, construction traffic levels will be lower. In terms of the total number of vehicle, therefore, the overall impact is expected to be small.

Temporary increases on the B1414 and B1352 are also expected to be small in terms of total vehicles (and are again less than 5%). However, the increase is made up entirely of HGVs, on roads where lorry movements are relatively few. There are places, particularly on the B1414, where it may be difficult for two lorries to pass. The B1352 has a dedicated cycle lane and, despite the relatively small percentage in vehicles, cyclists may for a period of some six months experience a feeling of intimidation during construction (existing HGV flows are expected to double). Pedestrians may also experience a change in perceptions of safety.

Although this assessment has focused on the significance of construction traffic on the network in the immediate vicinity of the Bathside Bay site, traffic will also travel through the wider network. The potential origins/destinations of construction workers' trips and HGV construction traffic is not known at this stage. However, given the relatively small increases in flows and the fact that the site is immediately adjacent to the trunk network, once away from the A120, the construction traffic will dissipate very quickly and any impact on the wider network will be minimal.

Mitigation measures that have been proposed and agreed by HPUK are described in *Section 6.4*.

6.1.2 Operational Traffic

A detailed assessment of operational traffic impacts is presented in full in *Annex C*. There are 12 locations on the highway network that have been tested, in agreement with the Highways Agency and Essex County Council. In summary, the key results of the assessment are as follows:

- at eight of the study locations, no alteration to the highway will be necessary as a result of the proposed development;
- at four locations, means by which the highway impact of the proposed development may be addressed have been developed (at one of these locations, measures for improvement are being promoted by the Highways Agency as part of its Route Management Strategy).

Subject to the adoption of the measures detailed in *Annex C*, the development will have no detrimental impact on highway conditions.

6.2 PREDICTED RAIL IMPACTS

6.2.1 Construction Phase

The precise methods of construction will be the responsibility of the chosen contractor. It may be possible for a proportion of materials and equipment (see *Section 6.4*, below) to be moved in and out of the proposed development by rail, as has been the case at some recent major UK developments.

It is not considered that the use of rail for this purpose would have any significant adverse impacts, provided principally that all materials were adequately secured and covered. Such a policy would accord with the principles of PPG13.

6.2.2 Operational Phase

Network Capacity Issues

As noted, the Bathside Bay development has good existing rail connections to the West Coast Mainline (WCML). The WCML is cleared to take 9'6" containers and has reasonable spare capacity at present. The lines linking Bathside Bay to the WCML are also understood to have some spare capacity, although the exact extent of this is uncertain pending further analysis by the SRA.

The London route from Bathside Bay to the WCML, via the Great Eastern Mainline (GEML) and the North London Line (NLL) is currently being gauge-cleared. This will be completed during 2004. From the opening of Bathside Bay (expected to be 2007), trains will be able to use this cleared route – it is anticipated that, initially, these will be no more than two trains a day each way. Trains to and from Felixstowe will also be able to use this route.

By 2010, there is expected to be five trains a day each way generated by the Bathside Bay development (plus a nominal increase in traffic to/from Felixstowe). It is likely that the F2N gauge clearance will have been completed by this time, which will provide an additional six paths.

By 2017, there will be an anticipated total of eight additional trains from Bathside Bay, and potentially up to three additional trains from Felixstowe. It is possible that these additional movements could be accommodated by the present spare capacity in the system, plus the six paths that are made available by the gauge-cleared F2N route. There is every indication that F2N capacity improvements will have taken place by this stage, which would provide a minimum of 13 additional paths (on the top of the six paths from gauge clearance), and up to a possible 26 extra paths (plus the six from gauge clearance).

In conclusion, there is every indication from a wide range of reliable sources that committed and proposed gauge clearance and capacity works on the rail network in the would provide adequate capacity for the maximum forecast level and pattern of rail traffic to and from Bathside Bay and an expanded Felixstowe.

Furthermore, such a modal distribution of freight would be not only in keeping with PPG13, but also accord with the aims of the Transport White Paper, the 10 Year Transport Plan, *Modern Ports: A UK Policy* and the SRA's Freight Strategy.

Other Impacts

Air quality and noise impacts due to changes in freight trains on the Harwich to Manningtree line are described in detail in the ES for the Bathside Bay development, and addressed in summary form in the NATA appraisal given in *Annex B* to this report and below in *Section 6.3*.

6.3 RISK OF HAZARDOUS CHEMICAL RELEASE

The transport of dangerous goods is well regulated in the UK, for example through the Carriage of Dangerous Goods by Road Regulations 1996 (referred to as "the Regulations") and there are specific rules that must be adhered to. For example, each hazardous material present can only be transported if there is the relevant Chemcard and UN Number. Such regulations serve to reduce the risk of hazardous releases should an accident occur involving transfer and transport of a container. Furthermore, the Regulations serve to ensure that accidents are minimised within a container itself. An example of this is regarding the compatibility of materials, where oxidising substances must not be carried in vehicles with readily flammable materials.

The amount of hazardous substance stored in each container would be in relatively small amounts (set down in the Regulations) and its mode of containment would be suitable to the nature of the material. The majority of materials stored would be solids and liquids at atmospheric conditions. Hence, any leaks would only be at a very small rate and the consequences would be minimal to the surroundings. If pressure liquefied gases were transported, these would be stored in suitable small-scale cylinders (set down in the Regulations), which are designed to retain mechanical integrity upon expected impacts. Even if a leak from such a vessel occurred, the release rate would be small. Any release from the large container would disperse to safe levels within a short distance (in the order of a few metres) and would have minimal consequences.

Perhaps the most dangerous consequence would be a fire in a large container, particularly if there were a number of hazardous materials within the container that may become involved in the fire. Thick smoke would likely be produced. In most cases the smoke would disperse above ground level, but at high wind speeds the smoke may disperse at ground level. However, the likelihood of a fire in a large container is remote and there is lack of historical evidence that such fires have occurred involving large containers containing hazardous materials. If such a fire did occur, persons would move to less dangerous locations.

Thus, qualitatively, it is judged that the risk to people who may be adjacent to large containers would be minimal. The risk to people (residents etc) who are outside of the container port boundary would be extremely low from the transport of hazardous materials in large containers, when compared to other risks to which they may be subjected.

Possibly, the highest risk is if a container is opened by an employee at the container port following a spill within the container. Although the consequences (effect distance) of the spill would be minimal, the near-field effects may be considerable, particularly if the employee enters the container, which would effectively become a confined space. (There are requirements within the Regulations on the decontamination of containers following a spill of liquid within.)

6.4 NATA APPRAISAL

As described in *Section 2.3*, a NATA appraisal has been undertaken for the development. This is in line with the emerging new TA guidelines and also the Scottish TA guidelines (which have relevance through their interpretation of the principles set out in PPG13).

The results of the appraisal, together with the Appraisal Summary Table (AST), are given in *Annex B*. The key issues are as follows:

- *Environment*. No significant adverse impacts are expected from generated traffic. Physical fitness could be improved as a result of better cycling facilities.

- *Safety*. The development can be expected to have a neutral effect on the safety objective.

- *Accessibility*. Option values will improve. Severance is unlikely to worsen. Access to the transport system may improve marginally.

- *Integration*. Overall, the development integrates well with key policies at the national, regional and local level.

6.5 MITIGATION AND RESIDUAL IMPACTS

6.5.1 Construction Traffic

Mitigation

During the assessment measures have been identified in order to mitigate potential impacts of construction traffic. Some of these have been built into the programme so that, for example, the movement of major items (such as reclamation materials and tubular piles) will be made by sea. Other measures have been identified, and agreed by HPUK, in order to combat any impacts identified during the assessment process.

It should be noted that impacts from construction traffic are, by their nature, temporary and once a particular phase of construction has been completed any impacts associated with vehicles will disappear.

A Traffic Management Plan will be prepared by HPUK in conjunction with Essex County Council, as highway authority, to reduce the impact of construction traffic on the highway network. As part of this work, a number of general and specific traffic mitigation measures will be implemented as a matter of best practice to ameliorate the effects of construction activities, as follows:

- suitable measures will be taken to prevent the deposit of mud and dirt on the public highway (using wheel washes) and to prevent the propagation of dust and fly-away material (through the use of sheeting);

- routes for construction vehicles will be agreed in advance and drivers informed of particular sensitivities - routes where sensitive receptors are close to the road will be avoided wherever possible;

- where practicable, construction vehicles associated with Bathside Bay will be marked so they are easily recognisable to the local community – an associated "hotline" number will be publicised so the relevant parties can hear any queries or complaints;

- if any abnormal loads are required, these will follow prescribed routes on the trunk road network only and be scheduled in advance to minimise possible disruption;

- consideration will be given to the use of minibuses to transport as many site workers as possible, reducing the use of private cars; and

- materials and equipment will be delivered, and waste taken away, by sea or rail as far as is practicable.

Residual Impacts

No significant construction traffic impacts are predicted as a result of site workers, nor from HGVs accessing the site via the A12(T) and A120(T). There may, however, be some residual impacts on the B1414 and the B1352 due to the presence of HGVs on roads that would otherwise have low flows of lorries. However, the movement of HGVs on these roads will last for an anticipated six months only and measures as described above will be implemented through the construction Traffic Management Plan, in agreement with Essex County Council. It is expected, therefore, that the process can be effectively managed with minimal adverse effects.

6.5.2 Operational Traffic

General Measures being Promoted by HPUK

HPUK is committed to reducing the impact of moving containers inland. To this end, they have over the years promoted the use of rail at its ports (in line with Government policy) and sought to reduce the number of containers

moved by road. The inclusion of 1 775 m rail terminal in the proposals for Bathside Bay is further evidence of this commitment.

In addition, HPUK has regular and ongoing discussions with the SRA, Network Rail and the FOCs to take forward ideas for increasing the rail share at its ports. Such talks will continue prior to, and following, commissioning of Bathside Bay.

Based on information available at the time of writing, there are numerous examples of industry responding to the opportunities being made available by HPUK. For example, Maersk Sealand, using a new service provided by Freightliner Ltd, last year became the first shipping line to achieve 100 000 containers moved annually by rail through the Port of Felixstowe (1) . This has allowed the company to switch a further 16 000 containers a year from road to rail, principally between the port and the Widnes freight terminal.

Similarly, GB Railfreight ordered 50 new wagons in 2002 from Marcroft for use from 2003, replacing wagons hired from EWS, for use at Felixstowe. In late 2002, GB Railfreight was contracted by Medite to run a second container train service from Felixstowe to Selby and Doncaster, and from Felixstowe to Hams Hall near Birmingham. This was helped by a SRA track access grant, and has increased the proportion of Medite freight by rail 24% to 26.5%. Medite plan to take 65 000 boxes a year off the road, contributing to Felixstowe's own targets.

From November 2002 EWS started operation of daily 10-wagon trains in and out of Felixstowe for hi-cube containers, on low platform wagons.

During the period 1995 to 2002 there was approximately a 46% growth in rail freight volumes across the UK. The efforts of the SRA, the port operators, the FOCs and others have all contributed to this happening.

Further measures will continue to be investigated by HPUK to reduce overall inland traffic and maximise the use of rail.

Actions being Undertaken in the Rail Freight Industry

Throughout this report, a clear distinction has been made between impacts arising on the highway network and those that may occur on the rail network. The volume of generated traffic on the road network is dependent in part on the levels of traffic which will be attracted to the railway.

As well as the initiatives being developed by HPUK, as described above, the investments in routeing which are being pursued by the SRA and others, and which are described in *Section 3* and elsewhere in this report, will provide faster, more predictable journey times. This will be better for both existing

(1) The Industrial Pioneer, October-November 2002, Bert Reynolds, Birmingham.

freight companies and newcomers to the market, since rail as a mode option can be sold and marketed better.

But there is also an increasing number of financial and other levers which have been developed to encourage greater use of the rail network for freight. These are summarised below and serve to demonstrate the high level of commitment that the appropriate authorities are making to promote rail.

Freight Facilities Grant: The Freight Facilities Grant (FFG**)** is one of two types of grant that have conventionally been available to help meet the extra costs generally associated with moving freight by rail (the other being the Track Access Grant, outlined below) (1) .

The scheme has been available since 1974 to help companies by providing a contribution towards the capital cost of providing rail freight handling facilities, such as rail terminals. It is also available to help companies re-invest in existing facilities, including branch line re-openings. The SRA was involved in a re-launched FFG scheme and, since the start of the SRA in February 2001, it is estimated that in excess of 1.5 million lorry journeys have been taken off roads as result of these grants.

Access Charges: The Track Access Grant (TAG) is designed principally to help goods service operators to meet the charges paid to Railtrack for access to the rail network. This has been available since the Railways Act 1993. Under the SRA, it is estimated that TAGs awarded have taken in excess of 650 000 lorry trips from the UK's roads.

Further work has also been undertaken to deliver reductions in access charges that better reflect the cost of providing freight access on the Railtrack network. A comprehensive review carried out by the Rail Regulator (2) concludes that there are strong reasons for reducing access charges paid by freight operators for use of the rail network and for providing a more transparent framework. One of principal aims is to provide a more level playing field for new and potential freight operators.

The Rail Regulator's view is that there should be a very significant reduction in access charges for freight operators, of around 50%, with the SRA being responsible for funding the shortfall to Railtrack.

It is expected that, overall, this will make a significant positive contribution to achieving substantial growth in rail freight traffic over the next 10 years.

Company Neutral Revenue Support Scheme: One of the key initiatives described in the SRA's 2002 Strategic Plan is the Company Neutral Revenue Support Scheme. This is a new subsidy regime aimed at the use of deep sea containers, with the aim of encouraging new ideas and competition.

(1) at the time of writing rail freight grants have temporarily suspended
(2) Office of the Rail Regulator (2001) **Review of Freight Charging Policy: Final Conclusions**, October.

The objective is for grants to be payable not to the rail operators, but to the risk takers, that is those companies shipping the containers. Grants would be allocated to key rail freight flows, and the shipper would get a grant per box. It is initially directed at the intermodal and "less than trainload" markets and is likely to apply to shorter distance journeys, since long distance trips are less in need of encouragement.

The overall effect should be to allow a company controlling freight (for example, a shipping line) to calculate the track charges and grant relevant to a particular flow and to seek competitive bids from wagon leasing companies etc.

The Working Time Directive: Pressure may be brought to bear on the way in which the road network is used for freight by the introduction of the Working Time Directive [(1)] .

The purpose of this Directive is stated as being:

> "*to establish minimum requirements in relation to the organisation of working time in order to enhance health and safety protection of workers performing mobile road transport activities and to improve road safety and align conditions of competition*".

"Working time" comprises the whole of the time from the beginning to the end of work and may include driving, loading and unloading, assisting passengers boarding and disembarking from the vehicle, cleaning and technical maintenance.

Effectively, the Directive limits truck drivers to a 48 hour week, including non-driving time. This will push up costs and may impact on flexibility and viability of road freight. It is expected that one effect of this may be to increase movement of freight by other modes where suitable services are offered.

Specific Highway Impact Measures

As noted in *Section 6.1.2*, four locations on the highway network will require mitigation measures. These are described in detail in *Annex C*. The locations comprise:

- Ramsey Bridge roundabout (A120/Church Hill/Main Road);
- A120/Harwich Road junction, Wix;
- Horsley Cross roundabout (A120/B1035); and

(1) Directive 2002/15/EC of the European Parliament and of the Council of 11 March 2002 on the organisation of the working time of persons performing mobile road transport activities.

- the Crown Interchange (A120/A1232/A12), for which the Highways Agency has put forward proposals.

Travel Plan

A Travel Plan has been developed in draft for the proposed development (see *Annex C* for details). This includes the following measures:

- off-site cycle route and on-site facilities for cyclists;
- additional footways along the A120(T);
- an employee bus service;
- a car-sharing scheme;
- under-cover parking for motor cycles; and
- the appointment of a site travel co-ordinator.

It is proposed that performance and targets be reviewed on an annual basis.

Residual Impacts

Mitigation measures are required at four locations on the highway network. With these measures in place, the development will have no detrimental impact on highway conditions.

Measures being promoted by HPUK to reduce overall inland traffic and maximise the use of rail will further reduce impacts on the highway.

Furthermore, measures which will be put in place as part of the Travel Plan are expected to reduce the levels of employee traffic.

7 CONCLUSIONS

This section of the main report sets out the conclusions from the TA and provides a summary of the main impacts of the scheme. It identifies the key mitigation measures that will be applied and identifies any significant residual impacts that may persist after mitigation.

On a wider level, the proposed Bathside Bay development is in a unique position as a new container facility to take advantage of the advantages offered by its location among the Haven Ports. HPUK has given a great deal of consideration to both the siting of the development and the way in which it links into the national and local transport networks.

The scheme enjoys a number of strategic location benefits:

- it is situated adjacent to the existing Harwich International Port, a nationally and internationally important multi-purpose freight and passenger port, strategically located in the south east of the UK;

- it has direct access onto the A120(T), part of both the national trunk road network and the European Union's Trans-European Transport Network; and

- it links directly into the national rail network, providing access to markets throughout the UK via a number of routes.

In this respect, the development is in accordance with European, national and regional transport policy.

As with any major transport infrastructure scheme, the development will inevitably cause a degree of traffic disruption during construction. Overall, construction vehicles will represent an increase of up to around 3% on the A120(T). There will also be increases over a period of six months on the B1414 (around 5%) and the B1352 (about 1%).

It is unlikely that this volume of traffic would have a material impact on the trunk road network. There may, however, be some perception of increased danger on the B1414 and B1352 for cyclists and pedestrians. These impacts will be temporary and HPUK will develop a construction Traffic Management Plan to minimise, and where possible remove, any effects that may arise.

The impacts of the operational development have been assessed in respect of both road and rail movements.

The rail network will enable a reasonable proportion of the forecast Bathside Bay container traffic to be moved by train. This is estimated at 22.5% of the total inland traffic. In 2007, when the scheme is due to open, there is expected

to be two daily two-way trains generated by the development. This will increase to around eight in 2017, with some increase also forecast for Felixstowe. There is understood to be spare capacity on the network at present, and by 2004 gauge clearance on the London route out of the Haven Ports will have been completed, enabling 9'6" containers to be moved on standard wagons. Gauge clearance on the cross-country to the West Coast Mainline via Nuneaton (referred to as "F2N") is also expected during this period, offering an extra six paths. Capacity works on F2N (which could be completed by around 2011) will provide a further 13 to 26 paths.

The assessment has shown that the remainder of the generated container traffic can be accommodated on the highway network, using the A120(T) and then dispersing onto the wider trunk road network via the A12(T). Four junctions on the A120(T) will require some modification to enable them to perform satisfactorily. With these measures in place, there will be no detrimental impact on the highway.

Measures being promoted by HPUK will further serve to reduce traffic overall and maximise the rail share. In addition, the development of a Travel Plan for the scheme will assist in reducing employee car traffic.

In conclusion, therefore, no residual transport impacts are expected from the Bathside Bay development, and the scheme is in accordance with Government policy.

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