

THE CHURCH COMMISSIONERS FOR ENGLAND

**EXETER GATEWAY
INTERMODAL FACILITY AND FREIGHT
DISTRIBUTION CENTRE**

**UPDATED
ENVIRONMENTAL STATEMENT**



OCTOBER 2005

**EXETER GATEWAY
INTERMODAL FACILITY AND FREIGHT DISTRIBUTION CENTRE
HAYES FARM, BROADCLYST, EXETER
UPDATED ENVIRONMENTAL STATEMENT**

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1. INTRODUCTION

1.1 In July 2000 the Church Commissioners for England submitted an outline planning application to East Devon District Council (EDDC) for Exeter Gateway, an intermodal facility for the transfer of freight and a freight distribution centre (IFFDC) (Planning Application Ref: 00/P1394). The site is located to the east of Exeter and north of Exeter Airport (See Figure 1.1). The development comprises:

a) Site preparation

- ecological mitigation works required for protected species;
- conservation of flora and habitat enhancement;
- removal of vegetation within the development footprint;
- removal of top and sub soil (small volumes will be stored for onsite external landscape works, the remaining soils will be available for off site construction works in the locality); and
- preliminary surface water and drainage works.

b) Minerals and waste issues

- extracting and processing of remaining in situ sand and gravel resources; and
- removal of construction and demolition waste materials from the closed landfill located within the development footprint.

c) Construction of rail terminal onto the Exeter to London Waterloo rail line.

d) Construction of site access onto the proposed Clyst Honiton bypass at its junction with the C832.

e) Development of the buildings and associated infrastructure to facilitate the transfer of freight and a freight distribution centre (Phase 1).

f) External landscaping and associated works.

g) Nature conservation management planning.

1.2 Operation of regional intermodal facility and freight distribution centre. The application was accompanied by an Environmental Statement (ES) reporting on an Environmental Impact Assessment (EIA) undertaken on the proposed development, as identified in the description of development, outlined above (See Figure 1.2). The EIA was based upon an indicative masterplan for the site (Appendix 1.1), which

encompasses two phases of the development. This application was for Phase 1 only, however the EIA considers both phases, where appropriate.

1.3 Since the registration of the application a thorough consultation process has been undertaken by EDDC, including consideration of the relevant policies with respect to the Minerals Local Plan and the East Devon District Local Plan. This process has resulted in a range of issues being identified that have subsequently been resolved. In addition, the policy basis for the proposed development has been positive, including the Inspectors report¹ on the public examination of the East Devon District Local Plan. The inspector's report considered a number of developments within the Exeter Area of Economic Activity (Exeter AEA), including:

- Cranbrook New Community – a new settlement to the east of Exeter Gateway;
- Extension to Exeter Airport; and
- Skypark a technology business park located to the south of Exeter Gateway and within land currently used by the airport.

1.4 The Inspector stated that 'My overall conclusion is that the Local Plan's proposal for major developments in Exeter the Exeter AEA are soundly based and in accordance with both the superseded and adopted structure plans, Regional Planning Guidance 10 (RPG10) and Planning Policy Guidance Note 3 (PPG3)'.

1.5 A specific aspect of the proposed development at Exeter Gateway, requires the construction of the Clyst Honiton bypass from the C832 (east of Clyst Honiton) to the A30(T), to the south of the airport. At the time of the application for Exeter Gateway, the line of the road had been identified in the application for SkyPark and Exeter & Devon Airport development (Planning Ref: 7/06/00/p0315/00129 (Outline))², submitted by Devon County Council. During the consideration of both applications (Exeter Gateway and SkyPark/Exeter Airport), it was apparent that further work would be required with respect to the specific proposals for the Clyst Honiton bypass, in part to accommodate the application for the new community (Cranbrook). It was agreed, therefore, that the application for the bypass was separated from the specific applications for development and submitted with a standalone Environmental Statement to report on the Environmental Impact Assessment of the scheme³. As a consequence the current Environmental Statement for Exeter Gateway requires updating to remove the line of the Clyst Honiton bypass from the application

1.

¹ East Devon District Council, Report of the Inquiry into issues raised by objections to Chapter 12 and part of Chapter 2 of the revised deposit Local Plan, March 2005.

² Devon County Council Skypark and Exeter & Devon Airport Development Environmental statement (Final report January 2000). This is currently in the process of being updated.

³ Devon County Council, Clyst Honiton bypass Environmental Statement prepared by Parsons Brinkerhoff, (July 2005).

boundary. In addition, it has been agreed with EDDC (under Regulation 19 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations (SI 1999 No. 293) (The EIA Regulations)) that the updated ES should include additional technical reports, submitted following the original application and consider any outstanding issues before the Council in order to allow determination of the application.

1.6 In discussion with EDDC, it was agreed that the updated ES should consider the following:

- A resume of information previously submitted in response to any issues raised by statutory consultees during the consultation process;
- New information to address the change in the planning application boundary;
- Updated assessment to fulfil changing methodological requirements that have taken place since the original ES was submitted; and an explanation of these updates in the impact assessment with respect to mitigation strategies.

1.7 This document sets out the 'Updated Environmental Statement' and will be supported by amended planning application drawings required due to the removal of the line of the Clyst Honiton bypass from the application.

1.8 Each section of this ES identifies both the original and updated information in a series of standardised impact assessment / mitigation analysis tables, referring as appropriate to Appendices that contain further technical or survey information submitted during the consultation process. For ease of reference, the document is based on the original format of the ES in terms of report headings and section numbers. Existing, unchanged information has been submitted with this Updated Environmental Statement to maintain the continuity of the document. Therefore, this document has been prepared as a standalone replacement of the original ES.

2 DESCRIPTION OF SITE

2.1 The site and surroundings

- 2.1.1 The land at Hayes Farm extends to 66.4ha and has been included in the study area for the EIA (see Figure 2.2). Land use is primarily agricultural, amounting to a total of approximately 50ha. In the eastern part of the study area, to the north and east of the outline planning application boundary, there is a sand and gravel quarry (Planning Reference 07/06/0395/96), which extends approximately 9.8ha. During the planning consultation phase of the mineral application, two areas were acknowledged as being of ecological interest. These were identified as an area of woodland in the north west of the study area and a wet hollow in the centre of the site. Adjacent to the wet hollow is a closed landfill, which was restored to pasture approximately 14 years ago. The outline application area extends to 43.1ha, of which approximately 21.3ha would be used for the proposed development. The boundaries of the individual areas are shown on Figure 2.1. The study area is also shown in Figure 2.2 from an oblique aerial photograph. It should be noted that the mineral extraction operation commenced after the photograph was taken. Therefore, the planning boundary of the quarry is shown on the photograph and extraction has been undertaken within this area.
- 2.1.2 The C832 (the former A30(T)), is adjacent to the southern boundary of the study area. This road now links to the new A30(T) via the B3184, through the village of Clyst Honiton. To the east of the village between the A30(T) and the C832 is Exeter Airport. Currently, there are proposals to develop an area of airport land for office space and to relocate the airport terminal. These proposals are the subject of separate planning applications submitted by Devon County Council. The implications of the proposed Intermodal Facility and Freight Distribution Centre (IFFDC) combined with that of Skypark are considered in more detail in Section 3 and 18, which illustrates the combined outline masterplan layouts.
- 2.1.3 To the north of the application area is the main line from Exeter, St David's to Waterloo station, London. The line is single track and situated on an embankment approximately 0.5m above the surrounding ground level, at an ordnance datum of 13.5m.
- 2.1.4 There are a number of settlements near the study area. Clyst Honiton is the largest settlement located to the south west of the study area. The settlement of Dog Village and Broadclyst are located to the north east of the study area. Both are residential villages with limited light industrial facilities. To the south of the rail line is a smaller outlying settlement centred on Clyst Avenue, which also has a number of newer residential developments, notably those on Shercroft Close and Cotterell Road.

2.1.5 There are a number of isolated dwellings adjacent to and in the immediate vicinity of the application boundary, including:

- Hayes House, adjacent to the C832 within the boundary of the outline application, was purchased by the Church Commissioners for England in 2000 and as been let as a residential dwelling;
- Coachfield House is located approximately 150m east of the study area, as is Clystlands approximately 200m to the north;
- Mosshayne Cottages and Farmhouse is located approximately 200m to the north west of the study area and north of the rail line; and
- Water/Stone Hayes are located approximately 150m southwest of the study area on Waterslade Lane.

2.2 Landuse

2.2.1 The study area is primarily agricultural land. To the north and west the land is flat with well-formed hedgerows on field boundaries. The highest point within the study area is along the southern boundary in the vicinity of Hayes House and associated farm buildings. To the north west of the site is a small area of woodland where a surface drainage ditch rises and flows north. On the western boundary of the site is the River Clyst, which flows south forming a tributary of the River Exe. The fields adjacent to the western boundary of the application area and the River Clyst are lower lying and form part of the flood plain.

Minerals

2.2.2 Hayes Quarry was granted consent in 1997 for the extraction of approximately 1.125M tonnes of sand and gravel. Operations commenced at the quarry during 1999, to coincide with the completion of the A30(T) link to the M5. This was a requirement of planning consent that there should be no HGV access to and from the quarry until the original A30(T) had been de-trunked.

2.2.3 The permission is also subject to Section 106 Legal Agreement to monitor the impact of extraction on the local groundwater regime. The purpose of the monitoring is as follows:

- To identify whether there is any short or long term derogation of the groundwater supply to a number of wells located to the east of the site; and
- To ensure that the two identified areas of ecological interest within the site do not suffer an adverse negative impact as a result. The areas of ecological interest

have been mapped following survey work undertaken at the time of the planning application.

Figure 9.1 shows the positions of the groundwater abstraction points (data from the Environment Agency). Figures 2.1 (and 13.1 in more detail) identify the areas of ecological interest.

- 2.2.4 The currently approved reclamation design for the quarry is for an agricultural enduse, using inert materials and the stored soils to achieve the final restoration contours over the quarry floor. The restoration scheme is subject to a 5 year aftercare scheme. Drainage from the restored quarry will be to the west requiring the construction of a new drainage ditch that will discharge surface runoff to the River Clyst.
- 2.2.5 During 2003, the operator Hayes Quarries Ltd handed back the lease, which was due for renewal and the quarry is currently non-operational (mothballed).

Minerals local plan

- 2.2.6 The final adopted version of the Minerals Local Plan (MLP) was published in June 2004⁴. The plan identifies a mineral consultation area at Hayes Farm, which extends over the majority of the study area (see Figure 2.1). The MLP also recognises that IFFDC has been identified in the Devon Structure Plan and that the Hayes Farm area has been identified as a potential site for this type of development.
- 2.2.7 The former operator (Hayes Farm Quarries Ltd) has quantified the potential sand and gravel reserve at Hayes Farm in submissions to the MLP. The available data has been used to evaluate the potential impacts on the natural mineral resource, as a consequence of the proposed development, subject of this outline application (see Section 8).

Landfill

- 2.2.8 A former landfill site extending to approximately 6ha is situated within the application area (Figure 2.1). The site is now restored and is delineated by post and wire fences. The restored landform is gently domed to a surface elevation of approximately 17mAOD. The site was licensed in 1983 to landfill 60,000 tonnes of inert industrial wastes including asbestos (description used in the licence).
- 2.2.9 The landfill site is located in the central part of the proposed Phase 1 development area. In order to facilitate the development of the site the landfilled material will therefore require one of the following - relocation and encapsulation in another part

⁴ Devon County Minerals Local Plan Part A Written Statement & Part B Proposals Map and Inset Plans June 2004

of the site, transferral offsite for disposal at a suitably licensed facility, or a combination of the above with separation and recycling of secondary aggregates. The issues associated with the development on former landfill sites are considered in Sections 9, 16 & 17.

2.3 Site survey

- 2.3.1 A detailed topographic survey of the study area was undertaken in December 1999 (see Figure 2.3). The topography of the area is generally flat in the east rising to a local high point, within the study area, at Hayes Farm (approximately 20m AOD). The land falls gently to the north east, east and south, varying in height between 12 and 17m AOD. To the west and north the gradient is steeper as the land falls into the flood plain of the River Clyst in the south at 8 – 9m AOD. To the north there is a low point associated with the remains of a hollow, which drains at a level of 10m AOD. This hollow has, to a large extent, been landfilled with the restored surface domed at approximately 18m AOD.
- 2.3.2 Hayes Quarry is shown on the survey, using data supplied by the Company from a site survey in 1999. The position of the main soil and processed sand and gravel stockpiles are shown, along with the quarry access and site office and weighbridge. The quarry floor was at a level of 10m AOD. Since this survey the area of the quarry void has increased but the position of the soil mounds remains essentially the same.
- 2.3.3 To the north of the site the Exeter St David's to Waterloo rail line is situated on a slight embankment. The height of the track bed has been confirmed at 13.5m AOD, rising gently from west to east. The track bed is situated approximately 2m above the agricultural land within the study area.
- 2.3.4 The surface drainage characteristics are considered in more detail in Section 9 however, the survey plan illustrates the impact that surface drainage has on site development and its relationship with the adjacent topography. Surface water from the airport, to the south, drains northwards via a series of surface ditches, which discharge into a tributary of the River Clyst to the north of the rail line. This ditch system is located in lower lying flat land, which slopes gently to the north on the western boundary of the study area. Within the site, there is a north-south watershed associated with the high point at Hayes Farm. Several large drainage ditches were surveyed to the west of watershed, which eventually discharge into the River Clyst, to the west. The River Clyst flood plain is located on the western boundary of the study area. This is an area of low-lying land, which forms the floodplain of the river and within which a number of remnant and existing drainage routes are evident.

2.4 Summary

- 2.4.1 The study area comprises approximately 66.4 ha of land primarily in agricultural use. A detailed site survey has been completed to provide a ground model for the study area. The survey demonstrates that the site is generally low lying to the north and south of the study area. The central section of the site is elevated, with a local high point at Hayes Farm.
- 2.4.2 There is a mothballed mineral site within the study area, formerly operated by Hayes Quarries Ltd., with planning consent to extract approximately 1.125M tonnes of sand and gravel. The deposit version of the Minerals Local Plan identifies an area of future sand and gravel extraction within the study area. The plan also recognises that the IFFDC could be engineered as the final afteruse of the site, in conjunction with continued mineral extraction.
- 2.4.3 A closed landfill site, formerly used for the disposal of construction and demolition waste, is situated within the Phase 1 area, which is the subject of this outline application. The landfill will require suitable remediation measures to be agreed with the Environment Agency prior to development within Phase 1.

3 PROJECT DESCRIPTION

3.1 Phase 1 – Outline application

3.1.1 The Phase 1 outline application encompasses 43.1ha of land, as shown on Figure 2.1. The application area comprises of agricultural land, Hayes House and outlying farm buildings and a closed landfill site.

3.2 Development platform

3.2.1 The Phase 1 development landform, extending to approximately 21.3ha, which will be engineered to provide a shallow gradient towards the central rail line, working from a datum fixed at the mainline (see Figure 3.1). The rail sidings will be constructed at track bed level of 13.5m AOD, where the track joins the main line. The track bed will be level, or on a gentle incline away from the mainline, along the central section of the sidings so that a proposed future track connection to Exeter Airport can be constructed at approximately 8 - 10m below the level of the C832. The development platform has been designed to a minimum gradient of 1 in 200 (see Figure 3.1). In order to achieve this platform a large volume of cut will be required, although a significant volume of fill will also be required to achieve final levels within and adjacent to the flood plain. The excess material will consist primarily of sand and gravel, some of which can be utilised for commercial extraction.

Phase 2

3.2.2 The proposed development of Phase 2, extending to approximately 23.3ha, is shown on Figures 3.2 and 3.3. The area of mineral working within Phase 2 ceased during 2003, leaving a shallow void and perimeter soil mounds. During Phase 1 construction, the soil mounds would be retained and further mineral would be worked from the current extraction area to provide general fill material for Phase 1 works. Where mineral is worked, the depth of extraction would not exceed that required for the development plateau in Phase 2 and the phasing of extraction would be the same as that dictated in conditions attached to planning reference: 07/06/0395/96. Therefore, construction during Phase 2 would be directly onto the quarry floor, within the existing mineral permission. Notwithstanding the foregoing, the volume of fill during Phase 2 exceeds the estimated cut required to achieve the pre-development platform. The options for mitigating this deficiency are considered in Section 8.

3.3 Engineering and environmental considerations

Outline application area

Remediation of closed landfill

3.3.1 The development platform designed to accommodate Phase 1 of the IFFDC requires the relocation of the closed landfill. The estimated volume of the landfill (approximately 120,000m³ of waste material) has been calculated by reference to the original ground survey. At this stage three options have been considered:

- relocation to a designed remediation cell on the site;
- removal offsite to a suitable licensed landfill; or
- landfill mining, whereby the potentially recyclable material in the landfill is separated (primarily secondary aggregates) and the remaining is relocated to a specifically designed cell. The secondary aggregate produced can then be utilised on site as a bulk fill material.

This assessment promotes the use of landfill mining as the preferred method of remediation, at the outset of the development. The material within the landfill would be treated to separate fines and secondary aggregates. The remaining wastes could be landfilled in an engineered cell within the quarry void. A possible location for this remediation cell would be under the rail terminal. An assessment of the technical and environmental issues associated with this remediation technique is considered in Section 16.

Mineral resources

3.3.2 Part of the application lies within a mineral consultation area (see Figure 2.1). The adopted minerals local plan identifies that mineral, within the consultation area, could be extracted prior to the development of the Intermodal Facility and Freight Distribution Centre (IFFDC). The outline design demonstrates this to be the case, although it would not be feasible for all the available minerals could be worked. However, it is important to recognise that the earthworks phase of the IFFDC construction will require a significant volume of aggregate for general fill in order to achieve a suitable development platform. Therefore, although the minerals available for use off site will be limited by the nature of the future land use, the construction of the IFFDC will be a significant sink for aggregate, which can, in part, be generated on site. The implications of developing this IFFDC with respect to mineral plan policy issues and the county landbank are considered in Section 4. The environmental issues associated the mineral extraction are considered in more detail in Sections 8.

Phase 2

Mineral planning consent

- 3.3.3 Hayes Farm Quarry has consent for the extraction of approximately 1.12 M tonnes of sand and gravel, although this has only been partly extracted up to the mothballing of the quarry in 2003. If the full depth of the extraction was to be achieved within the area with planning consent for mineral working, the final void would be deeper than the design level for the development platform for the IFFDC at final restoration. Therefore, in order to avoid the mineral extraction void becoming a significant sink for fill material during the earthworks phase the remaining reserves of sand and gravel within the consented area and future reserves within the preferred area will be extracted to the depth of the predevelopment landform. The design and final landform following mineral extraction has been considered in Section 8.
- 3.3.4 The project life-span of the existing quarry and any additional reserves within the preferred area are now no longer relevant because mineral worked will be used during construction of both Phases 1 and 2.

3.4 Rail infrastructure

The infrastructure requirements fall within two categories as follows:

Network Rail - The National Network owner

- 3.4.1 Land within Network Rail's network ownership is subject to a 'Connection Agreement' for the private sidings of the IFFDC. This 'Connection' is located at approximately 167m (BAE); it is within Great Western Zone jurisdiction and subject to their design, specification and implementation. It will consist of signalling (permanent way), rail crossover, turnout junctions and temporary buffers.
- 3.4.2 H.M.R.I (Her Majesty's Railway Inspectorate) - will monitor and approve the Safety Rail Case for the connection and rail operations by the IFFDC operator and freight train operating companies.

Private Terminal Sidings

- 3.4.3 For direct 'Euro' trains the rail terminal will comply with Eurotunnel's specification standards for safety and security, and to Customs & Excise for cargo, inspection and bonding requirements.
- 3.4.4 The rail layout will consist of 2 reception sidings each 400m long with a third escape siding, all connected by an engine head shunt. The layout of the siding is shown in Figure 3.2.

3.4.5 The rail terminal within phase 1 will be connected by a single track 'Western' cord to Network Rail's network. In addition, within this phase, a crossover with temporary buffers, will be installed to serve a possible future 'Eastern' cord connection, to satisfy future rail freight traffic demands and additional train paths to 'turnout' to the East.

3.4.6 Further rail sidings may be required at a future date to serve individual rail linked warehouses. These may spur off the single terminal line or have a direct connection to Network Rail's network.

3.5 Road infrastructure

3.5.1 The IFFDC would be connected to the new A30(T) by the Clyst Honiton bypass serving the Cranbrook New Community, proposed Skypark development, expansion of Exeter & Devon Airport and the IFFDC. The Clyst Honiton bypass is considered in a separate Environmental Statement³.

3.5.2 Phase 2 would be accessed by a separate junction on the C832, as shown on Figure 3.3.

3.6 Layout of IFFDC

3.6.1 The layout of the IFFDC was defined in an indicative masterplan prepared in 2000 (Appendix 1.1) and consisted of the following main elements:

- Freight transfer terminal, that provides the infrastructure from the main line into the IFFDC. The feasibility of this element was originally supported by separately bound rail report⁵. The railway engineering and feasibility was subsequently considered in a report prepared by Brett Associates⁶.
- Internal road network that, for Phase 1, will connect with the proposed junction onto the Clyst Honiton bypass. The position of the main access road has been determined by a minimum stand-off of 7m from the 1 in 100 year floodplain boundary. Therefore, the road layout in the indicative masterplan is illustrative only and actual line of the access road, to the junction with the Clyst Honiton bypass is shown on Figure 3.4, which also identifies the constraints associated with the outer edge of the road and the floodplain boundary. The layout of the internal road network (i.e. the roads from the main access servicing individual building plots is indicative only. This layout will be determined by the take up of space within the freight distribution centre (see below).

³ Devon County Council, Clyst Honiton bypass Environmental Statement prepared by Parsons Brinkerhoff, (July 2005)

⁵ Exeter Gateway Rail Report prepared by Gill Associates July 2000.

⁶ The Exeter Gateway Intermodal Freight Terminal Proposed Rail Connection Feasibility Study by Peter Brett Associates, September 2005.

- Freight distribution centre comprises a range of B8 storage and distribution warehousing units. The indicative masterplan and accompanying text (see below) identified a range of potential building to a maximum floor space within the built development. At this stage, it is not possible to provide a fixed layout of buildings in Phase 1 and the floor area of individual building plots will be determined at detailed application stage when individual occupiers have been determined. Therefore, the building element in Phase 1 has been defined by the following parameters:
 1. The outer limit of the development footprint, defined to protect the 1 in 100 year floodplain limit and identified habitats on the western boundary of the site.
 2. Total developable floor space will not exceed 65,000m² and will consist of up to four main warehouse structures.
 3. The height of the buildings will not exceed 20m to the eaves, as depicted on the photomontage (Appendix 14.4 and cross sections on Figure 14.3 and 14.4).
 4. The detailed design for building construction adopt BREEAM standards where appropriate and will incorporate the requirement for a sustainable urban drainage system, these two factors may influence the final building size and dimension, in addition to the constraints identified above.

Freight transfer terminal

- 3.6.2 This will consist of approximately 2.9ha (7.2acres) in area. The 3 rail sidings will be 'set in' heavy duty hardstanding to allow full vehicle movement within the terminal for HGV, 'Reach stackers' - which are rubber tyred hydraulic mobile container lifting vehicles, fork lifts, etc and for the open storage and stacking of containers up to 4 high, i.e. 12m.
- 3.6.3 The terminal perimeter will be compounded with security fencing and down lighter floodlights. Access to the rail sidings will be gated at Network Rail's boundary. HGV road access will be security gated with CCTV monitoring, with entrance booths linked to the terminal's control office which will serve both road and rail movements, there will be additional customs, security and staffing facility buildings.

Internal road network

- 3.6.4 A private internal road network will serve the intermodal facility for the transfer of freight and the freight distribution centre. The road layout will be engineered to meet the requirements of 'long' HGVs carrying a minimum payload of 44 tonne. The full extent of this eastern cord is shown on Figure 3.3. Each distribution building will have its own HGV parking within its curtilage. An adjacent external area of 'HGV Parking' will serve the terminal, this holding area would control time-tabled HGV

access to the terminal for both delivery and collection.

Freight distribution centre

3.6.5 This will primarily consist of B8 storage and distribution warehousing units, some of which may have their own dedicated private rail sidings. Others will make use of the 'open access' Intermodal facility for the transfer of freight, with terminal tractor units and HGVs towing trailers around the internal road network to and from the terminal. There is also an opportunity within the freight distribution centre to create:

- **'Urban Logistic Distribution Centre'** (ULDC) requiring typically 14,000m² (150,000ft²) of floor space. This unit would be sub divided into a commodity and warehouse operation shared by several logistic companies delivering to different local customers. The centre offers the advantage of group 'break bulk' facilities of long distance volume traffic being delivered locally by small vehicle units within the Exeter City urban area.
- **Regional Distribution Centre** (RDC), requiring typically 28,000m² (300,000ft²). This unit would provide a strategic location with good access to road, rail and air services and is likely to be occupied by a single operator.

3.6.6 The total floor space within the distribution park and freight village should be capable of providing approximately 156,500m² (1,684,500ft²) within the built development.

This split is as follows:

- Phase 1 - 65,757m² (707,802ft²)
- Phase 2 - 90,740m² (976,717ft²)

An indicative building layout for Phases 1 and 2, taking account of the nature of the potential operation with the IFFDC is shown on Figure 3.3. The footprint of the buildings is based on the original master plan, however as explained previously these may be changed to accommodate precise requirements of individual occupiers.

3.7 Construction programme (see Table 3.1)

3.7.1 There will be 2 main phases of construction each of which will be staggered. Phase 1 will be implemented in the period up to 2011; commencement of work will take place following rail connection and site access for traffic. Phase 2 is programmed for construction in the period to 2015/2016.

Phase 1 - Site earthworks

- 3.7.2 These will involve the movement within the site of the existing mineral and tip materials, to remodel the levels to provide railway gradients for the terminal and to create a building plateau formation for the warehouse and distribution buildings.

Network Rail

- 3.7.3 The rail connection will be designed and installed by Network Rail and will include new raised embankments for the single rail 'turnouts' to the main line.

Intermodal facility

- 3.7.4 Rail installation engineering works will include raised embankments to connect with Network Rail's; surface water drainage; heavy duty hard-standing with 'set in' flush rail sidings; perimeter security works to terminal compound. The following infrastructure has been identified:

Access road: The new junction on to the Clyst Honiton bypass will link to an internal estate road, which would serve the Phase 1 area within the intermodal facility.

Drainage: Internal surface water drainage would be designed in accordance with Sustainable Urban Drainage Systems (SuDs), an outline design is considered in Section 9. The foul system will connect to the existing sewer system (see Figure 17.1).

Services: Off-site works for incoming mains, gas, water, electricity and telephone. Installation and distribution of services would be programmed to facilitate the development of each plot. Diversion of any existing services within the site would be undertaken as necessary. Existing services are shown in Figure 17.1.

Buildings: These will be subject to demand and phased completion of the infrastructure works programme. The building design and construction will conform to BREEAM standards.

3.8 The operation of the IFFDC

- 3.8.1 The Rail Terminal will be managed and operated by a company approved by the HMRI (Her Majesty's Railway Inspectorate) and will be Eurotunnel security certificated with 24 hours Customs clearance available.

Train movements

External

- 3.8.2 The existing EWS rail facilities at Riverside and West Yards at St Davids, West Exeter will act as reception yards for in bound 'Block' and Euro trains, with max length 600-700m, weighing up to 2000 tonnes. They will be split into half trains 300 - 350m length, weighing up to 1000 tonnes, and delivered individually to the IFFDC.

Internal

- 3.8.3 Half trains will occupy the 2 No. 400m long reception sidings. The formation of outbound trains will be this process in reverse with the 2 existing EWS yards acting for re-marshalling and also for consolidation of other 'part' trains from other destinations travelling the Great Western main line between Cornwall and the rest of UK in a north easterly direction.
- 3.8.4 Containers will form the majority of cargo. Trains will be loaded and unloaded by mobile handling equipment 'reach stacker' and forklifts. These containers will be transferred to the Freight Village warehouses by either HGV or special terminal tractor units (TTU) for local distribution or stacked in a temporary storage holding area in the terminal awaiting collection by HGV or for loading to form a new train.

Vehicle movements

- 3.8.5 Terminal control office will monitor all train movements, including signalling to and from the terminal and will be linked to Network Rail's system.
- 3.8.6 HGVs will be controlled for timed access to the IFFDC and 'parked up' in the holding area along the access road to the terminal entrance at the central control office. The control offices will be located on the spine road into the IFFDC.
- 3.8.7 Within the terminal area temporary barriers will be used to define stacking and movement areas.
- 3.8.8 Pedestrian access within the terminal area will be limited and strictly defined to specific routes.

Facility Buildings

- 3.8.9 Terminal operators central control office will be manned 24 hrs a day - 3 shift pattern. The 'start up' service of up to 2 freight trains per day will run between the 'off peak' hours 20.00 to 06.00 hours.
- 3.8.10 The control office will operate and co-ordinate both timetables for HGV delivery and

collection and train operation, arrival and departure. This will be in accordance with TOC's, the agreed train paths operated in conjunction with Network Rail's zone operations.

3.8.11 CCTV operation room will be an essential feature of visual surveillance and control of the operation and movement within the IFFDC, as well as monitoring the compound's security - perimeter fence.

Customs - Office and staff facilities

Operator - Staff facilities

T.O.Cs - Train crews' facilities

3.9 Employment

3.9.1 The development of the IFFDC will create a number of jobs in the construction industry in the period up to 2015/2016, the actual requirements have not been determined. The indicative employment statistics for the operation of the IFFDC are as follows:

- Freight transfer terminal:

15 persons employed on a two-shift system,

10 person employed on a single day shift,

Total anticipated employment of 40 persons.

- Phase 1 – freight distribution centre:

Site A, warehousing to the south of the development with a gross area of 11.4ha. Anticipated employment in the range of 340-390 persons.

Site B, warehousing to the north of the development with a gross area of 9.9ha. Anticipated employment in the range of 280-320 persons.

- Phase 2 – freight distribution centre:

Development area extends to a total of 21.8ha. The anticipated employment is in target in the range of 820-940 persons.

3.10 Masterplan incorporating other developments within the locality

3.10.1 The site masterplan is shown in the separately bound Supporting Statement and Rail Report (outline layouts are shown on Figures 3.2 and 3.3). This shows the potential

integration of 3 modes of transport - road, rail and air at a strategic 'hub' which serves the Airport.

3.10.2 The IFFDC proximity and short road link to the Airport could help to develop potential airfreight traffic and expand the existing aircraft engineering and maintenance operation on the southern side of the Airport.

3.11 Landscape masterplan for Phase 1 of the development

3.11.1 An outline landscape scheme to be implemented during Phase 1 of the development is shown on Figure 3.3. The landscape proposals include the following elements:

- strengthen hedgerow on the boundary of the development, adjacent to the C382;
- gap up and strengthen hedge on the eastern boundary of the study area;
- maintenance of wet willow-alder woodland on the north western boundary of the Phase 1 development;
- plant additional wet willow-alder woodland on western boundary of the site;
- plant reedbeds within the floodplain of the River Clyst to accept surface drainage from Phase 1 SuDs design;
- encourage species rich, acid-neutral wet grassland in floodplain between areas of reedbeds;
- replacement habitat for bat roosts within Hayes House/outbuildings;
- replacement habitat for badger sett located within the Phase 1 development area.

3.12 Summary

3.12.1 The proposed IFFDC at Exeter Gateway has good access to all modes of transport rail, road and air. It is located in the area of Exeter's economic activity and is not in a built up residential area. The logistic and distribution industry research confirms there is a current and future market demand for an intermodal facility in this location.

3.12.2 Freight trains would access the site by a single track 'Western' cord connecting to the Exeter St David to London Waterloo mainline located to the north of the site. Traffic access would be from a junction on to the Clyst Honiton bypass to the A30(T), to the south, which would also provide access to Skypark and a by-pass to Clyst Honiton for traffic from the Cranbrook New Community. Note that the Clyst Honiton bypass,

Skypark, Exeter & Devon Airport Development and Cranbrook New Community are all separate applications to Exeter Gateway.

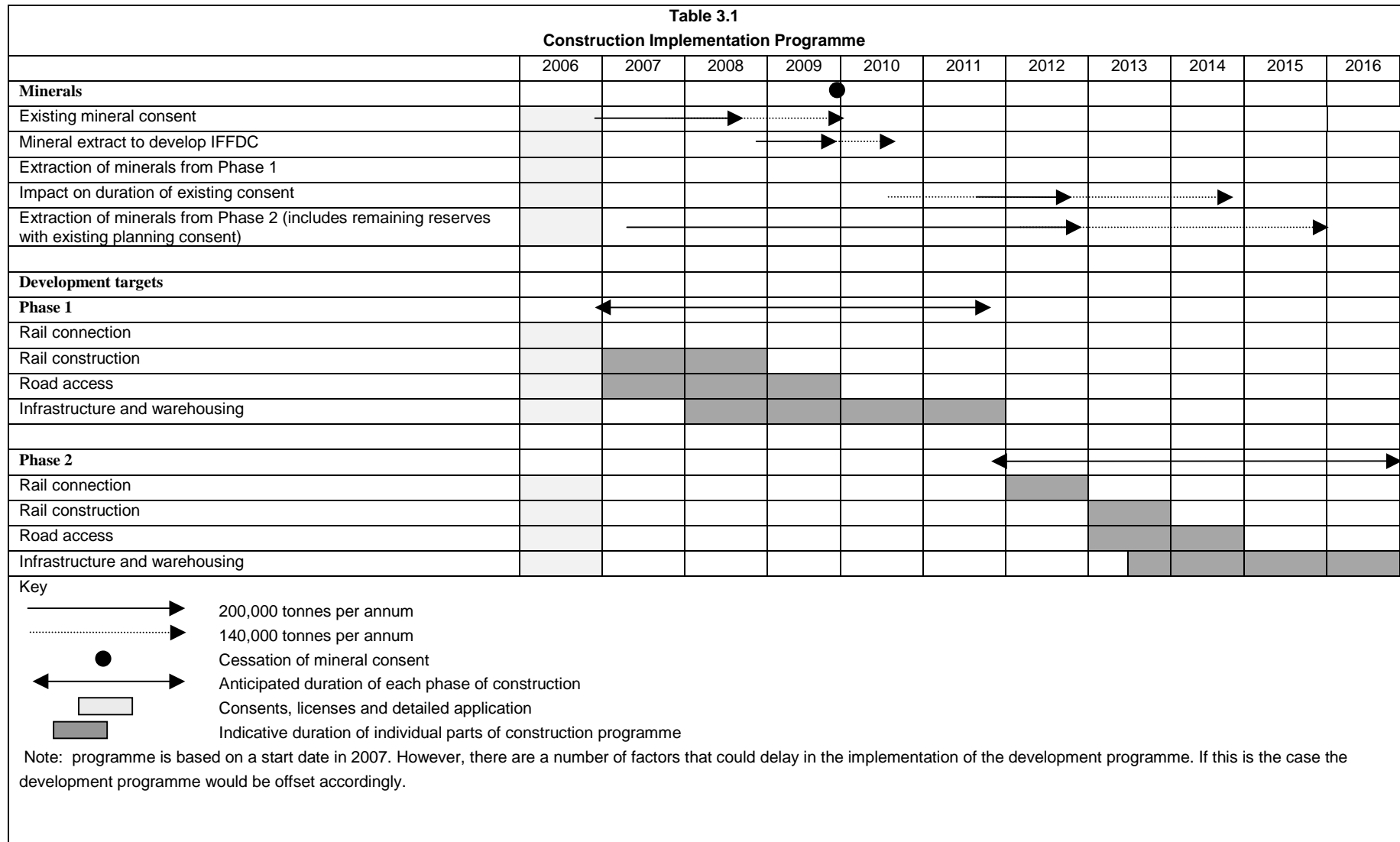
3.12.3 The IFFDC will consist of a facility to transfer freight between road/rail and a freight distribution centre comprising storage and distribution warehousing units and external space to provide for storage of containers and HGV parking. An indicative layout and masterplan was prepared for the strategic rail study report. This outline application has been based on the layout identified in the application and has set design principles in terms of:

- development footprint;
- layout of the intermodal facility;
- approximate height and area of buildings within the Phase 1 development area.

3.12.4 The development of the IFFDC can take place after partial mineral extraction has occurred over the majority of the site, although it is recognised that some of the mineral reserves will be sterilised as a result of the development. In addition, the development of the IFFDC will require a significant amount of aggregate, which can, in part, be derived from extraction of the minerals available on site.

3.12.5 Prior to the onset of development of Phase 1 the closed landfill located within the site will require remedial treatment. The preferred option would be to excavate and reuse bricks and hardcore material as a secondary aggregate within the construction phase of the development. These proposals would be subject to a detailed source-pathway-receptor risk assessment which will provide the basis of licence and/or permit applications required.

3.12.6 The construction of the IFFDC will continue over a number of years to a projected completion in 2011 for Phase 1. The total project employment at the site will be in the order of 660 - 750 persons required to operate the terminal and associated storage/logistics facilities.



4 PLANNING POLICY CONSIDERATIONS

4.1 Introduction

4.1.1 This section summarises the planning policies and guidance, which are potentially relevant to the Exeter Gateway Intermodal Facility and Freight Distribution Centre (IFFDC) proposal, in order to assess the degree to which the scheme is in accordance with them.

4.1.2 The planning policy framework for considering the Exeter Gateway proposal operates at several levels:

- Central Government issues national guidance in the form of planning and minerals policy guidance notes (PPGs, gradually being replaced by PPSs, and MPGs);
- The South West Regional Planning Conference (now the South West Regional Assembly) prepares and submits to the Government, regional planning guidance (to be replaced by a Regional Spatial Strategy) for the South West;
- Devon County Council is the Local Planning Authority responsible for preparing the Structure Plan and Minerals Local Plan;
- East Devon District Council is the Local Planning Authority responsible for preparing the district-wide Local Plan.

4.1.3 It is noted that the Government is committed to a plan-led system of development control, which was given statutory force by Section 54A of the Town and Country Planning Act 1990. This requires planning applications to be determined in accordance with the development plan where there is an adopted or approved plan in place, which contains relevant policies. This is re-enacted in Section 38 (subs.6) of the Planning and Compensation Act 2004 that refers to any determination being made in accordance with the development plan unless material considerations indicate otherwise.

4.1.4 The current 'development plan' comprises the East Devon District Local Plan, Devon County Structure Plan and Devon County Minerals Local Plan. As detailed below, East Devon District Council does not have an up-to-date adopted or approved local plan. The most recent plan covers the period to 2001 and only reached Deposit stage in 1996, after which it was abandoned in favour of a longer-term review. However, the East Devon Local Plan 1995-2011 is well advanced and the sections of the Plan most relevant to the Exeter Gateway proposal have been through a local inquiry and have been the subject of an inspector's report. The Devon County Structure Plan

2001 to 2016 and Devon Minerals Local Plan were recently adopted and both provide up-to-date policy advice.

4.1.5 The following sections summarise the most relevant aspects of each of the planning policy sources considered, and comments on their applicability to the Exeter Gateway proposal.

4.2 National planning guidance

Planning Policy Guidance Notes

4.2.1 PPG4 (paragraph 10) sets out guidance in relation to the locational factors affecting new employment development, advising that development plans offer the opportunity to:

- encourage new development in locations which minimise the length and number of trips, especially by motor vehicle;
- encourage new development in locations that can be served by more energy efficient modes of transport;
- discourage new development where it would be likely to add unacceptably to congestion.

4.2.2 Paragraph 11 reiterates the importance of controlling greenhouse gases, which lead to global warming and the consequent need to encourage development where it can be served by more energy efficient modes of transport, such as rail.

4.2.3 Similarly, PPG13 (and the accompanying 'Guide to Better Practice') encourages development in locations which reduce the need to travel and discourages major employment developments in locations not well served by public transport or readily accessible to a significant local residential workforce (paragraph 3.5). The Exeter Gateway proposal is situated at a highly accessible location, which offers multi-modal transport choice (rail, road and air). The employment area is accessible to the Exeter-based workforce, the proposed new community and the surrounding rural area. The Structure Plan specifically designated the area in which the site is located for its accessibility and sustainability for major new developments (employment and residential).

4.2.4 PPG13 (paragraph 45) refers to the sustainability of freight distribution: "while road transport is likely to remain the main mode for many freight movements, land use planning can help to promote sustainable distribution, including where feasible, the movement of freight by rail and water". It also requires local authorities, in preparing development plans, to identify and protect sites which could be critical in developing infrastructure for the movement of freight (such as major freight interchanges

including facilities allowing road to rail transfer). In the adopted Structure Plan 2001 to 2016, an intermodal facility (including, where appropriate, a freight distribution centre) is required in the Exeter area and the Exeter Gateway proposal fulfils the policy criteria. The scheme would encourage the transfer of freight traffic from road to rail and incorporates a direct rail connection.

4.2.5 Paragraph 45 of PPG13 also reiterates advice in PPG4 with regard to the location of developments generating substantial freight movements such as distribution and warehousing. It states that such developments should be located away from congested central areas and residential areas but with adequate access to the trunk road network. Exeter Gateway is situated sufficiently far from the Exeter urban area to avoid the congestion problems referred to in PPG13 and has good access to the A30 trunk road, via the C832 (the de-trunked A30) and the proposed Clyst Honiton bypass.

4.2.6 PPG16 provides guidance on archaeology and planning. Paragraph 8 states that, “where nationally important archaeological remains, whether scheduled or not, and their settings, are affected by proposed development there should be a presumption in favour of their physical preservation. Cases involving archaeological remains of lesser importance will not always be so clear cut and planning authorities will need to weigh the relative importance of archaeology against other factors including the need for the proposed development”. Paragraph 28 expands on this point: “there will no doubt be occasions, particularly where remains of lesser importance are involved, when planning authorities may decide that the significance of the archaeological remains is not sufficient when weighed against all other material considerations, including the need for development, to justify their preservation *in situ*, and that the proposed development should proceed...planning authorities will, in such cases, need to satisfy themselves that the developer has made appropriate and satisfactory arrangements for the excavation and recording of the archaeological remains and the publication of the results”.

4.2.7 PPS23 and PPG24 provide guidance on pollution and noise. This advice is reflected in the development plan policies referred to below and, as explained in subsequent sections, has been reflected in the formulation of the Exeter Gateway proposals.

4.2.8 PPG25 advises on development and flood risk. Paragraph 23 refers to the functional floodplain and states: “in these functional floodplains, the Government considers that built development should be wholly exceptional and limited to essential transport and utilities infrastructure that has to be there. Such infrastructure should be designed and constructed so as to remain operational even at times of flood, to result in no net loss of floodplain storage, not to impede water flows and not to increase flood risk elsewhere”. There has been liaison with the Environment Agency in relation to the proposal’s impact on the functional floodplain and it is considered that the Exeter

Gateway proposal comprises essential transport infrastructure that has to be in the proposed location for the reasons explained in accompanying documentation. A relatively small area of low lying ground adjacent to the functional floodplain would be developed upon but compensatory floodplain has been designed into the scheme.

Minerals Policy Guidance Notes

- 4.2.9 The Devon Minerals Local Plan (see below) has been compiled having regard to the relevant parts of the Government's Minerals Policy Guidance Notes and therefore the primary source of policy advice in assessing the site-specific mineral implications of the Exeter Gateway proposal is considered to be the Local Plan. Nevertheless, the following aspects of MPG1 are of particular note.
- 4.2.10 In MPG1 (paragraph 35) the stated objectives for sustainable mineral development include the following two provisions: the conservation of minerals as far as possible, whilst ensuring an adequate supply to meet needs; and the prevention of the unnecessary sterilisation of minerals. Paragraphs 36-39 set out the role of mineral consultation areas in allowing authorities to liaise where surface development would be likely to affect or be affected by the winning and working of minerals. As described below, the application is within the Hayes Farm Mineral Consultation Area.
- 4.2.11 Paragraph 40 of MPG1 addresses the need for minerals. Section 8 of the Environmental Statement refers to the specific implications of the Exeter Gateway proposal in relation to mineral resources at the site.

Other

- 4.2.12 With regard to intermodal facilities, the UK Government signed the Rio Convention on Climate Change and Sustainable Development, thereby committing itself and its successors. This commitment is to significantly reduce CO₂ emissions. Transport accounts for 35% of UK energy consumption. Freight cargo units/tonne kilometre moved by heavy goods lorries is 4-5 times more polluting than the equivalent moved by train. Government policy on the movement of freight is to encourage a greater volume to transfer to the rail network. This is clearly expressed in the 10 Year Plan which sets bold targets (80%) for increasing the amount of freight moved by rail and also in the Government's strategy for Sustainable Distribution. Since the original submission of the Exeter Gateway planning application in 2000, two reports have been published that directly support the delivery of these proposals: the Strategic Rail Interchange Policy and the SWARMMS report.
- 4.2.13 The Strategic Rail Authority (SRA) came into force on 1 February 2001. Although it is currently being wound up (with many of its functions passing to the Department for Transport's new Rail Group), it did develop the Strategic Rail Freight Interchange Policy (March, 2004). Paragraph 6.16 states that analysis indicates that the South

West needs another Strategic Rail Freight Interchange (SRFI). Such facilities are described as key features of national rail infrastructure necessary to promote a shift from road to rail freight and to achieve the associated sustainability benefits (paragraph 4.3). Paragraph 7.8 sets out the key factors in considering site allocations, all of which are considered to be met by the Exeter Gateway proposals:

- Suitable rail and road access – on rail freight routes with capacity and avoiding congestion, with good access to motorway junctions, primary and trunk roads;
- Ability for 24/7 working;
- Adequate level site area and potential for expansion;
- Proximity to workforce;
- Proximity to commercial customers, both existing and potential (noting the potential to change to rail achieved by close proximity);
- Fit with primary freight flows in the area;
- Ability to contribute to the national network by filling ‘gaps’ in provision; and
- Fit with SRA strategies, including the Freight Strategy, Route Utilisation Strategies and Regional Planning Assessments.

4.2.14 The Government Office for the South West published the ‘London to South West and South Wales Multi-Modal Study Inter-Modal Freight Plan’ (SWARMMS) in May, 2002. This considered the scope for new and improved intermodal freight facilities within the SWARMMS area to support the Government’s transport policy, as outlined in ‘A New Deal for Transport’. The study found that the potential market for intermodal rail in the South West is relatively thin. Devon and Cornwall combined will be able to sustain two or more daily freight trains although more than one intermodal terminal in Devon and Cornwall combined would appear to be unsustainable. A number of terminal sites were considered: Westbury, Taunton, Plymouth, mid-Cornwall and Exeter Gateway. Paragraph E.14 concludes that, “on balance, Exeter seems the best option”. Paragraph E.16 goes on to say that, “on the basis of the work undertaken, SWARMMS recommends that one intermodal freight terminal be proposed – near Exeter Airport. This would complement the facilities already constructed or under construction in Avonmouth and Swindon”.

4.2.15 The Highways Agency is, under current Government policy, charged with creating new highway links to other modes of transport, of which rail is the other most significant network. The 44 tonne HGV issue will also impact on HGV access to intermodal rail terminals.

4.3 Regional Planning Guidance

- 4.3.1 At the time of the Exeter Gateway planning application submission in 2000, the current Regional Planning Guidance for the South West (RPG10) covered the period to 2011 and it was being reviewed to roll it forward to 2016. The replacement version of RPG10 covering the period to 2016 was issued in September, 2001. Many of the main themes in the previous version of RPG10 are carried through into the replacement version but with greater emphasis on sustainability and integrated transport. Most significantly, the guidance adopts a pro-active stance on intermodal facilities and identifies the opportunity for such at Exeter.
- 4.3.2 The following is a brief exposition of the most relevant aspects of the replacement RPG10, according to a number of broad themes.
- 4.3.3 The spatial strategy for the region divides it into four areas, including the Central sub-region (which includes the Exeter area). Policy SS1 states that the policies for the Central sub-region should reflect its pivotal role in the South West of helping to spread economic prosperity westwards throughout the region. This includes encouraging sustainable growth at Exeter and improving transport links within and through the sub-region and with neighbouring areas (policy SS2). Specifically in relation to Exeter, policy SS15 refers to the “strategic location of the city in relation to the regional road, rail and air networks and exploiting opportunities to develop intermodal transport facilities”. This is in the context of developing the city’s role as a focal point for strategic economic investment (the Exeter Principal Urban Area or PUA). Exeter Gateway, on its own and in conjunction with the other proposed major development east of the city, would directly meet these policy criteria.
- 4.3.4 Section 4 of RPG10 addresses the natural and built environment, including landscape and biodiversity, and air quality. The relevant sections of the Environmental Statement address the issues raised in the corresponding policies.
- 4.3.5 With regard to economic development, policy EC1 seeks the active promotion of new economic activity in the areas where it can bring the greatest economic benefits. Policies EC3 and EC4 require the provision of major strategic sites, of which Skypark adjacent to Exeter Gateway is one. It is notable that Exeter Gateway would generate a significant amount of new employment and economic activity, is a key part of the long term growth strategy for the Exeter PUA and will assist in the delivery of other major developments east of Exeter through assisted delivery of the Clyst Honiton bypass.
- 4.3.6 In relation to transport, RPG10’s spatial strategy focuses growth at the PUAs to reduce the need to travel and increase accessibility (paragraph 8.4). Reference is also made to SWARMMS which had not been completed at the time RPG10 was issued. Policy TRAN1 seeks to reduce the need to travel by, amongst other

measures, proposing major development in keeping with the roles of the PUAs on sites where there is good choice of travel by sustainable transport. Policy TRAN2 seeks improved rail links, partly through the development of freight services from the region to Europe. Policy TRAN4 seeks investment in facilities that enable modal shift from road to rail. Exeter Gateway would directly meet and support these objectives.

- 4.3.7 Specifically related to freight transport, policy TRAN6 encourages the development of rail freight terminals and transfer facilities in locations close to the PUAs and at key locations where there is good access to the regional rail network and the inter-urban road network. This refers to terminals at various locations in the South West, including at Exeter. The Exeter Gateway proposal fulfils this requirement.
- 4.3.8 The protection of water resources, water quality and flood risk are addressed in policies RE1 and RE2. The impact of the scheme in relation to water issues is addressed at Section 9 of the Environmental Statement.
- 4.3.9 Policies RE3 and RE4 cover minerals planning and the use/supply of aggregates. Reference is made to identifying mineral consultation areas and the safeguarding of resources. Such matters are more fully addressed below in the sub-section on the Devon Minerals Local Plan and Section 8 of the Environmental Statement.
- 4.3.10 RPG10 is to be replaced by the Regional Spatial Strategy (RSS) for the South West 2006-2026. However, this is at a comparatively early stage with a pre-submission draft due in autumn 2005 and an examination in public for the draft RSS scheduled for autumn 2006. It is anticipated that the RSS approach will reinforce that of RPG10 in relation to the main themes of most relevance to Exeter Gateway.

4.4 Devon County Structure Plan

- 4.4.1 At the time the Exeter Gateway planning application was submitted in 2000, the current County Structure Plan was that adopted on 26 February, 1999 and which covered the period to 2011. This has now been superseded by the adoption on 8 October, 2004 of the Devon Structure Plan 2001 to 2016. It is notable the extent to which the latest version reiterates and reinforces the key policy provisions relating to Exeter Gateway, further augmenting the Structure Plan support for these proposals. The following summarises the most relevant policy provisions from the Devon Structure Plan 2001 to 2016.
- 4.4.2 Policy ST5 takes forward the PUA strategy encapsulated in RPG10 i.e. their role as the primary focus for strategic development. The Exeter PUA is addressed in policy ST10 with the stated priorities including economic development and diversification, and enhancing Exeter's role as a major focus for strategic transport routes – including road, rail and air – linking it the rest of Devon, UK, and Europe.

- 4.4.3 The key diagram for the Exeter PUA shows an area east of Exeter enclosing development at the PUA in the period to 2016. This includes an intermodal freight facility. In this respect, the location of Exeter Gateway fully accords with that shown on the key diagram.
- 4.4.4 With regard to archaeology, policy CO8 seeks to preserve internationally, nationally and regionally important sites and their settings. Other important sites should be preserved wherever possible. Where a loss of an archaeological site or area is acceptable, proper excavation and recording will be required. In conjunction with English Heritage and Devon County Council, it has been agreed that the strategic importance of the Exeter Gateway proposals overrides the importance of the archaeological resource present (see Section 15 of the Environmental Statement).
- 4.4.5 Policies CO9 and CO10 protect biodiversity and nature conservation interests, issues addressed in detail in Section 13 of the Environmental Statement. As referred to above in relation to the relevant RPG10 policy, water resources and floodplain matters (policy CO13) have been resolved.
- 4.4.6 The conservation of agricultural land is covered by policy CO14 that only allows the use of agricultural land, particularly higher grade 1, 2 and 3a, where there is an overriding need for development in that location which outweighs the need to protect such land or where it implements other policies and proposals of the Development Plan. In the case of Exeter Gateway, it has been established that the need for the development does outweigh the loss of some high grade land and it is also the case that this scheme does constitute a specific proposal in the Structure Plan under policy TR15 (see below).
- 4.4.7 Safeguards in relation to air quality and noise pollution are provided in policies CO15 and CO16. These matters are addressed in Sections 11 and 12 of the Environmental Statement.
- 4.4.8 Although the County's planning policies relating to minerals are primarily dealt with by the Minerals Local Plan, the Structure Plan does include policy MN1 that safeguards from unnecessary sterilisation by surface development deposits which are, or may become, of economic importance. The implementation of Exeter Gateway will sterilise some mineral deposits but, as this scheme is a necessary component of the Structure Plan's strategy, it is considered that the strategic importance of Exeter Gateway overrides the sterilisation of some reserves.
- 4.4.9 Policy TR15 seeks to achieve a more sustainable pattern of freight distribution by several means including, "providing for strategic intermodal facilities for the transfer of freight in the...Exeter area including, where appropriate, a freight distribution

centre, ensuring in all cases that the use of such facilities is limited to the transfer and handling of freight". Exeter Gateway directly meets this requirement.

4.4.10 Although an intermodal facility and freight distribution centre are now firm commitments in the adopted Structure Plan, some of the comments of the Panel in reporting on the Examination in Public are notable: the location of the site is well established; concerns over need and flooding do not rule out the need for some sort of facility; there are no insuperable problems to the principle of location in this area; rail capacity and gauge issues can be overcome; in strategic terms and in principle the location seems a good one. These comments reinforce the documentation supporting the planning application, including the Environmental Statement.

4.5 Devon Minerals Local Plan

4.5.1 The Minerals Local Plan is of relevance to the Exeter Gateway proposal because of the implications of the consented mineral extraction works started but stopped in February 2003, and because there are known to be sand and gravel reserves in the remainder of the application site. At the time of the original planning application submission in 2000, the Devon Minerals Local Plan had reached First Deposit stage. It was eventually adopted in June 2004 and therefore provides up-to-date policy provisions.

4.5.2 Hayes Quarry is the subject of Inset Plan 24 (Appendix 8.2). The Inset Plan shows all of the Exeter Gateway site (excluding the Hayes Farm buildings) to be within a Mineral Consultation Area. It also shows the extent of the planning permission area and what is considered to be the overall area of mineral resource.

4.5.3 The text accompanying Inset Plan 24 describes the location of Hayes Quarry and its geology. The planning history section refers to the series of applications, refusals, eventual consent for extraction and partial working of the site. The consent in September 1997 was for quarrying sand and gravel, infilling with inert materials and restoration to agriculture in the area between Hayes Farm and Coach Bridge. The text describes the ROMP status as a Schedule 14 Review site, with a planning permission which will expire in October, 2008 before the end of the 15 year periodic review. The 'comment' section makes the following remarks about the site:

- Mineral Working Area.
- The Mineral Consultation Area is located on land classified by the Environment Agency as a major aquifer.
- The site lies in the Exeter Area of Economic Activity as described in the Devon Structure Plan First Review, within which it is proposed that provision should be

made for an intermodal facility, 2,000 new dwellings and 40 hectares of employment land within the Plan period.

- The Devon Structure Plan First Review makes provision for intermodal freight facilities in the Exeter Main Area of Economic Activity (policy T16). The Hayes Farm area has been identified as a potential site for this use.
- There are features of national archaeological significance within the Mineral Consultation Area which demonstrate a range of sites dating from Neolithic to Early Medieval periods.

4.5.4 Non-mineral development in Mineral Consultation Areas is controlled by policy MP13. This states that, in the Mineral Consultation Areas, mineral resources will be safeguarded from sterilisation by other forms of development. However, the explanatory text in paragraph 5.2.8 states that, “in considering any proposals for non-mineral development within a Mineral Consultation Area, it will be necessary to assess the need for that development (as opposed to the need for the mineral), and the availability of the mineral elsewhere in the County. For example, it may be that the regional or national need for the non-mineral development could override the need for the mineral”. As set out in Section 8 of the Environmental Statement, the Exeter Gateway proposal would sterilise some of the reserves in the Mineral Consultation Area but its phased implementation would enable the consented area to be exploited where possible and additional extraction associated with the construction works. Because there is an overriding regional need for the intermodal facility (as well as being a Structure Plan proposal) and because some of the mineral cannot be practically extracted in advance of development, it is considered that the Exeter Gateway proposal would comply with paragraph 5.2.8.

4.5.5 The permitted extraction area at Hayes Farm is adjacent to the Exeter Gateway planning application area but within the area assessed by the Environmental Statement. It is designated a Mineral Working Area in the Mineral Local Plan. The explanatory text in paragraph 6.2.10(i) puts this into context and describes the absence of an objection by the Mineral Planning Authority to the Exeter Gateway proposals:

“Hayes Quarry is now included as a Mineral Working Area as it is considered that the reserves with planning permission are sufficient to continue at a substantial scale well beyond the Plan period. It is also noted, however, that the Mineral Site and adjacent land has also been identified in the East Devon Local Plan as a location for the establishment of an intermodal freight terminal which, if developed, would remove all existing and potential future mineral extraction at Hayes Quarry. The County Council, acting as the Strategic Planning Authority and Transport

Authority, resolved to support the proposal for a freight terminal, subject to planning conditions relating to a restriction for B8 warehousing use, the submission of archaeological and landscaping schemes, a waste management audit and wildlife mitigation measures. Acting as the Highway Authority and Mineral Planning Authority, it offered no objection to the development...”

- 4.5.6 Prior extraction of minerals incidental to non-mineral development is permitted under policy MP18, provided that: the extraction does not prejudice the subsequent proposed development; such extraction is no more than is reasonably necessary to enable non-mineral development to take place; it does not cause demonstrable harm to interests of acknowledged importance, having regard to any mitigation or compensatory factors. Section 8 of the Environmental Statement describes the extent of the proposed prior extraction, which would be sufficient to facilitate the proposed development but not excessive in relation to the subsequent construction.
- 4.5.7 The use of secondary and recycled materials is encouraged within policy MP27. Section 8 of the Environmental Statement states that, where practical, the use of secondary aggregates should be encouraged for the proposal’s bulk earthworks requirements.
- 4.5.8 Development control considerations in relation to mineral-related proposals are set out in chapter 12 of the Minerals Local Plan. Any mineral-related proposals resulting from the Exeter Gateway scheme would need to comply with the relevant policies. Where relevant, this is considered in Section 8 of the Environmental Statement.

4.6 East Devon District Local Plan

- 4.6.1 East Devon District Council does not have a statutory district-wide Local Plan although it is now well advanced. The version of the Local Plan covering the period to 2001 did not proceed to adoption because of an objection from the Government Office for the South West that it should cover the period to 2011. It only reached Deposit stage in 1996. Subsequently the Council started work on a Local Plan to conform to the adopted Structure Plan. The Revised Deposit version of September 2003 has been subject to a two-part inquiry. The first part dealt with strategic matters and the major developments proposed east of Exeter (Chapters 2 and 12). The Inspector’s report was published in March, 2005 and the recommendations have subsequently been endorsed by East Devon District Council. The Inspector’s report into Part 2 of the Inquiry dealing with remaining objections is due later in 2005. There follows a review of the relevant sections of both the 1996 Deposit and the emerging district-wide Local Plans, although the status and out-of-date nature of the former means that it carries relatively little weight when considering the Exeter Gateway proposal. It is the latter that is the substantive document in relation to this proposal.

1996 Deposit East Devon District Local Plan

- 4.6.2 On the proposals map, the Exeter Gateway site is shown to be within a Mineral Consultation Area. Policy EN9 reiterates the corresponding policy in the Consultation Draft Devon Minerals Local Plan and states that, in Mineral Consultation Areas, non-mineral development, which could sterilise mineral deposits, will not be permitted except where it is necessary for the economic or social well being of the area. This policy is now superseded by policy MP13 in the Deposit version of the Minerals Local Plan and the implications for the Exeter Gateway proposal are explained in the policy analysis relating to the Minerals Local Plan.
- 4.6.3 The only other proposals map designation affecting the site is the 'open land between or adjacent to settlements'. This abuts part of the western side of the application area but does not include any of the application site. Policies EN6 and EN7 which seek to maintain the openness and to enhance this area are therefore inapplicable because they only relate to proposed developments within the designated area.
- 4.6.4 In relation to the environment, policy EN1 states that the aims of sustainability and the conservation of the environmental wealth of East Devon will be given priority when considering development proposals. The sustainability of the Exeter Gateway is already referred to in the Deposit Devon Minerals Local Plan and environmental issues are considered in detail throughout the Environmental Statement.
- 4.6.5 The polluting effects of development are controlled by policy EN3 which sets out criteria by which to assess this issue. The potential implications of the proposal in relation to pollution by water, air and noise are considered in Sections 9, 11 and 12 of the Environmental Statement.
- 4.6.6 Policy EN4 assesses the acceptability of proposals in relation to contaminated land. This is dealt with in Section 16 of the Environmental Statement with regard to the on-site waste affecting the proposal.
- 4.6.7 Policy EN8 deals with agricultural land quality and replicates the provisions of policy CO14 in the adopted Devon Structure Plan (see above).
- 4.6.8 Policies EN12 and EN13 concern habitat protection. They prohibit development having an adverse impact on species protected by law, and wherever possible, protects from development of sites supporting important wildlife habitats. Section 13 of the Environmental Statement provides an assessment of the impact on important ecological features within the application area. It identifies the presence of statutory protected species that will be affected or maybe influenced by the development. At this stage of the outline application, the mitigation measures have been identified in

broad terms by way of conserving habitats of importance adjacent to the development and identifying habitat replacement and enhancement.

- 4.6.9 Policies EN16 and EN17 address archaeology and reiterate the key considerations found in Structure Plan policy and Government guidance. Section 15 of the Environmental Statement describes the extent of the site investigations undertaken, the need for further investigations and the consequent mitigation, in line with policy advice.
- 4.6.10 Local Plan policies on employment provision relate to the period to 2001. As the Exeter Gateway proposal will be implemented after this date, these policies are not applicable.
- 4.6.11 The accessibility of the new development is addressed in policy TA3 which requires proposals to make appropriate provision for access by pedestrians, cyclists and public transport, and to be well related to other land uses so as to minimise the need to travel by private car. The Traffic Impact Assessment accompanying the application explains in detail how the proposal will make adequate provision for non-car access. The site is well related to the Exeter urban area and to the proposed new settlement. It is also in close proximity to Exeter Airport and the proposed 'Skypark' employment area. The Exeter Main Area of Economic Activity and Exeter PUA, in which the site is situated, was designated in the Structure Plan specifically to establish a grouping of sustainable developments well related to Exeter and the sub-region. In addition, the intermodal facility will result in the transfer of freight traffic from road to rail.
- 4.6.12 Policies TA4, TA5, TA6 and TA9 set out development control requirements relating to other access issues, including new access points, other highway improvements, parking/servicing provision and bus services. The Exeter Gateway proposal has been designed to accord with these requirements, where appropriate, the details of which are set out in the Traffic Impact Assessment submitted in 2000. The addendum to the Traffic Assessment has been appended to this Environmental Statement (See Appendix 10.1).

East Devon District Local Plan 2001-2011

- 4.6.13 The Local Plan Inquiry Inspector's overall conclusion is that the Local Plan's proposals for major developments in the Exeter AEA/PUA are "soundly based" and in accordance with the superseded and adopted Structure Plans, RPG10 and PPG3.
- 4.6.14 With regard to the overall strategy for the Local Plan, paragraph 2.24 lists the key land use developments to 2011 and these include an "intermodal facility for the transfer of freight and a freight distribution centre". This is reiterated in Policy S1B which also refers to the need to integrate the various major developments and pay close attention to phasing.

4.6.15 Policy AEA2 deals with the intermodal facility. The endorsed policy states the following:

“Proposal PUA2 (Intermodal Facility for the Transfer of Freight and a Freight Distribution Centre)”

“A site is identified on the Proposals Map for an intermodal facility for the transfer of freight and a freight distribution centre (B8 and ancillary B1 uses). In order to comply with the Devon Structure Plan land uses on the site shall be restricted to the transfer and handling of freight. Before development commences on the site a full archaeological investigation shall be carried out. Before the occupation of any warehouse unit, an adequate rail junction with the Exeter-Salisbury mainline is required and the intermodal freight terminal is to be completed and ready for occupation. The rail junction and intermodal freight terminal shall remain in place indefinitely.

The identified site occupies a gross area of 65 hectares of which 44 hectares will be developed for the intermodal facility for the transfer of freight and a freight distribution centre. Of this developable area some 20 hectares of land for freight handling facilities and part of the distribution centre is envisaged to be developed in the plan period, although the Local Plan does not preclude completion of the entire scheme prior to 2011”.

4.6.16 Accompanying paragraphs 12.9, 12.9a and 12.9b refer to the conclusions of the SWARMMS report, describe the form and function of the intermodal terminal and distribution centre, and refer to the position of the Mineral Planning Authority in not objecting to this proposal. In addition, paragraph 6.13(ii) makes clear that the intermodal facility is not classified as an employment site under plan policy but it will offer transport-related employment opportunities. In other words, it does not count against the Structure Plan’s employment land requirements for East Devon District. It is also notable that the Local Plan proposals map allocation accords with the planning application proposals.

4.6.17 Proposal AEA5 relates to the delivery of the Clyst Honiton bypass in connection with the major developments east of Exeter, including Exeter Gateway. The proposals address this policy requirement through the mechanism described in the Memorandum of Agreement (see Transport Assessment Addendum). This in part addresses infrastructure issues also referred to in policy S5.

4.6.18 There are a number of ‘Part 2 Inquiry’ policies that are also relevant and these are described below in their Revised Deposit form.

- 4.6.19 Policy S4 protects the countryside but specifically allows development where it is in accordance with a specific Local Plan policy that permits such development. This is the case for Exeter Gateway (proposal PUA2).
- 4.6.20 Development control issues relating to design and associated matters are addressed via policies D1 to D5. In the context of the current outline planning application, it is considered that the proposals meet the relevant criteria, noting that many issues will need to be dealt with at the detailed design stage.
- 4.6.21 The western part of the site abuts a ‘green wedge’ but, because policy EN4 relates to development *within* it, there can be no conflict with the Exeter Gateway proposals. Policy EN9 deals with non-designated wildlife habitats and features. Policy EN10 only allows development which is likely to have an adverse effect on species protected by law where appropriate measures are taken to secure their protection. Various parts of the Environmental Statement describe how the scheme responds to such issues.
- 4.6.22 Policy EN11 only allows development involving the destruction or damage to nationally and locally important archaeology sites where the reasons for development outweigh the need to safeguard the remains in situ and there are no reasonable, less damaging solutions. As described above in relation to other similar policies and in more detail in Section 15, English Heritage has agreed an approach based on preservation by record.
- 4.6.23 Policy EN20 deals with agricultural land quality and largely replicates the provisions of policy CO14 in the adopted Devon Structure Plan (see above). The policy specifically allows development of high grade land where the benefits of the development justify its loss. It is considered that the strategic and other benefits of Exeter Gateway provide such a justification.
- 4.6.24 Issues relating to pollution, contaminated land, water resources and drainage are addressed by policies, EN21, EN22, EN23 and EN24/EN27, respectively. Various sections of the Environmental Statement deal with each.
- 4.6.25 The Traffic Impact Assessment and the Addendum accompanying the Exeter Gateway planning application address matters of accessibility, traffic management, transport assessment/green travel plans, pedestrians/cyclists, site access and parking under policies TA1-TA4, TA6 and TA8.

4.7 Summary

- 4.7.1 The planning policy framework for assessing the Exeter Gateway proposal operates at several levels: Central Government policy advice; regional planning guidance for

the South West; the Structure and Minerals Local Plans for Devon; and, the East Devon District Local Plan.

- 4.7.2 The Exeter Gateway proposal would comply with the relevant aspects of the planning policy framework. Most significantly, there is now in place a complete hierarchy of policy that supports the development of the Exeter Gateway IFFDC. This cascades down from Central Government support via PPG13 in particular, the Government's strategy for sustainable distribution and the 10 Year Plan, the SRA's Strategic Rail Freight Interchange Policy, the SWARMMS report (that identified the site as the most appropriate), RPG10, successive Devon Structure Plans (requiring such a facility in the Exeter PUA) and the well advanced East Devon Local Plan (that allocates the application site for the proposed use). Exeter Gateway would also complement the proposed 'Skypark' employment area, Airport expansion plans and proposed terminal, as well as the new settlement, providing a focus for a sustainable mix of developments with good access to several key transport modes (rail, improved roads and air).
- 4.7.3 The Environmental Statement, Traffic Impact Assessment and Rail Report set out in detail how the Exeter Gateway proposals meet the relevant policy criteria in the development plan.

5 NEED FOR THE DEVELOPMENT

5.1 Introduction

The need for the development has been assessed in the separate rail report⁵ and subsequent SWARMMS report⁷. This section summarises these reports.

5.2 Policy

- 5.2.1 At a national level, Government policy is to encourage more freight to transfer from road to rail. This policy is transfused through the planning system at Regional, County and District level, through the emerging 'Plan led' process to deliver more transport decision making which integrates Transport and Land Use Planning. The relevant national, regional and local plan policies are considered in section 4.
- 5.2.2 The Transport Bill came into force in 2000 and promotes the integration of road and rail networks. There is a general requirement, promoted by the Strategic Rail Authority and the Rail Regulator, to promote the expansion of the rail freight industry. The movement of freight from road to rail has potential benefits with respect to achieving limits to greenhouse gas emissions, with respect to the government's commitment under the UN Framework Convention on Climate Change. The shift of freight transport to rail would also positively effect regional and local air quality standards and actual or perceived congestion on the strategic road network.
- 5.2.3 The development of facilities such as Exeter Gateway, in tandem with greater use of public transport, car sharing, use of bicycles and walking will affect small but incremental steps to increased sustainability in transport policy and thus lead to a reduction in greenhouse gas (in particular CO₂) emissions.
- 5.2.4 It is recognised that for the commercial development of intermodal facilities the geographical and location aspects of the site, with respect to transport links are of paramount importance. These interrelationships are identified in PPG13 which requires rail freight terminals to be *located away from congested areas and residential areas, but with direct (highway) access to the trunk road rather than local road network*.
- 5.2.5 The rail sector of the transport industry aims to fulfil the promotion of a sustainable transport policy by increasing its share of the freight market. However, the infrastructure, namely transfer terminals for freight between road and rail, have either disappeared in the 1950s & 60s under the 'Beeching Rail Axe', or are now located in the wrong places away from the business and industry with inadequate access to the trunk road and motorway network.

⁵ Exeter Gateway Rail Report prepared by Gill Associates July 2000.

⁷ Government Office for the South West – London to South West and South Wales, Multi Modal Study, Halcro Group, May 2002.

- 5.2.6 The development of Intermodal Facilities and Freight Distribution Centres (IFFDC) enables an increased volume of freight to be transferred more efficiently from rail to road (considered in detail in the SWARMMS report). The size and complexity of the IFFDC depends on the market hinterland and the range of freight goods required by that market.
- 5.2.7 The strategy has to coincide with other site features, for example:
- Suitable gradient for railway engineering
 - Road access
 - Approximately 40ha of land, which can be developed, within the vicinity of the terminal for a phased expansion of related activities.
 - Location near to area of existing industrial and economic activity to provide a core of potential local freight traffic.
- 5.2.8 The potential for a strategic intermodal facility in the south west has been considered in the EU funded Trans European Network Study (TENS). In the report, Network Rail and the freight train operating companies (EWS and Freightliner) identified Exeter Gateway as a part of a network of terminals to serve the south west region.
- 5.2.9 The location of Exeter Gateway is the result of an independent site selection study, included in the Rail Report. The Government office for the South West commissioned a study of multi-modal transport for the south west, which issued the final report in May 2002. The report considered a number of locations (Westbury, Avonmouth; Taunton, Somerset, Exeter Gateway; Plymouth, Devon and Roche, mid Cornwall). The study identified that of the available sites, Exeter Gateway had the best potential, where it could be combined with as urban freight distribution centre for Exeter (see section 4).
- 5.2.10 Following identification of Exeter Gateway it has received considerable support from the rail industry.

5.3 Market

- 5.3.1 The transport industry in general has identified the need to reduce HGV pollution and congestion on our road network. The principal train operating company (EWS) has consistently supported the development of Exeter Gateway due to the relatively poor (due to road access) terminal facilities within Exeter, which have limited expansion capability due to restrictions on space.
- 5.3.2 Network Rail have identified Exeter Gateway as 'ideal for links to the highway and can be easily connected to the mainline' and have assessed the requirements of

upgrading the existing traffic infrastructure to support the development proposals should planning consent be granted (see Appendix 6.2).

- 5.3.3 The ease of access to the local and strategic road network provides a positive indicator that take up of warehouse space would be generated by haulage and logistic companies, delivering to the Exeter market.

There may be a synergy between the development of Exeter Airport and the adjacent IFFDC provide a sub-regional hub for intermodal transport.

5.4 Summary

- 5.4.1 The proposed IFFDC at Exeter Gateway has good access to all modes of transport - rail, road and air. It is located in the area of Exeter's economic activity and is not in a built up residential area. The logistics and distribution industry research confirms there is a current and future market demand for an intermodal facility in this location.
- 5.4.2 Exeter Gateway is likely to be one of a number of intermodal facilities located throughout the south west interchanging increasing freight for the Exeter area and outgoing freight from the region and possibly Europe to other parts of the UK.

6 SCOPING ANALYSIS

6.1 Introduction

6.1.1 A scoping report was sent to a range of consultees who have an interest in the site and the proposed development. The scoping report identified the full area of the potential development i.e. phases 1 and 2. The environmental issues identified through the scoping process relate to the study area. This has been continued with the studies for the environmental assessment.

6.2 Environmental interests

6.2.1 The range of environmental interests and potential effects of the development of the IFFDC on them are summarised in Table 6.1.

Table 6.1 Environmental interests	
Environmental interest	Potentially vulnerable to
Landscape setting	<ul style="list-style-type: none"> • impact on rural landscape character and area of high landscape character • visual intrusion from identified receptors
Cultural heritage	<ul style="list-style-type: none"> • loss or disturbance of archaeological features • impact on setting of scheduled ancient monuments
Highways	<ul style="list-style-type: none"> • proposed access arrangements • impact upon road structure and drainage • increased traffic volume
Settlement <ul style="list-style-type: none"> • Clyst Honiton • Shercroft Close/ Cotterell Road/Clyst Avenue • Adjacent office/commercial development (Skypark) • Cranbrook (New Community) • Individual properties: Hayes House (demolition thereof) Coachfield House Clystlands Mosshayne Cottage and Farm Water/Stone Hayes 	<ul style="list-style-type: none"> • noise & emissions to air • visual intrusion and obstruction • disturbance from traffic • impact on private water supplies
Flora and fauna	<ul style="list-style-type: none"> • River Exe SPA, Ramsar and SSSI • loss of hedgeline habitats • disturbance to fauna and flora of the water course crossing the site • loss and fragmentation of habitat • protected species (small mammals (including bats), amphibia) • breeding birds
Water resources	<ul style="list-style-type: none"> • change in volume and runoff regime • reduction in water quality • impact upon groundwater.
Public rights of way	<ul style="list-style-type: none"> • disturbance to amenity • disruption of routes
Landuse, agriculture and soils resources	<ul style="list-style-type: none"> • agricultural land quality • farm viability • contaminated land/landfill site
Material assets	<ul style="list-style-type: none"> • Hayes Farm sand and gravel site • Exeter airport • Hayes House • C832

6.3 Consultations

6.3.1 The purpose of the scoping process was to approach all statutory consultees to determine the issues that should be addressed within the Environmental Impact Assessment and to prioritise aspects of the assessment, which require detailed analysis. Certain non-statutory consultees were also contacted. The list of consultees was as follows;

East Devon District Council	Planning/Landscape/Conservation & Rights of way/Environmental health and protection/Highways
Devon County Council	Mineral Planning/Highways/County Archaeologist
English Heritage	Scheduled Monuments
FRCA	Soils & Agriculture
English Nature	Nature conservation and protection
Environment Agency	Water Resources/Conservation/Contamination
Devon Wildlife Trust	Nature Conservation and Protection
Parish Councils	Local community
Exeter Airport	Material assets
Civil Aviation Authority	Material assets
Hayes Sand & Gravel Co	Material assets
Utility Companies	Gas, water, electricity, telephone, drainage, cable, TV, street lighting
Network Rail	Transport

6.3.2 In 2001 and 2002 further consultation was undertaken with English Heritage and the County Archaeologist that resulted in the reissue of the section on Cultural Heritage, which now forms a part of the updated ES. During 2001 – 2003 further consultation was undertaken with the Environment Agency, which also resulted in technical appendices with respect to protected species surveys, flood risk assessment and the outline approach to SuDs.

In 2005, further consultation was undertaken with English Nature with respect to survey work undertaken in the period May – July 2005, principally to re-establish the baseline position for protected species.

6.3.3 A full list of correspondence resulting from the scoping report and subsequent correspondence in the period 2000-2003 is given in Appendix 6.1-6.3. In summary the following issues have been raised:

East Devon

District Council: General agreement with the scope of the EIA. Attention was drawn to the aspect of noise and air pollution with respect to existing residential areas and any new proposed housing developments. The application should be amended to remove the indicative link of the link road (to the A30(T)) from all plans and update the Environmental Statement in line with technical reports that have been produced subsequent to the submission of the last application.

Devon County

Council: No response in writing although there has been close collaboration in the nature of the proposed development. The County Council have commissioned a separate EIA of the Clyst Honiton bypass, this has been prepared by Parsons Brinckerhoff Ltd and was released in July 2005.

English Heritage:

Emphasise guidance in PPG16 and suggest that a geophysical survey may be prudent to target areas for exploratory archaeology investigation. Initial consultations following submission of the 2001 ES for Exeter Gateway identified that insufficient weight had been applied to the grouping of SMR:

- SX99SE/3 (group of three bronze age ring ditches – former burial grounds);
- SX99SE/153 (prehistoric or Romano-British farmstead enclosure);
- SX99SE/156 (post Roman settlement enclosure);
- SX99SE/154 (Romano-British farmstead enclosure);
- SX99SE/155 (post Roman settlement enclosure);
- SX99SE/215 (farmstead enclosure); and
- SX99SE/214 (bronze age ring-ditch).

Parallel studies being undertaken by EH identified the group of sites as being potentially of national importance. English Heritage, in consultation with the County Archaeologist have considered the potential impacts associated with the development, with respect to location specific requirements of an intermodal facility (for example the emerging SWARMMS report). As a result of this assessment, EH requested that the EIA reconsider the weight attached to the predicted impacts and that mitigation measures, to include a detailed field evaluation and record of the group of sites be identified as a requirement prior to development in Phase 1.

- FRCA: No overriding objections relating to the loss of agricultural land.
- English Nature: No specific information, advised discussions with the Wildlife Trust. The details of updated survey work and associated impact assessment have been submitted to English Nature for review. A scoping report for an Appropriate Assessment with respect to the River Exe SPA has been submitted to EN (see Appendix 13.11). English Nature's response to this correspondence is given in Appendix 13.12. In summary English Nature:
- have requested further information in relation to potential environmental impacts in the construction phase of the development.
 - highlighted points of clarification within the ES in relation to bats, badgers, otter, breeding birds, hedges and trees, flora, landscaping and issues relating to the River Clyst.
- Environment Agency: Pollution controls issues associated with the closed landfill are identified and guidance on the relevant waste management issues is given. The EA provided further details of the detailed work and permits required prior to work commencing on earthworks associated with the closed landfill. The 2000 EIA identified a range of technical reports that would be prepared and submitted with the detailed application for Phase 1 these would be based on the Source-Pathway-Receptor risk assessment methodology. The detailed reports would include the results from site investigation and groundwater monitoring required to establish a more detailed consideration of the baseline situation.

Treatment of surface water and foul drainage was identified as requiring a discharge consent. An additional technical report has been prepared that provides an outline consideration of SuDs for the Phase 1 development (see Appendix 9.1).

Biodiversity policies within the River Exe corridor should be addressed. The policies have been reconsidered in light of baseline data obtained in 2005.

The extent of the flood plain and its protection with respect to built development is reinforced. An additional technical report has been prepared that provides a flood risk assessment (FRA) for the Phase 1 development (see Appendix 9.1).

The safeguard of licensed and private abstraction is identified as important (No further information required).

Devon Wildlife Trust: Identified that the following issues should be addressed: quantify the loss of hedgerows/woodland, fencing to protect existing woodland, reference of the Local Wildlife site at Exeter Airport and on going management in relation to habitat creation.

Clyst Honiton
Parish Council: Object to an application on ground of economic justification and urbanisation. Require that the EIA consider the total development as opposed to the first phase. Identify the importance of a link road to the A30(T). Identify concerns relating to the closed landfill.

Provide additional information and criticism of the scoping impact matrix.

Broadclyst Parish
Council: Identified that the following issues should be addressed: an assessment of flood plain issues, noise levels at Mosshayne, traffic routing along Station Rd, Broadclyst, handling asbestos within the closed landfill and protection of the existing woodland within the study area.

Exeter Airport: Concern that any landscape proposals did not attract birds in the vicinity of the airport.

Civil Aviation Authority: Referred to Exeter Airport regarding a response to the scoping study. Requested further information on the elevation of the proposed built development with respect to the development.

Hayes Sand & Gravel: Requested more information on the nature of the proposed development. The mineral site has been mothballed and there is currently no active mineral working at this time.

Utility Companies: Details of existing utility infrastructure in or adjacent to the site. This assessment has not been updated from that originally submitted.

6.4 Scope of work

6.4.1 The following scope of work has been defined:

- A full assessment of baseline parameters. The assessment included a study of cultural heritage, flora and fauna, water resources, landscape setting and visual impacts on the surrounding area. The background information from other existing and proposed developments has been obtained including the sand and gravel workings, A30(T) and associated road infrastructure and the Skypark development at Exeter airport. The environmental effects identified in the Skypark EIA have been taken into consideration in this assessment.
- Identification and magnitude of environmental impacts associated with the development.
- Description of proposed mitigation measures where appropriate and any residual impacts.
- For the updated ES, for each technical section, a summary of the predicted impacts and associated mitigation measure has been produced in tabular form.
- A separate section on the cumulative impacts that takes in account negative, neutral, positive and synergistic effects associated with the proposed development.
- A traffic assessment (TA) has been prepared based upon traffic flows and growth assumptions agreed with East Devon District Council and Devon County Council. This was initially prepared as a separate stand alone report, which has been updated with a TA addendum issued in May 2005. The addendum report has been submitted to EDDC, however it has also been included in this ES in Appendix 10.1.

6.4.2 With respect to identified environmental issues (Table 6.1) the following scope of work has been identified as summarised below:

Landscape and visual impact

- 6.4.3 Field study will determine the sensitive receptors and the extent to which they are likely to experience visual disturbance. The surrounding landscape character will be assessed and the extent to which the development would impact upon the setting will be determined. Visual impacts during day light and night time have been assessed. Appropriate mitigation such as the development landform and use of landscape screening where feasible will be assessed. Photomontage visualisations of the development have been prepared for selected viewpoints (Appendix 14.4). The landscape section has been revised and update to take account of the Landscape Institute Guidelines on Environmental Impact Assessment issued in 2003. The conclusions to the report have not altered substantially, although the revised assessment has enabled a more detailed consideration of individual impacts (specifically in terms of visual impact).

Cultural Heritage

- 6.4.4 A desk study would be conducted using available material and information from Sites and Monuments Records, old OS maps and consultation with the County Archaeologist. This would be verified by a field survey. The assessment would follow the guidance of PPG15: *Planning and the Historic Environment*. The County archaeologist will advise upon the need for further investigation, dependent upon the presence of crop marks or features thought to be related to entries on the SMR. The Cultural Heritage section was revised and updated in 2002, the SMR was re-consulted in 2005, in conjunction with verbal discussions with the County Archaeologist.

Traffic

- 6.4.5 A traffic assessment based upon data sets agreed with Devon County Council. Consultants Savell, Bird & Axon, have undertaken this study which has been submitted as a separate report. The study has been summarised in the environmental statement to enable cross-referencing to the noise and air emissions sections, which are also draw upon data in the Clyst Honiton bypass Environmental Statement. The TA addendum is included as Appendix 10.1.

Landuse/agriculture

- 6.4.6 The proposed development area comprises agricultural fields used predominantly for arable agriculture. Part of the land is identified in the Deposit Minerals Local Plan. The issue of previous land uses will be addressed in particular mineral exploitation and the former landfill site. The technical report is unaltered, a summary of the predicted impacts and mitigation has been included.

Noise

- 6.4.7 Baseline conditions will be monitored at locations, to be agreed with the Environmental Health Officer. The following locations were identified for discussion purposes:

- Clystlands (Shercroft Close);
- Shermoor Farm (Cotterell Road);
- Coachfield House (junction of Station Road and the C832); and
- Stone Hayes/ Water Hayes (located on the junction of Waterslade Lane and the C832).

Hayes House and outbuildings would be demolished prior to development and have therefore, not been included in this assessment.

6.4.8 The location and monitoring schedule was agreed with the Environmental Protection Officer at EDDC. The property at Mosshayne was not included in this part of the study, due to the distance of the property from the development boundary. However, an indication of night time noise levels have been calculated. The identification of potential impacts will be based on assessment methodology in BS4142 and Design Manual for Road and Bridges (DMRB Vol 11). The issue of night noise associated with goods train arrivals will also be assessed.

6.4.9 The baseline noise levels have been reassessed in April 2005 taking representative measurements during the afternoon, evening and night periods at each location. The description of each monitoring location has been updated. Transport noise has been considered in the Clyst Honiton bypass ES and has therefore been removed from this ES. A model of noise emissions during construction and operation of the IFFDC has been developed to calculate worst case predicted noise levels at residential receptors.

Air Quality

6.4.10 The land within the study area is predominantly in agricultural use, field boundaries are generally maintained hedgerows with abundant trees, or post and wire fence. The original assessment process in 2000 involved a Phase 1 survey (that do to time constraints) was conducted out of season. Following initial discussion with the conservation team at the Environment Agency a further extended Phase 1 survey was undertaken during 2001 in conjunction with protected species surveys for small mammals (including bats), invertebrates and breeding birds (one off survey). English Nature also requested that the potential impacts on the Exe Estuary SPA and SSSI, of which the River Clyst is a tributary, were assessed. Therefore, during 2005 the baseline data obtained in 2001 has been extensively resurveyed reassessed with respect to the potential impacts and mitigation sections.

A scoping report to determine whether an Appropriate Assessment is required to examine the impacts on the Exe Estuary SPA has been forwarded to English Nature and the relevant correspondence has been provided in Appendices to this section.

Water resources

6.4.11 The assessment of water resources within and adjacent to the proposed development would utilise available information from the Environment Agency relating to groundwater and surface water courses. This information has been used to assess the effect, if any, upon adjacent watercourses and groundwater due to the construction of the site and its operation. This will be closely linked to the assessment on flora and fauna. Potential impacts on the adjacent flood plain would be assessed. Mitigation measures would include sustainable approach to surface water control promoted by the Environment Agency. The section was updated during 2001 to 2003 to take account of consultation response from the Environment Agency. These reports and associated correspondence has been attached as technical appendices to the original section, which has been updated with a summary of predicted impacts and mitigation section.

Flora and Fauna

6.4.12 The land within the study area is predominantly in agricultural use, field boundaries are generally maintained hedgerows with abundant trees, or post and wire fence. The original assessment process in 2000 involved a Phase 1 survey (that do to time constraints) was conducted out of season. Following initial discussion with the conservation team at the Environment Agency a further extended Phase 1 survey was undertaken during 2001 in conjunction with protected species surveys for small mammals (including bats), invertebrates and breeding birds (one off survey). English Nature also requested that the potential impacts on the Exe Estuary SPA and SSSI, of which the River Clyst is a tributary, were assessed. Therefore, during 2005 the baseline data obtained in 2001 has been extensively resurveyed reassessed with respect to the potential impacts and mitigation sections.

6.4.13 A scoping report to determine whether an Appropriate Assessment is required to examine the impacts on the Exe Estuary SPA has been forwarded to English Nature and the relevant correspondence has been provided in Appendices to this section.

Material assets

6.4.14 The potential impacts on the adjacent sand and gravel operation, Exeter Airport and Skypark have been investigated. The land is also identified within the Minerals Local Plan (adopted June 2004) and therefore the sterilisation of potential mineral reserves has been assessed with regard to these policies. This section has been updated with respect to the mothballing of the quarry and the applications for the New Community (Cranbrook), Exeter Airport, Skypark and the Clyst Honiton bypass to the A30(T).

Alternative sites

6.4.15 A detailed study of the alternative sites within the Exeter Region including the rationale for developing an intermodal facility in the south west strategic corridor has been prepared by Gill Associates contained in the Rail Report. The study identifies the combination of road and rail connections along with land take requirements necessary for the development of an IFFDC. Taking account of these factors a number of sites were identified for further study. Analysis of individual sites comprised reconnaissance and brief appraisal of infrastructure and environmental issues. The site at Hayes Farm was selected from this process for more detailed study. The rail study has been superseded by the SWARMMS report published in 2002, which also identified the Exeter Gateway site as a preferred location for an intermodal facility in the South West.

Alternative forms of development

6.4.15 The rationale for the IFFDC is explained in the separately bound Rail Report, prepared by Gill Associates and in the SWARMMS report published in 2002.

Cumulative impact

6.4.16 An additional section has been prepared to consider the cumulative impacts associated with the proposed development (Section 18).

Summary of environmental effects

6.4.17 An additional section to the original ES (Section 19).

Management, monitoring and schemes to be agreed

6.4.18 This section identifies the requirement for additional studies that will be required prior to a detailed application for Phase 1. A list of conditional licenses, authorisations and an indication of schemes to be agreed with the planning authority prior to implementation of a consent, should it be granted have also been identified.

6.5 Summary

6.5.1 The purpose of the scoping study is to identify the key environmental impacts associated with the proposed development. This has been accomplished by consulting with relevant statutory and non-statutory consultees. A range of potential issues has been identified as a result of this process and these are summarised in Table 6.2. Further more detailed studies of particular environmental impacts have also been identified as part of the assessment process. It is anticipated that these detailed studies would be undertaken prior to the detailed application relating to the Phase 1 development area.

6.5.2 The scope of the assessment also takes account of the EIA prepared for the Skypark and Exeter & Devon Airport Development, Cranbrook (New Community), also submitted as an outline planning application and the Clyst Honiton bypass currently under preparation.

- 6.5.3 Gill Associates have undertaken an analysis of alternative site and the results of this study, which identified Hayes Farm (Exeter Gateway) as the preferred site for IFFDC development has been submitted in a separately bound report.

Table 6.2 Potential releases and effects											
Site activity	Landuse	Surface Water	Ground Water	Air quality	Noise	Visual	Landscape	Wildlife	Cultural heritage	Traffic	Material assets
Establishment											
Site landscaping	○	○	○	○	○	□	□	□	○	○	●
Soil handling	●	●	○	○	○	●	○	●	●	○	○
Access and infrastructure, construction & building construction	○	●	●	○	○	●	●	○	○	●	●
Development landform	○	○	○	○	●	●	●	○	○	○	●
Operational											
Goods arrival handling and onward transportation	■	●	●	●	●	●	●	-	-	●	●
Offices, car parks etc	□	○	○	○	○	○	○	○	○	●	○
Traffic off site	○	○	○	●	●	○	○	○	○	○	○
Note: ○ Potential minor negative impact ● Potential negative impact requiring investigation and assessment □ Potential minor positive impact ■ Potential positive impact requiring investigation.											

7 SOILS AND AGRICULTURE

7.1 Introduction

7.1.1 This section of the Environmental Assessment investigates the potential impacts of the proposed development upon soil resources and agriculture. It considers aspects of agricultural and soil characteristics from climate, topography and site drainage to the depth of soil resources and their qualities such as texture.

7.1.2 The site was inspected between 23 – 25 November 1999 by a soil scientist, other information regarding the site was researched from the following sources:

- Soils and their use in South West England. Bulletin 14, SSEW, plus associated 1:250,000 plan;
- Climatological Data for Agricultural Land Classification, Met Office, 1989;
- Agricultural Land Classification of England and Wales, MAFF, 1988, plus 1:250,000 ALC sheet;
- National Rivers Authority (now the Environment Agency) – flood data; and
- FRCA Consultation.

7.1.3 Soil profile characteristics were investigated across the site, using a 50mm diameter hand-held Edelman Auger capable of sampling to a depth of 120cm, at approximately one auger per hectare (see Figure 7.1).

7.1.4 The survey area extended between the C832 delimiting the south east, the River Clyst to the west, the Exeter St David's to Waterloo rail line to the north and a hedgeline in the north-east. Hayes Quarry was excluded from the site survey.

7.1.5 The fields in the west of the site, adjacent to the River Clyst, are wet meadows currently used for grazing. The closed landfill has been restored to a single field, which has been sown to pasture and can either be used for grazing or cutting. A small field to the east of the landfill has been retained as a hollow and is not currently used for agriculture. The remaining fields are used for arable crop production. At the time of the survey three of the fields remained in the stubble of the previous crop. One field (B) had been sown to winter wheat.

7.1.6 A summary of each field with respect to agricultural use and soil characteristics is given in Table 7.1 (see Figure 7.1 for field references).

Table 7.1 Description of fields, their uses and general soil type			
Field ID	Area (ha)	Use	Soil Characteristics
A	7.0	Eastern half contains unmanaged (rank) grasses, the western half contained wheat stubble with an established weedy understorey.	Medium, sandy silty loam with moderate, medium angular blocky structure. Subsoil sand to silt or gravel, gravel at 65cm+ depth.
B	10.9	Emergent winter wheat.	Topsoil stony with medium, sandy silty loam and moderate, medium angular blocky structure. Subsoil silty to sandy clay loam with gravel at depth.
C	9.5	Wheat stubble with established weedy understorey.	Medium, sandy silty loam with moderate, medium angular blocky structure. Subsoil sandy clay or sandy silty clay loam over variable wet sand or gravel.
D	3.5	Wheat stubble with established weedy understorey.	Medium, sandy silty loam with moderate, medium angular blocky structure. Subsoil of sand or sandy or silty clay.
E	1.0	Unmanaged wetland grasses and rushes.	Clay loam over landfill materials (clay, rubble etc.).
F	3.7	Managed for silage/hay, over landfill	Medium, sandy silty loam over very coarse stony clay.
G	4.9	Recently ploughed straw.	Medium, sandy silty loam with moderate, medium angular blocky structure. Subsoil silty clay or sand to depth.
H	3.2	Wet pasture.	Medium to coarse silty clay loam over mottled clay.
I	4.3	Wet pasture.	Medium silty clay loam over variable mottled clay, clay loam and sandy clay.
J	4.1	Wet pasture.	Medium sandy clay loam to clay, continuing at depth, mottled or gleyed at depth.
K	2.9	Wet pasture.	Medium clay loam or silty clay loam over variable clay, clay loam and sandy clay, mottled at depth.
Quarry	4.7	Sand and gravel quarry (existing footprint)	No soils present within quarry area. A further 5.1ha is currently in agricultural use.
Hayes House	2.8	Residential and farm buildings, surrounding open space.	Medium, sandy silty loam with moderate, medium angular blocky structure. Subsoil sand to silt or gravel, gravel at 65cm+ depth.
Other areas	3.9	Woodland, hedgerows, access track and ditches.	Not investigated.
TOTAL	66.4		

7.2 Baseline conditions

Agricultural units

- 7.2.1 The land at Hayes Farm is subject to a single agricultural tenancy agreement, with Mr Northmoor of Marlborough Farm, Clyst Honiton. The business operates on approximately 200ha within the locality through both ownership and tenancy. The Hayes Farm tenancy has been let to Mr Northmoor by the Church Commissioners for England on a series of two year tenancies.
- 7.2.2 Hayes Quarry occupied approximately 4.7ha of the site, which is not currently available for agriculture. During 2003, the operator Hayes Quarry Ltd handed back the lease, which was due for renewal and the quarry is currently mothballed. The full extent of the permission is 9.8ha. Soil surveys commissioned prior to mineral extraction defined the quarry site as best and most versatile agricultural land. The existing restoration and aftercare conditions require that the quarry is restored to an agricultural afteruse following mineral extraction.

- 7.2.3 Fields B, C, D and G, plus the remainder of field A not lying within the quarry permission area, are used for arable crop production. These fields total 32.3ha in area. Fields B and G were the only fields being used for crop production at the time of inspection, field B containing emergent winter wheat and field G having recently been ploughed following a wheat crop. Fields A, C and D contained wheat stubble and weeds.
- 7.2.4 Fields E and F have been restored following landfill. Field E is at a lower elevation than the surrounding land and contains a Y-shaped ditch. The ground here is wet and marshy with rushes and nettles predominant. No grazing takes place in this field. Field F is at a higher elevation than most of the adjacent fields and contains grassland managed for silage or hay. Fields E and F total approximately 4.7ha of non-agricultural land.
- 7.2.5 Fields H – K are pasture totalling approximately 14.5 ha. Field K had sheep in at the time of inspection. A narrow strip of land to the immediate north of field K was also inspected, this area contained ungrazed grass and other herbaceous species. These fields form part of the flood plain of the River Clyst, located to their immediate west.

Relief and climate

- 7.2.6 The site is situated between approximately 8mAOD and 22mAOD, with gentle gradients between horizontal and approximately 6° (1 in 10).

The agricultural potential of an area is affected by climate and can be determined by interpolation between known values at nearby gridpoints. This data is obtained from the Met. Office publication '*Climatological data for Agricultural Land Classification, Gridpoint datasets of climatic variables, at 5km intervals, for England and Wales, 1989*'. For the site location, the interpolation gives the following climatic data:

Average Annual Rainfall = 776mm

Accumulated Temperature, January to June = 1580 day°C

Duration of Field Capacity = 165 days

Soil associations

- 7.2.7 There are two soil associations mapped in the vicinity of the site, these are the Bridgenorth association (a well-drained reddish sandy and coarse loamy soils) and the Compton association (clayey, waterlogged soils developed in river alluvium, subject to winter flooding).
- 7.2.8 The soil investigation identified a broad division of soils within the site into clayey, mottled soils typical of the Compton association (i.e. Clyst series) located in fields H

– K, and sandy silty loams over sandy or silty clay subsoils within fields A – D and G (i.e. Bridgenorth association, Newport series). The restored soil profiles over landfill in fields E and F were typically clay loams over clay, and were unlikely to be of either Clyst or Newport series in their natural state. The findings of the survey are summarised in Appendix 7.1.

Clyst series

7.2.9 The soils within fields H – K were typical of the Clyst series, exhibiting reddish, mottled clays with waterlogged grey clay within 1m depth. The topsoil profile was not prominent, but varied between 20cm and 70cm deep over waterlogged and mottled grey and red clays.

Newport series

7.2.10 Fields A – D and G exhibited soil profiles typical of the Newport series with sandy silty loam topsoil over a deep reddish sandy subsoil. In field C, the subsoil was clayey at depth in places and was thus more typical of the Clyst series. The sandy subsoil allows good drainage and no mottling or gleying was observed in soils over sandy subsoils. Topsoil was between 20 and 50cm deep with a sandy silty loam texture, and a moderate angular blocky structure (due to soil cultivation, for example ploughing).

Restored soil profiles

7.2.11 Soils in fields E and F have been restored on top of the landfill, which is now closed. The restored soil profile consists of 35cm of clay loam and sandy silty loam topsoil over red clay or inert fill material.

Site drainage

7.2.12 Surface watercourses and ditches are shown on Figure 7.2. Three main drains were identified at the time of survey, as follows:

- A ditch runs along the north east perimeter of the site adjacent to the quarry boundary. This ditch originates from the east of the site and carries water drained from the airport and from the quarry, as well as from land to the north. The ditch continues to the north and west of the site before entering the River Clyst to the west.
- The River Clyst flows in a north – south direction down the western perimeter of the site. The river receives water from the site by a system of shallow hedgerow ditches. A minor ditch system runs from the centre of the site to the River Clyst. This ditch receives surface water from a thin strip of

woodland located between fields C and K, and from around the landfill area (fields E and F).

- An additional ditch is located at the foot of field G and runs for a short length along the old A30 before meeting the river. Shallow ditches also run alongside the railway and the landfill in field C.

7.2.13 The layout and potential impacts of the proposed development upon both surface waters and groundwater are described in Section 9 of this report.

Underdrainage

7.2.14 No formal soil underdrainage system was observed during the site investigation. It is presumed that rainfall drains through the soil profile into the permeable sandy subsoils before passing either to groundwater or to nearby ditches and watercourses. Where the sandy subsoil is not present, (i.e. fields H – K, part of field C, landfill areas E – F) surface water either runs-off to perimeter ditches or flows laterally within the soil profile. These fields were generally wet, at field capacity, at the time of the survey and there is evidence that excess water is retained within the soil profile for a large part of the year due to the extent of mottling and gleying in the subsoil.

Agricultural Land Classification (ALC)

7.2.15 Agricultural Land Classification is a standardised method for classifying agricultural land according to its versatility, productivity and workability. It is based upon inter-related parameters including climate, relief, soil characteristics and drainage. The system of classification is contained in the MAFF publication '*Agricultural Land Classification of England and Wales, Revised guidelines and criteria for grading the quality of agricultural land, 1988*'.

7.2.16 Best and most versatile agricultural land is classified as grades of 1, 2 and 3a whereas moderate quality land is designated grades 3b or 4 and the remainder of poor quality land is grade 5.

7.2.17 The 1:250,000 ALC map for the south-west region shows that this land has an ALC of grade 3. At this scale there is no differentiation between grades 3a and 3b. The results of the detailed Agricultural Land Classification study are shown on Figure 7.2 and Table 7.2.

7.2.18 The detailed soil survey for the site shows, however, that ALC is limited either by droughtiness over sandy subsoils or by wetness due to slowly permeable silty clay and clay subsoils. The ALC analysis excludes agricultural land within the mineral planning consent. The distribution of ALC grade is shown in Figure 7.2, with approximately 7.5ha of grade 2 land, associated with the sandy subsoils in the east

of the site. There is approximately 25.4ha of grade 3a land within the site, relating to soils limited by droughtiness or slowly permeable subsoils. There is also approximately 18.2ha of grade 3b land, relating to the periodically flooded wet pasture to the west of the site and the restored soils over landfill in field F. Approximately 12.4ha of the site are classified as non-agricultural, this land comprises quarry workings, former landfill, woodland, access track and residential buildings.

ALC Grade	Area (ha)	Area affected within study area (ha)		
		Phase 1	Phase 2	Phase 1&2
2	7.5	4.4	1.6	6.0
3a	25.4	13.4	11.4	24.8
3b	18.2	4.3	0.0	4.3
Non agricultural	12.4	4.3	10.5	14.8
TOTAL	66.4	26.4	23.5	49.9

Notes:
 Difference in land take between the total area (column 2) and Phase 1 & 2 (column 5) is the land not affected by development, primarily within the flood plain.

This table takes account of the mineral planning consent, whereas Figure 7.2 shows the ALC of land yet to be included within the consent area. This represents the difference in areas of ALC Grade 2 and non agricultural land between Table 7.2 and Figure 7.2.

7.3 Potential impacts

Farm businesses (see also Table 7.5)

7.3.1 Phase 1 of the development proposal would result in the permanent loss of 22.1ha of agricultural land in field units C, D, F and G. Small portions of field units B, H, I and J, totalling 0.8ha, would also be permanently lost from agricultural productivity. Table 7.3 shows how each field unit is affected during each phase of development.

Field ID	Phase 1 (ha)	Phase 2 (ha)	Phase 1+2 (ha)
A	Not affected	2.7	2.7
B	1.8	9.1	10.9
C	8.6	0.9	9.5
D	2.6	0.9	3.5
E (non agricultural)	1.0	Not affected	1.0
F	3.7	Not affected	3.7
G	3.5	Not affected	3.5
H	0.1	Not affected	0.1
I	0.2	Not affected	0.2
J	0.3	Not affected	0.3
K	Not affected	Not affected	Not affected
Quarry (permitted area)	Not affected	9.8	9.8
Hayes Farm	2.4	0.4	2.8
Other	1.9	0.3	2.2
TOTAL AGRIC.	21.8	13.6	35.4
TOTAL NON-AGRIC.	4.6	9.9	14.5
TOTAL	26.4	23.5	49.9

7.3.2 Phase 2 of the proposed development would result in the permanent loss of 13ha of agricultural land in field units A, B, C and D, as shown in Table 7.3. In total an area of 49.9ha of land would be permanently lost to the IFFDC, including an area used for mineral extraction, which would otherwise be restored to agriculture. Of this total area lost, approximately 35.1ha are currently in agricultural use. It should be noted that these calculations exclude agricultural land yet to be worked within the mineral planning consent.

Soil resources (see also Table 7.5)

7.3.3 The requirement for soil resources within the proposed development is relatively minor and it is likely that the majority of soils would be sold offsite. This would therefore result in a permanent loss of soil resources from the site, as it is considered unlikely that a sufficient volume of suitable soil could be located to restore the site back to agriculture after decommissioning. A small proportion of top soils may be used for landscaping or screening purposes within the proposed development, this volume is estimated at approximately 5-10,000m³.

7.3.4 It may be possible to use some of the sandy and gravelly subsoils from within the site as a source of aggregate to establish the development plateau. There may thus be a requirement for short to medium term stockpiling of soil prior to use onsite for both the construction of the development platform and for landscaping/screening purposes. Further investigation of subsoil characteristics would be required to determine the volume available for construction purposes.

7.3.5 The requirement to move and store soil can potentially impact upon its texture, structure, biotic activity and fertility. The degree of damage to soil properties can however be limited by using appropriate handling techniques and storage practices.

Drainage and flood defence (see also Table 7.5)

7.3.6 The proposed Phase 1 development would disrupt main ditches between field units E, F and G, and minor ditches within field C. The development of the Phase 2 platform would impact upon drainage measures within fields A, B, C and D.

7.3.7 The majority of the proposed development lies outwith the flood plain area and therefore would not significantly impact upon the identified flood plain. The impacts upon surface waters and groundwater arising due to the proposed development are discussed in detail in Section 9.

Agricultural Land Classification (see also Table 7.5)

7.3.8 The permanent loss of agricultural land is summarised by ALC grade in Table 7.2.

Landfill (see also Table 7.5)

7.3.9 Field units E and F would be disturbed during Phase 1 of the proposed development. The potential impact of disturbing the landfill material would include the exposure of potentially contaminative materials, and the requirement of alternative locations for the safe disposal of excavated material. These issues are considered in more detail in Section 16.

7.4 Mitigation measures

Farm businesses

7.4.1 The loss of approximately 22.1ha of agricultural land during Phase 1 of development and approximately 13ha of agricultural land during Phase 2 of development is not anticipated to impact upon the viability of Mr Northmoor's farm business. Mr Northmoor is the owner of nearby Marlborough Farm and operates approximately 200ha of agricultural land in the vicinity, including other land on a tenancy basis.

7.4.2 Suitable source for the agricultural soils may be found during the development programme. For example there may be an opportunity to use soil resource for landscaping purposes within Skypark.

Soil resources (see also Table 7.5)

7.4.3 Soil resources would be protected from the adverse effects of handling and storage by following recommendations given in '*Code of Good Agricultural Practice for the Protection of Soil*' (MAFF 1993). Such recommendations include:

- The handling of soils only when sufficiently dry;
- The separate handling and storage of different soil types (both topsoils and subsoils);
- Seeding of all soil storage mounds required on site for a period longer than 6 months, to prevent erosion and to maintain soil structure, nutrient content and biological activity; and
- The handling of all soils by back acting excavators and dumptrucks.

Drainage and flood defence (see also Table 7.5)

7.4.4 The proposed development would be designed to have a minimal impact upon the drainage of the surrounding land. Sustainable urban drainage techniques will be utilised wherever possible, including source control methods, along with a combination of oversized pipes and underground storage to provide the necessary control to limit the discharge (Section 9). Sustainable drainage techniques are

described in Environment Agency publications ‘General Guide to the Prevention of Water Pollution; PPG1’ and ‘A Guide to Sustainable Urban Drainage’.

Agricultural Land Classification (see also Table 7.5)

7.4.5 There are no mitigation measures proposed to protect ‘best and most versatile agricultural land’ from development, it is accepted that the proposed development would result in the permanent loss of approximately 17.8ha of ALC grade 2 and 3a land and approximately 4.3ha of grade 3b land. A further 13ha of best and most versatile land would be lost should the development extend to Phase 2. There are no proposals to restore any parts of the site to agricultural use.

Disturbance of landfill

7.4.6 The excavation and relocation of landfilled material would be subject to Waste Management Licensing with approval from the Local Planning Authority and the Environment Agency. These requirements and a discussion of the potential for pollution associated with the remediation of the landfill are discussed in Section 16.

7.5 Cumulative effects

7.5.1 The developments within the Exeter Area of Economic Development will result in the cumulative loss of best and most versatile agricultural land (Table 7.4):

		Area of best and most versatile agricultural land permanently lost as a result of development
Exeter Gateway	Phases 1 & 2	18ha
	Phase 1	31ha
Cranbrook New Community		96ha
Skypark and Exeter & Devon Airport Development		No loss recorded
Clyst Honiton bypass		Small areas (not recorded)

7.5.2 The Local Plan Inquiry Inspector considered the loss of best and most versatile agricultural land¹, with specific reference to the Cranbrook New Settlement and whilst it was acknowledged that ‘In my view (the Inspector’s), any loss of land that can be used for agricultural production is undesirable’ this loss has to be balanced against the need for development for other purposes. Critically PPS 7 advises that the loss of best and most versatile land should be taken into account alongside other sustainability criteria, for example with respect to Cranbrook (maintaining viable communities) and for Exeter Gateway (infrastructure and modal shift of transport). MAFF/DEFRA have considered the potential impacts associated with the development of both Cranbrook and Exeter Gateway and have not raised objections to the significance of impact for either development. Taking the foregoing in context, although the potential impacts of both developments individually have been considered of significance (moderate adverse), in both cases the need for

development combined with a lack of alternative sites outweigh the cumulative permanent loss of best and most versatile agricultural land.

- 7.5.3 Soils excavated within the IFFDC development area may be suitable for landscaping purposes at Skypark, if there is a deficiency of good quality soil.

7.6 Residual impacts

Loss of agricultural land

- 7.6.1 The permanent loss of approximately 22.1ha of agricultural land is a residual impact of the proposed development. There are no proposals to reinstate any agricultural land within the site boundary. A further 13ha of agricultural land would be lost should the development extend to Phase 2.

Alternative sites

- 7.6.2 Policy CO14 of the Devon Structure Plan 2001 to 2016 (adopted October 2004) states that the best and most versatile land *'should only be permitted where there is an over-riding need for the development in that location which outweighs the need to protect such land'*. A number of alternative sites were considered in detail by Gill Associates prior to the selection of the Hayes Farm Site. The alternative sites were selected on the basis of 12 'key' criteria set out by principal freight train operating companies and associated logistics industry partners.

- 7.6.3 The agricultural land classification of the alternative sites considered is of an equivalent grade to the Hayes Farm site, being mapped as mainly ALC grades 3 or 4. One site considered (Matford Park/South Exeter) is mapped as ALC grade 2, which would prove to be a significant development constraint. The remaining sites were not considered suitable for development due to site-specific criteria and constraints not related to their agricultural capabilities (e.g. insufficient development area, poor transport links).

7.7 Summary

- 7.7.1 A soil survey was undertaken during November 1999, at approximately 1 auger profile per hectare. The site consists of arable land, wet pasture, restored landfill and non-agricultural land (woodland, ditches, sand and gravel quarry, residential property).
- 7.7.2 Two soil types were identified within undisturbed agricultural areas, these were clayey, mottled soils associated with the wet pasture and floodplain of the River Clyst, to the west of the site, and sandy silty loams over sandy or silty clay subsoils in the central and eastern parts of the site. The former landfill area had a restored soil profile of clay loam topsoil over clay.

- 7.7.3 No formal soil underdrainage was identified during the site investigation, water is allowed to drain freely through the underlying sands, or passes to nearby ditches and watercourses.
- 7.7.4 The detailed soil survey for the study area shows that Agricultural Land Classification grades are limited across the site either by droughtiness over sandy subsoils or by wetness caused by slowly permeable silty clay and clay subsoils. The site includes approximately 7.5ha of ALC Grade 2 land, 25.4ha of ALC Grade 3a land and 18.2ha of ALC grade 3b land. The remainder of the site (12.4ha) is classified as non-agricultural, consisting of woodland, ditches, access track and quarry.
- 7.7.5 The proposed development, within the outline application boundary, would result in the permanent loss of approximately 17.8ha of 'best and most versatile' agricultural land and 8.6ha of lower quality or non-agricultural land in two phases of development. There are no proposals to reinstate any agricultural land in relation to the proposed development.
- 7.7.6 Other potential impacts include disruption to soil texture, structure, biotic activity and fertility, drainage problems associated with the development, and the exposure of potentially contaminative materials within the restored landfill area.
- 7.7.7 Mitigation provisions include the careful handling and storage of soil resources, following guidance given in '*Code of Good Agricultural Practice for the Protection of Soil*' (MAFF 1993). Sustainable drainage techniques will also be adopted, as stated in Environment Agency publications '*General Guide to the Prevention of Water Pollution; PPG1*' and '*A Guide to Sustainable Urban Drainage*', as will be techniques to minimise the risk of accidental contamination.

8 GEOLOGY AND MINERALS

8.1 Baseline conditions

- 8.1.1 The study area includes proven sand and gravel reserves. These are mapped on the 1:10560 geological plan for the area as Quaternary gravels and alluvium overlying the Lower Permian Sandstone, within the Dawlish Sandstone series (see Figure 8.1). The alluvial sand and gravels derive from river terrace deposits and comprise poorly sorted quartzitic gravels and sands. The depth of the alluvial deposit varies within the site, averaging 3 - 5m. The underlying Dawlish Sandstone is of red coloured aeolian sands with individual particles showing well-rounded characteristics. The Permian Sandstone, which is in excess of 100m in depth, rests unconformably on a basement of carboniferous strata. The Permian strata dip at a shallow angle to the south east.
- 8.1.2 The mineral reserves have been recognised at the site for a considerable period, with planning applications for mineral extraction being dismissed, following appeals to the Secretary of State, in 1980 and 1986. The primary reason for dismissing the appeal in 1986 was that the need for the mineral did not outweigh the additional traffic loading on the A30(T), which was at or nearing capacity. The transportation issue has been resolved since the new A30(T) has been opened, as the quarry entrance is on the C832 which carries significantly less traffic than previously. Other issues considered in the Inspectors report included the loss of best and most versatile agricultural land, effect on ground water and the amenity of local residents.
- 8.1.3 In 1996, an application for mineral working in an area of approximately 9.8ha to the south east of the study area was granted consent (Planning Ref: 07/06/0395/96). The permission was for the winning and working of 1.125M tonnes of sand and gravel for a period of approximately 9 years, from the commencement of minerals being exported from the site (Condition 3, see Appendix 8.1). The condition specifies that the site shall be restored and returned to agricultural use during the 9 years of the permission, it is anticipated that mineral extraction would continue for a period of 8 years in total. Minerals were exported from the site during in the early part of 2000 therefore the current permission will continue until 2009. Should the minerals within the permission area be extracted at uniform rate throughout the duration of the consent an annual rate of 141,000 tonnes per annum. Hayes Quarries identified in 2000 that they anticipate reaching a target production of 200,000 tonnes per annum, which should ensure that period of extraction, is within the period specified in Condition 3. However, during 2003 the lease on the land was handed back to the surface and mineral owner, the Church Commissioners for England, and the quarry has been mothballed. It should be noted that the boundary of the mineral permission is wholly outwith the Phase 1 application area identified for Exeter Gateway, but is within the proposed Phase 2, development footprint, and study area for the EIA.

8.1.4 In granting permission for the mineral development the company (Hayes Quarry Ltd.) were required to enter into a Section 106 Agreement (see Appendix 8.1) in order to safeguard groundwater resources within and adjacent to the site (see Section 9 for a further analysis of this issue).

A large part of the study area is identified in the Minerals Local Plan as a sand and gravel resource area (see Figure 8.1) the supporting text of the plan identified the following:

‘There are three significant sand and gravel sites identified as Mineral Working Areas (see Chapter 6), where the principle of continued extraction is accepted. These are the Hillhead/Houndaller Quarries, the Rockbeare complex, and Hayes Quarry. The total reserves at these sites are about 8mt. Areas of Mineral Resource based on information contained within the relevant British Geological Survey Sheets (and previously supplied by the mineral operator) are shown adjacent to the Mineral Working Area boundaries’.

Following an examination in public of the Local Plan, the wider policy context of the Exeter Main Area of Economic Activity (Devon Structure Plan First Review Policy T16) was stated in the policy provision for Hayes Farm Quarry (see Appendix 8.2). The planning policy issues are considered in detail in Section 4. This assessment considers the potential impact associated with mineral resources within the study area.

8.2 Potential impacts (see Table 8.3)

8.2.1 The potential sand and gravel reserves within the study area have been determined as follows (see Table 8.1):

- Estimated total reserves in the study area, including the existing planning consent for the winning and working of minerals;
- Estimated reserves in the study area (within the preferred area for mineral extraction, defined in the deposit draft Minerals Local Plan), excluding existing mineral working planning consent;
- Estimated reserves in Phase 1 development area, subject of the outline application; and
- Estimated reserves in Phase 2 development area, excluding existing mineral planning consent.

8.2.2 The alternative reserve assessment required in order to construct a development platform for the IFFDC has also been calculated and the results are given in Table 8.1. The reserves in this assessment have been based on a predevelopment

excavation to provide a level platform at approximately 12.5m AOD. This is based on a final track bed level of 13.5m AOD.

Resource	Potential available for exploitation	Comments
Mineral planning consent area	0.8 M tonnes	Resultant void too deep to develop IFFDC.
Mineral consultation area	2.0 M tonnes (excluding reserves with planning consent)	Depth of extraction within 1m of groundwater table, difficult to use as pre-development level for IFFDC.
Phase 1 of IFFDC	1.04 M tonnes	Resultant void too deep to develop IFFDC
Phase 2 IFFDC	0.96 M tonnes	Deficit of fill if current mineral permission worked to its full depth.
Note: These calculations have been based on retaining the quarry void above an assumed groundwater level, based on available data. The mineral resource could be increased by artificially lowering the groundwater level, as promoted in the existing planning consent, or through the design of a wetland restoration scheme. Reserves within mineral planning consent area have been adjusted to take account of sand and gravel removed to date.		

8.2.3 Based on the assumptions given in Table 8.1 the total mineral resources (those outwith the planning consent area) within the study area are in the order of 4M tonnes and comprise sand and gravel for aggregates and building sand at depth. However, as identified in Table 8.1, mineral extraction to the depth required to exploit these reserves would leave a landform unsuitable for development of the IFFDC.

8.2.4 The potential mineral resources within the study area, taking account of the predevelopment landform for the IFFDC have been estimated by reference to two outline designs for the study area. The following issues have been taken into account in both designs:

- Minerals within the existing mineral consent area are worked to an optimum depth for developing the IFFDC. It should be noted that mineral extracted thus far has created a void that would require in filling in order to achieve the appropriate predevelopment landform. Although subsequent extraction could be designed to minimise the amount of backfilling required, it would require a variation to the approved phasing plan.
- The preferred option for preparing the closed landfill for development involves the reuse of waste material as secondary aggregate, as appropriate and relocation to a purpose designed repository. The potential volumes of aggregate have been taken into account for the purpose of the estimated mineral reserves, although for reasons considered in Section 16 the design and location of the repository has not identified as part of the outline application.
- The reserve estimate takes account of the requirement to provide infrastructure within the site; for example, raising the ground level within, and adjacent to the

flood plain, backfilling the quarry void and the design of the access road in Phase 2 to the C832.

Table 8.2 provides the predicted range of potential sand and gravel resources in both phases of the development.

	Sand and gravel resource (M tonnes)	Available for sale off site (M tonnes)	Comments
Hayes Quarry consent area	0.8	0	Approximately 0.5Mm ³ of fill will be required to achieve predevelopment levels for future development of IFFDC (Phase 2). This material can be gained from the exiting mineral consent area.
Phase 1	0.27	-0.06	The difference between the two figures is the amount of mineral required for earthworks construction – to form embankment to roadside on western boundary and fill material to form pre-development platform.
Phase 2	0.28	0.21	This calculation assumes that the sand and gravel is remove to a shallow depth. Underlying building sand would be sterilised. Potential for offsite sale of mineral resources.
Note: The sand and gravel resource for Phases 1 and 2 has been recalculated from Table 8.1 to consider only the available mineral resource that could be exploited without compromising the pre-development platform required for the development of the IFFDC. The calculations assume that gravely material in lower subsoil horizons can be used for fill in earthworks.			

8.2.5 The analysis in Table 8.1 provides an estimate of the tonnage of sand and gravel potentially exploited prior to development. The final predevelopment levels will be dependent on further investigation on the groundwater regime within the site and the detailed design of Phase 1. However, it is clear that mineral will be sterilised and these early estimates indicate that between 1.59 and 1.85M tonnes of sand and gravel from within the mineral consultation area would be left in situ as a result of the development proposals.

8.3 Mitigation measures (see Table 8.3)

8.3.1 It has been identified that the IFFDC will require large volumes of aggregate for bulk fill and processed aggregate such as concrete and asphalt. The presence of sand and gravel (for concrete) and finer building sand (for asphalt and bulk fill) within the site has significant benefits in terms of sustainability. Should the IFFDC be located at an alternative site in the Exeter area, it would require aggregates including sand and gravel resources, which could be supplied from Hayes Quarry or alternative quarries. In this regard, it is considered that the impact of losing potential mineral resources, identified in Minerals Local Plan would have a minimal effect on the overall landbank requirements, if the natural resources available on site can be used to benefit the development of the IFFDC.

- 8.3.2 Data on the mineral resources outwith the planning consent area is currently limited. There is a need to quantify the volume of alluvial sand and gravel that can be processed for concreting purposes distinct from the underlying building sand, which would be of less value during the IFFDC development.
- 8.3.3 A site investigation should therefore be undertaken prior to the detailed application for Phase 1 such that the mineral resources can be quantified in more detail and a programme of extraction identified that links to the development of the IFFDC.
- 8.3.4 Where practical the use of secondary aggregates should be encouraged for bulk earthworks requirements. Their use could be combined to maximise the supply of building sand to local markets. For example, it may be practical to undertake recycling of secondary aggregates excavated from the closed landfill within the existing mineral consent area. There is likely to be an ongoing demand for secondary aggregate during the construction phase of the IFFDC, Skypark, Cranbrook New Community and the Clyst Honiton bypass. Therefore, there may be some advantage in developing and maintaining a facility to recycle aggregates, perhaps within the existing quarry, during the development phase of the Exeter Main Area of Economic Activity.

8.4 Cumulative effects

- 8.4.1 No mineral resources have been identified within the Skypark and Exeter & Devon Airport development area, therefore, no further cumulative impacts are predicted. There may be a synergy between the developments in the Exeter Area of Economic Activity, with respect to the requirement for primary and secondary aggregates.

8.5 Residual impacts

- 8.5.1 Assuming that all potential mineral resources identified in the Minerals Local Plan could be extracted through future mineral planning consents, the development of Exeter Gateway would result in the sterilisation of mineral. The actual amount of mineral sterilised will depend on the detailed design but is estimated to be in the order of 1.59 -1.85M tonnes. The MLP protects safeguarded mineral resources by policy MP13. The policy provides for sterilisation of minerals by other forms of development, if other overriding circumstances prevail, as follows:

- An overriding need for the development. The case for the development of an IFFDC at Exeter Gateway has been set out in the Rail Report (2000) which forms part of the submission and the later SWARMMS report issued by GOSW in 2002⁶. Other national and regional initiatives promoting intermodal transport hubs have been discussed in Section 4.

⁶Government Office for the South West – London to South West and South Wales, Multi Modal Study, Halcro Group, May 2002.

- That the mineral cannot practically be exploited in advance of development. The primary constraints on the predevelopment landform for the IFFDC are the track bed level of the mainline to the north of the site and groundwater level within the site. Further investigations are required to assess the groundwater regime within the site and following this it may be practical to increase the volume of mineral exploited by altering the incline of the rail terminal and individual building plots within Phase 1.

8.5.2 The Minerals Local Plan identifies that there is currently a sufficient landbank of permitted reserves of sand and gravel in accordance with national guidelines set out in MPG6 (Guidelines for Aggregate Provision in England and Wales). For this reason, areas of search, or preferred areas for sand and gravel extraction have not been specifically identified. However, the following measures have been considered in order to maintain the supply of sand and gravel during the plan period:

- Two quarries have been identified at which the continuation of mineral working will be acceptable in principal, namely Hillhead Quarry and Rockbeare Quarry.
- Continued monitoring of the need for minerals in order to identify preferred areas, or areas of search in subsequent reviews of the plan.
- Flexibility of approach, in that although substantial reserves of mineral are available at certain sites, other smaller sites may require extension to meet local needs and markets, even though the total landbank meets the criteria set out in MPG6.

Therefore, although Hayes Farm has been identified as a mineral consultation area, there are unlikely to be circumstances when an extension to mineral working would be permitted at the site, during the plan period, unless specific local requirements were specified. The potential developments associated with Exeter Gateway, Skypark, Cranbrook New Community and the Clyst Honiton bypass would require a significant supply of aggregates, as has already been identified. Therefore, prior to submission of the detailed application further analysis of the potential for mineral extraction should be evaluated in line with the following policies:

- MP13, regarding non-mineral development in mineral consultation areas;
- MP18, regarding prior extraction of minerals incidental to non-mineral development; and
- MP27 regarding the use of secondary and recycled material.

8.5.3 In the long term, once the rail terminal has been constructed there is the potential to continue the supply of aggregates from Exeter Gateway by train. Such a facility

could also be linked to a material recycling and storage facility within the freight terminal.

8.6 Summary

- 8.6.1 A large proportion of the study area is within a mineral consultation area identified in the Minerals Local Plan for Devon County Council.
- 8.6.2 Estimates based on the outline design for phase 1 indicate that minerals would be sterilised as a result of the development proposals and an estimate has been calculated, based on the outline design.
- 8.6.3 The development of the IFFDC will generate a demand for aggregate during the earthworks and construction phase. These can, in part, be generated from the minerals available on site. Therefore, the net effect of the development on minerals local plan policies is considered to be minimal during the forthcoming plan period.

Table 8.3 Geology - summary assessment matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Mineral reserves and resources	Construction phase: loss of approximately 1.6 - 1.8M tonnes of mineral reserve from Phases 1 & 2 areas.			*			Adverse	Lt, R	Moderate	Mineral resources will be required for the development of the IFFDC and these can be gained in part from resources within the Phase 1 and 2 development areas.
	Operational phase: potential for importation of aggregates by rail to support development of the Exeter Area of Economic Development.				*		Beneficial	Lt, R	Minor / Moderate	Provision of primary aggregates during the construction phase could be combined with secondary aggregate recycling.
Hayes Quarry	Construction phase: modification to the restoration plan for Hayes Quarry (planning ref: 07/06/0395/96)					*	Beneficial	Lt, R	Minor / Moderate	The mothballed site will be restored to a hard end use following a variation of the restoration conditions attached to the mineral planning consent. Note: this variation will be submitted as part of the application for Phase 2 of the Exeter Gateway development.
	Operational phase: no impacts predicted					*	Neutral	n/a	n/a	No mitigation measures required. Quarry will be restored as identified above.
Key I = International N = National R = Regional D = District L = Local St = Short term Lt = Long term R = Reversible Ir = Irreversible										

9. WATER RESOURCES

9.1 Introduction

9.1.1 This section considers the hydrology and hydrogeology within the study area and assesses the potential impact of the IFFDC on the water resources at the site.

Methodology

9.1.2 The assessment has been based on the following:

- Landmark Information Group, EnviroCheck Report;
- BGS borehole data;
- an inspection of published mapping;
- walk over survey;
- detailed topographical survey of the site;
- consultation with the Environment Agency (EA);
- archive reports; and
- estimates of pre and post development runoff.

9.1.3 Additional information and assessment has been submitted with respect to the following:

- replacement floodplain and landform characteristics of the phase 1 development where it is adjacent to the floodplain;
- indicative SuDs design and surface water drainage from the Phase 1 development area into the floodplain;
- updated indicative floodplain plan available from the Environment Agency website;
- comments on the flood defence aspect of the assessment (Environment Agency memo, October 2005); and
- summary analysis of potential impacts and mitigation.

9.2 Baseline conditions

Existing levels

9.2.1 The existing site levels are shown on Figure 3.1. The Phase 1 area within the application boundary falls naturally towards the River Clyst, from south-east to the west and north-west boundaries. The remainder of the study area (Phase 2) drains principally to the north east, flowing into the River Clyst through a culvert under the rail way. A smaller proportion of the Phase 2 area drains north west directly to the River Clyst.

Surface water

9.2.2 The site of the proposed IFFDC is bounded on its western edge by the River Clyst, this River being classified as River Quality B or 'good and suitable for all fish species' under the 1993 General Quality assessment. A water monitoring station is located on the River Clyst, near the south western corner of the proposed site area. The

existing surface water drainage network in and adjacent to the study area is shown on Figure 9.1.

- 9.2.3 The closed landfill site, located within the proposed development area, is drained by a number of ditches to the east and south of the landform that discharge to the River Clyst via a purposed designed drain constructed across the floodplain. A larger ditch containing slow moving water has been constructed to the west of the landfill, also receives surface water from the restored landform, which outfalls to the drain crossing the floodplain and identified above. The drainage network for the landfill site is identified as ditch A on Figure 9.1.
- 9.2.4 The southern section of the site is drained by a ditch that flows to the River Clyst (ditch B) located at the foot of a sloping field to the west of Hayes House. There is a further small ditch (ditch C) that flows to the River Clyst from the area of wet alder/willow woodland on the western edge of the site. There are also ditches that drain the fields within the floodplain and these are evident on field boundaries.
- 9.2.5 Although not a formal drainage structure, shallow drainage channels are also located along the edges of one field (ditch D). In the area of wet pasture adjacent to the river on the western edge of the site, the fields contain surface depressions that would aid the channelling of water from the fields at times of flood.
- 9.2.6 To the north east of the site is a perimeter ditch that drains runoff from the nearby airport (ditch E on Figure 9.1). This ditch eventually discharges to the River Clyst, being culverted beneath the railway embankment to the north of the site.
- 9.2.7 Although the River Clyst exhibits a significant flow, all ditches on the site were noted during site inspections in November 2002 and April 2005 as being vegetated with either standing water present or minimal flow. Ditch E was an exception to this observation as it had a significant flow during site surveys in November 2000. The site inspection in April (27) 2005, followed a period of heavy rainfall in the previous 48 hours and this was evident by the relatively high water levels in the River Clyst. Water levels in ditch A were assessed as high, but water was slow moving and restricted at the outfall from the southern tip of the landfill into the ditch crossing the floodplain to the River Clyst. Standing water was evident in the triangle of low lying land to the east of the closed landfill and water was also slow moving within the two ditches that flow into ditch A. Water flow was evident in ditch E, although to the north of the quarry void the ditch was overgrown. In the fields to the north of the quarry there were areas of standing water. There were also several small surface ponds that had developed within the quarry void, although these had largely dried out at later survey dates in May and June 2005.
- 9.2.8 No surface water abstractions or discharge consents have been identified within the proposed development area. Seven discharge consents have been identified within

a 1km radius of the site, relating to the discharge of trade and sewage effluent into tributaries of the River Clyst. There are three licensed river abstraction points within a 1km radius of the site used for the purposes of agricultural spray irrigation during the summer. The locations of the known abstraction points are shown on Figure 9.1. It is however appreciated that there maybe additional abstraction points within the locality and these need to be identified and considered prior to the submission of a detailed application for Phase 1.

9.2.9 A section 106 Legal Agreement attached to the mineral planning consent (Ref: 07/06/0395/96) seeks to protect existing water abstractions to the east of the quarry (see Figure 9.1). The legal agreement was entered into because the final restoration surface requires that the groundwater be lowered in order to return the land to agricultural use. This would be achieved by draining surface water to the west, into the River Clyst, as opposed to the existing drainage pattern, which is to the east. During the planning consultation phase the applicant (Hayes Quarries Ltd) submitted information that demonstrates that lowering the groundwater would not derogate the abstraction licences. The legal agreement protects this position.

9.2.10 Currently, mineral extraction at Hayes Quarry has not been conducted to the full depth defined in the mineral planning consent and surface water drains to low points in the quarry void, then and either infiltrates to groundwater or evaporates from the surface. No specific drainage has been implemented to date. Design details in Sections 3 & 8 identify that the current quarry floor level would be maintained during the development of Phase 1. Therefore, further quantitative analysis will be required prior to the application for Phase 2 of Exeter Gateway. However, it is recommended that groundwater monitoring within the study area is implemented prior to development in Phase 1. This data can be used to evaluate the long-term impacts on groundwater.

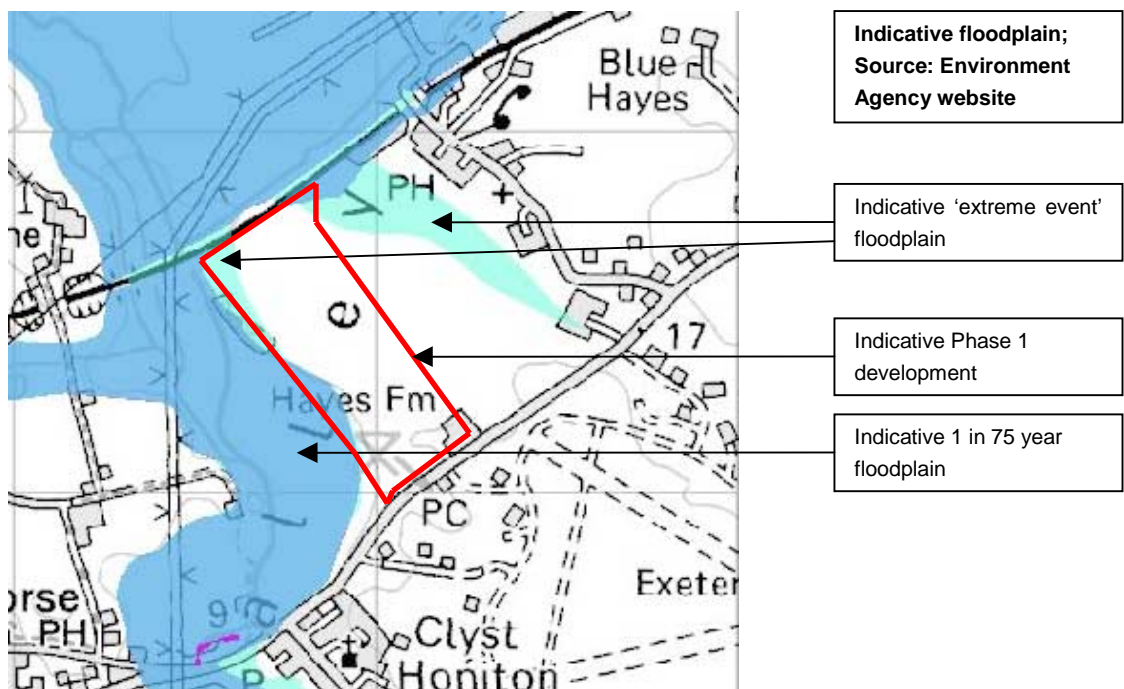
Flood risk

9.2.11 Some parts of the application area are potentially at risk from flooding, during periods of high flow in the River Clyst. However, the majority of the Phase 1 development footprint lies outwith the indicative floodplain. The extent of the floodplain in the vicinity of the site has been derived over time from 3 sources:

- EnviroCheck report dated 18th November 1999. Although this plan is provided at a large scale and is not considered very accurate, it indicates that a large part of the application area, and a smaller part of the development footprint, lies within the 100-year floodplain for the river.
- Discussion and modelling carried out between Wardell Armstrong and the Environment Agency during the period October 2002 and October 2003. This determined the extent and depth of flooding from the River Clyst in a return

period of 1 in 100, with an allowance for climate change. In addition the principles for flood storage compensation and surface water runoff mitigation were agreed. The agreed limit of the 1 in 100 year floodplain, including the allowance for climate change is shown on Figure 9.1.

- Published indicative floodplain map available from Environment Agency website (2005, see below). This shows the 1 in 75 year floodplain of the River Clyst in dark blue and other areas prone to 'extreme flooding' in light blue. This allocation does not detract from the accuracy of the previously determined 1 in 100 year floodplain (the difference essentially being related to the depth of flooding in this area, rather than the lateral extent of flooding). An additional area of 1 in 75 year floodplain is also shown alongside the railway embankment to the north east of the site. A small part of this indicative floodplain is located within the Phase 1 development area. The areas designated within the 'extreme event' floodplain are partially included within the earlier 1 in 100 year assessment area, and are therefore already accommodated within the mitigation scheme, or are located generally outwith the Phase 1 development footprint. Section 9.4 provides further details of mitigation measures with respect to flooding.



9.2.12 The indicative 1 in 75 year floodplain published by the Environment Agency identified that a small area is within the Phase 1 development footprint (see inset). However, by reference to Figures 9.1 and 9.2, it is evident that the published model does not take full account of the landform associated with the closed landfill, which, as shown on the topographic survey (Figure 3.1) rises to a level 13m AOD at the interface of

the floodplain boundary as shown on Figure 9.1. Therefore, the agreed 1 in 100 year floodplain boundary, shown on Figure 1, is considered to provide an accurate limit on which to base the flood risk assessment (see Appendix 9.1), with the exception of a small area of low lying land at the southern end of the closed landfill, which, due to the topography, would also provide flood storage capacity in a 1 in 100 year flood event (see Figure 9.2). It should be noted that this small area is not coincident with the indicative 1 in 75 year flood return identified on the EA model, see above.

9.2.13 A small area of land within the application boundary is also located within the floodplain associated with Ditch E, to the north east. This watercourse originates to the south of the A30 road, passing beneath the road near Coach Bridge. This ditch carries surface drainage from the runways at Exeter Airport. Previous studies undertaken on behalf of Hayes Quarry Ltd have indicated that flows are highly variable, being particularly high during times of heavy or prolonged rainfall. Flooding of this ditch is known to occur and is thought to be due to water levels “backing up” from the Cranny Brook at times of flood.

9.2.14 The area of indicative 1 in 75 year floodplain lying within the north east corner of the application boundary is approximately 1885m², as shown on Figures 9.1 and 9.2. The floodwater storage capacity of this area will be lost through the development of connecting railway infrastructure into the site.

9.2.15 The indicative ‘*extreme event*’ floodplain identified on the Environment Agency model encroaches into the northern part of the Phase 1 & 2 development footprint. The indicative boundary identified that in the event of an extreme flood (i.e. the light blue hatch shown on the Environment Agency model and on Figure 9.1).

Geology

9.2.16 The site is underlain by the Lower Permian Sandstone Formation of the Permian period. This comprises a series of irregularly intercalated fine breccias and red sandstones with a thickness in excess of 100 metres. The formation is very dense red brown silty and medium sand with thin sub horizons of coarser gravel.

9.2.17 Superficial deposits at the site extend to a depth of approximately 4.4 metres. The deposits consist of silty clay, sand and gravel horizons overlain by topsoil.

Groundwater

9.2.18 The site overlies the Lower Permian Sandstone Formation, which is recognised as a major aquifer. The groundwater vulnerability has therefore been assessed as high.

9.2.19 The site is known to have a relatively high water table where monitoring is undertaken on a regular basis required by the mineral permission. It is thought that groundwater is in hydraulic continuity with the River Clyst. There is a low natural hydraulic gradient within the area. Within the boundary of the study area there is a

15m deep well, located as shown on Figure 9.1. Water is abstracted from this for agricultural use at a maximum licensed abstraction rate of 4m³ per day.

9.3 Potential impacts (see Table 9.2)

9.3.1 The proposed IFFDC has the potential to impact upon hydrological resources both during the construction of the site and during the operational phase. Potential impacts have been considered with respect to surface and groundwater.

Flood risk (see Table 9.2a)

9.3.2 A Flood risk assessment is provided in accordance with the requirements of the Planning Policy Guidance Note 25: Development and Flood Risk, which came into force on 17 July 2001 (see Appendix 9.1 for FRA as submitted in August 2003).

9.3.3 It has been agreed with the Environment Agency (EA) that detailed calculations and hydraulic analysis are not required at this stage, which reflects the current status of the scheme as an outline proposal (see Addendum A to Appendix 9.1, EA letter to Wardell Armstrong (WA) dated 12th February 2002). When the scheme reaches the detailed design stage then it is anticipated that further work will be required to demonstrate the management of the flood risk associated with the proposed development. It is anticipated that the requirement for detailed studies will form a condition attached to the outline consent if granted.

Flood risk

9.3.4 Data provided indicates that a portion of application area lies within the indicative floodplain for the River Clyst and of a ditch feature draining the airport (Ditch E).

9.3.5 Following consultation with the EA during 2002-2003, the extent of the 1 in 100 year floodplain to the east of the River Clyst was agreed, the boundary of which is defined on Figure 9.1 and Figure 9.2. These Figures identify that this agreed 1 in 100 year floodplain boundary is largely located to the west of the development footprint defined for Phase 1 of the IFFDC. However, using the available topographic data, three areas of low-lying land are identified within and adjacent to the Phase 1 development area whilst also being within the 1 in 100 (75 in EA model) year floodplain, these are (see Figure 9.2):

- the red hatch area, which is an area of low lying ground at the southern tip of the landfill, which connects to ditch A;
- the green hatch area, which is the area of alder / willow wet woodland; the agreed boundary of the floodplain passes through the woodland although the natural boundary is probably the fence line to the adjacent agricultural land which is at a slightly higher level than the woodland edge; and
- a small area in the north east of phase 1, where the rail connection to the main line will be located.

- 9.3.6 The areas of ‘extreme flooding’ indicated on the current Environment Agency website are also associated primarily with the area of wet alder/willow woodland and Ditch E. The alder/willow wet woodland area will be retained, in its entirety for its ecological value and floodwater storage capacity. Only the small area associated with Ditch E would potentially be lost to Phase 1 development, but can be mitigated by provision of a new wet woodland area within the perimeter landscaping zone (see Section 9.4).
- 9.3.7 Given the limited encroachment of development footprint into the floodplain (i.e. the red hatch and black crosshatch areas identified on Figure 9.2) and the design which accommodates an adjacent area for floodplain replacement and compensation volume (i.e. the blue hatch and black hatch areas on Figure 9.2); it is considered that, in relation to PPG25: Table 1, the Phase 1 development is in a low risk flood zone.
- 9.3.8 There are two principal impacts that may act to increase the flood risk along the River Clyst, resulting from the development within the Phase 1 area:
- i. Due to the physical encroachment of the development into the flood plain resulting in a loss of flood storage capacity. The existing surface water drainage network for the site discharges to the River Clyst, which would be the receiving watercourse for surface water discharges from the development. As the river is known to flood in the vicinity of the site at the current time, any future increases in runoff above that currently generated from the existing greenfield (i.e. undeveloped) site will have the impact of increasing flood risk.
 - ii. Due to an increase in the rate of run-off from the development site area. Following construction of the site there is a potential impact upon flood risk to the River Clyst. This risk arises due to the increase in the amount of impermeable surfaces (such as paved areas and roofs), which reduce the area of ground that is capable of absorbing rainfall. The new development may therefore increase the rate at which run-off reaches the river. If these additional flows were discharged to the river and the river does not have sufficient capacity to accommodate them, then increased flooding will occur downstream of the site. The discharge of additional flows to the river also has the potential to increase the rate of erosion to riverbanks.
- 9.3.9 Taking account of these potential impacts and the risk rating with respect to PPG25 Table 1 can be considered at worst case to be moderate, therefore the overall risk rating is low – moderate, in the absence of mitigation for attenuation and rate of run-off from the Phase 1 development area. The two principal potential impacts have been assessed, with respect to mitigating design measures in Section 9.4

Surface water contamination (Table 9.2b)

- 9.3.10 There is a risk that watercourses can be polluted by the deposition of waste, the spillage of liquids or by sediment entering the drainage system as a consequence of construction activities. This risk is enhanced at this site due to the proximity of the River Clyst and the drainage channels that are present on the site. Pollution of the watercourses could result in damage to the current ecological system, by affecting oxygen levels, water chemistry or riverbed composition.
- 9.3.11 The closed landfill located within the outline application area will require excavation and relocation to allow the proposed development. These operations have a number of potential impacts on surface water including release of suspended solids, leachate and large particles of construction debris. Remedial works associated with the closed landfill would be subject to further technical remediation reports to be submitted with the detailed application, which is discussed in Section 16.
- 9.3.12 The majority of materials used during the construction of the IFFDC (e.g. steel, timber, stone) are unlikely to have a significant impact upon the hydrology of the site. However, some materials do pose a potential risk to the surface water regime with regards to water quality. Materials such as plaster and cement could affect the quality of surface water if they entered the drainage network. These materials however, are supplied in bags and should be stored on pallets under cover resulting in a low risk of pollution to any surface watercourse. Of more concern is the risk of pollution due to liquids associated with the construction works. These include fuels and oils, which have the potential for significant impact upon the surface water network if a spillage, should occur.
- 9.3.13 The volume of flow in the individual ditches across the site will be affected following construction of the proposed development due to areas of naturally draining grassland being replaced by developed areas with fixed drainage runs. There is also the potential for contaminated water from the developed site (e.g. runoff from roads and pavements, accidental spillage) to enter the surface water drainage network, thus causing a pollution incident.

9.3.14 English Nature, in response to a scoping report for an Appropriate Assessment (prepared for potential impacts on the Exe Estuary SPA) requested that the assessment of the potential impacts upon surface water during the construction phase were considered in more detail. The assessment table, as submitted to English Nature, is contained correspondence (see Appendix 13.11).

Groundwater (see Table 9.2c)

9.3.15 The potential impacts of the development of the site on groundwater regime are assessed for two stages of development:

- those impacts which may occur during the construction stage; and
- those which may occur subsequent to the completion of the development.

9.3.16 The two main areas of concern regarding potential impacts during the construction phase on site are those which may occur due to accidental spillages and those due to unforeseen ground conditions encountered during excavation for foundations and drainage (or services).

9.3.17 The relocation of the landfill material and the construction of the development platform may also impact upon groundwater depth and quality as well as nearby surface waters and licensed abstractions.

9.3.18 Potential impacts due to accidental spillage/leaks of construction materials used on site are unlikely due to the nature of construction materials and the relatively small volumes involved.

9.3.19 Unforeseen ground conditions represent the most significant and unpredictable potential impacts during construction. However, by following good management practices and by instigating procedures for mitigation should contaminated material be encountered, the impacts are predicted to be low.

9.3.20 Upon completion of the development the main potential impact would be a decrease in infiltration of water to the aquifer due to the increase in impermeable areas (i.e. buildings and hardstandings) associated with the development. The effect of this may be to reduce the recharge to groundwater and have a localised adverse effect upon the aquifer. Should the effect extend to adjacent users of the aquifer, an objection from the EA and South West Water would be likely. In any case the abstractions are currently protected through a legal agreement attached to the mineral planning consent.

9.3.21 The Environment Agency have identified this concern in correspondence to EDDC and have identified the requirement for a ‘comprehensive water features survey’ (particularly in Clyst Honiton) to be undertaken prior to any development works. This survey will identify all water sources, not only licensed abstractions; this survey and assessment will need to be combined with potential impacts associated with the

construction of the Clyst Honiton bypass. If any water sources exist then a detailed assessment will need to be undertaken to determine potential impacts and identify suitable mitigation measures. This study will form a part of the detailed application for Phase 1.

9.4 Mitigation measures

Flood risk (see Table 9.2a)

Encroachment into the flood plain

- 9.4.1 The potential risk of flooding to the new development from the River Clyst and ditch E can be mitigated by minimising development within the floodplain areas. This approach would be in accord with PPG25 Development and Flood Risk.
- 9.4.2 The footprint of the proposed development area is shown to extend marginally within the flood plain, see Figure 9.2. During consultation with the EA it has been agreed that it will be possible to ensure that the loss of storage capacity within the flood plain, due to the encroachment of the development footprint, will be replaced by a greater compensatory storage capacity. (See red and blue hatch areas on Figure 9.2 and WA letter to the EA, dated 16th October 2002, and Figure 9.3). The EA has formally accepted the proposals in relation to the compensatory flood plain on the western boundary of the development footprint, see EA letter to WA dated 15th November 2002. Copies of the relevant items of correspondence are included in Addendum A of Appendix 9.1. The compensatory floodplain identified in the north east part of the development footprint has been identified as a result of comments from the EA relating to the updated Environmental Statement.
- 9.4.3 Considering each of these potential impacts in order, the following mitigation measures have been recommended and incorporated into the masterplan:
- a) The area of red hatch represents an encroachment of the development footprint into the natural 1 in 100 year floodplain. This loss of floodplain can be mitigated by engineered compensation, as shown by the blue hatching on Figure 9.2.
 - b) The green hatch area will be retained due to its importance for ecology and floodwater capacity (i.e. no loss of natural floodplain in this area). Furthermore, a minimum stand-off of 7m between the existing fence line and the edge of the development footprint has been identified as a mitigation measure to protect the woodland edge. (Note: this is the minimum stand-off distance which is closer to an average of 15 – 20m for the majority of the internal access road). The 7m stand-off has been designed on the interface of both the natural floodplain and the engineered compensation floodplain (see Figure 9.1).
 - c) With respect to the area of indicative 1 in 75 year floodplain to the north east of the study area, adjacent to the railway embankment, only an area of

approximately 1885m² is located within the Phase 1 development area (see Figures 9.1 and 9.2). This would be lost to the proposed development of the railway infrastructure into the site, but can be compensated by excavation of an adjacent wet woodland area as part of the advance landscaping works. This will be achieved by stripping soil to 50cm depth from the proposed wet woodland area before planting with trees. This would provide approximately 1910m³ of floodwater storage, which would compensate the volume lost by development of the railway infrastructure into the current floodplain (the replacement volume equates to a volume of water approximately 1m deep within the indicative floodplain). The location of this wet woodland is such that the floodwater that would previously have built up alongside the railway embankment would instead be permitted to enter into the artificial depression in the wet woodland area as waters rise. The indicative boundary also identifies that in the event of an extreme flood adjacent areas of external landscaping, internal roads and associated hardstanding may be affected.

9.4.4 With respect to the mitigation designs, it is acknowledged, by the EA, that the designs are to an outline stage only and that with the detailed submission the proposed development footprint levels may change. Therefore, a boundary line has been defined that denotes the edge of the Phase 1 development footprint, such that no surface change in level or hardsurfacing can be designed outwith this boundary. The development footprint boundary has been defined to safeguard mitigation measures required to maintain 1 in 75 year floodplain storage capacity of the River Cyst.

9.4.5 The effects of climate change are considered within PPG25 Development and Flood Risk by the incremental increase in predicted flood levels at a rate of 5mm per year for the South West of England. The proposed development platform is at a significant elevation above the current 1 in 100 year flood levels (approximately 3.5m above predicted flood levels, see Figure 9.2) therefore the proposed development is not considered at risk to flood level changes associated with climate change. A minimum 7m stand-off boundary line has been defined on Figure 9.2, as the minimum distance from the edge of the floodplain to the hard surfacing, associated with the edge of the development footprint, to provide a buffer capacity for the effects of climate change.

Proposed surface water discharge (see Table 9.2b)

9.4.6 The development of the site as an IFFDC will increase the hard standing areas on the site and will therefore increase the potential rate of run-off to the River Cyst.

9.4.7 This issue has been discussed with the EA and it has been agreed that the rate of run-off should be limited to 4l/s/ha, the equivalent of a 1 in 1 year green field run-off, see EA letter to WA dated 1st October 2002. A copy of the letter is included in Addendum A of Appendix 9.1.

9.4.8 Therefore the detailed design will require that onsite drainage has sufficient storage capacity to allow the discharge of the surface water run-off to be controlled to the agreed 4 l/s/ha. This criteria does not predicate the need for the detailed design to demonstrate the control of surface water run-off at lesser rainfall events, this being achieved through the adoption of Sustainable Urban Drainage systems (SUDs), which will be submitted with the detailed design for Phase 1.

Water storage

9.4.9 Initially it was proposed to use an attenuation lagoon to provide the required storage (see outline masterplan in Appendix 1.1). However, concerns were raised about risks associated with bird strikes in relation to the proximity of Exeter Airport. In response to this concern it is now proposed to utilise sustainable urban drainage techniques wherever possible, including source control methods, along with a combination of oversized pipes and underground storage to provide the necessary control to limit the discharge to the agreed 4 l/s/ha. There are now no surface water attenuation storage in lagoons and this change in design should remove any perceived risks associated with bird strikes during take-off and landing at Exeter Airport.

9.4.10 The potential increase upon downstream flood risk and rate of bank erosion following development of the site can be mitigated by the attenuation of surface water draining from the site above the existing greenfield drainage discharge. In order to provide preliminary guidance on the amount of storage required to prevent an increase in downstream flood risk, the amounts of greenfield and developed runoff require estimation.

9.4.11 The existing greenfield site covers approximately 66 hectares, with surface water drains discharging to the River Clyst via a number of points. The proposed development would take place in two phases, with Phase 1 covering approximately 21.3ha (including the IFFDC sidings) and the combined Phase 1 and 2 development covering approximately 41.8ha.

9.4.12 For the purposes of this study it has been assumed that it will be necessary to balance flows above and beyond the greenfield runoff, from a rainfall event equivalent to the 1 in 100 year storm of 30 minutes duration, (i.e. a storm that is likely to occur for a period of 30 minutes once in every 100 years). Local authorities commonly adopt this severity of storm event as an adequate design frequency. The area of land used for the greenfield calculation equates to the areas of the proposed development footprints of 21.3ha and 41.8ha described above.

9.4.13 The Wallingford Procedure Modified Rational Method, Volume 4, was used to estimate the difference between the runoff produced from the greenfield area and the runoff from the proposed development footprints. Table 9.1 shows the variation in

storage requirements according to the development area and the limiting discharge. In order to provide an overestimate of storage requirements, a low limiting flow (4l/s/ha) and high % impermeable cover (85%) has been used.

Development area (ha)	Limiting outfall (l/s/ha)	% impermeable cover	Minimum storage requirement (m³)
Phase 1; 21.3	4	85	9,962
Phase 1+2; 41.8	4	85	18,081

9.4.14 In designing the minimum storage capacity, a sustainable urban drainage system (SUDs) design will be adopted to reduce the rate and speed of run-off from the developed site during rainfall events.

Outline design principles for SUDS.

9.4.15 In correspondence dated 1st October 2002 (see Addendum A of Appendix 9.1) from the EA confirmed the following parameters for use in the design of the proposed surface water drainage for the development:

- i. The discharge to the River Clyst should be limited to an equivalent 'green field' run-off rate of 4 litres per second per hectare.
- ii. The water levels for a 1 in 100 year flood condition within the existing floodplain should be taken to be 10.75m A.O.D. at the northern end of the site, adjacent to the railway, and 9.25m A.O.D. at the southern end of the site, bordering the C832.
- iii. It has been agreed that for the purposes of the assessment that the water levels within the floodplain along the length of the development should be considered as a uniformly sloping surface between the 2 levels defined above.

9.4.16 Detailed designs for the proposed development will identify the methods adopted to minimise storm water runoff. The choice of attenuation will depend upon the design of the development but suitable methods include swales, oversize surface water sewer pipes or underground tanks fitted with flow restricting devices that will prevent flows greater than the greenfield flow being discharged.

9.4.17 Consideration will also be given to the feasibility of recharging the aquifer that underlies the site within the Lower Permian Sandstone Formation, rather than discharging all of the surface water to the River Clyst. Clean water from roof areas etc. could be drained via soakaways or filter/french drains in order to reduce the potential impact of decreased aquifer recharge resulting from the increase in other impermeable areas. The use of such methods will be considered as part of the detailed design of the buildings and the associated surface water drainage

9.4.18 In addition, hardstanding areas could also be constructed of porous asphalt underlain with a sub-base of high void ratio laid to encourage subsurface percolation to groundwater.

Discharge to surface water

9.4.19 It was also agreed with the EA that due to the size of the proposed development that there may be a need for 4 separate discharge points for Phase 1 so as to achieve the following:

- required gradients to drain the proposed development;
- invert levels at the discharge points into the existing flood plain;
- maintain current proposed development levels; and
- sufficient cover over the proposed drainage system.

9.4.20 The discharge points have been identified on Figure 9.3 and coincide with existing surface drainage features within the floodplain. These existing ditches are likely to accept surface water flow from a swale ditch constructed on the edge of the Phase 1 access road, which will flow, via interceptors, to the ditch within the floodplain. Floodplain ditches will be widened, and the increased channel width planted reeds. Surface flow between the edge of the development and the floodplain will be drained via a toe drain, which will be designed to form a part of the reedbed system.

9.4.21 To provide mitigation during the construction period, it is recommended that the detailed design, and landscaping of the ditch / reedbed system within the floodplain is agreed and implemented prior to construction works in the Phase 1 development area.

9.4.22 A preliminary storage attenuation assessment has been undertaken for a 1 in 100 year return period based on a restricted discharge of 4 litres per second per hectare as requested by the EA.

Surface water contamination (see Table 9.2b)

9.4.23 The majority of pollution incidents resulting from construction works are avoidable if the works are carefully planned and if pollution control measures are included at the planning stage of the project. To minimise the potential for impact upon the existing surface water drainage network during construction works, a detailed Pollution Control Strategy should be produced and agreed with the planning authority prior to commencement of the works. The strategy should include a detailed monitoring programme to evaluate the interaction between ground, surface water, licensed and private unlicensed abstraction in the vicinity of the site. Examples of good site management techniques that could be adopted include:

- Materials such as cement, plaster, paints etc., should be stored in secure containers protected from the weather and sited in a location where damage due to vehicle movements is unlikely.
- All fuels, oils etc., for construction plant should be in tanks sited on an impermeable base and be contained by secure bunds. Bund walls should also be impermeable and the bund capacity should be equal to 110% of the volume of the largest drum or tank. Re-fuelling should also take place within the bunded area. When not in use tanks should be securely locked to prevent vandalism and located in an area as far away as practicable from any watercourse and where the potential for damage due to vehicle movements is minimal.
- Existing surface water drains on the site convey uncontaminated rainwater to the River Clyst and nothing, which may cause pollution, should be allowed to enter this drainage network.
- All wastes produced during the works should be stored in a designated area and isolated from the drainage network.
- Silty water arising from excavations, exposed ground, soil stockpiles, washing facilities or site roads should not be drained to any watercourse.

9.4.24 As previously identified in paragraph 9.3.14, these outline mitigation measure have been considered with respect to the likelihood of effect on the Exe Estuary SPA, this assessment table has been reported in correspondence to English Nature (see Appendix 13.11)

9.4.25 Following development any potentially contaminative materials should be stored in a safe fashion as per the materials used during the construction works. Additionally, there is potential for pollution to the surface water network by the discharge of runoff from the site. Runoff from roof areas should generally be of reasonable quality and be suitable for direct discharge to the drainage network (subject to any balancing requirements). Runoff from areas of hardstanding may, however, contain suspended solids or spillages of vehicle fuels or oils. The new drainage infrastructure design should therefore incorporate gully pots/petrol interceptors to minimise this risk.

9.4.26 With regards to the new drainage infrastructure for the development, consideration should be given to designing a scheme that is sustainable, i.e. one that balances the social and economic requirement of development with the need to protect water resources for the future. The adoption of a sustainable approach compared to a conventional piped drainage system can help to overcome problems traditionally associated with conventional piped systems such as increased risk of flooding, reduced aquifer recharge and increased risk of surface water pollution.

9.4.27 The concept of sustainable drainage schemes is one that is promoted by the EA and in various government policy documents, (for example, the Review of the Regional

Planning Guidance for the South East, which states that: “*local authorities should promote, through development plans and design guides, measures which minimise the impact of new development upon the environment*” and that “*aspects of sustainable drainage includes...control measure for surface water drainage as close to its source as possible (including the attenuation of runoff to prevent flooding or erosion of a water course)*”. The requirements for surface drainage, taking account of this guidance should form part of the detailed planning submission for the development.

Groundwater (see Table 9.2c)

- 9.4.28 The adoption of good site management practices as per the mitigation measures identified for surface water drainage can also effectively reduce the likelihood of impacts on groundwater.
- 9.4.29 Following completion of the development, good site management techniques should continue to be employed to prevent further risk of groundwater contamination. For example, any areas used for the storing of fuel should be contained within bunding. Any freight storage areas should also be contained within bunding should any containers leak or fall. Siphons should be in place to minimise the oil and fuel leaks in areas where trains and vehicles enter the site.
- 9.4.30 Clean water from roof areas etc. could be drained via soakaways or filter/french drains in order to reduce the potential impact of decreased aquifer recharge resulting from the increase in other impermeable areas. This would also have the added benefit of mitigating the increased volume of water discharged to the river as a result of the development.
- 9.4.31 At this stage there is insufficient baseline data to assess the impact of the earthworks required to attain the development platform and the effect on groundwater. Further studies are required to accurately determine the groundwater regime within the site. This study should be undertaken prior to the detailed application. Information available for the site, in particular the assessment submitted for the mineral planning consent, indicates that effects on groundwater level would be minimal and that there would not be an impact on the existing groundwater abstraction licences outwith the site. The abstraction licence from the well within the site would be lost during Phase 1 development.

Landfill

- 9.4.32 The closed landfill requires further studies. It is anticipated that these could be considered as part of the detailed application or as a separate application for the handling of waste material. The following programme should thus be incorporated prior to the submission of any future detailed application.

- Installation of piezometers to monitor quality of groundwater within, underlying and adjacent to landfill. This data should be used to provide a specification for drainage control measures during remediation of the landfill.
- A detailed site investigation to define the type and volume of waste materials within the landfill.

9.5 Cumulative effects

9.5.1 The cumulative effect of the Skypark development and the IFFDC will require that the surface water management of both sites will need an integrated approach to detailed design and careful long-term management. An increased flow from either site could impact on the flood flow characteristics of the River Clyst, thereby increasing the risk of flooding within the IFFDC and potentially downstream. Development within Phase 2 of Exeter Gateway has been considered in this impact assessment with respect to the indicative 1 in 75 year and 'extreme' floodplain identified in the north east of the site.

9.6 Residual impacts

Surface water

9.6.1 Subject to the adoption of SUDs in the detailed design and construction of Phase 1, combined with the mitigation measures identified in this assessment, the development is unlikely to have any significant impact upon the long term hydrology of the site. The design of the development footprint will provide an increased flood storage capacity than that identified in the agreed 1 in 100 year and indicative 1 in 75 year flood return periods. Therefore if a sustainable approach to drainage design is adopted, with balancing facilities incorporated, the in flood risk to the River Clyst will remain broadly similar to that identified in the absence of development.

Groundwater

9.6.2 The proposed development will produce an increase in the impermeable area thus resulting in a decrease in recharge in the aquifer beneath the site area. This could be mitigated by discharging clean water in a way that will promote aquifer recharge, and by adopting sustainable drainage designs in line with measures taken for surface water drainage.

9.7 Summary

9.7.1 The study area comprises agricultural land, a former landfill and a sand and gravel quarry. The study area is drained by a number of ditches discharging to the River Clyst. Two zones within the study area are located within the boundary of the indicative floodplain. However, the development footprint has been designed largely outwith the floodplain boundary. Compensatory measures have been designed to

balance the loss of a small area of low lying land adjacent to the floodplain that may be liable to flooding.

- 9.7.2 Development of the site has the potential to increase the risk of flooding downstream of the site due to the development footprint and increased rate of runoff arising from the increase in impermeable area. The risk of downstream flooding can be minimised by providing compensatory floodplain storage equivalent to that lost as a result of the development footprint and storage for all runoff that will occur above that which would be expected from the undeveloped (greenfield) site. Therefore, although proposed Phase 1 development will encroach into the flood plain, it has been demonstrated that it is possible to ensure that the loss of storage capacity within the flood plain due to the development encroachment will be replaced by a greater storage capacity.
- 9.7.3 Balancing of flows will also reduce the risk of increased erosion to the riverbanks downstream of the site. The use of SuDS techniques will be utilised to achieve the desired attenuation within the site boundary and the calculated runoff can be balanced by drainage design to accommodate swales, oversize pipes and underground storage. Surface water lagoons and ponds will not be used in the design, in response to concerns over bird strikes associated with Exeter Airport. The rate of run-off will be controlled to an agreed limit of 4 l/s/ha and so the actual discharge from the development will not exceed the equivalent of a 1 in 1 year green field run-off.
- 9.7.4 It has been agreed with the EA that there will be at least 4 discharge points designed from the development into surface water ditches that drain to the River Clyst (for the Phase 1 development area). Details of the overall balancing requirements will be submitted with the detailed application. The hardstanding areas within the proposed development footprint for the IFFDC will increase the rate of run-off for surface water to the River Clyst.
- 9.7.5 The site overlies the Lower Permian Sandstone Formation, which is recognised as a major aquifer. The detailed design will include the drainage of clean water from roof areas etc. via soakaways or filter/french drains to groundwater in order to reduce the potential impact of decreased aquifer recharge resulting from the increase in the impermeable surface area within the developed site. There are a number of adjacent licensed and unlicensed abstractions and further long term monitoring will be established in advance of Phase 1 to audit and if necessary design additional mitigation measures to minimise the impact associated with development on groundwater recharge. This study will need to take account, or be part of a joint programme with that for the Clyst Honiton bypass.
- 9.7.6 Construction works and site operations subsequent to the development have the potential to increase pollution risk to groundwater and surface water within and

adjacent to the site area. The risk of pollution can be minimised by adopting good site management techniques.

- 9.7.7 The balancing facilities provided should be integrated into the overall drainage strategy for the site development. Where possible the drainage scheme designed to control the quantity and quality of runoff should adopt principles that are in accord with a sustainable development strategy.

Table 9.2(a) Water resources (flood plain) - summary assessment matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Phase 1 development footprint is adjacent to the River Clyst floodplain (agreed 1 in 100 year flood plain)	Construction phase: Loss of existing flood plain to design site access road (and service corridor) into Exeter Gateway.			*			Adverse	Lt, Ir	Moderate	Loss of flood plain will be compensated by an increase storage volume on the boundary between the development footprint and the flood plain. Appendix 9.2 identifies that the boundary of the flood plain has been agreed the Environment Agency and compensatory design measures are identified in Figure 9.3.
	Operational phase: The potential for an increase in the rate of run-off from the developed / operational site area.				*		Adverse	Lt, Ir	Moderate	A SUDs scheme will be submitted with the detailed application, in line with recommendations in Appendix 9.2.
Phase 1 development of rail infrastructure is partly within the indicative 1 in 75 year flood plain	Construction phase: Loss of existing flood plain for eastern link to main rail line.			*			Adverse	Lt, Ir	Moderate	Loss of floodplain will be compensated by an increase in storage volume in an area designed as wet willow/alder woodland.
	Operational phase: Tracks laid on ballast, surface water will continue to percolate to groundwater.					*	Neutral	Lt, Ir	Moderate	No mitigation required.
Surface water flow into flood plain	Construction phase: loss of existing surface water features on the site would affect rate of run-off into the flood plain					*	Adverse	St, R	Minor / Moderate	A SUDs scheme will be submitted with the detailed application, in line with recommendations in Appendix 9.2.
	Operational phase: The potential for an increase in the rate of run-off from the developed / operational site area.					*	Adverse	Lt, R	Minor / Moderate	
Landscape works identified in the flood plain as a mitigation measure to compensate for habitat loss (See flora and fauna section)	Construction phase: Increased sedimentation into existing water courses, increased surface water run-off after rainfall.					*	Adverse	St, R	Minor / Moderate	Pollution control plan to be agreed with EDDC and the EA prior to construction works. Development of reedbeds and wet meadows to attenuate surface water flow from Phase 1 development area. Use of temporary settlement lagoon to control surface water run-off. Note: potential effects on the Exe Estuary SPA have been considered in Appendix 13.11. The residual impacts are assessed as negligible.
	Operational phase: Increased runoff from areas of hard surfacing within development footprint. Potential contaminative materials associated with run-off from access road and its use by HGVs.					*	Beneficial	Lt, R	Minor / Moderate	Reedbeds and wet meadow will provide balancing and attenuation of surface water flow in addition to SUDs identified in Appendix 9.2. Long term management and maintenance regime for reedbeds and wet meadows will be submitted as part of the detailed application to the planning authority.
<p>Key I = International N = National R = Regional D = District L = Local St = Short term Lt = Long term R = Reversible Ir = Irreversible</p>										

Table 9.2(b) Water resources (surface water) - summary assessment matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Removal of vegetation (including hedgerows by ditches and shrub woodland adjacent to the eastern boundary landfill)	Construction phase: Increased sedimentation into exiting water courses, increased surface water run-off after rainfall.				*		Adverse	St, R	Minor/ Moderate	As part of the detailed application for Phase 1 a scheme will be submitted for the attenuation and surface water during earthworks and construction. There is the potential to use existing water attenuation ditch, remaining from the former landfill operations.
	Operational phase: Increased runoff from areas of hard surfacing within development footprint.				*		Beneficial	Lt, R	Minor	Swales and open ditches within the site will be designed with bankside vegetation. A SUDs scheme will be submitted with the detailed application, in line with recommendations in Appendix 9.2.
Remediation of the closed landfill to enable redevelopment	Construction phase: The waste materials within the landfill will require excavation, screening and crushing (for reuse) and disposal of non-recyclable residues. There is the potential risk that works on the landfill would result in the release of suspended solids, leachate and large items of construction debris into surface waters.				*		Adverse	St, R	Minor / Moderate	Remediation works will be subject to a Source-Pathway-Receptor risk assessment analysis. The remediation strategy will define operational and management controls during works on the landfill. Note: English Nature identified that geographical significance maybe international in context due to potential effects on the Exe Estuary SPA. Analysis in Appendix 13.11 identified that residual impacts are negligible or at worst case minor. Likelihood of effect on the SPA is very low.
	Operational phase: the current risks associated with leachate and gas associated with the landfill will be remediated, prior to construction				*		Beneficial	Lt, R	Minor	None required.
The edge of the development area in Phase 1 is adjacent to the flood plain of the River Clyst and there a number of drainage channel that drain to the Clyst.	Construction phase: increase risk of pollution into surface water courses during the construction period. Pollution of watercourses within the site could result in damage to the current ecology of the River Clyst, by affecting oxygen levels, water chemistry or riverbed composition.				*		Adverse	St, R	Minor / Moderate	A detailed pollution control strategy will be agreed with the planning authority prior to commencement of construction, this will be submitted as a part of the detailed application and will include: storage of plasters and cements etc, storage and handling of fuels, treatment and storage of wastes produced during the construction period. The detailed scheme will include temporary changes to surface water flow required during construction and prior to the implementation of SUDs design for the operational site. See note regarding English Nature above.
	Operational phase: potentially contaminative materials will be used at the site, in particular fuel and engine oils, chemicals and particulates (either through storage) or action of HGVs following rainfall).				*		Adverse	Lt, Ir	Minor / Moderate	A site specific water management system will be submitted with the detailed application and will include the location of gullies and interceptors accepting surface water from operational areas, design of surface water flow from roofs, hardstanding and storage areas and the integration with the SUDs design for Phase 1
Key I = International N = National R = Regional D = District L = Local St = Short term Lt = Long term , R = Reversible. Ir = Irreversible										

Table 9.2 (C) Water resources (groundwater) - summary assessment matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
The development footprint will reduce the depth to the groundwater.	Construction phase: Large scale earthworks may result in the mobilisation of in situ contaminants that disperse to groundwater.					*	Adverse	St, Ir	Minor / Moderate	As part of the detailed application for Phase 1 a scheme will be submitted for the attenuation and surface water during earthworks and construction. The scheme will include data obtained from peizometers, to be installed, providing data on the quality of groundwater in close proximity to the landfill. In addition, the scheme will include data from the site investigation to determine the type of and volume of wastes within the landfill.
	Operational phase: Reduced attenuation for pollutants migrating from surface to groundwater.					*	Adverse	Lt, Ir	Minor	A SUDs scheme will be submitted with the detailed application, in line with recommendations in Appendix 9.2.
Recharge of groundwater	Construction phase: Recharge to groundwater may reduce due to active surface water management during earthworks and through increased surface water run off as the extent of the development area increases.					*	Adverse	St, Ir	Minor	A SUDs scheme will be submitted with the detailed application, in line with recommendations in Appendix 9.2. This will include soakaways or filter/french drains for clean water from roof areas etc to percolate to groundwater.
	Operational phase: Development area would increase surface run off and reduce aquifer recharge.					*	Adverse	Lt, Ir	Minor	
Key I = International N = National R = Regional D = District L = Local St = Short term Lt = Long term , R = Reversible. Ir = Irreversible										

10 TRAFFIC

10.1 Introduction

10.1.1 Savell, Bird & Axon have prepared a detailed traffic impact assessment, which forms a separately bound report. The main issues identified in that report have been summarised in this section. The addendum to the Traffic Assessment is given in full in Appendix 10.1.

10.2 Baseline conditions

10.2.1 The baseline traffic flow data have been quantified in a traffic impact assessment report for the proposal development at Skypark and Exeter & Devon Airport produced by Halcrow Fox and subject of a separate planning application. The traffic model produced by Halcrow Fox identifies the traffic flows before and after the construction of the A30(T), and includes the traffic effects of all developments in the area anticipated in the County Structure Plan. Table 10.1 shows the data presented in the Environmental Statement for the Skypark and Exeter & Devon Airport developments.

Road	AM Two-Way Flows		PM Two-Way Flows	
	Before	After	Before	After
B3184 through Clyst Honiton	670	100	535	90
A30 West of B3184	2410	360	1960	325
A30 East of B3184	1925	320	1640	275
N.B. "After" flows are predicted not observed Data Presented in Environmental Assessment for Skypark prepared by Halcro Fox				

10.2.2 The traffic impact assessment concludes that the site is not well served by public transport and consequently the majority of employees will come to the site by car. However, the site is located close to the high quality Trunk road and Motorway networks, and with the potential to be served by rail, making it particularly suitable for the development of warehousing and distribution facilities.

10.3 Potential impacts

10.3.1 The intermodal facility will generate substantial numbers of heavy goods vehicle movements to the site in addition to the substantial numbers of goods vehicles likely to be generated by the proposed warehouse developments, estimated at between 500 – 1100 lorries per day. These have the potential to generate traffic capacity impacts, noise and other environmental impacts associated with lorry traffic on, and adjacent to, the local road network.

10.3.2 Employees travelling to the site, the majority of who are likely to travel by car have the potential to generate between 1500 – 2500 car trips per day to the site. These would have the potential to give rise to traffic capacity impacts on the local road network.

10.3.3 This attracted and generated traffic has the potential to partially offset the reduction in environmental impacts on local roads resulting from the recent completion of the A30(T).

10.4 Mitigation measures

10.4.1 The outline application submitted in 2000 included the development of a Clyst Honiton bypass to the new A30(T), connecting the proposed development (and the proposed Skypark and Exeter Airport developments) to the new A30(T) by-pass. The bypass is now subject of a separate application and ES³. The transport assessment identifies that all HGV traffic entering and leaving the site during operation of the IFFDC will be directed to use this approved route, with the exception of goods traffic for local destinations. These local trips are anticipated to be relatively few in numbers. In this way the impact of goods vehicles generated by the development on local roads will be minimised.

10.4.2 The proposals will include a commitment to implement an employee travel plan aimed at reducing the proportion of employees coming to the site by car through encouraging car sharing and by promoting alternative modes such as walking, cycling, and public transport. These commitments have been developed in the transport addendum.

10.5 Residual impacts

10.5.1 Once the effect of these mitigating measures (particularly the Clyst Honiton bypass) are taken into account, the Transport Assessment concludes that the residual traffic impact of the Phase 1 proposals will be within normally accepted levels for all likely combinations of development in the area. With Phase 2, the assessment indicates that there may be a need for further highways improvements, but that the need for these may not be wholly attributable to the Phase 2 proposals.

10.5.2 The assessments show that employee (car) traffic generated by the development will give rise to a significant increase in the volume of traffic on the C832 through Clyst Honiton (up to a doubling of peak hour flows for the full development). However this increase must be seen in the context of the dramatic reduction predicted to result from the Clyst Honiton bypass. The IFFDC development will, therefore, simply offset a small part of this reduction.

10.6 Summary

10.6.1 The traffic impact of the development has been shown to be within acceptable levels in all likely scenarios up to 2011. The traffic impact of the eventual full masterplan

³ Devon County Council, Clyst Honiton bypass Environmental Statement prepared by Parsons Brinkerhoff, (July 2005).

proposals may require improvement to the existing road network, but the improvements cannot be attributed solely to the development of the IFFDC.

11. AIR QUALITY

11.1 Introduction

11.1.1 This assessment considers the potential impacts upon air quality as a result of traffic movements directly related to the Exeter Gateway Intermodal Facility and Freight Distribution Centre development. A comparison of predicted air quality parameters is made from traffic flow data, including a prediction for traffic associated with the development. The aims of the assessment are as follows:

- identify sensitive locations;
- predict air pollution concentrations as a result of traffic on the adjacent road network; and
- assess the impact upon the air quality from the extra traffic generated by the development.

11.1.2 In the original ES submitted in 2000, this assessment considered the impact of the development on the local road network including the potential traffic flow on the proposed Clyst Honiton bypass, from the access into the IFFDC to the junction on to the A30(T). This part of the assessment has been superseded by the ES air quality assessment prepared, on behalf of Devon County Council by Parsons Brinkerhoff Ltd, released July 2005³. Therefore, the assessment of air quality, as it relates to the bypass is now available in the Clyst Honiton bypass ES and has been summarised in this report.

11.1.3 Notwithstanding the above, the overarching premise of the intermodal facility would be to generate a positive impact upon air quality, by reducing the volume of traffic on the arterial road network through a resultant increase in bulk transport by train. The SWARMMS report recognises that the development at Exeter Gateway could also provide some capacity for a regional urban freight distribution centre. The TA prepared for Exeter Gateway by Savell Bird and Axon (see separately bound report and Appendix 10.1), also recognises the potential for traffic generation associated with urban freight distribution. The local traffic generation has been factored into the combined transport model used in the Clyst Honiton bypass EIA and therefore the assessment of air quality, as reported by Parson Brinkerhoff.

11.2 Baseline conditions

Construction

11.2.1 The primary source of potential dust emissions from the site would have been associated with the mineral workings at Hayes Quarry that is controlled by conditions

³ Devon County Council, Clyst Honiton bypass Environmental Statement prepared by Parsons Brinkerhoff, (July 2005).

attached to the consent. Since the quarry has been mothballed, the main source of dust emissions is probably associated with agricultural operations within the site.

Vehicle exhaust emissions

11.2.2 Existing air quality in the vicinity of Exeter Gateway has been considered in the Clyst Honiton bypass ES (for nitrous oxides and PM₁₀). Existing road and air traffic will contribute to the baseline condition, as a result of the combustion of any hydrocarbon fuel in air mainly produces carbon dioxide (CO₂) and water (H₂O). However, combustion engines are not totally efficient, so some fuel is not burnt, or is partially burnt, which results in the presence of hydrocarbons (HC) and other organic compounds, carbon monoxide (CO) and carbon particulate in the exhaust. In addition, at the high temperatures and pressures found in motor vehicle engines, some of the nitrogen in the air and fuel is oxidised to nitrogen oxides (NO_x), including nitrogen dioxide (NO₂).

National air quality standards

11.2.3 UK air quality standards are derived from the recommendations of the DETR Expert Panel on Air Quality Standards (EPAQS) and also as a result of EU Directives relating to ambient air quality. The Government has recently completed a review of the National Air Quality Strategy and, as a result, the Air Quality (England) Regulations 2000 have been adopted. The Air Quality Standards describe air pollution in terms of concentrations of various contaminants, as summarised in Table 11.1.

11.2.4 Local authorities are required by Part IV of the Environment Act 1995 to review and assess air quality in their area. The strategy also requires the identification of areas where the air quality is unlikely to meet objectives prescribed in the Air Quality (England) Regulations 2000, by the specified date.

Table 11.1			
Standards and Specific Objectives from the UK National Air Quality Strategy			
Pollutant	Objective		Date achieved (or to be achieved by)
	Concentration	Measured as	
benzene	16.25 μgm^{-3} (5 ppb)	Running annual mean	31 December 2010
1,3-butadiene	2.25 μgm^{-3} (1 ppb)	Running annual mean	31 December 2003
carbon monoxide	11.6 mgm^{-3} (10 ppm)	Running 8-hour mean	31 December 2003
lead	0.5 μgm^{-3}	Annual mean	31 December 2003
	0.25 μgm^{-3}	Annual mean	31 December 2008
nitrogen dioxide	200 μgm^{-3} (105 ppb) not to be exceeded more than 18 times a year	1-hour mean	31 December 2005
	40 μgm^{-3} (21 ppb)	Annual mean	31 December 2005
PM ₁₀	50 μgm^{-3} not to be exceeded more than 35 times a year	24-hour mean	31 December 2010
	40 μgm^{-3}	Annual mean	31 December 2010
sulphur dioxide	350 μgm^{-3} (132 ppb) not to be exceeded more than 24 times a year	1-hour mean	31 December 2004
	125 μgm^{-3} (47 ppb) not to be exceeded more than 3 times a year	24-hour mean	31 December 2004
	266 μgm^{-3} (100ppb) not to be exceeded more than 35 times a year	15-minute mean	31 December 2005
PAH	0.25 ngm^{-3} as B[a]P	annual average	31 December 2010

11.2.5 All of the above pollutants are associated with traffic, as engine exhaust products, part A and B processes (within Section 11 of the Environmental Protection Act, 1990) and other industrial sources, identified by the first stage review. Road traffic is identified as the principal sources of all the pollutants with the exception of SO₂. This is likely to be as a result of road traffic on the A30, and air traffic to Exeter Airport.

Local air quality

11.2.6 The proposed site is located adjacent to Exeter Airport. The C832 passes along the southern edge of Exeter Gateway and will continue to be a local traffic route from Clyst Honiton to the east. In future the C832 will provide a direct route from Cranbrook New Community to the Clyst Honiton bypass, joining at the proposed junction into Phase 1 of Exeter Gateway. The Clyst Honiton bypass will also provide a through route for traffic from Skypark and Exeter & Devon Airport to the A30(T).

11.2.7 There are few residential properties in the immediate vicinity of the development; the closest are as shown on Figure 11.1. A larger group of properties is located to the south west of the development in the village of Clyst Honiton. Of these properties, only those at Water / Stone Hayes, (junction of the C832 and Waterslade Lane) lie within 200m of the identified road links into Exeter Gateway.

Road traffic data

11.2.8 Road traffic data for the relevant sections of the local road network were originally obtained from peak flows supplied by Savell, Bird & Axon in the separately bound Transport Assessment (see Table 11.2).

Traffic Scenario	Link 1	Link 2	Link 3	Link 4
2000 Existing AADT flow (at time of the original application)	5121 (10%)	-	5121 (10%)	-
2005 Predicted AADT, without development	5922 (10%)	7784 (15%)	10144 (10%)	-
2005 Predicted AADT, development traffic to Phase 1 of the development	5922 (10%)	10726 (15%) (19%)	10144 (10%)	1643 (70%)
Key				
Link 1	C832 (from proposed junction to Phase 1 of Exeter Gateway) through to Clyst Honiton			
Link 2	Clyst Honiton bypass (from proposed junction to Phase 1 of Exeter Gateway) to A30(T)			
Link 3	C832, (from proposed junction to Phase 2 of site access) eastwards through to Station Road junction on the C382)			
Link 4	Traffic on the access road into Phase 1 of Exeter Gateway			
AADT	Annual Average Daily Traffic			
HGV	Heavy goods vehicles (%)			
HGVs	From IFFDC development (% (in bold))			

11.2.9 The estimated AADT road traffic volumes were derived from the County traffic model and the Environmental Statement for the Skypark and Exeter & Devon Airport development.

11.2.10 This transport model has been incorporated into that used for the Clyst Honiton bypass ES and Table 11.3 provides an equivalent data-set used in this assessment.

Link		AADT (speed km/h: %HGVs)				
		2005	2011 Do Minimum	2011 Do Something	2025 Do Minimum	2025 Do Something
1	C832 (former A30) west of bypass	5121 (96 : 10)	5810 (96 : 10)	5922 (32 : 10)	6901 (96 : 10)	11927 (32 : 10)
2	C832 (former A30) east of bypass	5121 (96 : 10)	5810 (96 : 10)	10144 (32 : 10)	6901 (96 : 10)	20430 (32 : 10)
3	A30	37733 (112 : 15)	41688 (112 : 15)	57976 (112 : 15)	50862 (112 : 15)	83650 (112 : 15)
4	B3184 (C93) (Clyst Honiton)	300 (32 : 5)	339 (32 : 5)	50 (32 : 5)	404 (32 : 5)	50 (32 : 5)
5	Proposed bypass (north section)	N/A	N/A	10726 (32 : 15)	N/A	21602 (32 : 15)
6	Proposed bypass (south section)	N/A	N/A	16288 (32 : 25)	N/A	32788 (32 : 25)
7	Inter Modal Freight Terminal	N/A	N/A	2942 (32 : 70)	N/A	5925 (32 : 70)
%HGV figures have been conservatively estimated to give a worst-case scenario						

11.2.11 The data in both tables demonstrates that HGV traffic is estimated at 10% in both directions on the C832 and will not be increased in percentage terms as a result of the development of the IFFDC. Within Exeter Gateway the HGV component is estimated at 70% of the total traffic flow, which will rise through to an annual average daily traffic flow of 5925 by 2025. Due to the construction period operational traffic from the IFFDC will commence in the period up to 2011, following construction of the Clyst Honiton bypass.

11.3 Potential impacts (see Table 11.8)

Construction phase (dust)

11.3.1 The potential for dust arising from construction sites can be a matter of public concern. The fear is that the nuisance created during works will affect local amenity value and quality of life for the period during operations. The level of concern, and potential for nuisance, may be directly related to the number and proximity of residential areas to the site. The design proposals for Exeter Gateway include continued mineral extraction, to reduce the potential for mineral sterilisation. Therefore, there is the potential for particulate emissions from mineral working combined with that associated with construction related activities.

11.3.2 The degree of nuisance experienced depends on the rate of deposition, and is discernible at two levels:

- nuisance experienced when the dust cover is sufficient to be visible when contrasted to an adjacent clean surface, such as when a finger is wiped across the surface. This is particularly annoying when it occurs regularly over long periods; and
- severe nuisance experienced when the dust cover is perceptible without a clean reference surface for comparison. This usually occurs over short periods during very dusty conditions.

11.3.3 Nuisance complaints are usually associated with periods of peak deposition, occurring during particular weather conditions. There is a “normal” level of dust deposition in every community and it is only when the rate of deposition is high relative to the norm that complaints tend to occur. The impact of dust on a community will therefore be determined by five main factors:

- the short-term dustiness during periods of dry weather (climatic factors);
- the location of the potential dust source relative to the community;
- the effectiveness of dust control measures adopted by the site operator;

- the frequency or regularity with which these occur; and
- the duration of the site activities that contribute to dust.

The amount of dust that might cause complaint or nuisance in a particular circumstance is very difficult to determine and there are no statutory limits such as those applicable to suspended particulates or gaseous pollutants. However, guidance relating specifically to mineral operations (and not necessarily to the construction phase) indicates that complaints are likely when the rate of dust deposition is at 2 to 3 times the normal background level of dust deposition in the area.

11.3.4 The potential for severe dust impacts is greatest within 100-200 m of dust generating activities, within the prevailing wind (i.e. from the south west). Therefore, properties within 200m to the east / north east of the development footprint are most at risk. Table 11.4 shows the approximate distance from the closest point of selective properties to the closest point of the development site. As identified previously the properties of Water/Stone Hayes are located within 200m of the development proposed for Exeter Gateway. The analysis demonstrates that standard on-site operational procedures should suffice with respect to mitigation measures.

Location	Distance from Phase 1 boundary	Distance from Phase 2 boundary	Direction from site
1 Coachfield House	620 m	190 m	East
2 Shercroft Close	450 m	150 m	East / North East
3 Cotterell Road	450 m	200 m	East / North East
4 Shercroft Farm (edge of Clyst Avenue etc)	430 m	200 m	East / North East
5 Water / Stone Hayes	130 m	420 m	South
6 Edge of Clyst Honiton village	280 m	570 m	South West
7 Mosshayne	420 m	630 m	North/North West

• For location of receptors see Figure 11.1

Dust control in construction

11.3.5 Nuisance dust can arise from the following areas during the construction stage:

- unpaved surfaces;
- parking areas;
- demolition activities;

- vehicle treads;
- uncovered spoil tips, bins and skips;
- tools such as drilling and sanding activities;
- earthmoving plants; and
- generator, motor and vehicle exhausts.

11.3.6 The amount of dust is also affected by climatic factors such as humidity and temperature, therefore during periods of hot, dry and windy weather the potential for dust incidents is greater.

Transport

11.3.7 The assessment of potential impacts of road traffic to Exeter Gateway has been submitted in the Clyst Honiton bypass ES (Parsons Brinkerhoff July 2005), which used the transport model prepared by Savell Bird and Axon. The assessment was based on the specification and guidance contained in the publication *Design Manual for Roads and Bridges - Volume 11, Section 3, Part 1, Air Quality* (Highways Agency, 1999) and amendments (1999 and 2000) (DMRB).

11.3.8 DMRB provides a reliable screening tool for assessing the effects of traffic change on local air pollution. It takes account of traffic composition, speeds and inhibited flow conditions such as roundabouts and junctions. In predicting the significance of future traffic impacts, there are in-built correction factors for projected improvements in vehicle emissions. The method is appropriate for calculating the air quality impact of new road schemes, or changes to vehicle flows at distances of up to 200m from the carriageway.

11.3.9 With respect to Exeter Gateway there is one property within 200m of the junction from the IFFDC to the Clyst Honiton bypass (Water/Stone Hayes, receptor position 5 on Figure 11.1). The Clyst Honiton bypass ES also considers the potential air quality impacts at Hayes House, however as identified elsewhere the property would be demolished in advance of earthworks and construction and has therefore not been considered in this assessment.

Local air quality assessment

11.3.10 The assessment undertaken by Parsons Brinkerhoff for the Clyst Honiton bypass included concentrations of NO₂ and PM₁₀ concentrations which have been calculated for the following (see Tables 11.5 – 11.7):

- current air quality levels (2005);

- levels anticipated 2011 with no development (of the bypass);
- levels anticipated 2011 with development of the IFFDC being operational before this date;
- levels anticipated in the design year (2025), if the bypass is not constructed and also no IFFDC (as the two schemes are tied); and
- levels anticipated in the design year (2025), if the bypass and the IFFDC are operational.

Year	Contaminant	
	nitrogen oxides	PM ₁₀
2005	24.99	16.59
2011	19.72	17.02

11.3.11 The predictions with and without development have been taken from Tables 4.2 – 4.7 in the Clyst Honiton bypass Environmental Statement.

Scenario	Receptor 5 Stone/Water Hayes (see Figure 11.1)	nitrogen dioxide µg/m ³		PM ₁₀ µg/m ³	
		annual average	Number of hours >20µgm ⁻³	annual average	Number of days >50µgm ⁻³
2005	Existing ¹	24.99	0	16.59	0.54
2011	no dev. ²	19.72	0	17.02	0.75
	with dev ³	18.76	0	16.39	0.45
2025	no dev. ⁴	16.79	0	17	0.49
	with dev ⁵	18.76	0	16.39	0.45
Standard		40	18	40	35
Note: data available in Clyst Honiton bypass Environmental Statement in tables identified as:		¹ See Table 4.2 and 4.3			
		² See Tables 4.4 and 4.5			
		³ See Tables 4.12 and 4.13 (receptor 2)			
		⁴ See Tables 4.8 and 4.9			
		⁵ See Tables 4.14 and 4.15 (receptor 2)			
Note: Data from Parsons Brinkerhoff as published in the Clyst Honiton bypass ES.					

11.3.12 These results show that the impact from the extra traffic resulting from the development will not make a significant impact upon the predicted concentrations, and expected annual maximum concentrations, at the nearest residential properties (Water/Stone Hayes). There are no other properties within the 200m influencing distance of the link access road into Exeter Gateway. Other properties identified in the Clyst Honiton bypass will be affected by traffic generation from all the proposed developments within the Exeter Area of Economic Development. The data in Table 11.2 and 3 identifies that HGV traffic will be considerably less than 10% of the overall

flow therefore will not be a significant contributor to local air quality. Comparison of the “2011 no development” and the “2011 - traffic to development” scenarios indicates that the pollution generated by traffic to the development will not make a significant impact over levels generated by the road network.

11.3.13 These results show that the impact from the extra traffic resulting from the development would not make a significant impact upon the predicted concentrations, and expected annual maximum concentrations, at the nearest residential properties. Comparison of the “2025 no development” and the “2025 with development” scenarios indicates that the pollution generated by traffic to the scheme would be insignificant in comparison with levels generated by the road network alone. The assessment indicates that there would also be a progressive improvement in localised air quality in future years, notwithstanding the additional traffic loading associated with the proposed development and traffic growth on the general road network.

11.4 Mitigation (see Table 11.8)

Construction

11.4.1 There are a range of mitigation measures that can be employed on construction sites to reduce the amount of dust generated during construction, for example:

- watering disturbed surfaces regularly;
- chemical stabilising of the soil;
- prompt re-vegetation of disturbed areas;
- disturbance of only limited areas of earth at any one time;
- regular washing of vehicles and high levels of maintenance;
- provision of gravel beds or wheel washes for vehicles entering and leaving the site;
- enforcement of low speed limits within the site;
- use of wind barriers;
- suspension of dust producing activities during periods of strong winds;
- stockpiles kept damp by the application of water as and when necessary;
- placing dust producing machinery away from adjoining roads and properties;

- use of skip covers and tarpaulins;
- waste minimisation and regular waste removal;
- regular sweeping and cleaning of paved roads;
- demolition activities regulated under a Prior Consent Notice, issued by the local authority;
- haul roads will be appropriately graded to remove loose material from the surface;
- no burning of waste and vegetative matter on site;
- selection of different materials or use of prefabricated structures that do not give rise to as much dust; and
- compliance with BRE guidance on controlling construction and demolition pollution.

11.4.2 In addition, there are existing conditions attached to the mineral consent for Hayes Quarry and these will be enforced for mineral extraction that takes place during the construction period. Where mineral extraction takes place in other areas of the site, a dust action plan will be extended and the principles agreed with the EHO, prior to work commencing in that area.

Transport

11.4.3 The traffic impact assessment for the development details the measures taken to accommodate footpaths and cycle ways within the development, and provision for public transport links. Such measures should reduce the use of private vehicles, and therefore reduce the impact from vehicle emissions upon the local air quality.

11.4.4 The benefits of the IFFDC, with respect to shift transport mode from road to rail have been considered in the separate rail report⁵ (prepared by Gill Associates). The implications on air quality have not been assessed empirically, however, on a regional level an improvement in road-based transport related emissions to air are anticipated.

Regional air pollution

11.4.5 The assessment for the Clyst Honiton bypass concludes that although there would be a relative increase in regional air pollution as a result of traffic (including the

⁵ Exeter Gateway Rail Report prepared by Gill Associates July 2000.

component from Exeter Gateway), this would not result in a significant deterioration in regional air quality.

Greenhouse gas emissions

11.4.6 The assessment for the Clyst Honiton bypass also considers the contribution to greenhouse gas emissions associated with traffic using the bypass (including the contribution from Exeter Gateway). These calculations demonstrate a significant increase in overall carbon dioxide emissions due to the increase in volume of traffic that would use the bypass. It should be noted that HGVs from Exeter Gateway would contribute 19% of the annual average daily traffic flow on the Clyst Honiton bypass. Therefore, the overall contribution to CO₂ emission will result from cars and light goods vehicles as well as the HGVs from Exeter Gateway.

11.4.7 The Clyst Honiton bypass ES provides a comparison of total regional emissions at a baseline in 2002 with the 2011 and design year forecast for the bypass (See Table 11.7).

Table 11.7: Total Regional Emissions in Comparison with 2002 UK Roads		
	NOx	CO₂
Change in total with Do Something in 2011 (Tonnes/year)	+ 22.4	+ 5,214
Change in total with Do Something in 2025 (Tonnes/year)	+ 31.9	+ 10,965
2002 Total UK Road Traffic Emissions (Tonnes/year)	711,000	31,900,000
Change as % of 2002 UK total for 2011	0.00	0.02
Change as % of 2002 UK total for 2025	0.00	0.03

11.4.8 This analysis demonstrates that total emission associated with the predicted traffic flow on the bypass (including the contribution from Exeter Gateway) are negligible in comparison with the UK total quantity of emission for road traffic sources in 2002.

11.5 Cumulative impacts

Construction

11.5.1 Cumulative affects associated with construction of developments within the Exeter Area of Economic Development are short term and unlikely to generate cumulative effects because of the relatively short influencing distance associated with dispersal of dust from each of the identified construction sites. Properties most at risk of cumulative affects are those on the edge of Clyst Honiton and Water /Stone Hayes that are located close to the southern and western edges of Exeter Gateway and the Clyst Honiton bypass. A dust action plan is recommended to address the potential from cumulative effects if the construction phase for both developments is

simultaneous. The dust action plan would form part of the detailed application for Phase 1 development.

Traffic

The cumulative impact of the individual developments has been assessed in the Clyst Honiton bypass ES³.

11.6 Residual impacts

11.6.1 The increased traffic applicable to the development will generate pollution, as demonstrated in Section 11.3. However, these levels are not significantly greater than those levels calculated for the '*do nothing*' scenario. The predictive methodology demonstrates that these levels should also decrease with time, as technological improvements are made to vehicles (see Clyst Honiton bypass ES³).

11.7 Summary

11.7.1 An assessment has been made of the likely impacts upon air quality resulting from the development of Exeter Gateway. The assessment has identified that air quality, can be affected in two ways, firstly as a result of particulates (or dust) dispersed into the local area and causing a visible nuisance when deposited on a clean surface. Secondly, the change in air quality as a result of traffic flows associated with the development during the operational phase. The changes in air quality from transport relate primarily to the predicted traffic flows on the Clyst Honiton bypass. This is subject to a separate Environmental Statement, which has been considered and reported in this assessment.

11.7.2 The results of this assessment demonstrate that dust for earthworks and construction related operations should not cause a nuisance due to the separation distance between site activities and residential receptors in the locality. The assessment also demonstrates that these operations are highly amenable to mitigation and these can be implemented through a dust action plan to be agreed prior to site operations commencing.

11.7.3 With respect to site related traffic flows the assessment, drawn from the Clyst Honiton bypass ES, identifies that there would not be a significant change to air quality levels in comparison with the predicted air quality levels in the absence of the development but with the traffic routing. When compared with a background of a projected improvement in ambient air quality, emissions directly associated with the development should not lead to a deterioration of air quality. The increased traffic flow to the development should not cause air quality standards set for the area to be exceeded.

³ Devon County Council, Clyst Honiton bypass Environmental Statement prepared by Parsons Brinkerhoff, (July 2005).

Table 11.8 Air quality - summary assessment matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Dust emissions from earthworks and construction activities	Construction phase: Earthmoving and construction related activities can give rise to dispersal of dust that deposits as a thin film on horizontal surfaces such as window sills, cars etc.					*	Adverse	St, R	Minor	A wide range of mitigation measures are available, which form standard practice on most construction sites (see list in Section 11.4). Mitigation may require a specific dust action plan if construction activities on the Clyst Honiton bypass and Exeter Gateway are coincident. Conditions relating to dust for mineral extraction would be enforced.
	Operational phase: Dust can be entrained from action of wheels of HGVs.					*	Adverse	Lt, R	Negligible / Minor	Maintain site access road and internal roads in a good condition and state of repair.
Transport	Construction phase: Access to the site required by HGVs for construction purposes.					*	Adverse	St, R	Minor	No mitigation measures, until the rail terminal is constructed after which raw materials required for Exeter Area of Economic Development could be imported by rail.
	Operational phase: Intermodal facility reduce trunk road HGV and freight distribution centre may reduce HGVs in City Centre.			*			Beneficial	Lt, R	Moderate	No mitigation measures required.
Key I = International N = National R = Regional D = District L = Local St = Short term Lt = Long term R = Reversible Ir = Irreversible										

12. NOISE AND VIBRATION

12.1 Introduction

12.1.1 This assessment considers the potential impacts of noise and vibration as a result of operations directly related to the Exeter Gateway IFFDC development.

12.2 Baseline conditions

12.2.1 The area proposed for the development is currently a green field site located adjacent to Exeter Airport. The major noise sources in the area are the C832 (former A30 route), the airport and the London Waterloo to Exeter mainline railway. The A30(T) and M5 are also audible in the distance. The nearest residential properties to the site are situated in the settlement at Clyst Honiton to the south of the proposed development, with other isolated properties along the eastern perimeter of the site, as shown on Figure 12.1.

12.2.2 Baseline noise surveys were undertaken on 15th/16th March 2000 and again on the 27th/28th of April 2005. Representative monitoring positions were identified in order to develop an accurate model of the background noise environment.

- **Clystlands/Shercroft Close** - approximately 450m east of the phase 1 boundary and 180m from the phase 2 boundary. Represents properties along Shercroft Close and the mid-section of Station Road.
- **Shercroft Farm/Cotterell Road** - approximately 430m north-east of the phase 1 boundary and 220m from the phase 2 boundary. Also representative of properties to the south of the rail line (Clyst Avenue etc) and along the northern section of Station Road.
- **Coachfield House** - approximately 610m east of the phase 1 boundary and 220m from the phase 2 boundary. Represents properties along the C832.
- **Water/Stone Hayes** - approximately 45m south of the site. Also representative of properties in Clyst Honiton.

12.2.3 The monitoring positions identified are the properties in closest proximity to the site, beyond them noise levels will fall due to distance attenuation. The precise location of each monitoring position is shown in Figure 12.1.

12.2.4 Broadclyst Parish Council requested that the noise assessment be extended to Mosshayne farm and cottage. However, baseline studies were not undertaken at Mosshayne farm/cottage because of the distance of separation of these properties from the development (closest point and development are approximately 400m apart, in comparison to, less than 250m for other properties). In addition the properties are

located to the west of a ridge that provides a screen between the proposed development and these properties. The noise environment was essentially very quiet and rural in nature with traffic from the M5 audible in the distance.

12.2.5 The results of the noise survey are given in Appendix 12.1 (2000 data) and Appendix 12.4 (2005 data); a summary of the data is given in Table 12.1.

Table 12.1 Summary of noise measurements taken on 15 / 16 th March 2000 and 27 / 28 th April 2005						
Position	Time		noise levels dB(A)			Comments / noise sources
			L _{Aeq}	L _{A10}	L _{A90}	
Clystlands / Shercroft Close	day time mean	2000	63	64	40	road traffic
	night time mean		49	48	35	
	day time	2005	52	59	47	
	evening night time		48 42	51 44	43 38	
Shercroft Farm / Cotterell Road	day time mean	2000	64	64	41	road traffic light aircraft
	night time mean		54	49	33	
	day time	2005	65	50	44	
	evening night time		48 48	43 43	45 35	
Coachfield House	day time mean	2000	69	71	43	road traffic (most noticeable during day) and noise from airport at night
	night time mean		59	53	31	
	day time	2005	67	72	53	
	evening night time		64 53	67 50	50 36	
Water/Stone Hayes	day time mean	2000	56	56	43	road traffic light & jet aircraft
	night time mean		43	42	32	
	day time	2005	63	67	48	
	evening night time		56 42	60 44	49 39	

12.2.6 The day time background noise level has generally risen during the 5 years between the 2 surveys whereas the night time value has fallen, with the exception of Clystlands/Shercroft Close. The variation in monitored levels at this location can be attributed to a change in the monitoring position. In 2000 the monitoring point was closer to Station Road, whereas in 2005 a point to the rear of the houses on Cotterell Road, pointing in the direction of Exeter Gateway was selected. The most significant change to the local noise environment during the period 2000 to 2005 can be attributed to the increase in road traffic on both the C832 and on Station Road, which was apparent throughout the day and night period when monitoring took place. The data, which is representative of Coachfield House, on the junction of the C832 and Station Road, was significantly influenced by traffic at the junction. This monitoring position was also moved, partly to reflect (to a greater degree) the noise from traffic on Station Road. The actual monitoring position selected in 2005 was to the north of Coachfield House and was identified as potentially representative of properties on both sides of Station Road at this location. If the monitoring point had been maintained at the location used in 2000, which was in closer proximity to the junction, the day and evening data would have been influenced by traffic queuing on Station Road, to gain access onto the C832, and therefore could potentially have been higher than those recorded.

- 12.2.7 Further to the north off Station Road, at the two cul-de-sac estate on Sher Moor Close, traffic noise was less significant, although light goods vehicles using station road were clearly audible at each of the monitoring periods taken in 2005.
- 12.2.8 The monitoring position at Water/Stone Hayes was also influenced by traffic on the C832 and is therefore considered representative of the properties in Clyst Honiton that are located closer to the roadside than the monitoring point used for Water/Stone Hayes.
- 12.2.9 The night time measurements at both Coachfield House and Water/Stone Hayes were influenced by activity within the airport, which was audible during the monitoring period.
- 12.2.10 Comparing the $L_{A10(18 \text{ hour})}$ monitoring period given in the Clyst Honiton bypass ES³ with those recorded over a 15 minute checking sample provide a fair comparison for properties at Water/Stone Hayes and Clystlands.

12.3 Potential impact (see Table 12.5)

Construction noise and vibration

- 12.3.2 The development itself would generate construction noise during the phased building of the site. Whilst the construction phase of the site may go on for many months, in terms of noise emissions it can be considered as temporary due to the mobile nature of the works. A particular process, e.g. site clearance, may go on for a year however, it will only operate within closest proximity (to the noise sensitive receptor) for a few weeks. For the purposes of predicting noise disturbance, the worst case circumstances are considered.
- 12.3.3 Construction noise would be controlled by means of a Prior Consent Notice under Section 61 of the Control of Pollution Act 1974. Conditions would be imposed by the Local Authority to limit site noise to acceptable levels and operating hours to minimise noise impact.
- 12.3.4 The most relevant guidance, BS:5228 “*Noise and vibration control on construction and open cast sites*”, does not specify an upper limit on construction noise. However because of the disturbance is temporary, limits imposed are generally higher than those set for operational noise. Due to its temporary nature the Wilson Committee Report concluded that; ‘*with a level of 70 dBA outside a window, which reduced noise by approximately 15 dBA, [people] found they could conduct business and telephone conversations without undue difficulty*’. 70dB is widely regarded as a reasonable upper limit for temporary construction noise.

12.3.5 Conditions relating to vibration would also be issued under the Prior Consent Notice to control the impact from vibration. Suggested conditions are given in Appendix 12.2.

12.3.6 The construction noise emissions have been predicted for the work stages that will have most impact on the local noise environment, as detailed in Table 12.2. Predictions have been calculated using the methods outlined in BS:5228.

Nature of operation	Extent of operations	Items of plant
Removal of soils and ground preparation	Required throughout the site, with the exception of relatively small areas including Hayes Farm house and buildings.	Front loading shovels and 360 ^o excavators loading dump trucks. Removal of soils from stockpile to HGV for landscape projects in the locality.
Access road and Internal transport network	Form internal spine road from junction onto the Clyst Honiton bypass into the site.	Earthmoving, as above, and road surfacing equipment, including the importation of sub base and black top to site.
Remediation of closed landfill	Within the boundary of the closed landfill, with processing plant located on land adjacent to the landfill.	360 ^o excavators loading dump trucks. Front loading shovel for coarse separation of materials suitable for secondary aggregate recycling. Screen and crushing plant for production of secondary aggregate recycling.
Demolition of on site buildings	Localised – Hayes Farm – house and outbuildings.	Dropping ball demolition, dozer excavator and a HGV to carry debris off-site
Profiling and landform	Earthmoving required to generate preformation levels within the site.	Dozers and 360 ^o excavators loading dump trucks and surfacing equipment.
Rail terminal	Laying of track from rail line into terminal	Lifting equipment (mobile cranes), specialist track laying equipment
Buildings and infrastructure	Four main buildings identified adjacent to the rail terminal. Building of portal steel framed construction with exterior of block and profiled metal cladding.	Construction vehicles, including HGVs, earthworks for foundations and cranes etc.

12.3.7 The predicted construction noise levels at each sensitive property are summarised in Table 12.3.

Work Stage		Clystlands / Shercroft Close	Shercroft Farm / Cotterell Road	Coachfield House	Water/Stone Hayes
Removal of soils and ground preparation, profiling and landform	Laeq, 1hr	43.1	42.7	41.3	48.3
Access, internal transport network	Laeq, 1hr	50.0	49.7	47.6	55.8
Remediation of closed landfill	Laeq, 1hr	46.6	45.7	44.4	42.5
Demolition of on site buildings	Laeq, 1hr	52.3	50.2	50.9	52.5
Buildings and infrastructure	Laeq, 1hr	44.5	44.2	42.1	50.3
Profiling and landform	Laeq, 1hr	47.3	47.0	44.9	53.1
Baseline 2005	L _{A90}	47.0	44.0	52.5	48.0

12.3.8 The construction noise emissions predicted are generally below or within 3dB of the measured baseline levels and therefore will have no significant impact on the sensitive properties identified. Predicted noise levels at Mosshayne Farm and

Cottage would be significantly lower than those presented in Table 12.3. The audible levels that have been predicted are well within the 70dB limit set on temporary construction noise.

Traffic noise

- 12.3.9 The Clyst Honiton bypass Environmental Statement, submitted in 2005, provides an assessment of the potential impact from traffic noise associated with Exeter Gateway and a number of other proposed developments which would utilise the bypass.
- 12.3.10 The assessment was based on the recommendations given in *Calculation of Road Traffic Noise* (CRTN - Department of Transport, 1988). CRTN methodology records the current (2005) traffic noise data and predicts the corrected noise levels at the chosen location for the years 2011 (opening year) and 2026.
- 12.3.11 The results of the study indicate that in the opening year of the bypass the resulting increase in traffic flow along on the C832 would produce a 4dB rise in traffic noise levels. This represents the approximate minimum noticeable increase in loudness, and would therefore be an impact of marginal significance.

Operational noise

- 12.3.12 There will be noise generated by the day to day operations at Exeter Gateway. The main source of operational noise will be mobile plant; electric powered forklifts and HGVs.
- 12.3.13 Predictions are based on 4 forklifts each making 100 movements per hour, and 267 HGV movements per hour (taken from the Clyst Honiton Bypass Traffic assessment). Forklifts would operate between the rail terminal and adjacent warehouse units and also between the warehouses and site roads. HGVs would operate from the warehouses along the site roads to and from the site entrance. There is the possibility that infrastructure associated with the site, e.g. public address systems, air conditioning systems and cooling fans may add to operational noise levels. However it is expected that this will be contained by the buildings themselves and present no significant impact.
- 12.3.14 The noise levels resulting from mobile site operations have been calculated at each of the sensitive locations shown in Figure 12.1 and are presented in Table 12.4. The assessment assumes that the sound from the development does not make any distinct impulses or a distinguishable discrete continuous note.

Site Location	Predicted operational noise levels $L_{Aeq, 1hr}$	Background noise (2005) L_{A90}
Clystlands / Shercroft Close	48.7	44
Shercroft Farm / Cotterell Close	47.9	53
Coachfield House	46.9	47
Water/Stone Hayes	50.2	48

Calculations assume bunding between source and receiver at Water Hayes and partial screening at other properties.

12.3.15 Table 12.4 shows that the operational noise levels are less than or within 3dB of background noise levels and so will produce no significant impact, at each of the sensitive properties with the exception of Clystlands. Calculations have assumed only partial screening between the site and Station Rd, soil bunds along the eastern boundary would reduce operational noise at Clystlands to below background levels. Once Phase 2 of the development is complete, the proposed buildings will produce a screening effect.

12.3.16 It should be noted that, all mobile site operations would be in excess of 450m from Mosshayne farm and cottages, with the primary noise source being associated with trains on the mainline travelling into the IFFDC. Therefore it is considered that there would be no significant change to the baseline conditions.

Night time operational noise

12.3.17 There will be a requirement for night time site operations as trains are restricted to off peak movements. The main source of operational noise will be electric powered forklifts and the idling freight train. It is recommended that HGV's do not operate during night time hours (2300-0700) in order to minimise night time noise levels from the site.

12.3.18 Predictions are based on 4 forklifts each making 100 movements per hour and the freight train idling whilst being unloaded (freight train movements are considered in the railway noise section). Forklifts would operate between the rail terminal and adjacent warehouse units and also between the warehouses and site roads.

12.3.19 The noise levels resulting from night time mobile site operations have been calculated at each of the sensitive locations shown in Figure 12.1 and are presented in Table 12.5.

Table 12.5 Predicted night time noise levels attributable to mobile site operations		
Site Location	Predicted night time operational noise levels $L_{Aeq, 1hr}$	Night time Background noise (2005) L_{A90}
Clystlands / Shercroft Close	33.8	36
Shercroft Farm / Cotterell Close	32.5	35
Coachfield House	30.8	38
Water/Stone Hayes	30.1	39

Calculations assume bunding between source and receiver at Water Hayes and partial screening at other properties.

12.3.20 Night time operational noise levels will be lower than the current background levels, therefore no significant impact is predicted. This prediction assumes that HGVs entering and leaving Exeter Gateway at night time are infrequent as the majority of the activity will be during normal working hours.

Railway noise

12.3.21 The development will be serviced by an estimated two trains per day, i.e. four movements. However, these trains will use the track only during the off-peak hours (2000-0600). Idling time has been considered as part of the night time operational noise in order to establish the cumulative impacts. However, noise will be generated as the trains enter and leave the site. The potential railway noise has been calculated for each property using CRN 'Calculation of Railway Noise' dept of transport 1995, the results are presented in table 12.6.

Table 12.6 Predicted night time noise levels attributable mobile railway noise		
Site Location	Predicted night time mobile railway noise levels $L_{Aeq, 5mins}$	Night time Background noise (2005) L_{A90}
Clystlands / Shercroft Close	34.7	36
Shercroft Farm / Cotterell Close	34.0	35
Coachfield House	32.4	38
Water/Stone Hayes	36.5	39

Calculations assume electric locomotive pulling 30 disc braked freight vehicles at 20km/hour

12.3.22 Noise levels attributable to night time railway movements at each property are below measured background noise levels and therefore should present no significant impact. The results presented in Table 12.6 are 5 minute Leq's based on specific standardised data in CRN. It should be noted that this is not a continuous sound source, a maximum of 2 trains per night are expected to use the sidings at Exeter Gateway.

12.3.23 There may be a requirement to take night time possession of the line during the construction phase of the railway sidings. Any noise associated with such works

could be classed as a statutory nuisance within the provisions of the Environmental Protection Act 1990. In this case the operator must show that 'best practicable means' have been used to minimise any impacts. There are also controls contained within the Control of Pollution Act 1974, details of which are contained in Appendix 12.2.

12.4 Mitigation (see Table 12.7)

Construction phase

12.4.2 The developer will employ all means that are practicable to maintain site noise levels during construction to within the levels specified by the Prior Consent Notice. Suggested conditions are contained in Appendix 12.2.

Operational phase

12.4.3 Screening would be required along the eastern boundary in order to reduce noise levels at properties on Station Road. Once Phase 2 of the development is complete, the proposed buildings will act as a screen. Temporary soil bunds would achieve the same effect for the interim.

12.4.4 Details of mobile plant activity and noise emissions should be submitted with each detailed application for the phased development of the site. Where appropriate, noise screening or attenuation measures should be implemented.

12.5 Residual impact

12.5.2 The application of standard noise control measures will ensure that site noise and vibration limits are not exceeded and the construction of the development does not constitute a statutory noise nuisance.

12.5.3 The impact from increased traffic flow resulting from the development will not make a significant impact upon the ambient noise levels resulting from traffic on the identified roads.

12.6 Cumulative impacts

12.6.2 The principal noise associated with the development will result from the additional road traffic generated by the development itself. However, there has been a general reduction in traffic noise at most of the identified properties as a result of the redirection of traffic from the C832 to the new A30(T). The additional noise resulting from the operations at the development will not make a significant impact over the traffic noise levels. A full assessment of the traffic impacts of this development, and the neighbouring Skypark and Cranbrook New Community development proposals, is contained in the Clyst Honiton Bypass E.I.A.

12.6.3 The additional noise from railway traffic will not be significant and will not have a cumulative effect over road traffic noise.

12.7 Summary

12.7.2 The development will not be a significant source of noise and vibration when it is completed, but may have an impact during its construction phase. Standard mitigation measures will be put in place to ensure that noise and vibration from construction activities remain within the specified levels contained in the Prior Consent Notice. Screening measures will be implemented along the eastern boundary to reduce noise levels at properties on Station Road. The noise assessment is based on the majority of HGV traffic entering and leaving the site during the day time with a reduction in frequency during the evening and night time period. Increased traffic flow generated by the development will have a marginally significant impact upon ambient levels generated by traffic on the identified roads.

Table 12.7 Noise - summary assessment matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Clystlands / Shercroft Close / Shercroft farm and Cotterell Road	Construction phase: Possible temporary impact during demolition and road network construction but no major impacts predicted due to distance from construction activity.					*	Adverse	St, R	Minor	The rail terminal will be at a lower level than existing surface east of the development area. Once this is constructed the retained embankment will provide an acoustic screen between site activities and residential properties around Station Road.
	Operational phase: Noise from site activity is predicted at 5dB above background which will be audible.					*	Adverse	n/a	Minor	Calculations have assumed partial screening, full screening (bundling) would reduce operational noise to background levels. Proposed phase 2 buildings would act as acoustic screens, temporary soil bunds could be put in place for the interim.
Coachfield House	Construction phase: No impacts predicted due to distance of earthworks / construction activity.					*	Neutral	St, R	n/a	No mitigation measures required.
	Operational phase: Noise from site activity is predicted at well below background levels and therefore will have no impact.					*	Neutral	Lt, R	n/a	Calculations have assumed partial screening, full screening (bundling) would reduce operational noise to background levels. Proposed phase 2 buildings would act as acoustic screens, temporary soil bunds could be put in place for the interim.
Water/Stone Hayes (representative of residential properties in Clyst Honiton)	Construction phase: noise and vibration associated with the use of heavy earth moving equipment, demolition of existing buildings and construction of the access road and rail link. Note Water/Stone Hayes is screened from the development by landform and nearest properties in Clyst Honiton are at sufficient distance to reduce the potential for impacts from noise and vibration.					*	Adverse	St, R	Minor / Moderate	The developer will employ all means that are practicable to maintain site noise levels during construction to within the levels specified by the Prior Consent Notice (see Appendix 12.2). A scheme for the management and monitoring of noise during construction will be agreed with the planning authority, based on the conditions of the prior consent notice and the construction program for the Clyst Honiton bypass.
	Operational phase: Noise from site activity is predicted at well below background levels and therefore will have no impact. There will be an increase in traffic noise levels associated with the proposed Clyst Honiton bypass.					*	Adverse	Lt, Ir	Minor	Traffic impact and mitigation measures have been assessed separately in the Clyst Honiton bypass E.S.
Mosshayne Farm and Cottages.	Construction phase: Mosshayne farm and cottages are screened from the development by landform. Noise and vibration associated with the construction of the development is not expected to have any significant impact.					*	Neutral	St, R	n/a	No mitigation measures required.
	Operational phase: Noise from site activity is predicted at well below background levels and therefore will have no impact. There maybe some increase in railway traffic associated with the development.					*	Adverse	Lt, Ir	Minor	Increase in railway traffic is considered to be insignificant in comparison to overall usage.
<p>Key I = International N = National R = Regional D = District L = Local St = Short term Lt = Long term , R = Reversible. Ir = Irreversible</p>										

13. FLORA AND FAUNA

13.1 Scope of the ecological assessment

13.1.1 This section comprises of an ecological impact assessment of the proposed development of the Intermodal Facility and Freight Distribution Centre (IFFDC) and includes:

- Review of existing information relating to the application area obtained from English Nature, the Environment Agency and Devon Biodiversity Records Centre;
- An ecological survey of the application area and adjacent land;
- An overall evaluation of the nature conservation value of the habitats identified within and adjacent to the application area;
- Identification and assessment of the potential impacts of the proposed development; and
- The mitigation measures that will be taken to limit these potential impacts.

13.2 Baseline conditions

Site description

13.2.1 The boundary of the site is shown on Figure 2.1 and the study area extends to some 66.4ha. It is defined along its north-eastern boundary by mature hedgerows, by the C832 along its southern edge, by the Exeter St David's Waterloo rail line along the north-western edge and by the River Clyst along its western boundary.

13.2.2 The site, which is gently undulating, is comprised mainly of arable land and poor semi-improved grassland, used primarily for pastoral farming. Hedgerows with mature trees surround most of the fields. The majority of these hedgerows are double planted, on soil banks, and some have associated scrubby bases and ditches. Other types of habitat present include the River Clyst corridor, which marks the western boundary of the site; numerous streams and ditches throughout the site; an alder-willow woodland in the western corner of the site; areas of tall ruderal and short ephemeral/perennial vegetation on disturbed land e.g, the restored landfill in the centre of the site; and small areas of swamp, ephemeral standing water, marshy grassland and planted trees. Appendix 13.1 shows photographs of typical habitat around the site at the time of the survey in 2000 (Figure 13A-13C).

Methodology

Phase 1 habitat Survey

- 13.2.3 The site was initially surveyed on the 2nd and 3rd December 1999. The Phase I Habitat Survey was a detailed one, whereby the habitat types present on the site were identified and mapped following the techniques outlined in the '*Handbook for Phase 1 Habitat Survey*', (Joint Nature Conservation Committee, 1993).
- 13.2.4 Following the submission of the Environmental Statement in July 2000, the Environment Agency stated that they required a botanical survey of the site at a more suitable time of year. In accordance with this, an extension to the Phase 1 survey was undertaken on 3rd and 4th July 2001. This was in order to ensure that a more complete plant species list could be compiled for the habitats on the site. The additional species and comments were integrated into the Target Notes and habitat descriptions and the potential impacts were reassessed using all available data.
- 13.2.5 The final Phase 1 survey was completed on 27th April and 13th May 2005, which updated the surveys undertaken in 2000/01 and provides minor revisions to the target notes prepared for the earlier surveys. Further bat surveys were undertaken on 20th July and 22nd September 2005. The main habitats recorded on the site during the Phase I survey are mapped on Figure 13.1 and described below. More detailed species information is given in the form of Target Notes, located on Figure 13.1 and listed in Appendix 13.1. All common names of plant species in the text follow Stace (1997) and a full species list is located in Appendix 13.2.

Fauna Surveys

- 13.2.6 During the Phase 1 surveys observations and evidence of fauna were noted, with particular attention paid to the possible presence of legally protected species (badger, bat, otters, water vole, dormice, great crested newt and breeding birds).
- 13.2.7 The ES submitted in July 2000 identified the need for further fauna surveys. The Environment Agency indicated that they required these surveys to be undertaken before the granting of outline planning permission was considered. In response to this the following surveys were undertaken:
- Survey for protected mammals – badger, otter, water vole, dormice and bat, undertaken in September 2000;
 - A breeding bird survey, undertaken in summer 2001;
 - An amphibian survey, particularly for great crested newts, which are legally protected, in summer 2001; and

- An invertebrate survey, undertaken in summer 2001.

13.2.8 The results of these surveys have been incorporated into this revised ecology section and the assessment of potential impacts and mitigation measures has been revised to take account of their results.

Surveys undertaken during 2005

13.2.9 In order to update the surveys submitted with the original ES and the revised report submitted in 2001, the following surveys have been undertaken:

- update of the phase 1 survey, undertaken May 2005;
- field survey for protected mammals – badger, otter, water vole, dormice and bat, undertaken April/May 2005;
- transect bat survey undertaken in June/July 2005;
- additional bat surveys undertaken with an ultrasound detector in July/September 2005;
- breeding bird survey, undertaken as combined dawn and dusk survey in May and June/July 2005; and
- amphibian survey, particularly for great crested newts in May/June 2005 to provide data on four nights during that period.

13.2.10 Methodologies for the surveys are included in Appendix 13.3/4. The surveys for fauna concentrated on the outline application area, but where possible the surveys extended to cover the whole of the study area as shown on Figure 1.2. In 2001, it was not possible to complete the breeding bird surveys, invertebrate survey and great crested newt survey in spring 2001 due to restrictions on access as a consequence of the foot and mouth outbreak. These surveys were undertaken in summer 2001 when restrictions on access were lifted. The survey in 2005 did not include a breeding bird survey in April and the first survey in this year was undertaken in mid May.

13.2.11 The ecological survey has not tried to produce a comprehensive list of plants and animals for the site as any ecological survey will be limited by factors which affect the presence of plants and animals, such as the time of the year, migration patterns and behaviour. However, the extent of surveys undertaken will have been sufficient to identify the main habitats and species using the site and to allow a satisfactory assessment of the value of the site for nature conservation and for the identification of potential impacts and mitigation measures.

Enquiries

13.2.12 In 2005, enquiries were made to the Environment Agency and Devon Biodiversity Records Centre. Additionally the MAGIC⁸ and English Nature's Nature on the Net⁹ websites were reviewed and the UK and Devon Biodiversity Action Plans were consulted. English Nature were also consulted regarding a scoping report for an Appropriate Assessment of the potential impact upon the Exe Estuary SPA, RAMSAR and SSSI. The correspondence relating to the Appropriate Assessment is given in Appendices 13.11-13.12.

13.3 Baseline data

Habitat description

13.3.1 The site predominantly comprises a mixture of arable land and poor semi-improved grassland, with numerous hedgerows and ditches/streams. Also present is a river, broad-leaved woodland, and areas of tall ruderals and short ephemeral/perennial vegetation. Additionally, there are areas of swamp, ephemeral standing water and marshy grassland, a disused quarry and scattered, planted trees.

Grassland

13.3.2 The majority of the grassland on the site is used for pastoral farming and comprises poor semi-improved grassland. Poor semi-improved grasslands (found at Target Notes 21, 31, 37 and 43,) border the River Clyst along the western edge of the site. These are relatively species-poor, consisting of mainly perennial rye-grass with less frequent Yorkshire-fog, red fescue, meadow foxtail, field wood-rush, and sedge species. Flower species include creeping buttercup, dandelion, common mouse-ear, lesser celandine, broad-leaved dock, cuckoo flower, creeping thistle, bulbous buttercup and common sorrel. In the field denoted by Target Note 37, additional species recorded include germander speedwell and crosswort. The fields found at Target Notes 31 and 38 have remnant ditches running north to south (Target Notes 24 and 38). There is a small area of marshy grassland around this feature at Target Note 38.

13.3.3 North of these poor semi-improved fields is a field denoted by Target Note 11, which exhibits rank growth and includes the grass species cock's-foot, annual meadow-grass, meadow foxtail and perennial rye-grass. Other species recorded in the 2005 survey are as for the poor semi-improved grasslands.

13.3.4 In the north east of the site there is a field that has been split into two halves by electric fencing, with grassland to the east of a recently ploughed arable field. The

⁸ www.magic.gov.uk

⁹ www.natureonthemap.org.uk

poor semi-improved grassland here (Target Note 62) has been recently grazed by horses and therefore the vegetation is short. Species present include abundant perennial rye-grass and frequent meadow foxtail, as well as common mouse-ear, field forget-me-not, dandelion, creeping thistle, common bird's-foot trefoil and dove's-foot crane's-bill.

- 13.3.5 In the centre of the site is a stream inlet surrounded by marshy grassland (Target Note 20). Species noted include tufted hair-grass, creeping buttercup, broad-leaved dock, cuckoo flower, marsh thistle, silverweed, southern marsh orchid and southern marsh orchid var. *junialis* (tentative id.).

Arable Land

- 13.3.6 Arable production is primarily winter cereals and land that has been recently been re-seeded and freshly ploughed land. The field found at Target Note 7 comprises a cereal crop with a field margin around the perimeter of the field, which has a varying width of 1-3m. Species in this margin include common mouse-ear, creeping thistle, common cleavers, hemlock, charlock, ribwort plantain, creeping buttercup, groundsel, and cuckoo flower. The arable field to the east of this has species-rich margins, with common-ramping fumitory, field madder, field pansy, burdock, red campion, lesser swine-cress, changing forget-me-not, wild radish, prickly sowthistle, thyme-leaved speedwell, scentless mayweed, grey field-speedwell, scarlet pimpernel, groundsel and shepherd's-purse. The field found at Target Note 62 has been recently ploughed. This field also has species-rich field margins with species similar to those recorded at Target Note 15. In the south east of the site are two ploughed fields. Species noted in the field margins include changing forget-me-not, bramble, common cleavers, red dead-nettle, common nettle, ground ivy, common mouse-ear, field pansy, bugloss, common field-speedwell, burdock and cut-leaved crane's-bill.

Tall ruderals and short ephemeral/perennial vegetation

- 13.3.7 A former landfill site is located in the centre of the site (Target Note 1). The landfill ceased receiving waste in December 1988 and has since been covered and re-seeded. The surface vegetation on the landfill site can now be described as short ephemeral and perennial vegetation with patches of tall ruderals, with species characteristic of disturbed land. Species include cock's-foot, red fescue, Yorkshire-fog, red clover, yarrow, greater plantain, scentless mayweed, spear thistle, teasel, thyme-leaved speedwell, common mouse-ear, creeping thistle, creeping buttercup, common nettles, common sorrel, broad-leaved dock, ribwort plantain and dandelion. Trees have been planted on the steep southern, eastern and western banks of the landfill site (Target Notes 4 and 5). These are mainly pedunculate oaks and white willows, with less frequent dog-rose, elder, laurel, horse-chestnut, and sycamore,

with an understorey of dense bramble. Also present is abundant cock's-foot, creeping thistle, common nettle, teasel, yarrow, hemlock and ribwort plantain.

13.3.8 East of the landfill site is another area of tall ruderals (Target Note 20a). The main expanse of this field is dry and dominated by common nettle. Other species present include broad-leaved dock, red campion and creeping thistle. A 5m wide stream inlet is present at the bottom of this slope (Target Note 20b). This inlet was dry at the time of the 2005 survey and choked by vegetation. Two grey willows occur on opposite sides of the inlet. Surrounding this inlet is an area of marshy grassland (Target Note 20). A track occurs through Target Note 20a, which comprises short grass and species such as common stork's-bill, spotted medick, dove's-foot crane's-bill, thyme-leaved and common field-speedwell, common mouse-ear, greater plantain and red dead-nettle. A woodpile is present in the corner of this field.

13.3.9 There is also an area of tall ruderals to the west of Hayes Farm. Species include thale cress, common mouse-ear, spear thistle, field madder, changing forget-me-not, common field-speedwell, lesser swine-cress, ragwort and bulbous buttercup.

Hedgerows, Ditches and Streams

13.3.10 The hedgerows compartmentalising the fields on the site are generally double planted on soil banks and are species rich. Most of the hedgerows on the site are managed to some extent, i.e. by cutting, and show evidence of having been laid in the past. In many cases there are ditches present on both sides of the soil banks, which serve to isolate the hedgerows from the strips of taller ruderal vegetation present along their courses. Many of these ditches are choked with typical field species such as grasses, common cleavers and common nettles. Some of the ditches are wetter and these can be divided into three types;

- areas where there are small pools of standing water (Target Notes 6a);
- areas where the water is fast flowing and clear of vegetation (Target Note 18 and 19); and
- areas where the ditch is filled with vegetation such as tufted hair-grass, water-cress, soft rush, hard rush, cuckoo flower and yellow iris (Target Notes 13, 20b, 24, 32, 35, and 45).

13.3.11 A number of the ditches containing water were covered with the invasive alien species, water fern e.g. at Target Note 6a.

13.3.12 There are a number of hedgerows on the site, which are notable in ecological terms, the majority of which occur in northern portion of the site and are found at Target Notes 6, 17, 25, 27, 29, 40, 42, 46, 53a, 56, 58, 60, 61, 64, 66, and 67. These

hedgerows are species-rich, containing English elm, ash and pedunculate oak (often as mature trees), holly, grey willow, blackthorn, hawthorn, dog-rose and occasional spindle, goat willow, elder, hazel, honeysuckle, bramble and field maple. The ground floras associated with these hedgerows comprise a range of typical hedgerow species such as red campion, hedge parsley, hedge bedstraw, ground ivy, common ivy, crosswort, hemlock, cow parsley, common cleavers, lords-and-ladies, burdock, garlic mustard, common nettle and red dead nettle. Species found less commonly include navelwort, great mullein, bugloss, foxglove, white dead-nettle, lesser celandine, colt's-foot, bluebell, meadowsweet and greater stitchwort. Other hedgerows are found at Target Notes 2, 3, 8, 19, 19a, 39a, and 49. These hedgerows are deemed to be of less value ecologically, as they are relatively species-poor, tending to be dominated by hawthorn and blackthorn with occasional elder and gorse and some are gappy in nature. The ground flora associated with these hedgerows also tends to be species-poor, dominated primarily by bramble, hemlock, common nettle and common cleavers.

Scattered trees

13.3.13 To the front of Hayes Farm, bordering the C832 there is a formal garden that has had little management since the 2001 survey, (Target Note 50) of mainly exotic species such as monkey puzzle and conifers. Behind the Farm (Target Note 54) there is a thick line of planted Leyland cypress.

13.3.14 A number of isolated mature trees occur on the site, including two pedunculate oaks over 20m tall (one with a hollow in its lower trunk) and two mature ash trees (15m tall) on the northern edge of the site. A few isolated trees/areas of scrub occur next to the River Clyst, including some multi-stemmed hawthorn and willow, and immature blackthorn. Additionally, a number of mature pedunculate oak and ash occur around the poor semi-improved grassland to the west of the site.

Ephemeral Standing Water

13.3.15 Two pools of ephemeral standing water occur next to hedgerows in the poor semi-improved grasslands to the west of the site. Species indicative of wet ground were noted in these areas, such as yellow flag-iris, cuckoo flower, and tufted hair grass.

Broad-leaved Woodland

13.3.16 A linear strip of alder and crack willow (20m) dominated woodland with holly, hawthorn and blackthorn as infrequent understorey woody species (10-12m) is located at Target Note 14. This woodland is defined on its eastern and western boundaries by ditches that have developed more natural stream forms in terms of bank slope and vegetation. The ground is marshy and the ground flora recorded in 2000/2001 consists mainly of species with affinities for wet ground conditions such as

wood rush, creeping buttercup, yellow flag-iris and soft rush and also typical woodland species including violet species, enchanter's nightshade and ground ivy. Closer to the field denoted by Target Note 11, the woodland has well spaced out mature pedunculate oak and ash trees with bramble, dog-rose and ivy understorey on a bank. Other species include alder, goat willow, crack willow, holly and occasional elder. There is abundant floating sweet-grass, cock's-foot, common reed, ivy and bramble. The woodland closer to the arable field denoted by Target Note 7 has been recently trimmed and consists of English elm and scrambling bramble. There is also a ditch in this area, which is choked with vegetation.

13.3.17 A triangular area of broad-leaved woodland and thick, impenetrable understorey occurs south of the landfill site (Target Note 39). This comprises primarily of hawthorn and pedunculate oak.

Swamp

13.3.18 In the north-west corner of the site there is a small swamp dominated by tall common reed (Target Note 10), which extends to the riverbank.

River Clyst

13.3.19 The River Clyst is approximately 8m wide, fast flowing, with steep banks (approximately 4m high) and occasional emergent vegetation. The banks are vegetated mainly by a band of vegetation similar to that found at Target Note 11, with common nettle abundant to dominant, occasional teasel and abundant hemlock and bramble. There are two multi-stemmed grey willow trees (10m tall) overhanging the river and three multi-stemmed hawthorn trees (8m tall) approximately 10m north of the willow trees. A single multi-stemmed grey willow (10m tall) occurs approximately 5m north of the hawthorn (Target Note 12).

Fauna (see Appendix 13.3 and 13.4)

13.3.20 Fauna surveys have been undertaken during 2001 and in 2005, when the protected species surveys were undertaken by 'The Badger Consultancy'. The copy of the full report is given in Appendix 13.4. The main findings of the 2001 survey, supplemented by that from the Badger Consultancy, have been summarised in the following sections.

Badgers

Survey 2001

13.3.21 A badger sett was located on the boundary of the north-western corner of the field to the west of Hayes Farm and the south-eastern corner of the former landfill, GPS reference SH 98958 94169 ± 95 ft (Figure 13D). The sett was located partially inside

a wooded area and partially into a relatively steep bank. In 2001, the sett had 6-7 entrances and appeared active with fresh digging and bedding material present on the surface. There were also a number of holes in the road embankment in the north-east corner of the field to the west of Hayes Farm. These holes are most likely attributed to rabbits, but the closeness of a large latrine may indicate the badgers could use these holes at some time.

13.3.22 A large latrine consisting of at least nine dung pits was located in the north-eastern corner of the field to the west of Hayes Farm against the boundary fences of the C832 and the house garden. Three more dung pits were located in the field, two next to the southern hedge bordering the C832 and one along the western hedgerow. A single dung-pit was located along the eastern hedge of the field immediately to the east of Hayes Farm and a small latrine (two dung-pits) along the northern hedge of the field to the north-west of the quarry. Badger droppings were also found on the ground (not in dung-pits) along the western edge of the landfill field and along the eastern hedge of the field along which the railway line runs in the north of the site.

13.3.23 The site was covered in animal runs, particularly along hedgerows. The large number of rabbits on the site as well as the presence of foxes made it difficult to distinguish badger paths. There were, however, a number of larger runs through the hedge in the north-eastern corner of the field along which the railway runs and along the same hedge as it bordered the railway. Runs, and a possible badger/fox run through the eastern hedge of the former landfill site were also noted.

Survey 2005

13.3.24 In the period between 2001 and 2005 the sett has been extended and continues to be in active use. The set currently has 10 used, 4 partially used and 6 disused entrances. Given the number of entrance holes, spoil heaps and the network of paths around the sett it is clear that this is a main sett. A main sett is a well established, often large sett in continuous use by badgers and is where cubs are most likely to be born.

13.3.25 The extent of the badgers' territory is unknown, however due to the lack of latrines in the study area, it is suggested that there are no other groups within the vicinity.

Otters

13.3.26 In 2001, otter spraints were found along the banks of River Clyst (Figure 13D). One was found on a granite ledge that protruded out from western bank and two on a rock by the river close to the eastern bank. The spraints seemed very old, damp and were full of fish-bones. The spraints were removed and members of the University of Bristol Mammal Group confirmed identification. No other signs or indications of otters were found.

13.3.27 In 2005, fourteen otter spraints were identified at five locations along the banks of the River Clyst. There was also evidence of otter activity extending into the wet alder/willow woodland in the north west of the study area. The survey was undertaken following a period when the River Clyst was in high spate and suggests that otters are regularly active and have a territory including this stretch of the River Clyst. No evidence of holts were found along this stretch of the river.

Water Voles

13.3.28 No signs of water vole presence within or adjacent to the site were noted during the survey in 2001. In the 2005 survey evidence of water vole activity was apparent. Two water vole footprints and some disused burrows were identified. Although there has been evidence of water vole activity in the past, due to the fluctuation in water levels in the river it is unlikely that there would be many suitable locations for burrows. The water voles may use the site for foraging and as a dispersal route.

13.3.29 The habitat on the ditch banks within the floodplain may be suitable for water vole, however the vegetation was too dense to identify specific burrows. This is an important observation with respect to mitigation measures for enlarging the ditch channels within the flood plain to design reedbeds (see Section 13.6)

Dormice

13.3.30 There was generally a paucity of hazel on the site and no chestnut was recorded. None of the hazelnuts examined, had been eaten by dormice. The woodland had a comparatively open under-storey and was not very diverse. It seemed unlikely to support dormice. These findings from the 2001 were reviewed in 2005 by observation and visual survey. In 2005, sections of hedgerow and scrub suitable to support dormice were found within the study area. However, due to 'the isolation of these pockets of habitat' it is considered unlikely that dormice are present onsite.

Bats

13.3.31 In 2001, no suitable bat roosts in trees were identified within the proposed development. However, common pipistrelle, soprano pipistrelle, a mottled bat and a long-eared bat were recorded foraging along the edge of the woodland in the sheltered corner of the field in the north of the site along which the railway runs (Figure 13E). A common pipistrelle was also recorded along the hedge in the north-western corner of the field to the west of Hayes Farm.

13.3.32 No bats were found roosting in either Hayes Farm or the associated farm buildings at the time of survey in 2001. However, a large quantity of bat droppings were noted on the floor of the attic and cellar of Hayes Farm, indicating that bats had been roosting here in the past. The droppings in the cellar lay beneath a hole in the ceiling which

suggests that one or more of the bats had been using the edge of the hole as a perch. It is likely that the bats are gaining entry to the cellar by a grill across the window in the door to the outside of the stairwell.

13.3.33 The surveys undertaken during July 2005 were more extensive, but concentrated on the potential for roosts within Hayes House and outlying buildings and within the woodland extending along the western boundary of the proposed development footprint. The results of the bat surveys in 2005 are reported in Appendix 13.4. During the survey on the 20 July 2005, the following bat species were detected:

- a soprano pipistrelle (*Pipistrellus pygmaeus*) was found foraging in the south east and south west of the woodland and on hedge H15.
- noctule (*Nyctalus noctula*) were detected in the south west of the woodland and on hedge H15 throughout the survey period.
- serotine (*Eptesicus serotinus*), common pipistrelle (*Pipistrellus pipistrellus*) and whiskered/Brandt's bat (*Myotis mystacinus/M. brandtii*) were detected on the south western edge of the woodland and across the flood meadows between the river and the woodland.
- A barbastelle bat (*Barbastella barbastellus*) was recorded on the southern edge of the woodland, 1 hour after sunset.

13.3.34 During the survey on 22nd September 2005, the following bat species were detected:

- common pipistrelle (*Pipistrellus pipistrellus*) in the woodland.
- soprano (*Pipistrellus pygmaeus*) and common pipistrelle (*Pipistrellus pipistrellus*) were detected on the south western and eastern edges of the woodland.
- Brown long-eared bats were detected within the woodland (first 30 minutes of survey).
- serotine (*Eptesicus serotinus*), and whiskered/Brandt's bats (*Myotis mystacinus/M. brandtii*) were detected along the south western edge of the woodland and in the flood meadows between the river and the woodland.
- a serotine (*Eptesicus serotinus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bat was recorded at the northern edge of hedge H6 (50 minutes after sunset).
- common pipistrelle (*Pipistrellus pipistrellus*) were recorded around the farmbuilding and trees and could be using them as roost sites.

- a colony of brown long eared bats were found within the roof space of Hayes House. Although only 6 individuals were seen, there may be more bats present. The presence of droppings throughout the roof space indicates that the bats have been present here for sometime.

13.3.35 Bat surveys conducted in July and September 2005 identified that there are several potential roost areas for bats within the study area. These include trees in the woodland (to the north west of study area), individual trees (BT2 and BT7) and Hayes House and potentially some of the outbuildings.

13.3.36 The surveys have identified the location of foraging and access routes for bats within the study area. These include the woodland edge and adjacent meadows and mature trees and hedgerows adjoining the woodland.

Breeding Birds

13.3.37 During the Phase 1 survey in December 1999 a small number of birds were recorded on the site, and all of these were common birds, typical of farmland, such as blackbirds, common gulls and bluetits. A pair of ducks was observed near Target Note 43.

13.3.38 A large number of occupied house martin nests were present on the outside of the farmhouse in addition to several swallow and passerine nests within the farm building complex.

13.3.39 The bird species recorded on the site are listed in Appendix 13.2. The list is annotated with the probable breeding status, including any evidence of breeding.

13.3.40 A total of 37 bird species were recorded on the site (excluding Hayes Farm and associated buildings), of which 23 probably breed on the site. Another 6 could possibly breed here, although there was no direct evidence of their breeding status at the time of survey. Species noted to be breeding within the site include skylark, song thrush, linnet and reed bunting. One species, the wheatear, was considered to be an early returning migrant. A kingfisher was also noted on the site, although there was no evidence of juveniles, which would indicate breeding.

13.3.41 No sign of current or recent use of the interior of Hayes Farm by owls was noted. However, six to eight very old owl or raptor pellets (species could not be identified) were found on the floor of one of the associated farmhouse buildings, indicating that they may have used this area in the past.

Bird surveys (May and July 2005)

13.3.42 A full list of the bird species identified within the study area in May and July 2005 is included in Appendix 13.5. Additional bird species present within the study area in

2005 include bullfinch, bittern, cormorant, coal tit, goldcrest, garden warbler, grey heron, house sparrow, jackdaw, pheasant, pied wagtail, spotted flycatcher, water rail and willow warbler. See Appendix 13.5 for the location within the study area that these species were recorded. Bird species that were present during the survey in 2001 but not 2005 include moorhen, stock dove and sand martin. A total of 46 bird species were recorded on the site.

13.3.43 The surveys confirmed the importance of the following habitats with respect to breeding birds:

- woodland on the western boundary of the development footprint;
- hedgerow / woodland to the north east of the closed landfill;
- hedgerows on the eastern boundary of the study area; and
- garden area within Hayes House.

Amphibians

13.3.44 There is an extensive network of ditches on the site. Due to the agricultural uses of the site the ditches in the north and centre of the site could possibly contain farm effluent from field run off and are not likely to be suitable to support significant breeding populations of amphibians.

13.3.45 The large ditch surrounding the landfill is relatively slow flowing, and is covered with vegetation in places, as well as water fern. The ditch along the eastern boundary of the landfill site is wide in places with still/very slow flowing water. There may be run off from the landfill, but with the combination of slow flowing water and aquatic vegetation this ditch may be suitable as an amphibian breeding habitat.

13.3.46 Access to check this ditch, and particularly the pond, around the landfill area was restricted by steep slopes and dense vegetation. In 2001, no newt eggs were found in the areas surveyed, but the survey was undertaken early July (due to the outbreak of foot and mouth) and observations for newt eggs should preferably be undertaken between late April and early June. No amphibians were recorded during the night-time survey, although one frog and a common toad were observed in this area during the day-time search for eggs.

13.3.47 In 2005, survey were undertaken on four separate nights in the period mid May to mid June and consisted of a torch light survey and bottle trapping, in the following water-bodies within the study area:

- Ditch system that surrounds the former landfill (where access was possible);

- Ditch running north east to south west across the poor semi-improved grassland (Target Note 35); and
- Slow flowing stream in the linear section of broad-leaved woodland in the north west of the site.

Notes of the surveys are given in Appendix 13.10.

13.3.48 During the surveys there was no evidence of great crested newts on the site. A single male palmate newt was caught in a bottle trap in the ditch to the east of the former landfill site, and a single female further south in the same ditch. A smooth/palmate newt was seen by torchlight in the ditch south of the landfill.

13.3.49 Small fish, possibly sticklebacks, were noted in the slow moving stream in the north west of the site, in the ditch flowing north east to south west across the grassland, in the ditch to the south of the closed landfill and in the ditch around the closed landfill. This evidence indicates that it is unlikely that great crested newts will be present in these water-bodies since it is known that ideal great crested newt habitat would normally be free of fish.

Invertebrates

13.3.50 The invertebrate species recorded are listed in Appendix 13.2. The species noted are generally common species associated with the range of habitats present on the site including hedgerows, grassland and woodland. Some species which are associated only with a particular plant species were also recorded, including the meadowsweet leaf gall midge, alder pimple gall mite and the field maple pimple gall mite. However, none of these species are considered to be uncommon.

13.3.51 A total of thirteen butterfly species were recorded. All of these species are common, although the speckled wood butterfly and the marbled white butterfly are considered to be common only in the south of England. Similarly, the speckled bush-cricket and the dark bush cricket are also only common in the south of England and Wales.

13.3.52 Dragonflies and damselflies are associated with waterside vegetation. Four species of dragonflies and damselflies were recorded, three of which are common species. However, the emperor dragonfly is mainly confined to the south of England, and is considered to locally common there. It is a species, which characteristically hunts over open water, such as the River Clyst. No further surveys were undertaken in 2005.

Other Fauna

13.3.53 The soil banks of the hedgerows contain numerous rabbit holes and there was evidence of rabbit grazing on all grasslands comprising the site.

13.3.54 Evidence of foxes was also abundant, with scats present in almost every field. Local workers had seen a fox and cubs frequently, indicating that they were breeding within or close to the site. A possible site for the fox earth where cubs were present was identified in the eastern embankment of the former landfill site. The earth was located amongst rabbit burrows but was a substantially larger hole. The presence of a small footprint, fox fur and trampled down vegetation suggested cubs were still in the area. Roe deer, moles and grey squirrel were also recorded.

Additional Ecological Information from Enquiries

Statutory Designations

13.3.55 Enquiries to English Nature, as well as information from the MAGIC and Nature on the Net websites, confirmed that there are no sites of statutory importance on the site. However, the River Clyst flows into the Exe Estuary SSSI, which is a Special Protection Area (SPA) Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC) and a Ramsar site. English Nature requested that the assessment considered the potential impacts upon the SPA and this has been undertaken through the submission of a scoping report submitted as a part of an Appropriate Assessment of the development, with respect to the SPA (see Appendix 13.11 and 13.12).

Non-statutory Designations

13.3.56 Information received from the Devon Biodiversity Records Centre confirmed the presence of one County Wildlife Site and three Local Wildlife Sites within 2km of the site. These are:

- Hellings Park Fen (12.5ha), which is a County Wildlife Site and described as unimproved and semi-improved marshy grassland (Grid reference SX995960);
- Hellings Park Copse (1.7ha), which is a Local Wildlife Site and described as wet and dry secondary broadleaved woodland (Grid reference SX993963);
- Exeter Airport Local Wildlife Site (11.7ha), which is marshy grassland (Grid reference SY008937); and
- Pinhoe Marshes Local Wildlife Site (2.2ha), which is secondary broadleaved woodland (Grid reference SX975948).

13.3.57 County Wildlife Sites are sites of county importance for wildlife, designated on the basis of the habitat or the known presence of a particular species. Local Wildlife Sites are sites of significant wildlife interest within a local context that do not reach the criteria for County Wildlife Sites.

13.3.58 Part of the Exeter Biodiversity Network is also within 2km of the site. This consists of statutory and non-statutory sites, and countryside features which provide wildlife corridors, links or stepping stones from one habitat to another. These help to form a network essential for migration, dispersal and genetic exchange and therefore are necessary to maintain biodiversity, with the best habitats described as key network features.

13.3.59 A review of information on the Nature on the Map website has revealed that part of the site (mainly the poor semi-improved grassland in the west) is listed as the Biodiversity Action Plan Priority Habitat “coastal and floodplain grazing marsh”. This is defined as periodically inundated pasture or meadow with ditches that maintain water levels, containing standing brackish or fresh water. This habitat is in decline and particularly important for a number of breeding waders such as snipe, lapwing and curlew. Threats to this habitat include ecologically insensitive flood defence work, agricultural intensification, neglect and eutrophication.

13.3.60 Additionally, there is an area of alder/willow wet woodland, which is a UK and Devon BAP priority habitat. Species-rich hedgerows are also a UK and Devon BAP priority habitat.

Protected/Notable Species

13.3.61 Devon Biodiversity Records Centre provided several records of protected/notable species within 2km of the site. These include:

- Bat species, recorded approximately 2km west of the site and dated 1994. All bat species are fully protected under the Wildlife and Countryside Act, 1981 (as amended), and are UK BAP species;
- Three records for common frog (the closest being approximately 1km south west of the site) dated 2002 and 2000. Frogs are protected against sale only under the Wildlife and Countryside Act, 1981 (as amended);
- A newt species was recorded approximately 1.9km west of the site in 2002. All newts are protected against sale only in the Wildlife and Countryside Act, 1981, (as amended) whilst great crested newts are fully protected;

- Hedgehog was recorded approximately 1.9km west of the site in 2000. Hedgehogs are listed on Schedule 6 of the Wildlife and Countryside Act, 1981 (as amended);
- Two records for Kestrel, the closest approximately 1.2km north of the site exist, dated 2001 and 1993. Kestrel is listed on the RSPB Amber List of medium conservation concern;
- Swallow, listed on the RSPB Amber List of medium conservation concern, was recorded approximately 1.9km south west of the site in 2002;
- Dunnock, a species listed on the RSPB Amber List of medium conservation concern, was recorded approximately 1.9km south west of the site in 2001;
- Eight records for badger dated 1991-2004 occur within 2km of the site, the closest being approximately 1km southeast of the site. Badgers are protected under the Protection of Badgers Act, 1992.
- Grass snake, protected under the Wildlife and Countryside Act, 1981 (as amended) from killing and sale has been recorded approximately 1.5km north west of the site in 2003;
- Four records for purple hairstreak, a species experiencing decline, occur within 2km of the site, dated 1998-2000. The closest of these records is approximately 100m south of the site;
- A record for pyramidal orchid, a Devon Notable Species, is located approximately 1.5km north east of the site, dated 2000;
- Lesser horseshoe bat, fully protected under the Wildlife and Countryside Act, 1981 (as amended) and a UK BAP priority species has been recorded approximately 1.7km south west of the site in 1990;
- There are six records for otter on the River Clyst, and one record for Crannie Brook, a tributary of the River Clyst, dated 2000-2001. The closest record to the site is less than 100m to the north west of the site. Otters are fully protected under the Wildlife and Countryside Act, 1981 (as amended), and are a UK BAP priority species and Devon BAP species;
- Barn owl, which is a species listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended) and RSPB Amber List, as well as being Devon BAP species, was recorded approximately 0.3km west of the site in 2001;

- Bladder-sedge, recorded in 1988, approximately 1.3km north of the site, is a Devon Notable Species;
- Willow warbler recorded approximately 1.3km north of the site in 1993, is an RSPB Amber Listed species;
- Roe deer, protected under the Deer Act, 1991, was recorded approximately 1.3km north of the site in 1993;
- Reed bunting, recorded approximately 1.3km north of the site, is an RSPB Red List species of high conservation concern and a UK BAP priority species;
- Marsh arrowgrass, a Devon Notable Species was recorded in 1988 approximately 1.3km north of the site;
- Bottle sedge, a Devon Notable Species, was recorded approximately 1.3km north of the site in 1988; and
- Common toad, protected under the Wildlife and Countryside Act, 1981 (as amended) against sale was recorded in 2002 approximately 0.4km north of the site.

13.3.62 Additional information identified in the Clyst Honiton bypass prepared for Devon County Council by Parson Brinkerhoff, July 2005, includes:

- Cirl bunting, of specific importance in south west Devon, the RSPB stated that no systematic survey has been undertaken in the search area, however it has been recorded approximately 4km to the west of the Clyst Honiton bypass and Exeter Gateway at tetrad SX9490.
- Barn owl, there have been recorded road kills on both the A30(T) and M5 (Barn Owl Trust) – however no Barn owls were recorded in the period May to July 2005.
- Kingfishers have been recorded on the River Clyst.

13.3.63 The National Trust identified that there is a colony of Barbastelle bats in Ashclyst Forest approximately 4.5km to the north of Exeter Gateway. The wet alder/willow woodland in the north west of the application area, on the edge of the River Clyst floodplain forms part of a sinuous stretch of woodland in the Clyst valley and may provide temporary roost sites for Barbastelle bats. The species was included in the bat transect surveys in 2005.

13.3.64 Additionally, Devon Biodiversity Records Centre has provided a record for Japanese knotweed (an invasive alien species), which is listed under Schedule 9 of the Wildlife

and Countryside Act, 1981 (as amended), for approximately 1.9km south west of the site, dated 2002.

13.4 Nature Conservation Evaluation

13.4.1 A number of criteria have become accepted as a means of assessing the nature conservation value of a defined area of land. These are set out in 'A *Nature Conservation Review*' (Ratcliffe, 1977), a summary of which is provided in Appendix 13.6. The criteria are size, diversity, (habitat and species), naturalness, rarity (habitat and species), fragility, typicality, historical record, position in an ecological unit, potential value and intrinsic appeal.

13.4.2 The nature conservation value of an area of land is usually assessed in terms of international, national, regional/county, local (parish) and negligible importance:

- **international importance** (Special Areas of Conservation, Special Protection Areas, Ramsar sites);
- **national importance** (Sites of Special Scientific Interest);
- **regional/county importance** (Local Nature Reserves, Sites of Importance for Nature Conservation, ancient woodlands);
- **local (parish) importance** (significant ecological features such as old hedges, woodlands, ponds) – sub-divided into high, medium and low nature conservation value;
- **negligible importance** would usually be applied to areas of built development, active mineral extraction or intensive agricultural land.

Nature Conservation Designations

13.4.3 There are no sites of statutory or non-statutory importance designated on or adjacent to the site (e.g. SSSI's, Sites of Importance for Nature Conservation). However, the River Clyst, which forms the western boundary of the site, flows into the Exe Estuary, which has the international statutory designations of Ramsar and SPA associated with it, as well as the nationally important designation of SSSI. Appendices 13.11 and 13.12 provide the scoping report for the Appropriate Assessment and consultation response from English Nature. Therefore, although the Exe Estuary is of International importance, no impacts are predicted. Additionally, there are a number of non-statutory designations within 2km of the site, including one County Wildlife Site and three Local Wildlife Sites, part of the site is also listed as UK BAP priority habitat (Coastal and floodplain grazing marsh). These are of Regional importance, but no impacts predicted.

Habitats and Flora

Flora

- 13.4.4 No red data species or nationally scarce species of vascular plant were recorded during the Phase 1 survey. The majority of species recorded are commonly associated with agricultural land and hedgerows.

Grasslands

- 13.4.5 The majority of the site is of negligible nature conservation importance because it is managed relatively intensively as agricultural land. The poor semi-improved grasslands alongside the River Clyst are listed as floodplain grazing marsh, a UK and Devon Biodiversity priority habitat type. However, due to the relatively intense level of agricultural management they have been subjected to, they are considered to be of only local importance for nature conservation, with a relatively low diversity of plant species and a high level of representation in the surrounding landscape.
- 13.4.6 The triangular field to the north-east of the landfill site supports populations of common spotted-orchid (recorded in 2000/2001), southern marsh-orchid and southern marsh orchid var. *junialis* (tentative id.). Although the southern marsh-orchid is common only in the south and centre of England and southern Wales, none of these orchids are protected. Due to the presence of the orchid species and the diversity of other plant species present, this field is considered to be of medium local nature conservation.

Arable Land

- 13.4.7 A large area of the site comprises arable land (Target Notes 7, 15, 62, 57 and 48) with negligible value for nature conservation due to its intensive management and low biodiversity.

Swamp

- 13.4.8 The section of common reed-dominated swamp in the north-west corner of the site can be considered to be of medium local importance for nature conservation as it represents a habitat not found elsewhere on the site or within the vicinity of the site and which could offer habitat for species such as the reed warbler.

Hedgerows and Field Boundaries

- 13.4.9 The boundary hedgerows along the east of the site, the internal hedgerow in the north and east of the site, and their associated ditches are of high local importance for nature conservation both for the assemblage of plant species present and for wildlife potential. The hedgerows on the site are old, species-rich and double planted,

and therefore they may meet the criteria for ‘important’ hedgerows as set out in the Hedgerow Regulations 1997. The hedgerows on the site found at Target Notes 6, 14c, 17, 19, 27, 32, 40, 42, 46, 56, 60, 64, and 66 may fall within the criteria for ‘important’ hedgerows. Almost all of the hedgerows on the site can be considered to have high local importance for nature conservation as linear features.

13.4.10 The ditch, which runs from the southern boundary of the landfill site to the River Clyst in the south-western section of the site supports plant species associated with damp or wet ground. This is the best example of this type of feature on the site and it is considered to be of medium local importance for nature conservation.

13.4.11 There are a number of botanically species-rich arable field margins on the site, including around the edges of fields denoted by Target Notes 7 and 15. Although these field margins constitute a small total area of the site, they are considered to be of medium local importance for nature conservation due to their high diversity.

Tall ruderals/short ephemeral and perennial vegetation

13.4.12 The site of the former landfill is relatively botanically diverse with a mixture of short and tall vegetation characteristic of disturbed land. This area, and the similar habitat west and north of Hayes Farm is therefore considered to be of low-medium local nature conservation importance.

Woodland and scrub

13.4.13 The linear woodland strip in the north-west corner of the site supports mature trees and a relatively diverse ground flora. It is a UK and Devon BAP priority habitat and is located close to the River Clyst, forming part of a wildlife corridor to the north of the site. Therefore, this woodland is considered to be of high regional importance for nature conservation. The smaller section of alder-willow woodland, located to the south of the landfill site, supports less mature trees and a less characteristic ground flora, making this larger area of woodland of medium local importance.

13.4.14 The scrub and planted trees along the landfill site, whilst not of intrinsic botanical value, provides potential nesting habitat for small birds and cover and seasonal foraging for the badgers located nearby. This habitat is of low local importance for nature conservation.

River Clyst

13.4.15 The results of the otter survey have shown that otters use the River Clyst. Other fauna, such as the emperor dragonfly, may also be dependent on the river. Devon Wildlife Trust has no relevant information on the aquatic ecology of the River Clyst. However, the river is classified as River Quality B or good and suitable for all fish

species under the 1993 General Quality assessment and it flows into the Exe Estuary SPA, Ramsar and SSSI. Hence, the River Clyst is considered of national importance for nature conservation.

Protected fauna species

Badgers

13.4.16 A badger sett, most likely a main sett, with 10 entrance holes was recorded on the steep bank to the south-east of the landfill site. No other setts were located on the site, although some larger rabbit holes in the hedgerow along the south of trackway into the site may be also used by badgers on occasions. Badgers and their setts are legally protected from disturbance under The Protection of Badgers Act 1992. Although a social territory survey was not undertaken, it is likely that the territory of the badger group in the main sett is largely concentrated within the site, as the grassland habitat offers good quality foraging. The presence of badgers is considered to be of high local importance.

Bats – commentary on 2001 survey

13.4.17 All bat species and their roosts are fully protected under UK and European legislation. Hayes Farm and the associated outbuildings have evidence of past and more recent use by bats, possibly for a number of activities including maternity roost sites or as a hibernation site.

13.4.18 Whilst it recognised that the bat survey was not undertaken at an ideal time of year it was possible to assess the value of the site for bats, and evidence of bats foraging within the site were recorded. No potential bat roosts were found within the site, as none of the mature trees were suitable for roosting purposes, *i.e.* lack of holes for bats to gain access.

13.4.19 Four bat species were recorded foraging over the site. It was not possible to identify the myotis bat to an exact species, but the other three species are relatively common and widespread throughout England. Other species of bats other than those identified are also likely to be foraging over the site. The site is considered to be of high local value for foraging bats due to the type of habitats present including grazed grassland and hedgerows.

Update from 2005 survey

13.4.20 The alder/willow woodland in the north west of the site is now known to have number of potential roosting and foraging sites for bats. Noctule, soprano pipistrelle and Daubentons bat. Individual trees in hedgerow adjacent to the woodland also offered potential for bat roosts. No emergence survey was carried out. A single Barbastelle

bat was identified to the east (and on the fringe) of the alder/willow woodland, although it is thought to be unlikely to be roosting within the woodland

13.4.21 Hayes House, outbuildings and trees has a colony of brown long-eared bats identified within the roof space of house. Six bats were visible, but further individuals may have been present under the loose sections of felt. Bat droppings were found throughout the roof space: the number and condition of the droppings indicated that the bats had been present for some time (years).

13.4.22 Common pipistrelle bats were detected around the farmhouse and outbuildings during the evening survey, and it is likely that they also may be roosting in the farm buildings.

13.4.23 Scattered bat droppings and some feeding remains were found in the outbuildings. Most of the outbuildings would be unsuitable for roosts due to the construction (i.e. single skinned walls, metal cladding and no under boarding). However, in at least two sections of the outbuildings, wooden sarking was present, and so could provide suitable roosting sites for bats. The presence of a range of bat species is considered to be of high local importance.

Otters and Other Mammals

13.4.24 Otters are fully protected by UK and EU wildlife legislation and it is illegal to kill, injure, or disturb otters and their places of shelter. Old otter spraints found along the River Clyst indicate that it is used sporadically by otters. Recent otter surveys were undertaken following a period of fluctuating water levels within the river. Otter spraints were found on the banks of the river but no holts were found. However, the presence of spraint does not provide information on how often the otters use the site and when it was last used. Otter territories are linear along waterways and can range between 4-39 km in length. It is possible the otters may use this part of their territory more regularly at different times of the year. Otters are generally increasing in numbers and spreading their distribution, so more otters could move into the area.

13.4.25 The presence of otters on both the River Clyst and potentially using area within the alder/willow woodland is considered to be of high local importance.

13.4.26 In 2001, no signs of water vole presence within or adjacent to the site were noted. However, in the 2005 survey evidence of water vole activity was apparent. No burrows were found and it would appear that the water voles may use the site for foraging and as a dispersal route.

13.4.27 There was no evidence of dormice on the site and it is likely that the site is of low potential value for these species. Sections of hedgerow and scrub suitable to support

dormice were found within the study area in the 2005 survey but due to the isolation of these habitat areas it was considered unlikely that dormice are present on site.

13.4.28 If there is evidence of these small mammals (water vole and dormice) the impact would be considered to be of high local importance, the current view is that the presence of populations is unlikely, therefore impact is considered of low local importance.

Breeding Birds

13.4.29 No species protected under Schedule 1 of the Wildlife and Countryside Act 1981 were recorded on the site. However, a number of species recorded are on the Red List of species of conservation concern in the United Kingdom (RSPB, 1996). These are the bittern, house sparrow, skylark, song thrush, linnet and reed bunting. All five are listed because of a population decline of 50% or more over the last 25 years.

13.4.30 A further nine species are on the Amber List, including cormorant, dunnoek, house martin, mistle thrush, swallow, blackbird, goldfinch, starling, water rail and willow warbler all of which are breeding on the site. Amber List species which have suffered a greater than 25% decline in their UK breeding population or range in the past 25 years.

13.4.31 A kingfisher was noted in the study area in the 2001 survey and on the boundary of the study area in 2005, but was not thought to be breeding there. Kingfishers are given full protection under Schedule 1 of the Wildlife and Countryside Act 1981.

13.4.32 Owl or raptor species have used the buildings associated with Hayes Farm in the past, although there is no evidence of recent use. Certain owl species, such as the barn owl are also listed as a Schedule 1 species.

13.4.33 The hedgerows, grasslands and woodlands on the site offer good quality habitat for bird species. A range of breeding bird species, including species that have experienced declines in population numbers over the past 25 years were recorded during the bird survey, indicating that the site is of high local importance for breeding birds.

Amphibians

13.4.34 The ditches and streams present within the site offer potentially suitable habitat for amphibians. Frogs and common toads were recorded on the site, although no great crested newts were recorded. The most suitable area for newts is the ditch surrounding the landfill site, where palmate newts were identified in the 2005 survey, and the ditch south of the landfill site, where a smooth/palmate newt was identified in the 2005 survey. However, vegetation on the ditch side provides a dense shade for

this wetland area and fish are present, features which may discourage newts from this area. Ditches in the alder-willow woodland are also heavily shaded, and there is a general lack of standing water elsewhere on the site, which could be used by newts. Therefore, the site is considered to be of low to medium local value for amphibians.

Invertebrates

13.4.35 No Red Data list invertebrates were recorded on the site. Whilst most of the species were common, a few species such as the emperor dragonfly and the speckled wood butterfly are largely confined to (but are locally common in) the south of England. The range of habitats present on the site, from the River Clyst through to grasslands, hedgerows and woodlands, make the site of high local importance for invertebrates.

Summary of Nature Conservation Value

13.4.36 A summary of the nature conservation of the habitats on the site is given in Appendix 13.7. Overall, the study area is of high local importance for nature conservation, supporting a diversity of habitats and species. The mature alder-willow woodland is considered to be of high regional importance. Taking into account of the footprint of the Phase 1 development area, the overall significance is considered to be of a lower overall value (low local importance for nature conservation), with the exception of the presence of protected species (badgers and bats) which are of high local importance for nature conservation.

13.5 Potential Impacts

Assessment of Potential Impacts

13.5.1 The assessment of the impacts of the development needs to take into account both on-site impacts as well as those which may occur to adjacent areas of ecological value. Impacts can be permanent or temporary and can include:

- direct loss of wildlife habitats;
- fragmentation and isolation of habitats;
- disturbance to species using the site or adjacent sites; and
- changes in the quality and/or quantity of water entering or leaving a site and causing changes upstream or downstream of a site.

13.5.2 The significance of an adverse impact (or a beneficial result) is the product of the magnitude of the impact and the value or sensitivity of the nature conservation resources affected. There is no agreed method for assessing the significance of

adverse impacts on nature conservation receptors. Nevertheless, high levels of significance will generally be ascribed to large impacts on receptors of high nature conservation value. Low levels of significance will generally be ascribed to small impacts on receptors of high nature conservation value or large impacts on receptors of low or negligible nature conservation value.

13.5.3 The significance of the potential impacts have been assessed using the following criteria:

Major (or severe) impact

13.5.4 Loss of or permanent damage to any part of a nationally important site, or a substantial part or key feature of a site of county importance, or the whole of a site of local importance. Loss of a legally protected, nationally rare or nationally scarce species from the site or its immediate vicinity.

Moderate impact

13.5.5 Loss of or permanent damage to any part of a site of county importance, or a substantial part or key feature of a site of local importance. A substantial reduction in the numbers of legally protected, nationally rare, nationally scarce species on the site or its immediate vicinity. The loss of, or very substantial reduction in the population of, a rare species (regional/county level) from the site or its immediate vicinity.

Minor impact

13.5.6 Loss of or permanent damage to any part of a site of local importance. A reduction in the population of legally protected, nationally rare, nationally scarce or rare (regional/county level) species on the site or its immediate vicinity.

Negligible impact

13.5.7 Temporary damage to a small part of a site of local importance or loss of or damage to land of negligible nature conservation value. No reduction in the population of legally protected, nationally rare, nationally scarce or notable (regional/county level) species on the site or its immediate vicinity.

Potential impacts (see Table 13.1a-c)

13.5.8 The proposal to develop the site will lead to the permanent loss of wildlife habitats within the development footprint as follows:

- the semi-improved grassland and arable land in the northern and eastern portions of the site;

- approximately 0.4ha of planted area surrounding the eastern and southern tip and more open grassland areas on the closed landfill;
- approximately 250m of the ditch along the eastern boundary of the landfill site;
- approximately 1637m of internal hedgerow in the north and centre of the site; and
- Hayes House, outbuildings and garden.

13.5.9 The loss of each of these habitats on their own would constitute a minor adverse impact, as they do not support rare or scarce plant species but would result in the disruption of a small number of legally protected species. However, taking into account the large area of habitat to be lost, the overall impact of the direct habitat loss is considered to be a moderate adverse impact, particularly as these habitats support a range of locally important fauna species.

13.5.10 In terms of habitat loss, the greatest potential for impact will arise from:

- The removal or dislocation of the intact hedgerows. The loss of hedgerows will result in reduced habitat and species diversity within the local area and the loss of potential habitat and wildlife corridors for fauna. The diversity and maturity of the woody species as well as the presence of a well-developed ground flora tends to attract a greater diversity of species and contributes to the habitat diversity of the area as a whole.
- The loss of the ditch system and associated bankside vegetation around the closed landfill, this area is of less significance than the habitats identified above and suffers from a lack of active management, which has meant that over time the ditch has become choked with vegetation over large areas.
- The loss of areas identified as being botanically species-rich, such as the arable field margins, areas of tall ruderals and short ephemeral/perennial vegetation and marshy grassland surrounding the stream inlet, east of the landfill site.

13.5.11 The grasslands along the floodplain, the belt of mature trees, scrub and hedgerows to the east of the floodplain grasslands and alder-willow woodland in the north-west of the site will not be subject to development and have been included in the application area to provide for compensatory mitigation.

River Clyst and other watercourses

13.5.12 The large, water-filled ditch surrounding the former landfill site joins the River Clyst through the ditch indicated at Target Note35, in the lower south-western part of the

site. Earthmoving and construction activities could result in increased sediment load as well as increases in plant nutrients such as nitrogen and phosphorus in the ditch, which unabated would drain into the River Clyst.

13.5.13 As the development will be concentrated away from the river and its flood plain, it is envisaged that there will be negligible impact on the rivers aquatic ecology. Mitigation measures to control the release of construction water into the River, including use of SuDs are described in outline in Section 9 (Water Resources), and will minimise disturbance to the river. Otters, fish populations and other wildlife using the river will therefore not be adversely affected by the development. The Appropriate Assessment that considers the potential impact on the Exe Estuary SPA and RAMSAR site identifies that the potential for significant impact is low. In addition, effective mitigation design can be included in the detailed design for Exeter Gateway, to include use of SuDs and reedbed attention for surface water outflow from the development towards the River Clyst (see Appendix 13.8).

Badgers

13.5.14 For the purposes of the assessment of the impact of the proposed development on badgers it is assumed that the range of the social group based at the potential main sett to the south-east of the landfill site is entirely contained within the development footprint. The greatest potential for direct adverse impacts on this badger group is the removal or disturbance to the potential main sett, which would cause the social group to disperse. The main sett will require relocation prior to earthworks in Phase 1 and a suitable location has been identified to the south west corner of the site, where the sett would be relatively close to the existing sett and out of the floodplain but adjacent to the retained feeding area.

13.5.15 Under The Protection of Badgers Act (1992) badger setts are protected from disturbance, obstruction or damage in any part, and the animals within a sett cannot be disturbed or excluded except from under licence from, in this case, English Nature. A licence would be required if heavy equipment is used within 30m of a sett or hand equipment within 10m. Licences to exclude badgers will not normally be issued during the breeding season (*i.e.* between 1st December to 30th June). Before issuing a licence, English Nature normally require detailed planning permission to have been granted.

13.5.16 The land within the site is considered to be of moderate to good foraging potential for badgers and the direct loss of feeding habitat may have a significant effect on the badger social group. Generally, badgers in rural areas, depending on the quality of foraging present and pressure from the presence of other social groups, have a range of between 40ha to 60ha. It is therefore, likely that the entire site will be contained within the badger range, and that this forms an important part of their

feeding territory. Figure 3.3 shows that the majority of this land will be lost to the proposed development and that the habitat range will be reduced to approximately 22ha of land present within the floodplain. Therefore, the direct loss of this good quality foraging area, with appropriate mitigation will result in a moderate adverse impact on the badger group.

13.5.17 Areas of similar quality grassland are located within the vicinity of the site. However, access to these areas is cut off by the River Clyst to the west, by the proposed development to the east and by the railway line to the north.

13.5.18 The network of badger pathways through and from the site were difficult to separate from pathways used by other fauna. Due to its extent it is likely that the proposed development will interrupt some badger pathways. Badgers tend to use or attempt to use the same pathways even if an obstruction has been put in their way, which may lead to badger injuries if they have to cross roads or other areas of potential danger. Badgers are nocturnal, therefore because the proposed rail terminal is active at night, lighting and the rail and vehicle movements will disturb the badger activity. To protect the social group appropriate fencing will be required on the edge of the Gateway development to reduce the potential for badgers foraging within the site itself.

13.5.19 The disruption of the badger sett and a reduction in the total area available for foraging habitat is considered to be a minor impact, subject to suitable mitigation.

Bats

13.5.20 Bats are legally protected under the Wildlife and Countryside Act, 1981 from any disturbance or damage to their roosts whilst they are in use. Bat roosts have been identified in several trees, in particular within the alder/willow woodland. There is also substantial evidence of the recent use of Hayes Farm and its associated outhouses by bats, possibly for roosting. These buildings will be demolished as part of the proposed development and will result in the loss of potential roosting sites. Depending on the phasing of the development, it may be necessary to undertake further surveys in advance of any works to the buildings to determine if bats are present. Any works to these buildings will need to be agreed in advance with English Nature and a licence from Department of the Environment, Farming and Rural Affairs (DEFRA) to demolish the buildings will be required if bats are present. The loss of these buildings is considered to be a minor impact, subject to suitable mitigation.

13.5.21 The other main effect on bats by the proposed development relates mainly to impacts on foraging, i.e. the loss or fragmentation of foraging or commuting habitat (e.g. hedgerows and trees). The proposed development will remove a substantial portion of suitable feeding habitats within the site. However, the site is surrounded by similar

habitat, i.e. agricultural grasslands and hedgerows, which can be used by foraging bats, and therefore the impact of removing existing feeding areas will be somewhat ameliorated by adjacent good quality foraging. Indirect effects such as the use of floodlights or night lighting may also negatively affect the foraging behaviour of bats, although this is unlikely to be a problem during winter months when bats are mostly inactive. Land use changes, such as removal of animal grazing, may adversely affect the richness and abundance of insect prey reducing the value of the site to bats as foraging ground.

Otters

13.5.22 As the River Clyst and its floodplain will not be directly affected, the potential impacts on otters are reduced. However, without appropriate mitigation measures there is the possibility for a reduction in water quality in the River Clyst due to site run off or discharges, which would adversely affect the otters use of this stretch of the river. As the area along the flood plain will not be developed, potential impacts such as loss of bank side vegetation (cover and shelter) due to construction will not be an issue.

13.5.23 Otters that live along inland waterways are primarily nocturnal, so would be disturbed by night lights, noise, and vehicle activity from the proposed development. The fields along the River Clyst that will not be developed form a buffer between the proposed development and the area used by the otters, however there is still potential for the above impacts to disturb otters without appropriate mitigation and therefore this is a minor potential impact.

Birds

13.5.24 A number of birds use the various habitats within the site, particularly the woodland and the hedgerows for nesting. Other species such as starlings rely on the grasslands for foraging. The majority of these habitats will be lost within the proposed development.

13.5.25 Bird activity within the study area was concentrated within four of the habitats:

- within the floodplain;
- alder/willow woodland;
- dense vegetation / ditch system surrounding the former landfill;
- hedgerows; and
- house and garden at Hayes house.

13.5.26 Of these habitats the floodplain will remain unaltered and managed to increase wildlife potential. The loss of hedgerows will potentially have the greatest impact on bird populations on the site, due to loss of nesting and feeding areas. Whilst the loss of suitable habitat for birds is considered to be a minor impact, other suitable habitat is located adjacent to the site which the displaced bird populations can colonise.

Amphibians

13.5.27 Surveys in 2001 and 2005 have identified that there are no great crested newts identified in water bodies within the study area, although frogs and palmate newts (as well as a smooth/palmate newt) have been identified on one or both surveys.

13.5.28 The ditch system which surrounds the landfill site will be lost as part of the proposed development. Ditches associated with hedgerows to be removed will also be lost. However, ditches associated with the floodplain and with the alder-willow woodland in the north-west of the site will be retained and new reedbeds will be constructed to attenuate surface water outflow from the development as it drains onto the floodplain. As the majority of suitable amphibian habitat will be retained and mitigation measures can be included in the detailed design, the proposed development is considered to have a negligible impact on amphibian populations.

13.5.29 Amphibians that may be using the aquatic habitats within the floodplain could experience a reduction in water quality due to site run off or discharges, which, without mitigation measures (for example construction of reedbeds), could result in a decrease of these populations. Therefore potential impact is considered to minor in significance.

Invertebrates

13.5.30 The invertebrates recorded on the site are generally common species, although some are confined to the south of England. The extent of the habitat loss will result in the downgrading of invertebrate species diversity on the site, which is considered to be a minor adverse impact. However, the retained habitats and new habitat planting will ensure that some species will be maintained. Suitable habitat for invertebrates to disperse to is located adjacent to the site, so many of the species will not be lost from the locality. Therefore potential impact is considered to minor in significance.

Other Wildlife

13.5.31 All other wildlife that currently use the site will be affected to some degree by the direct loss of habitat, and indirectly by increased disturbance.

Summary of potential impacts (see Table 13.1a-c)

13.5.32 The significance of adverse impacts is a combination of the size and duration of the impacts and the nature conservation value of the receptor (the wildlife habitats and their species). The direct habitat loss as a result of the development proposals is considered to be of moderate significance due to the following:

- the large area to be affected and the loss of a large area of hedgerows;
- the loss of the badger sett and the majority of the territory of a badger social group;
- the loss of buildings and single trees, which have been used by bats for roosting and ;
- the potential off-site impact on the ditch which flows westwards from the reclaimed landfill to the River Clyst is recognised and would be a minor impact without appropriate mitigation.

13.6 Mitigation measures (see Table 13.1a-c)

13.6.1 Mitigation measures are those designed to reduce the severity of adverse impacts on the nature conservation features within the site. Due to the extent of the proposed development any mitigation measures will be concentrated along the River Clyst flood plain, with the exception of hedgerows to be planted along the boundary and internally within the development.

Habitats

13.6.2 Formalised hedgerows will be created as part of the overall landscape planting using native tree and shrub species, which are in keeping with traditional Devon style hedgerows and which are appropriate to the site and which are from local sources. Appropriate tree and shrub species for the general area are given in '*Native Trees and Shrubs for Wildlife in the United Kingdom*' (Nature Conservancy Council, 1989). Species noted on and around the site include: English elm, pedunculate oak, ash, hawthorn, blackthorn, field maple, dog-rose, (with lesser amounts of guelder rose, spindle and elder).

13.6.3 The loss and gain of hedgerows has been quantified in Appendix 13.9. Approximately 1637m would be lost from the some 3887m of existing hedgerow, although the scheme proposes additional planting of approximately 750m of new hedgerow. In addition, the retained hedgerow along the eastern boundary of Phase 2 will be assessed and any gaps will be planted up using native species. . The new hedgerow planting will mitigate somewhat against the loss of existing hedgerows and provide potential habitat and

wildlife corridors for fauna within the proposed development. The retained and new hedgerows will be managed to maintain species diversity, particularly those on the eastern boundary and within the floodplain.

13.6.4 The potential to create a reedbed, recognised as key habitat within the *Devon Biodiversity Action Plan* (1998), is possible along the existing flood plain of the River Clyst. Standing areas of common reeds are found in the top north-west corner of the site and along the drains that run into the river. Reedbeds will be constructed to take surface water from the four discharge points from the development into the floodplain (see Figure 3.3). Reedbeds are not botanically rich but can support large numbers of amphibians, bird species (e.g. bitterns, reed warblers and bearded tits), herpetofauna and invertebrates. The creation of such a habitat would increase the diversity of the site and serve as an interesting visual feature in an otherwise flat landscape. The detailed design of reedbeds and the context with respect to the surrounding wet meadow will be submitted with the detailed plans for the development, including design of SuDs and calculate surface water drainage from each outfall. The construction of reedbeds within ditches on the site will promote the management of some of the ditches that are heavily choked by vegetation. Removal of the invasive water fern is also necessary in some of the ditches and care should be taken not to transfer water fern from one waterbody to another.

13.6.5 Grazing of livestock should be continued along the retained floodplain. Dung from livestock, particularly cattle attracts a range of insects, which are in turn fed upon by birds and bats. The botanical diversity of the grasslands can be improved with time by reducing the intensity of grazing and grazing at certain times of the year. The most effective method of increasing floristic diversity, in the context of a wet meadow, would be to manage the grassland for a single hay crop and allowing grazing by livestock on the after growth until the autumn, with limited low intensity grazing during the winter months. This will also serve to attract other invertebrates to the retained grasslands.

13.6.6 The *Devon Biodiversity Action Plan* identifies alder-willow wet woodland as a key habitat within the county and it is included in the County Habitat Action Plans. These woodlands are also recognised as key habitats within the UK as a whole, because nationally they are a scarce habitat, but in Devon the combination of moist soils and heavy soils means they are a characteristic feature of the landscape. One of the objectives of the Devon Habitat Action Plan for this habitat is that '*there be no net loss of smaller (alder-willow) wet woodland sites*'. The alder-willow woodland within the site will be largely retained adjacent to the proposed development footprint. Woodland planting adjacent to this woodland will reflect the species present, thus enhancing the quality of the existing wet woodland and providing a buffer strip between the existing woodland and activity within the IFFDC. Woodland planting has also been extended to the east of Phase 1, on the northern and eastern section of the Phase 2 development. This woodland planting will has been designed to retain a corridor from the River Clyst

floodplain to the agricultural habitats to the east of the site. Woodland Grant Schemes, run by the Forestry Authority, provides grants for the establishment of new wet woodland and maintenance of existing wet woodland. The mitigation measures outlined in Section 9 (Water Resources), that control the quality of discharge into the River Clyst, will also benefit the woodland.

River Clyst

13.6.7 The potential for off-site impacts on the ditch flowing westwards from the reclaimed landfill site to the River Clyst is recognised and will be maintained at an insignificant level due to appropriate site design, site management and prevention of pollution during both the construction and operational phases. Disturbance to the watercourse itself will be avoided. English Nature have required an assessment of potential changes in the flow and water quality of the River Clyst and potential effects on the Exe Estuary, an SPA, Ramsar and SSSI, into which the river flows and these issues are addressed in Section 9 (Water Resources) and Appendix 13.11 (Appropriate Assessment scoping report submitted to English Nature).

Badgers

- 13.6.8 For the purposes of mitigation measures it is assumed that the territory of the badger group based at the main sett within the site is contained entirely within the site.
- 13.6.9 It is very unlikely that the social group can be retained within the site if the development proceeds, as a substantial proportion of good quality foraging will be removed. The badgers are cut off from suitable foraging to the west of the site by the River Clyst and from the north of the site by the railway track, although they may cross this to gain access to the fields at the north.
- 13.6.10 A more detailed survey of badger territories in the surrounding area will be required prior to a detailed application for Phase 1 of the development. The options for relocating the badger sett will be dependent on the results of this survey. An alternative option to retain the main sett combined with the provision of badger tunnels allowing alternative access to areas of good quality forage to the east and north of the site will also be considered, although not likely to be practical given the nature of the development. However, if this is the preferred option or the floodplain is managed to maintain suitable foraging habitat, continued grazing by cattle of the majority of the floodplain fields should continue. This will maintain high quality foraging for badgers and bats. In addition, new hedgerow and tree planting could include fruiting species, such as apples and plums, which would provide a source for seasonal foraging in the longer term. An area of proposed woodland has been identified to buffer the badger habitat from the C832. In addition there are hedgerows

present within the floodplain that can be managed to increase their values as a food source for the badger population.

13.6.11 Before work (including ground investigation, demolition and clearance) within 20 m of the main sett could take place, a licence would need to be issued by English Nature to allow closure of the sett and/or disturbance of the badgers. The Act does not specify a season when licences will not be issued; however, generally, licences are not issued during the breeding season (1st December to 30th June). Before issuing a licence, English Nature normally require detailed planning permission to have been granted.

Bats

13.6.12 There is a known brown long-eared roost at Hayes Farm. Further roosts are likely to be present in the outbuildings and the woodland. Important foraging routes include the flood meadows alongside the river and the mature trees and hedgerows.

13.6.13 Bat roosts are protected from disturbance and a licence will be required in advance of any works that could disturb bats in the buildings and woodland habitats. Mitigation measures to design replacement roosts in the early stages of development in Phase 1 will be agreed in the licence application. Attempts will be made, wherever possible, to conserve foraging habitat, e.g. the retention of hedgerows and mature trees. The retention and continued maintenance of hedgerows and some areas of animal pasture in the flood plain would ensure a continued supply of insect prey, particularly for bats. New areas of planting within proposed development could serve to attract nocturnal insects and in turn foraging bats.

13.6.14 Demolition of the farmhouse at Hayes Farm would require a licence to cover destruction of a bat roost. The licence application would include a detailed mitigation strategy covering the specifications of the replacement roost, timings, the extent and need for further surveys, a programme of monitoring work and the method of the exclusion, as agreed with English Nature.

13.6.15 The farm outbuildings offered a number of potential roost sites for bats and so, prior to any demolition an emergence survey would be required during the summer/autumn to confirm that bats were genuinely absent from the buildings. For the trees that offered potential roost sites for bats, prior to the removal of any branches or felling, further investigation of the cavities should be carried out using an endoscope and ladders/ropes. If it were not possible to confirm whether a bat roost exists, then an emergence or swarming survey should be carried out. If bats were using the trees, it would be necessary to obtain a licence to disturb bats and/or exclude bats from the recesses.

Birds

13.6.16 Clearance of vegetation from the areas proposed for development would, be undertaken outside the bird-breeding season (1st February to 31st August inclusive) in order to avoid damage or destruction of nests. The species rich hedgerows provide breeding opportunities for the commoner species and will be retained where possible, including the notable hedgerows along the eastern boundary of the site. A detailed strategy for removal of vegetation and landscape planting / mitigation will be submitted with the detailed application for built development.

Otters

13.6.17 There will be minimal disturbance to otters using the banks of the River Clyst, as the undeveloped flood plain will offer a buffer against disturbance. It is recommended that night lights and activity should be minimised, if possible, and all lighting should point away from the River Clyst which will further minimise impacts on otters. Otters will benefit from the new habitat proposed along the flood plain such as a reedbed, which can be used as temporary lying up sites.

Water vole

An area of sedges at the eastern end of ditch D1 offered suitable habitat for water voles: should removal of this area be required, further survey work would be required to confirm that water voles were still absent from this area. In addition, prior to work required to widen ditches within the floodplain to accommodate reeds, further survey work will be required to confirm that water vole are absent from the ditch banks.

13.7 Cumulative effects

13.7.1 Cumulative effects of the Cranbrook New Community, Skypark (including Exeter & Devon Airport), the Clyst honiton bypass in combination with the development and operation of the IFFDC will result in a combined loss of hedgerows, agricultural land and open space as a habitat and feeding areas for invertebrates, mammals and birds. The additional studies undertaken in this report confirm the cumulative impact associated with the proposed developments.

13.7.2 The EIA for Skypark and the Exeter & Devon Airport Development areas identified several features of ecological significance that would be affected as a result of the proposals. The Clyst Honiton bypass would affect a number of hedgerows and an area of species rich grassland. Within the development area itself primary impacts identified related to protected species, hedgerows loss and species rich grassland.

13.7.3 Cumulative impacts primarily result from the loss of natural habitats associated with hedgerows. However, these are mitigated by strengthening those hedges retained

and by the planting of additional areas of woodland, as part of the IFFDC proposals and high quality landscape structure planting within the Skypark development. Impacts on fauna are increased due to the land take of the combined developments (including Cranbrook) and these impacts have been assessed further in Section 18. although the linkage between sites is likely to be reduced as a result of the barrier associated with the existing road network (the C832).

13.8 Residual impacts

- 13.8.1 The maintenance of the alder-willow woodland corridor, with the planting of additional trees along this area, and the retention of the open flood plain habitats will benefit both bats, for foraging and roosting, and birds who will have access to areas for nesting and foraging.
- 13.8.2 The proposed woodland planting will provided a corridor for movement between habitats within the River Clyst floodplain to those on the east of the Phase 2 development boundary.
- 13.8.3 The proposed development will result in a long-term residual impact on the badger group within the site as there will be a permanent loss of habitat and displacement from their existing potential main sett. With appropriate mitigation the badger population should not be lost from the locality.
- 13.8.4 The proposed development will also result in the permanent loss of potential bat roosting habitat at Hayes Farm and its associated outhouses and the loss of foraging habitat will result in the decrease in the value of the site to bats.

13.9 Summary

- 13.9.1 There are no Sites of Special Scientific Interest, Local Nature Reserves or other nature conservation sites subject to statutory or other designations within or adjacent to the site.
- 13.9.2 The majority of the habitats on the site are of low to medium ecological significance being comprised mainly of arable land and poor semi-improved grassland, used primarily for pastoral farming. Hedgerows with mature trees encapsulate many of the fields. Some of the hedgerows, particularly along the north eastern boundary, are of considerable age and species-rich. A proportion of the species-rich hedgerows will be retained and new hedgerow planted to the west of the IFFDC. The alder-willow woodland in the top north-west of the site is over 200 years old and is to be retained, with the loss of a small section (0.4ha). Together, the hedgerows and the alder-willow woodland provide the most important habitats for fauna, with the areas of tall ruderals, short ephemeral and perennial vegetation and arable field margins being

the most important botanically. The floodplain grasslands along the River Clyst will also be retained.

- 13.9.3 A badger social group and their main sett is contained within the site. The area where the sett is located will be incorporated into the proposed development and there will be a substantial loss of foraging ground. Further studies will be required to identify appropriate areas to relocate the sett and to determine whether this is the preferred option.
- 13.9.4 Hayes Farm and associated outhouses have evidence of roost sites in use by long eared and common pipistrelle bats. These buildings will be demolished as part of the proposed development. Measures are outlined in the main text to mitigate against the loss of habitat for these legally protected species. The alder/willow woodland has also been identified as potential roost site for a number of bat species and therefore the conservation and enhancement of this area will form an important part of the detailed application for site development.
- 13.9.5 Otters using the River Clyst will not be directly affected by the proposed development. There will be a permanent loss of habitat for invertebrate and bird species, which will in part be mitigated by the provision of new habitat and the retention and management of retained habitat.
- 13.9.6 Overall the impact of the proposed development on the site is considered to be a moderate adverse impact, due to the large area of the proposed development and the resultant loss in habitat. However, the proposed mitigation measures will maintain and enhance the most valuable habitats present and specific mitigation measures for badgers and bats will be incorporated.

Table 13.1 (a)										
Assessment of potential impact on River Exe cSAC, RAMSAR and SSSI										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Impact on River Exe cSAC, RAMSAR and SSSI										
Disturbance - resulting from operations	Construction phase: Impact resulting from changes to noise and air quality within cSAC	*					None	St, R	Negligible	No mitigation measures required due to separation distance between development and cSAC.
	Operational phase: Impact resulting from changes to noise and air quality within cSAC	*					None	Lt, Ir	Negligible	No mitigation measures required due to separation distance between development and cSAC.
Surface water drainage	Construction phase: reduction in water quality entering the River Clyst	*					Adverse	St, R	Negligible / Minor	Pollution incidents resulting from construction works can be controlled by adopting good detailed design prior to construction; a detailed Pollution Control Strategy will be produced and agreed with the Planning Authority / Environment Agency prior to commencement of the works. The strategy will include a detailed monitoring programme to evaluate the interaction between ground, surface water and licensed abstraction in the vicinity of the site. The pollution control strategy will also include, detailed method statements for each phase of working to ensure control of surface water combined with a pollution control response, in the event of discharge into a ditch that flows towards the River Clyst. The pollution control response would include use of settlement lagoons during site works and preparedness with respect to booms designed to hold water flow within the ditch if water quality is compromised. Note: The potential effects on the Exe Estuary SPA have been considered in Appendix 13.11. The residual impacts assessed as negligible or at worst case minor. Likelihood of effect on SPA is very low.
	Operational phase: reduction in water quality draining to River Clyst	*					Adverse	Lt, Ir	Negligible/ Minor	Runoff from roof areas should generally be of reasonable quality and be suitable for direct discharge to the drainage network (subject to any balancing requirements). Runoff from areas of hardstanding may, however, contain suspended solids or spillages of vehicle fuels or oils. The new drainage infrastructure design will incorporate gully pots/petrol interceptors to mitigate this risk. Transfer of loads within the intermodal will be within containers, therefore negligible risk of spillages and no mitigation measures required. Surface drainage will be balanced to greenfield flow (see Section 8) and zones within the floodplain will be designed as reedbeds / wet meadows to further balance and attenuate run-off before entering the River Clyst.
Impact on River Clyst										
Surface water drainage	Construction phase: reduction in water quality entering the River Clyst					*	Adverse	St, R	Minor	Pollution incidents resulting from construction works can be controlled by adopting good detailed design prior to construction; a detailed Pollution Control Strategy will be produced and agreed with the Planning Authority / Environment Agency prior to commencement of the works. The strategy will include a detailed monitoring programme to evaluate the interaction between ground, surface water and licensed abstraction in the vicinity of the site.
	Operational phase: reduction in water quality draining to River Clyst					*	Adverse	Lt, Ir	Minor	Runoff from roof areas should generally be of reasonable quality and be suitable for direct discharge to the drainage network (subject to any balancing requirements). Runoff from areas of hardstanding may, however, contain suspended solids or spillages of vehicle fuels or oils. The new drainage infrastructure design will incorporate gully pots/petrol interceptors to mitigate this risk. Transfer of loads within the intermodal will be within containers, therefore negligible risk of spillages and no mitigation measures required. Surface drainage will be balanced to greenfield flow (see Section 8) and zones within the floodplain will be designed as reedbeds / wet meadows to further balance and attenuate run-off before entering the River Clyst.

Table 13.1 (b)										
Assessment of potential impact on flora										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Impact on Flora										
Hedgerows	Construction phase: approximately 825m of internal hedgerow will be removed in the north and centre of the site. A further 1175m of hedgerow would be removed in advance of development in Phase 2.					*	Adverse	Lt, IR	Minor / Moderate	Formalised hedgerows will be created as part of the overall landscape planting using native tree and shrub species which are appropriate to the site and which are from local sources. Appropriate tree and shrub species for the general area are given in Native trees and shrubs for wildlife in the United Kingdom (Nature Conservancy Council, 1989). Species noted on and around the site include: English elm, pedunculate oak, ash, hawthorn, blackthorn, field maple, dog rose, (with lesser amounts of guelder rose, spindle and elder). This will significantly increase the ecological value of the site. Approximately 2000m would be lost from the 5000m of existing hedgerow although the scheme proposes additional planting of approximately 2600m of new hedgerow. In addition the remaining hedgerows along the eastern boundary will be gapped up. Therefore the new hedgerow planting and gapping up of remaining hedgerows will increase species diversity and the area of potential habitat for fauna.
	Operational phase: damage to new or existing hedgerows through activity on site					*	Adverse	Lt,R	Minor	Hedgerows will be managed for a period of 5 years, with replacement of dead diseased or damaged stock, as appropriate. Maintenance of all hedgerows thereafter will form a part of the site maintenance programme. Hedgerow on north eastern boundary of the site also provide an important visual screen onto the Phase 2 development area.
Wet alder / willow woodland	Construction phase: Development footprint is adjacent to the alder/willow wet woodland (Target Note 19). Habitat identified in the Devon County BAP and included in the County Habitats Action Plan.			*			Adverse	Lt, Ir	Minor	Development footprint has been designed to ensure that <i>there will be no loss of alder-willow wet woodland</i> in accordance with the Devon Habitat Action Plan. A stand-off has been designed to protect the edge of the woodland. Long term management, including off site planting of species characteristic of the habitat will be undertaken, for example an additional 0.6ha of alder-willow woodland planting has been identified adjacent to the existing woodland. The wet habitat characteristic will be promoted by design of surface water run-off from the development. A detailed specification for woodland removal, replanting and management will be agreed with the planning authority, prior to the commencement of construction phase.
	Operational phase: management and maintenance of woodland			*			Beneficial	Lt,R	Minor / Moderate	Long term management and maintenance of woodland has value in terms of biodiversity. The woodland will also act as a visual barrier onto the south western boundary of the development
Woodland on the perimeter of the closed landfill	Construction phase: Loss of approximately 1ha of willow / alder / hawthorn (planted), occasional mature pedunculate oak and elm, with elder dog rose etc as understorey					*	Adverse	Lt, Ir	Minor	Additional 4ha woodland planting will be undertaken in Phase 1 of the site.
	Operational phase: management and maintenance of woodland					*	Beneficial	Lt,R	Minor / Moderate	Long term management and maintenance of woodland has value in terms of biodiversity. The woodland will also act as a visual barrier onto the southern boundary of the development.
Marshy / aquatic areas	Construction phase: Loss of existing marshy and aquatic habitats within the development footprint. These habitats have been identified as having a relatively good diversity of species offering opportunities for wildlife.					*	Adverse	Lt, Ir	Minor	Approximately 12ha of wet meadow and 3.4ha of reedbed will be planted / managed within the floodplain. Receptor area for translocation of certain plants, for example orchids in marshy hollow to east of landfill.
	Operational phase: management and maintenance of habitats within the floodplain of the River Clyst					*	Beneficial	Lt, R	Minor	Long term management and maintenance of marshy/aquatic habitats has value in terms of biodiversity.
Grassland	Construction phase: loss of improved, semi improved and agricultural grassland, also scrub grassland dominated by nettles, cleavers etc (see Target notes: 1, 21, 27, 30, 33, 42, 43 & 56.					*	Adverse	Lt, Ir	Minor	Approximately 12ha of wet meadow will be managed to increase species diversity of the sward.
	Operational phase: management and maintenance of habitats within the floodplain of the River Clyst					*	Beneficial	Lt, R	Minor	Long term management to reduce grazing in early spring to promote flowering and encourage species diversification of the sward.
Gardens and boundary vegetation to Hayes Farm	Construction phase: loss of habitat					*	Adverse	Lt, Ir	Negligible	Uniformity of species and ages of planted areas offer little potential for wildlife, they are of low nature conservation value. Formal landscaping will be implemented as part of the detailed design of Exeter Gateway
	Operational phase: formal landscape design on access road and where appropriate to break up built development					*	Beneficial	Lt, R	Negligible	Long term management integral to maintain the image of the site - negligible benefits in terms of biodiversity

Table 13.1(c)										
Assessment of potential impact on flora and fauna										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Impact on protected species										
Impact on Red and Amber List bird species of conservation concern.	Construction phase: Disturbance adjacent to wet woodland, woodland, marshy habitats - Impacting on small numbers of breeding birds including Reed Bunting, Bittern and Song Thrush (Red List) and Willow Warbler, Mistle Thrush etc (Amber List). Note : Bittern and Reed Bunting are also priority species in the Devon BAP.				*		Adverse	Lt, Ir	Minor	Additional woodland and shrub planting within the site will offset this habitat loss. Detailed scheme will include specification for construction works near retained woodlands to reduce disturbance on bird populations.
	Loss of hedgerows, potential impact on a small number of breeding birds including: Song thrush (red list) and Mistle thrush (Amber list).				*		Adverse	Lt, Ir	Minor / Moderate	Habitat loss has been partially mitigated by offsite woodland planting and long term management of retained hedgerows.
	Loss of grassland (arable, semi improved and improved), potential impact on a very small number of breeding birds, e.g. Skylark (Red List), Dunnock (Amber List). Note: Skylark is also a priority species in the Devon BAP.				*		Adverse	Lt, Ir	Negligible	Breeding birds confined to hedgerows and woodland, majority of the land could be used for arable agriculture, although currently either in set aside or used for horse grazing.
	Loss of aquatic habitat (ditches and small areas of surface water) including Water Rail, Willow Warbler and Reed bunting (Amber List)				*		Adverse	Lt, Ir	Negligible	Few breeding birds identified, the largest surface water body was over grown and heavily shaded. Long term management of land within the floodplain will be subject to a detailed scheme to be agreed with the planning authority - will include wet meadow and reedbed habitats.
	Operation phase: Terrestrial habitats - no impacts identified				*		Neutral	n/a	n/a	No mitigation measure required
	Aquatic habitats - surface water run-off from development used to enhance aquatic habitats on the flood plain (including wet meadow, alder / willow wet woodland and reedbeds)				*		Beneficial	Lt, R	Minor / Moderate	Design and long term management of land within the floodplain will be subject to a detailed scheme to be agreed with the planning authority prior to the construction phase.
Impact on European Protected Species - Mammals	Construction phase: Otters - increased disturbance in close proximity to alder / willow wet woodland, potential impact on territorial range of otters using the River Clyst.				*		Adverse	St, R	Moderate / Major	Detailed scheme for construction to be discussed with LPA and English Nature, disturbance licence maybe require.
	Bats - Demolition of Hayes House and farm buildings, known roost site for long eared bats (Plecotus auritus) and potential common pipistrelle (Pipistrellus pipistrellus). Increased disturbance in close proximity to alder / willow wet woodland and mature oak/elm/ash (suitable roost sites for Common pipistrelle (Pipistrellus pipistrellus), soprano pipistrelle (Pipistrellus pygmaeus). A mooted bat (Myotis sp.) and a long-eared bat (Plecotus sp., probably auritus) and barbastelle spp. have been recorded foraging along the edge of the woodland in the sheltered corner of the field east of the wet woodland.				*		Adverse	Lt, R	Major	Roosts for long eared bats and common pipistrelle have been identified in the outbuilding at Hayes Farm. Suitable alternative roosts will be constructed at an early part of Phase 1, prior to demolition of the buildings. The mitigation measures will form part of the licence application. Woodland planting will in time provide additional roost sites, in the short term a scheme for erecting bat boxes will be agreed with the planning authority, prior to commencement of construction. Increasing species diversity of habitats on floodplain will increase invertebrate populations that will act to neutralise potential impact associated with habitat loss.
	Great Crested Newts - Four surveys undertaken using the methodology (English Nature Guidance)				*		n/a	n/a	n/a	If a significant time elapsed from the current survey a subsequent survey should be commissioned prior to construction phase.
	Operational phase: Potential to enhance habitat on land within the floodplain				*		Beneficial	Lt, R	Minor	Loss of agricultural habitats will be offset by design and long-term management of offsite habitats to increase species diversity. There is scope to achieve this beneficial impact on land within the floodplain, subject to agreement of detailed schemes. Lighting schemes for access roads and buildings will be designed to reduce light scatter into the wet alder/willow woodland and flood plain. This can be achieved in part by lighting design and also buffer planting between the area of ecological sensitivity and the development footprint.
Impact on other mammals	Construction phase: Water Vole: no signs of water vole activity have been identified within the development boundary. The vegetation on certain ditch / water course is thick, which reduce the confidence attached to the survey.				*		Neutral	St, R	n/a	Further surveys should be undertaken prior to construction work commencing on site, should signs of water vole be identified during the survey a licence to disturb will be required from English Nature.
	Badgers: a single badger sett was identified in the 2001 survey and again in 2005 in the same position. The sett is active. phase 1 development will result in the disturbance of a main sett, located within the proposed development footprint, therefore both the sett and the immediate foraging area would be lost.				*		Adverse	Lt, R	Major	The sett can be relocated to an identified area that is outside the 1 in 100 year floodplain. However, prior to applying for a licence to English Nature, further work is required on the characteristics of the population, their feeding habits and territory. Woodland and hedgerow planting should take account of the need to provide a food source for the population that is present. This can be achieved by thickening hedgerows on field boundaries within the floodplain and the proposed woodland along the western edge of the Phase 1 development footprint. The design of the woodland aims to provide a corridor from the west of Phase 1 to the east of the Phase 2 development footprints, thus potentially increasing the territorial range of the badger community.
	Dormice: no signs of dormice activity on two separate surveys in May/June 2005.				*		Neutral	St, R	n/a	Further surveys should be undertaken prior to construction work commencing on site, should signs of water vole be identified during the survey a licence to disturb will be required from English Nature.
	Operational phase: Potential to enhance habitat on land within the floodplain				*		Beneficial	Lt, R	Minor	Loss of agricultural habitats will be offset by design and longterm management of offsite habitats to increase species diversity. There is scope to achieve this beneficial impact on land within the floodplain, subject to agreement of detailed schemes.
Impact on amphibian populations	Potential loss of habitat: Palmate newts, frogs and toads have been identified in surveys.				*		Adverse	Lt, R	Negligible / Minor	Detailed design to include schemes to maintain and create suitable habitat for amphibian populations.
Impact on invertebrates	Potential to increase biodiversity within offsite habitats				*		Beneficial	Lt, Ir	Minor	Loss of agricultural habitats will be offset by design and longterm management of offsite habitats to increase species diversity. There is scope to achieve this beneficial impact on land within the floodplain, subject to agreement of detailed schemes.
Impact on species identified in local BAP	Brown hare Weasel Stoat Deer Shrew				*		Neutral	Lt, R	n/a	Loss of agricultural habitats will be offset by design and longterm management of offsite habitats to increase species diversity. There is scope to achieve this beneficial impact on land within the floodplain, subject to agreement of detailed schemes.

14 LANDSCAPE AND VISUAL IMPACT

14.1 Introduction

14.1.1 The landscape and visual impact assessment of the proposed Intermodal Facility and Freight Distribution Centre (IFFDC) near the village of Clyst Honiton to the east of Exeter, aims to identify and assess the significance of the likely landscape and visual impacts of the proposed development upon the site and surrounding area.

14.1.2 *Landscape effects* associated with a development relate to changes to the fabric, character and quality of the landscape resource and how it is experienced. Landscape assessment studies, including:

- direct effects upon specific landscape elements, especially prominent and eye catching features;
- change in character, which is the distinct, recognisable and consistent pattern of elements that creates distinctiveness and a sense of place;
- subtle effects that contribute towards the experience of intangible characteristics such as tranquillity, wildness and cultural associations; and
- effects on designated landscapes, conservation sites, and other acknowledged special areas of interest.

14.1.3 Visual effects relate closely to landscape effects, but concern changes in views. Visual assessment concerns people's perception and response to changes in visual amenity. Effects may result from new landscape elements that cause visual intrusion or new features that obstruct views across the landscape.

Both landscape and visual effects can be positive or negative.

14.2 Methodology

14.2.1 The methodology for this assessment follows the recommendations and guidance set out in the following reports:

- Department of Transport in "Manual of Environmental Assessment" Volume II (June 1993); and as amended;
- Guidelines for the Assessment of Landscape and Visual impacts, Second Edition, edited by The Landscape Institute and Institute of Environmental Management and Assessment (2002); and
- Landscape Character Assessment Guidance (2002) Countryside Agency.

14.2.2 The landscape and visual assessment has been carried out by a process of site and desk survey and analysis of the study area. A series of photographs were taken in April 2005 from representative viewpoints, as illustrated on the Photographic Viewpoint location plan (Figure 14.1). The photographs were taken with a 50mm lens and 35mm film. Viewpoints 6 to 20 in Appendix 14.1 illustrate the site in its context of the surrounding landscape and settlements. Each viewpoint analysis includes the following:

- a description of the location (receptor);
- the distance from the application boundary close to the viewpoint;
- a location map of the viewpoint;
- a description of the existing view, and those during construction and of the completed proposed development;
- descriptions of magnitude of impact and landscape sensitivity;
- mitigation measures;
- status of effects (temporary, permanent, reversible, irreversible); and
- a summary of the significance of the potential impact (adverse or beneficial).

The original photographs taken in March 2000 are included in Appendix 14.2.

14.2.3 A night time lighting analysis and impact assessment was undertaken in May 2000 and was reassessed in 2005. This assessment was taken from a number of the same vantage points that were used in the daytime assessment (see Appendix 14.3 for night time photographs taken in May 2000).

14.3 Visual assessment

14.3.1 The visual assessment considers the site and its surroundings focusing on a radius of approximately 2.5km. It is generally considered that observers beyond this distance are unable to perceive much detail, however, the potential for effects (such as changes to skylines) at greater distances is considered.

14.3.2 Views have been assessed from an average height of approximately 1.75m above ground level.

14.3.3 A consideration of the combination of the sensitivity of visual receptors and the magnitude of the change determines the level of significance of the predicted impact. Properties/settlements and roads are considered to be of high sensitivity,

whereas industrial landscapes are considered to be of low sensitivity. The magnitude is determined by the distance from the viewer, the extent of change in the field of vision, the proportion or number of viewers affected and the duration of activity apparent from each viewpoint, or a sequence of points that may have transient views e.g. along a road. In visual assessment greater weight is given to the visual impacts of the development as seen from public viewpoints, rather than upon private properties, though these are also given due consideration.

14.4 Landscape character assessment

14.4.1 The assessment analyses the sensitivity of the landscape, which is a measure of its capacity to accommodate change without loss of character. The magnitude of landscape effects depends upon the extent to which the landscape changes are perceptible in the wider context. In the context of the proposed IFFDC the relationship of the site to the adjacent settlement areas, to individual properties or groups of properties and to transport corridors and rights of way is examined. As the proposals involve a permanent change to the environment of the area, the long-term residual changes are also assessed.

Value

14.4.2 Table 14.1 explains how criteria are applied to arrive at an assessment of landscape value. It is derived from the DETR 'Guidance on the Methodology for Multi-modal Studies', as amended in the GLVIA, Second Edition. These criteria have been applied to this assessment.

Value		Typical criteria	Typical scale	Typical examples
High	Exceptional	<ul style="list-style-type: none"> High importance and rarity No or very limited potential for substitution. 	International, National	World Heritage site, National Park, AONB.
	High	<ul style="list-style-type: none"> High importance and rarity Limited potential for substitution. 	National, regional & local	National Park, AONB, National Scenic Area, AHLV / AGLV etc.
Medium	Medium	<ul style="list-style-type: none"> Medium importance and rarity Limited potential for substitution. 	Regional, local	AHLV / AGLV, Regional Scenic Areas etc.
	Medium-Low	<ul style="list-style-type: none"> Medium importance and rarity Some or good potential for substitution. 	Regional, local	Undesignated but value expressed for instance in demonstrable use.
Low	Poor	<ul style="list-style-type: none"> Low importance and rarity. 	Local	Areas identified as having some redeeming feature or features and possibly identified for improvement.
	Very poor	<ul style="list-style-type: none"> Low importance and rarity. 	Local	Areas identified for recovery.

Magnitude

14.4.3 Table 14.2 explains how criteria are applied to arrive at an assessment of magnitude and is derived from the DETR 'Guidance on the Methodology for Multi-modal Studies', as amended in the GLVIA, Second Edition. These criteria have been applied to this assessment.

Table 14.2 Criteria for the assessment of magnitude	
Level	Typical criteria
High	Total loss of or major alteration to key elements/ features/characteristics of the baseline, i.e. pre-development landscape or view and/ or introduction of elements considered to be totally uncharacteristic when set within the attributes of the receiving landscape.
Medium	Partial loss of or alteration to key elements/ features/characteristics of the baseline, i.e. pre-development landscape or view and/ or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving landscape.
Low	Minor loss of or alteration to key elements/ features/characteristics of the baseline, i.e. pre-development landscape or view and/ or introduction of elements that may not necessarily be considered to be uncharacteristic when set within the attributes of the receiving landscape.
Negligible	Very minor loss of or alteration to key elements/ features/characteristics of the baseline, i.e. pre-development landscape or view and/ or introduction of elements that are not uncharacteristic with the surrounding landscape- approximating the ' no change' situation.

Significance

14.4.4 Overall impacts may be adverse, neutral or beneficial, and are assigned a level on the scale: Imperceptible-Slight-Moderate-Substantial-Severe, taking into account mitigation measures, and at different stages of the project lifecycle. Intermediate levels, such as slight to moderate, may also apply. Table 14.3 assigns criteria to each level, as applied in this assessment.

Table 14.3 Criteria for determining significance	
Level	Typical criteria
Imperceptible	The degree of change is so small as to have little or no effect
Slight	The proposals have some, but only a limited effect within the mainly local context
Moderate	The proposals have a noticeable effect within the context of the wider area
Substantial	The proposals have a large effect within the context of the wider area
Severe	The proposals are wholly out of character with the existing situation, both locally and on the wider scale

14.4.5 Additional information regarding the threshold criteria applicable to landscape and visual impact assessment is given in Appendix 6.0 of the GLVIA, Second Edition.

14.5 Baseline conditions

Character of the surrounding area

- 14.5.1 The site lies to the east of Exeter within the geographical area of east Devon. The landscape surrounding the site has an even undulating topography with a general rural character.
- 14.5.2 Hedgerow and wooded field boundaries, with scattered rural properties and small settlements connected by lanes and minor roads, fragment the agricultural landscape. Due to the proximity of the city of Exeter, high voltage power lines, the A30 trunk road and the M5 further dissect the landscape.
- 14.5.3 The flat-bottomed river corridor of the River Clyst known as Clyst Valley, runs through the centre of this lowland area, at a level of 9.5m AOD. The landscape around the river corridor does not rise dramatically and within a 2km radius slopes to 30-35m with one high point of 45m AOD at one point in the west. The area of the Clyst Valley is an area prone to localised flooding and this is the case with the site area as this lies adjacent to the river and partially with its flood plain.
- 14.5.4 The general landscape description of the area is given as ‘Devon Redlands’ within the ‘Countryside Agency’s Countryside Character Initiative for England’. This refers to the distinct red colouration of the sand and sandstone that underlies this region and appears within the building materials of the surrounding area. The landscape character is described as comprising an ordered agricultural landscape of arable and pasture fields, broken up by villages, hamlets, farmsteads and winding lanes with settlements becoming denser around Exeter where roads, railways and, to some extent, the airport begin to dominate the landscape. The area lacks woodland of any size; however, small farm woodlands and thick hedgerows containing numerous trees lend a wooded feel to the landscape.
- 14.5.5 Devon County Council has undertaken a more detailed landscape appraisal ‘The Devon Landscape – an Appraisal of Devon’s Landscape, published in 2002. This subdivides the character areas identified by the Countryside Agency; the site lies in the area described as ‘mid-Devon farming belt’. The key characteristics of this zone are as follows:
- flat or rolling mixed farmland with distinctive red soils;
 - relatively little woodland, meaning hedgerow trees are an important landscape element;
 - major road and rail corridors; also the route of transmission lines;

- heavily settled, by Devon standards, with many villages and scattered farms and a number of large towns; and
- cob and thatch buildings.

14.5.6 Devon County Council has included a policy within the Devon Structure Plan (adopted October 2004) aiming to conserve Devon's landscape character:

Policy CO1

Landscape Character and Local Distinctiveness

The distinctive qualities and features of Devon's Landscape Character Zones should be sustained and enhanced.

Within the context of the broad characterisation, Local Planning Authorities should undertake more detailed assessments of landscape character in order to identify priority areas for the maintenance, enhancement and/ or restoration of that character and provide an appropriate policy framework in Local Plans for each area.

Policies and proposals within each part of Devon should be informed by and be sympathetic to its landscape character and quality.

14.5.7 East Devon District Council has designated this site for the Intermodal Facility as part of the Exeter Area of Economic Activity (East Devon Local Plan January 2002, Revised Deposit September 2003). The land adjacent to the site on the western side has been designated as a 'Green Wedge', which circles the northern and eastern sides of Exeter. This is open land between Exeter and the Exeter Area of Economic Activity, which is to be retained to help maintain the separated identities, landscape settings and to avoid the coalescence of the settlements.

Policy EN4 (Development in Green Wedges)

Within Green Wedges, as defined on the proposals map, development will not be permitted if it would add to existing sporadic or isolated development or damage the individual identity of a settlement or could lead to or encourage settlement coalescence.

The character of the site

14.5.8 The site itself rises from 10m in the west to 20m in the east, on land occupied by Hayes House. The main site use and that of the surrounding landscape is agricultural, mixing arable and grazing. The fields are fairly large, bounded by deciduous hedgerows and in places low banks. The River Clyst is situated on the western site boundary where the fields run boundaries perpendicular to the river

and are generally open in character and contain fewer large tree stands and complete hedgerows. This open character is a good indication that regular flooding affects the vegetation here.

- 14.5.9 Moving away from the river, the field boundaries become a combination of hedge banks and dry ditches, often with the ditches on both sides of the bank, isolating the hedgerow. This is a common feature of the surrounding landscape, combining drainage and ditches with boundary alignments. Where the water bodies are wider and older, for example on the edge of the floodplain, established woodland follows the courses, providing tall stands of alder, willow and ash. On the drier hedge banks and hedgerows on slightly higher ground, are mature oak trees, some of considerable age.
- 14.5.10 The main north and eastern site boundary hedge has evidence of management by laying, with some tree stools up to 1m diameter. The rows combine oak and alder with hawthorn, blackthorn, holly and dog rose and are managed by flailing to heights of between 2m and 3m, allowing the larger oak trees to become standards within the lines. The connecting rows that split the fields are younger and have not been managed as well, overcrowded with maturing trees of 10m and over. This provides linear windbreaks and screens, rather than secure stock proof, field boundaries, although the majority of the fields in this area are arable.
- 14.5.11 In summary, the area can be described as attractive, although not of especially high quality due to the presence of visually intrusive energy and infrastructure features. At a local level the villages enjoy a rural setting that includes views to and along the Clyst Valley, therefore the landscape value is considered medium to low with a medium sensitivity.

Visibility of the site

- 14.5.12 The site is located in a low flat area and due to the lack of variation in the landform of the site and the surrounding landscape, the main views into the site will be from properties on the site boundaries. Figure 14.2 provides an analysis of the landscape features and the visibility of the site. Intervening hedgerows and tree stands block views into the site area particularly from properties in Clyst Honiton on the south west boundary and properties off Station Road to the east. From these points the site is only visible where gaps exist in the boundary hedgerows.
- 14.5.13 Views of the site area are gained from the farm properties higher up the valley sides to the north and west and from within the village area of Blackhorse also to the west. The combination of low gradients and intervening vegetation along the western site boundary effectively screens the eastern part of the site area, from these directions.

14.5.14 As the land rises to the west, there are clearer views of the site, in particular from the streets around Pinhoe, on the north east fringe of Exeter where the land rises to 80m. However, these are distant views at over 2.5 km from the site, crossed by high voltage power lines, the main line railway and the M5 motorway. Points within roads, lanes and footpaths to the east and south of the site were assessed however it quickly became apparent that the site was visually secluded from these areas.

14.5.15 On public highways and footpaths, the site was visible from the C832 on the southern site boundary and Blackhorse Lane and Tithe Barn Lane in the west. The site is also visible from the public right of way that runs north south, along the western valley side, connecting Clyst Honiton via Mosshayne Farm, with the B3181 in the north. From this route the floodplain area is clearly discernible.

14.5.16 From all viewpoints at properties and highways in the west, the land adjacent to the River Clyst is clearly visible, however the views into the main eastern sections of the site are well screened by vegetation and topography. The main screening feature is the north south woodland area at the edge of the flood plain that merges with the planting on the edge of the landfill slope. The combination of tall tree species and existing topography, including the closed landfill, provides an effective screen into the site area from views to the north and west.

14.5.17 Generally, the effect of landform and slope aspect is such that the residential areas and isolated farm properties, with the exception of Hayes House, in the locality do not overlook the site.

14.6 Potential impacts

Potential impacts upon landscape character (see Table 14.5a)

14.6.1 The main impacts that will affect the landscape character of the site and the surrounding area, as a result of the proposed development, are identified as:

- a permanent change in land use, from farm land, to built development;
- the loss of hedgerows and vegetation to zones of built development; and
- the provision of structural landscape planting on the boundaries to the development area.

14.6.2 Impacts will be affected by the proposed phasing of the development and the time scales over which this will take place. The changes vary during construction, on completion and once the proposed planting has matured. Table 14.4 summarises the potential impacts on the landscape character.

Table 14.4 Potential landscape effects	
Potential effect	Cause and significance
Landscape change (principally landform and land cover)	<ul style="list-style-type: none"> • The character of the central and eastern areas of the site will change permanently from farmland, former landfill and from a sand quarry to a large scale built development with access roads and a rail link. Hedgerows and vegetation around the former landfill will be lost. The magnitude of this change is high and the impacts are substantial to severe adverse in the short term reducing to moderate adverse in the long term as the proposed planting matures. • The landform in the development areas will also change permanently, as the development will need to be at the same level as the railway. This is a lower level therefore reducing the impact of the height of the buildings. The magnitude of this change is high and the impacts are substantial adverse in the short term reducing to moderate adverse in the long term. • The landform and land cover of the western areas will not change, it will be enhanced by proposed planting, gapping up of hedgerows and creation of a wet meadow. The magnitude of this change is low and the impacts are slight beneficial in the short term increasing to moderate beneficial in the long term.
Buildings or structures	<ul style="list-style-type: none"> • The only buildings and structures within the existing site are those of Hayes Farm on the central southern boundary. This will be demolished to make way for the development. The proposed development consists of large portal steeled framed with profiled steel clad buildings in the central and eastern areas. The magnitude of this change is high and the impacts are substantial to severe adverse in the short term reducing to moderate adverse in the long term as the proposed planting matures. • The western areas of the site (within the floodplain) will not have buildings or structures.
Change to land management	<ul style="list-style-type: none"> • The site is currently managed as arable and grazing farmland. The grazing style management will continue in the western area of the site; the rest will change to built development. The magnitude of this change is high and the impacts are substantial adverse in the short term reducing to moderate adverse in the long term.
Landscape features	<ul style="list-style-type: none"> • The main landscape features within the site apart from Hayes farm are the hedgerows and hedgerow trees, the woodland and vegetation around and to the north of the former landfill site and the former sand quarry. These will be lost within the development areas and only retained along the boundaries. The former sand quarry will be lost to development. The magnitude of this change is high and the impacts are substantial adverse in the short term reducing to moderate adverse in the long term. • The buildings will cause significant skyline effects when viewed from certain areas.

14.6.3 In general terms the site contributes to the overall landscape setting of gently undulating fields and low lying rural, river corridor and appears to have a landscape character common to this area of east Devon. Parts of the site and the surrounding area contain a number of visual detractors that reduce the quality of the landscape. These include the mothballed quarry, high voltage pylons and infrastructure features (including the airport to the south of the site), indicative of the pressures on rural land located on the fringe of Exeter.

14.6.4 During the construction phase of the development the impact on the local landscape would consist of the following:

- earthworks to form development plateau;
- building construction would be visible and would include the use of cranes etc required for large-scale construction work. However this impact would be of a relatively short duration, occurring when individual elements of the development were constructed;
- construction traffic would be evident on the local road network; and

- other offsite impacts would include the construction of the Clyst Honiton bypass considered in a separate EIA, prepared for Devon County Council by Parsons Brinckerhoff Ltd.

14.6.5 These elements are considered of high magnitude and as substantial to severe adverse short-term impacts.

14.6.6 The development of the site will require the removal of several sections of hedgerow across the site. The lengths removed will be the less significant east west rows in the centre of the site, with the important eastern hedgerow and the western woodland area retained. The proposed woodland planting, as part of the development proposals will significantly enhance the hedgerows along the C832 verges on the southern site boundary. The development and its associated road frontage proposals will visually enhance these verges in the long term.

14.6.7 Where development is shown to cross the area currently occupied by the closed landfill the boundary planting for a short length will be reduced in width. This may result in an increase in views from the west into part of the western part of the development site reducing the effective visual screen of the linear wooded boundary. The potential impact can be reduced through new planting in combination with hedge banks and ditches. These features will help to protect the new planting located on the edge of the flood plain where it could be adversely affected by seasonal flooding. The planting will define the edge of the river corridor in time making a positive character contribution to the landscape and protecting views from the west.

14.6.8 In the long term the movement of vehicles to and from the site would have to be considered especially where this could affect local roads. However, traffic associated with the IFFDC will use the Clyst Honiton bypass and not the existing local network (C832) which may result in a reduction of traffic particularly compared to its former A30(T) status. The visual impact of traffic at the Clyst Honiton bypass have been considered in the ES prepared by Parsons Brinckerhoff.

Visual impacts (see Table 14.5(b))

Views from settlements and properties

14.6.9 The topography of the landscape with its gentle gradients, tree and hedgerow cover reduces views into the site from the south and east. Development of Phase 2 would potentially impact on properties close to the eastern boundary i.e. within the housing developments on Cotterell Road and Shercroft Close in Shermoor. These properties have filtered views into the Phase 2 development site area because the boundary hedgerows are less dense; these views will be more open in winter. The

sand stockpiles that were once part of Hayes Quarry were visible from these viewpoints. However, the buildings shown on the masterplan for Phase 2 are set back further into the site than the stockpiles were and would therefore be less visible as the overall height would be similar. The site was not visible from other points around Sher Moor. These impacts are considered slight adverse to imperceptible and are illustrated on Viewpoints 7, 8 and 20 (see Appendix 14.1).

14.6.10 As the land rises to the north, properties that are set off the B3181 may have views of the site. These include the properties of Brockhill, Kerswell House and Kerswell Barton and as all these properties are accessed via private drives. It was not possible to assess the impacts from the residential properties, this includes the National Trust land to the north of the rail line. However, elements of the Phase 1 and 2 development will be visible from land to the north.

14.6.11 From western viewpoints the retained north to south woodland belt will screen the northern sections of the development. As the southern sections of the woodland and existing hedgerow will be removed to accommodate the development and its new access, views will be available of the lower section of the site. These impacts are considered to be moderate to substantial adverse reducing over time as the proposed perimeter planting matures along the western boundary of the development. These viewpoints are illustrated on viewpoints 11, 12 and 15 (Appendix 14.1).

14.6.12 From elevated points in the west the visual impact of the development will be slightly higher although still partially screened by planting on the edge of the flood plain. Hedgerows and tree stands, 3-8m high, within the intervening landscape combined with distances of over 2km, will reduce any significant impacts. Building design and quality will also help to reduce the visual impact, for example; when viewed at these distances low, pitched roof buildings are a common sight within the agricultural landscape.

14.6.13 The proposed development will be visible from on Mosshayne Farm to the north west of the site. This viewpoint will observe the development through the intervening overhead power lines that already affect the visual quality of this viewpoint location. As the development would be partly screened by the railway embankment it should not have a significant effect on the quality of the views from this location, although it will be visible. To the immediate west of the site, are a series of buildings at the end of Tithe Barn Lane. Due to the elevation of the property, at 20m AOD the development will be visible beyond the woodland boundary although again the quality of the existing view is lessened by the presence of overhead power lines. These are illustrated on viewpoints 12, 14 and 15.

14.6.14 The site will be visible from the edge of Clyst Honiton village, in particular those properties facing onto the C832, that have views into the southern section of the site and will be able to clearly view the site once the hedgerow boundaries have been removed. Potential impacts are considered to be substantial adverse, reducing on maturity of the landscape measures proposed for the site boundary and entrance point. Long-term impacts will comprise development rooflines viewed beyond the boundary tree planting. See viewpoints 9 and 10 (Appendix 14.1) as representative of those from Clyst Honiton.

Views from highways and public rights of way

14.6.15 The view of the site area from the north is available at points on the B3181, where the roadside tree cover is thinner, particularly from the bridge over the M5 adjacent to a point named as Withy Bridge. From this elevated point the site appears as part of the general rural landscape, beyond the railway line, set amongst hedgerow boundaries, and scattered buildings. Development will be visible although the significance of the impact on the visual amenity from these points will be dependent on the final heights and design (including colour) of the buildings. These viewpoints are illustrated on 17, 18 and 19 (Appendix 14.1).

14.6.16 The site is currently visible from the public footpath, which runs northwards alongside the River Clyst western bank turning up the slope to Mosshayne Farm. This forms the only public access close to the site. Views from the path are similar to those described for settlements to the west and Mosshayne Farm. The importance of the flood plain with respect to views from the west is characterised by the footpath viewpoint, as the foreground will remain essentially unchanged except for vegetation management. The impacts are considered to be substantial to moderate adverse reducing over time as the proposed planting matures (see Viewpoint 13. Appendix 14.1).

14.6.17 In general, the potential visual impact of the development is considered to be moderate, adverse in the long term from most viewpoints around the site boundary and within the local landscape. From all these viewpoints there is a possibility of a view of the rooftops and facades of the proposed buildings, depending on their scale. The greatest potential visual impact will be from the section of the C832 from Clyst Honiton to Hayes Farm, adjacent of the southern boundary of the site. This route will overlook the southern part of the development and be affected by the new roundabout proposal to access the site in the short term. In the long term, boundary and internal landscaping measures to the site will improve the quality of the landscape in this area and the views obtained along the road corridor.

14.6.18 The National Trust owns land to the north of Exeter St Davids Waterloo rail line, which forms part of the Killerton Estate and Hall located in excess of 5km to the north

of Exeter Gateway. Due to the distance, the application area is not visible from the main visitor attraction areas that are open to the public. There is however a footpath ('The Buzzard Walk'), which crosses over the M5 over a high level bridge, where, following construction of buildings, long distance views may be apparent.

Summary of potential impacts and mitigation.

14.6.19 Summary Tables 14.5(a) and 14.5(b) provide an analysis of the landscape and visual effects associated with the earthworks, construction and operation phases of the development.

Photomontage (see Appendix 14.4)

14.6.20 Photomontage has been used as a technique to visualise Phase 1 of the development area, following construction of the proposed warehousing. The photomontage are based on the indicative masterplan for the Exeter Gateway. In the detailed design actual building footprint will depend on take up at the time therefore the floor dimensions may change but not the height of buildings as identified in the photomontage. Two photo viewpoints were chosen to represent the main aspect of the development from the villages of Clyst Honiton and Shermoor. A third photo viewpoint is located on the public footpath to the north west of the site. The locations of these viewpoints are shown on Figure 14.1

14.6.21 The photomontage from Clyst Honiton was taken from the lay-by situated on the south west corner of the application boundary (Viewpoint 9). From this viewpoint the proposed warehousing will be clearly visible, although filtered to a certain extent by the foreground vegetation comprising the boundary hedgerow. The edge of the development plateau will be visible, as it will be raised by 2 to 3m from the flood plain. The slope would be planted with woodland species, although this planting would have little effect in the early years of the development. The site access is not readily visible, however any signage and HGV movements will be seen along stretches of the internal access road. In the background the embankment created on the eastern boundary of Phase 1 is visible, which would be seeded with a suitable grass mixture. It is unlikely that the freight trains would be readily visible, although train movements may be noticeable.

14.6.22 The photo viewpoint in Shermoor was taken from Station Road with a view across the intervening meadows towards the Phase 2 development area (Viewpoint 7). The hedgerow on the eastern boundary of the study area provides a substantial screen between the village and the development. The tops of the stockpiles located within the quarry are visible behind the hedgerow boundary, which would be strengthened by additional planting. From this viewpoint the buildings proposed for phase 1 of the development would be visible in the distance, with the roof shapes being evident.

- 14.6.23 The photo viewpoint taken from the public footpath provides an indication of the buildings from the west of the site (Viewpoint 12). From this location the woodland located within the application boundary, and adjacent to the flood plain, obscures the rail line itself. The majority of this woodland would be retained in the northern part of the site. However, further to the south the existing woodland (adjacent to the closed landfill) would be removed and the embankment on the edge of the development plateau would be visible. New woodland planting would eventually mature to provide a partial screen along this boundary. The roofline of the buildings would be visible, internal HGV traffic on the access road would also be visible as glimpses through the boundary hedgerow.
- 14.6.23 The outline of the building has been based on a uniform height of 20m from the floor to the eaves. This represents the maximum elevation anticipated for building construction. Should the final building dimension be of a lower overall height, the visibility would be reduced. Reducing the height of the outer facing portion of the buildings, or using a split-level design could achieve a similar effect. These factors should be taken into account during the detailed submission.
- 14.6.24 The photomontage have assumed the use of certain colours for external walls to buildings, the adoption of bright colours, to suit company logos or livery may increase the impact of buildings. Therefore the use of colours and tones to reflect the wider landscape setting would reduce the magnitude of the visual impact. Information on colour, height of buildings and other external details should be submitted with the detailed applications for individual units within the site.

Night time lighting

- 14.6.25 A series of photographs were taken on and around the site and the key night time views are illustrated in Appendix 14.3.
- 14.6.26 Visual impacts associated with night-time lighting would be restricted mainly to the north and west and from Black Horse village and the A30 to the south. New lighting associated with the construction of the development would be clearly visible in several viewpoints from these locations. However, there are at present other sources of night-time lighting that cause an impact from several of these viewpoints. These include the lighting on the A30, M5 and Exeter airport as well as other villages and towns in the distance.
- 14.6.27 Exeter Airport has a high night time lighting impact at certain locations to the north and west, the main dominant source of lighting coming from the airport buildings. The A30 and M5 also have significant night time impact within the landscape at various locations. The Skypark development will be located between the A30 and

Exeter airport and so will also contribute to night time lighting impacts on the surrounding landscape.

14.6.28 The Clyst Honiton bypass will extend existing lighting to the north of the A30, and has been considered in the EIA prepared by Parsons Brinckerhoff Ltd for Devon County Council.

14.6.29 The possible night-time lighting impacts from the development will merge with the other existing and proposed lighting sources, although the extent and density of night lighting will increase as a result of the IFFDC development and Skypark. At other locations around the site night time views will either be non-existent due to intervening structures, vegetation and topography or will be restricted to just the lighting glare above the hedgerows and other vegetation.

14.7 Mitigation (see Tables 14.5(a&b))

14.7.1 The development of the site is defined by environmental constraints that have effectively formed the site boundaries and set a limit to the developable area. This has had a number of benefits in terms of the landscape character and the resulting visual impacts of the development. The proposed urbanisation within the development footprint will be visually significant in terms of its scale and massing and will be dissimilar to the existing and surrounding landscape. However, the proposals for Skypark to the south of the C832 would also result in the spread of built development away from the airport. In order to ensure that the potential impacts on the landscape and visual impact are minimised a number of measures will be undertaken including:

- retaining significant areas of woodland and hedgerows around the site, as part of the landscape character;
- gapping and thickening existing hedgerows around the perimeter to protect distant views across the landscape and ensure good landscape screening for local views. This will include landscape measures across the floodplain area where appropriate to ecological aims;
- improve and maintain the landscape quality of the Clyst Valley;
- screen planting and landscape improvement measures provided around the site entrance point and along the C832 verges;
- internal landscape measures following development edges and infrastructure;
- placement of new hedgerow and tree planting on bunds to avoid water logging as planting may be affected by site drainage and general damp conditions;

- advance peripheral planting to allow screens to establish; and
- the use of local native species to form development structure and infrastructure planting.

14.7.2 Traffic routes to the site will preclude the use of smaller lanes and back roads in the locality, as the route of the C832 (the former A30) will be the only route available to construction traffic. This road links to east and west routes and directly onto the motorway network, not causing significant adverse impacts to local residents. Following construction, the Clyst Honiton bypass to the A30(T) will carry all traffic from Exeter Gateway, with the exception of local traffic.

14.7.3 The design of buildings and structures will be a primary factor in the short and long term impacts of the development. The structure design, including materials and finishes will complement the landscape character and reduce the long-term impacts of the development.

14.7.4 The landscape mitigation measures outlined above will also provide measures for restricting the night time lighting impacts of the development. Gapping and thickening existing hedgerows and new screen planting will protect distance and local night time views of the development. The layout of the buildings, structures and associated lighting will also be a key factor in the short and long term impacts of the development.

14.7.5 The night time lighting impact will potentially come from three sources within the development, these are the working area lighting, the road transport areas within the compound and the boundary security fence lighting.

14.7.6 In order to ensure that these night time lighting impacts are minimised a number of measures should be undertaken including:

- careful planning of the working area, restricting this to within the centre of the site, and thus screened by the surrounding buildings;
- lighting on buildings will be directional and face downwards, using shades to avoid glare, as appropriate;
- on the perimeter road, use of ground level lighting, or if overhead lighting is to be used, then use of cut-off light fixings to reduce glare and direct light downwards to the road; and
- security lighting can be sensor activated to avoid constant light impact. These can be positioned to reduce glare experienced at residential properties.

Landscape management

14.7.7 The landscape measures implemented around the site area will require effective maintenance in the short term to ensure the establishment of the planting and this will need to be followed by a long term management regime for perimeter planting and the internal development areas. This will be necessary to ensure the success of the whole scheme and maintain low long-term impacts.

14.8 Cumulative effects

14.8.1 The effects of the Skypark, Exeter Gateway and Clyst Honiton bypass would inevitably lead to a greater sense of urbanisation on the western edge of the airport. However, the Skypark and Exeter Gateway developments are not particularly intervisible from vantage-points identified in both EIAs. The photomontage visualisations of Exeter Gateway provide an interpretation of actual visibility of the site from the main residential areas near to the site from which it can be seen that Skypark would not also be readily visible. At completion of both proposals the character of the C832 from Clyst Honiton to Coachfield House would be changed significantly. These changes include the altered road layout and the entrance formed to Exeter Gateway and the Clyst Honiton bypass. The scheme provides for perimeter landscape works to both sides of the C832 such that in time the building and other infrastructures will be largely screened from view.

14.9 Residual impacts

14.9.1 The immediate visual effect of development will be moderate to substantial adverse especially during the construction phase. This will be due to the necessary removal of boundary and internal hedgerows, opening the site to the surrounding areas. Once the proposed planting measures are established and begin to mature these impacts will gradually reduce. If planting managed to maturity and building design is in keeping with the agricultural character, the long term visual impact of the development will be considered as low.

14.10 Summary

14.10.1 The site is not of any high landscape value, but as it is in agricultural use it contributes to the wider landscape of gently undulating fields characteristic of this area, especially in terms of the landscape quality of the Clyst Valley. A well-designed, high quality built development with sensitive planting infrastructure would minimise the impacts on the landscape amenity of the area and the visual impacts from identified viewpoints.

Table 14.5 (a) Impact on landscape character - summary assessment matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Construction phase:										
Devon Redlands landscape character area.	Loss of agricultural land adjacent to Exeter Airport - an area that it is acknowledged is more dominated by the urban character east of Exeter.	*					Adverse	Lt, Ir	Minor	Retention of existing hedgerows and trees. New tree and hedgerow planting, perimeter woodland planting, gapping up of existing hedgerows and retention and enhancement of wet meadows in the River Clyst flood plain.
Mid Devon Farming Belt landscape character area.			*							
Pebble Bed Heaths landscape character area.				*						
Exeter & Estuary Fringe landscape character area.				*						
Site Character Area, site features and character.						*				
National Trust land and property Brockhill					*					
Operational phase:										
Devon Redlands landscape character area.	Exeter Gateway has been identified as a part of the Exeter Area of Economic Activity and is consistent with policy in the EDDL	*					Adverse/ Neutral	St, Ir	Minor	No mitigation measures required
Mid Devon Farming Belt landscape character area.			*							
Pebble Bed Heaths landscape character area.				*						
Exeter & Estuary Fringe landscape character area.				*						
Site Character Area, site features and character.						*				
National Trust land and property Brockhill					*					
Key I = International N = National R = Regional D = District L = Local St = Short term Lt = Long term , R = Reversible. Ir = Irreversible										

Table 14.5 (b) Visual impacts - summary assessment matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Views from floodplain within site (see Viewpoints 10 and 11 taken on footpaths, with floodplain in the foreground.	Construction phase: in the foreground the fields within the floodplain will be unaffected, except for landscape works, woodland, wet meadow etc. In the background remediation and earthworks will be visible, filtered through intervening hedgerows. The demolition of Hayes Farm and change to the landform will alter the aspect of view (viewpoint 11). The rail terminal will not be visible, however the buildings will be, as the rooflines will break the skyline in the mid distance (viewpoint 10).				*		Adverse	St, Ir	Moderate	Retention of existing hedgerows and trees, where practical on the western boundary of the site. Where vegetation is removed along the boundary, this will only take place after the main earthworks in Phase 1. Where appropriate temporary soil mounds will be used to provide temporary screens on the western boundary. Details of vegetation removal and screening mounds will be submitted with the detailed application for Phase 1 construction works.
	Operational phase: HGV traffic entering the site along the access road will be visible, other site operations will be screened by the buildings (the majority of site activity will be adjacent to the rail terminal).					*		Adverse	Lt, Ir	Minor
Views from the adjacent former A30, including residential properties and Clyst Honiton (see Viewpoint 9 taken from the edge of the layby).	Construction phase: in the foreground the fields within the floodplain will be unaffected, except for landscape works, woodland, wet meadow etc. In the background remediation and earthworks will be visible, filtered through intervening hedgerows. The demolition of Hayes Farm will remove a focal point from the view. The change to the landform will alter the aspect of view, the embankment to the former A30 will be visible. The rail terminal will not be visible, however the buildings will be, as the rooflines will break the skyline in the mid distance.				*		Adverse	St, Ir	Moderate	Retention of existing hedgerows and trees, where practical on the western boundary of the site. Detailed application will include phasing of site works to reduce potential visual impact from these elevated viewpoints.
	Operational phase: HGV traffic entering the site along the access road will be visible, other site operations will be screened by the buildings (the majority of site activity will be adjacent to the rail terminal).					*		Adverse	Lt, Ir	Minor
Views from the east, including Shermoor village and Station Road (Viewpoints 7, 8 and 20)	Construction phase: Phase 1 construction will not be visible from these viewpoints				*		Neutral	St, Ir	Negligible	Retention of existing hedgerows and trees on north eastern boundary of Phase 2
	Operational phase: Site activity will not be visible from these viewpoints				*		Neutral	Lt, Ir	Negligible	The extent and width of the hedgerow on north eastern boundary of Phase 2 will be increased, with planting to take place in the first available season, in accordance with landscape works specification to be agreed with the planning authority.
Views from the west on rise to east of footpath to Mosshayne Farm (viewpoints 12 and 13).	Construction phase: foreground open agricultural land, with 450kV pylons dominant. Background, phase 1 area (including closed landfill and Hayes Farm building visible. Earthworks will be visible, particularly mobile plant. Change in landform discernible as a change in colour and texture. New building within the terminal will be visible.				*		Adverse	Lt, Ir	Minor / Moderate	Retention of existing hedgerows and trees. New tree and hedgerow planting, perimeter woodland planting, gapping up of existing hedgerows and retention and enhancement of wet meadows in the River Clyst flood plain. Perimeter planting to take place in the first available season.
	Operational phase: HGV traffic entering the site along the access road will be visible, other site operations will be partially screened by the buildings, however a proportion of the site activity will be adjacent to the rail terminal will be visible.					*		Adverse	Lt, Ir	Minor / Moderate
Views from the west, Blackhouse Lane (viewpoint 14) and Langaton Lane (viewpoint 15) to Pinhoe.	Construction phase: In the foreground hedgerows generally limit views of the site. Through gateways on Blackhouse Lane the west facing field sloping up to Hayes Farm is visible. During earthworks the demolition of the house and formation of an embankment to the former A30 will be visible. The temporary embankment between Phase 1 and Phase 2 will also be visible. Buildings within Exeter Gateway will be visible as they are constructed, but will form a relatively small proportion of the view, where the view is not screened by a hedgerow in the foreground.				*		Adverse	St, Ir	Minor	Detailed application will include phasing of site works to reduce potential visual impact from these elevated viewpoints.
	Operational phase: Operations, concentrated near to the rail terminal; will be largely screened by the buildings constructed during Phase 1					*		Neutral	Lt, Ir	n/a
Views from Pinhoe on the western edge of Exeter.	Construction phase: Site is largely screened by foreground vegetation, adjacent properties and infrastructure. In glimpsed view of the site earthworks and construction would be visible as a change in colour and texture. New buildings will be visible as a whole but difficult to distinguish in detail.				*		Adverse	St, Ir	Minor	Retention of perimeter hedgerows and trees will help to filter glimpsed views into the site.
	Operational phase: Operations, concentrated near to the rail terminal; will be screened by the buildings constructed during Phase 1.					*		Neutral	Lt, Ir	n/a
Views from the north of Exeter Gateway, including the B3181, residential properties and Dog Village.	Construction phase: Site is largely screened by foreground vegetation, adjacent properties and infrastructure. In glimpsed views of the site earthworks and construction would be visible as a change in colour and texture. New buildings will be visible as a whole but difficult to distinguish in detail.				*		Adverse	St, Ir	Minor	Retention of perimeter hedgerows and trees will help to filter glimpsed views into the site.
	Operational phase: Operations, concentrated near to the rail terminal; will be screened by the buildings constructed during Phase 1.					*		Neutral	Lt, Ir	n/a
Views from the National Trust land and property Brockhill	Construction phase: Site is largely screened by foreground vegetation and infrastructure. In glimpsed views of the site earthworks and construction would be visible as a change in colour and texture. New buildings will be visible as a whole above vegetation.				*		Adverse	St, Ir	Minor / Moderate	Retention of perimeter hedgerows and trees will help to filter glimpsed views into the site.
	Operational phase: Operations, concentrated near to the rail terminal; will be screened by the buildings constructed during Phase 1.					*		Adverse	Lt, Ir	Minor
Views from the National Trust Killerton House and Estate	Construction phase: Site is distant and screened by landform and vegetation.	*					Neutral	St, Ir	n/a	None required
	Operational phase: Site is distant and screened by landform and vegetation, no operations will be visible.	*					Neutral	St, Ir	n/a	None required
Night time local views, within 1.5km of Exeter Gateway	Construction phase: Night lighting will be used during the construction works and will be visible when viewed from the south and west.				*		Adverse	St, R	Minor	Retention of existing hedgerows and trees will filter views into the site and reduce impact of lighting. Layout and distribution of lights will be determined during the construction period to minimise the impact of lighting offsite.
	Operational phase: There are four potential sources of night time lights: lighting associated with the rail terminal, lighting on the access roads, lighting on buildings (including signage) and boundary security lighting.				*		Adverse	Lt, Ir	Moderate	Roadside lighting will form an extension to the existing lighting on the former A30 and the link road through the junction 2 on the A30. Lighting adjacent to the rail terminal will largely be screened by the buildings constructed in Phase 1. Lighting on buildings will be designed to reduce scatter and glare. Lights on mobile plant cannot be mitigated.
Night time medium and distant views, beyond 1.5km of Exeter Gateway	Construction phase: Night lighting will not be distinguishable from other lighting in the area, in particular lighting associated with Exeter Airport.				*		Neutral	St, R	Negligible	Retention of existing hedgerows and trees will filter views into the site and reduce impact of lighting. Layout and distribution of lights will be determined during the construction period to minimise the impact of lighting offsite.
	Operational phase: Individual source of light are unlikely to be distinguishable from other lighting in the area, however the total area of illumination will be noticeable larger than existing.				*		Adverse	Lt, Ir	Minor	Retention of existing hedgerows and trees will filter views into the site and reduce impact of lighting
<p>Key I = International N = National R = Regional D = District L = Local St = Short term Lt = Long term , R = Reversible. Ir = Irreversible</p>										

15. CULTURAL HERITAGE

15.1 Introduction

15.1.1 This section is a revised version of the original Cultural Heritage chapter of the Environmental Statement submitted in 2000. The section was originally submitted during 2001, following discussions with English Heritage and the County Archaeologist, as part of the planning application for the proposed development of Exeter Gateway. Since 2001, Cotswold Archaeology Ltd have reported the results of a field investigation within the mineral permission at Hayes Quarry. This work is relevant to the overall understanding of the archaeology within the eastern portion of the study area.

15.1.2 The principal requirement for a revised version of the Cultural Heritage section of the Environmental Statement results from the notification by English Heritage that an area of archaeological remains, within the proposed development area, was being considered within the Monuments Protection Programme (MPP) for statutory protection as a Scheduled Ancient Monument. This process was running parallel to and independent from the planning application, however it was agreed that a meeting should be held to consider all aspects of the proposed scheme and to ensure that all the archaeological issues associated with the proposed development were discussed.

15.1.3 This report contains a more detailed evaluation of the archaeology within the study area, and appraisal of the various potential modifications to the development of the site. This appraisal also includes a discussion and re-evaluation of the potential for mitigation, in light of the consultation with English Heritage.

15.1.4 This report contains information from the original Environmental Statement, the amended cultural heritage section submitted in 2001 and the results of further discussions with Devon County Council Development Control Archaeologist in 2005.

15.2 Baseline conditions

Background and scope of work

15.2.1 The aim of the cultural heritage desk-based assessment is to identify sites and features of cultural significance within and near to the study area, which may potentially be affected by the development. Following the desk-based assessment, the importance of these impacts can be evaluated and appropriate mitigation measures proposed. If necessary, subsequent field-based investigation may be carried out.

15.2.2 The term 'cultural heritage' encompasses archaeology, historic buildings and historic landscape features, as well as sites and features associated with art, literature and historical events. These features may take the form of upstanding structures and remains, buried remains and surface artefact scatters, ranging from prehistory to post-industrial (after c.1770) in date. Such features may be associated with environmental evidence that can be of value for dating purposes and in indicating the character of past landscapes.

Methodology

15.2.3 In addition to field observation, through fieldwalking, geophysical survey and excavation, there are a number of archival sources relevant to cultural heritage. These include the Sites and Monuments Record (a county by county register of known archaeological sites, abbreviated hereafter to SMR), registers of listed buildings, scheduled monuments, historic battlefields and historic parks/gardens, cartographic and historical documents, aerial photographs, place-name evidence and existing published material. For this assessment, research was undertaken at the following organisations and repositories:

- West Country Local Studies Centre, Exeter;
- Devon County Record Office;
- Devon SMR;
- National Monuments Record, Swindon;
- English Heritage.

15.2.4 A walkover inspection of the site was undertaken on 3rd December 1999 by a fully qualified archaeologist. As part of the updating of the current Environmental Statement it was not considered necessary to undertake a further site inspection.

15.2.5 This assessment was carried out in accordance with the principles laid down in the *Management of Archaeological Projects 2* (English Heritage 1991) and with those in the Institute of Field Archaeologists' *Standards in British Archaeology* (IFA 1993, rev.1999) and *Standard and Guidance for Archaeological Desk-Based Assessments* (IFA 1994, rev.1999).

15.3 Study area

15.3.1 The study area comprises a parcel of thirteen fields bounded on the southern side by the C832, to the north by the Exeter St Davids to Waterloo railway line and to the west by the River Clyst. A hedgerow forms the eastern boundary of the study area. Other prominent hedgerows form internal boundaries. The gently undulating land

mostly comprises wet grassland and arable fields and includes a capped landfill site, an active mineral site and a stretch of wet woodland.

Sites and Monuments Record

15.3.2 The Devon Sites and Monuments Record was inspected as part of the original Environmental Impact Assessment in 1999. As part of the revision of the 1999 ES a reconsultation of the Sites and Monuments record was undertaken in order to identify any sites which had been added to the Record in the intervening period. All twenty sites recorded within the study area in the SMR are described in Table 15.1 and shown on Figure 15.1.

Table 15.1 Sites and Monuments Record	
SMR No.	Site Description
SX99SE/3	Group of three Bronze Age ring ditches – cropmark
SX99SE/99	Course of Roman road from Exeter to Dorchester
SX99SE/106	Pre-1890 site of Hayes Farm
SX99SE/153	Prehistoric or Romano-British farmstead enclosure – cropmark
SX99SE/154	Romano-British farmstead enclosure – cropmark
SX99SE/154/1	Bronze Age ring ditch
SX99SE/154/2	Prehistoric boundary ditch associated with ring ditch
SX99SE/155	Post-Roman settlement enclosure – cropmark
SX99SE/156	Scatter of Neolithic flint and chert tools
SX99SE/188	Cropmark – probably prehistoric
SX99SE/196	Field boundaries of varying age
SX99SE/206	Intervention at Hayes Farm (non-antiquity)
SX99SE/206/1	Evidence from 1999 excavations: Neolithic pits and linear features including Mesolithic finds
SX99SE/206/2	Evidence from 1999 excavations: Semi-circular enclosure boundaries and Trevisker style pottery
SX99SE/206/3	Evidence from 1999 excavations: Iron Age elements
SX99SE/206/4	Evidence from 1999 excavations: Post Medieval and modern boundaries
SX99SE/214	Bronze Age ring ditch – cropmark
SX99SE/215	Cropmark – enclosure
SX99SE/286	Hayes Cottage on twenty five inch Ordnance Survey (NGR SX99379424)
SX99SE/294	Prehistoric ring ditch shown as cropmark on 1992 aerial photograph (NGR SX9915 9438)

15.3.3 There are a further forty-six entries recorded within a kilometre of the site.

15.3.4 There are no scheduled monuments within or in the vicinity of the study area.

15.3.5 There is one listed building within the search area, a Grade II listed post-medieval milestone located at SX998946.

Cartographic and documentary research

15.3.6 A list of the maps and written material consulted, which form the basis for the history of the site below, is given in the bibliography (See section 5.11).

Aerial Photography

15.3.7 Aerial surveys of the study area have been carried out on a number of occasions since 1945, revealing several cropmarks within the study area. These sites have

been entered onto the SMR. Archive aerial photographs of the site were studied as part of the 1999 assessment, but no new sites were identified. Information on recent site history and land use provided by the photographs has been incorporated into the history of the site below.

Archaeological reporting within the study area

15.3.8 Formal archaeological study of the survey area commenced in 1974 when a series of cropmarks were identified on aerial photographs. Further aerial photographic study later added to the number of cropmarks identified within the present application area.

1986 Archaeological Evaluations

15.3.9 A programme of archaeological field evaluation undertaken by the Exeter Museums Archaeological Unit was implemented in advance of an application to quarry sand and gravel at the site of the currently operating quarry. The investigation included limited excavation of cropmark features and was supplemented with a programme of archaeological fieldwalking (Simpson, Griffith and Holbrook, 1989).

1995-1996 Archaeological Evaluations

15.3.10 In response to a further application to extract sand and gravel in the south-east corner of the study area (the quarry is currently mothballed) an archaeological evaluation was undertaken by Cotswold Archaeological Trust. The evaluation comprised of the accurate plotting of the identified cropmarks and magnetic scanning of the whole site followed by a magnetic susceptibility survey. The results from the magnetic susceptibility survey highlighted areas of potential human activity and these two areas were subjected to magnetometer and resistivity survey. The results from the geophysical survey guided the selection of areas for further archaeological investigation by trial trenching. This comprised the excavation of 11 test pits and 410m length of trial trench.

15.3.11 As a condition of planning consent a full archaeological mitigation excavation was undertaken in advance of extraction at the Hayes Farm site during 1999. Topsoil removal was monitored and the exposed sand and gravel natural subsoils was planned and sampled by hand. Survival of stratigraphy was assessed as moderate with archaeological remains surviving as negative features cut into the sand and gravel. The interpretation of the features was hindered by their truncation from modern ploughing.

15.3.12 However, evidence was found of human activity during the Early Neolithic, Middle Bronze Age, Iron Age, Romano-British, post medieval and modern periods. Early Neolithic activity was demonstrated in the north of the site in the form of a cluster of pits and gullies, yielding pottery, worked flint and charcoal. Bronze Age occupation

remains were identified across the site, including a ditched linear boundary, an adjacent sub-circular enclosure with internal features and a linear arrangement of paired ditch segments. Iron-Age and Romano-British pottery was recovered in association with the pits and gullies and indicated limited activity from these periods within the vicinity of the site. Post medieval activity was demonstrated by quarrying, tipping and field boundary evidence.

15.3.13 Recent work carried out as part of the environmental assessment for the proposed 'Skypark' development to the south of the site, including geophysical survey, has revealed several archaeological features, despite considerable limitations caused by modern services and structures. Although the character and condition of these features has not yet been ascertained, there is potential for further archaeological features at Exeter Gateway. There was evidently extensive activity at the site during prehistory and, due to the presence of the airfield and its wartime use, it is likely that the Skypark site has experienced much disturbance. This is also the case for the area of the proposed Intermodal Facility and Freight Distribution Centre (IFFDC) which has been subject to large-scale post-war development, in the form of landfill operations and modern mineral extraction, both of which have detracted from the archaeological and landscape context of the development site.

15.3.14 An environmental statement comprising a desk based assessment and geophysical survey was carried out by Devon County Council in July 2005 in advance of the proposed Clyst Honiton bypass. The study area that the proposed bypass statement covered included the south-eastern section of phase 1 and the far south-western corner of phase 2 of the application area for the proposed rail freight terminal. The area of phase 1 which was within the bypass study area was subject to geophysical survey; however, the results in this area were affected by the multi-wired field boundaries and by iron service pipes or cables, and were therefore inconclusive.

15.3.15 The study area has also been investigated by the Historic Landscape Characterisation project for Devon. As part of this survey the majority of the eastern half of the application area (phase 1) was classified as post-medieval enclosure, with a small portion of the phase in the north being classified as modern enclosure. The eastern sector of the application area (phase 2) was classified as *Barton Fields*, large rectangular enclosures which appear to have been laid out between the fifteenth and eighteenth centuries. The western and northern sectors of phase 2 have been classified as post-medieval enclosure and modern enclosure respectively.

15.4 Archaeological and historical development of the study area

Prehistoric and Roman Activity within the study area

- 15.4.1 As a result of the previous archaeological investigations, which have been undertaken within the proposed development area and in its immediate vicinity it is possible to chart the archaeological and historical activity within the study area.
- 15.4.2 The earliest recorded archaeological deposits within the study area were revealed during the 1987 fieldwork. This comprised a single microlith (small flint blade used on an arrow or spear) recovered during fieldwalking. During the 1987 excavations a small pit thought to be associated with later prehistoric features yielded a radio-carbon (C14) date of 8400 ± 150 BP (Simpson et al 1989, 6) (BP = before present, taken as 1950). There was no further evidence for Mesolithic activity within the locality, however this is to be expected due to the ephemeral nature of the remains from this period.
- 15.4.3 Evidence for Neolithic activity was more forthcoming and was revealed during the fieldwalking investigations in 1987 and during the excavations in 1996 and 1999. Pottery sherds were recovered during the 1996 evaluation, which have been attributed to being of early Neolithic date. These occurred within a single pit, though further early Neolithic pits were revealed during the mitigation excavation in 1999. Whilst no form or function could be ascertained for these features, the presence of pottery on the site would indicate some form of settlement in the locality during the early Neolithic period. The finds assemblage (exclusively flint) recovered on the surface in 1987 was predominantly late Neolithic in origin.
- 15.4.4 The Bronze Age features form the most striking group of archaeological features on the site and were the most distinctive to be noticed from the aerial photographic reconnaissance. The 1974 aerial photograph depicted three ring ditches of which two were subjected to archaeological examination in 1987. A third ring ditch was revealed during the evaluation of the rectangular cropmarks located to the south.
- 15.4.5 During the excavation of these features it was shown that there was a degree of variability in the quality of survival in each of the features. The most northerly and largest ring ditch (approximately 31-33m internal diameter) when evaluated was shown to survive to a depth of approximately 1.90m below the present ground surface. The remaining two ring ditches were both physically smaller (c9.5m-10.5m internal diameter) and were much shallower, approximately 0.25m in depth and 0.90m below the current ground surface. Accurate dating was possible for the most northerly ring ditch which yielded a radiocarbon date from an upper deposit of the fill of 1000-790 Cal BC placing the later silting up of the ditch towards the end of the Bronze Age.

- 15.4.6 During the 1999 excavations further Bronze Age features were revealed. These included a Bronze Age enclosure and a linear, parallel, double ditched feature. The double ditched feature has been interpreted as a trackway possibly analogous to upland reeves (Darren Limbert pers. comm.) although with the close association of the ring ditches there is a tentative suggestion that it served a ritual purpose (ibid.). Another feature of Bronze Age date was a burnt mound, located in the eastern part of the present quarry, adjacent to a tributary of the Clyst; part of this feature has been preserved below screen bunding.
- 15.4.7 Limited evidence for occupation during the Iron Age period was recorded in the area with a single sherd of pottery being recovered from a gully feature during the 1996 evaluation. Roman occupation is however more apparent.
- 15.4.8 There appears to be at least two phases of Roman occupation on the site, with a small ditch cut through by a later square enclosure. The apparent regular clearing of the ditches at that time complicates dating evidence of the features. However, a date of the late third century has been forwarded for the square enclosure. The earlier ditch is dated as originating in the mid third century.
- 15.4.9 The precise function and the internal arrangement of the enclosure was not established due to heavy plough damage of more ephemeral structural features. It was however possible to identify that the enclosure potentially had an internal mound, presumably surmounted by a palisade, and was served by a gateway as evidenced by two post holes at the entrance. Evidence for the domestic use of the feature was revealed in a midden deposit (rich in organic material) within the enclosure ditch which contained locally manufactured pottery, roofing tile, South Devon slate and potentially daub. Dating evidence from the square enclosure is problematic. The earliest date for the Roman activity on the site is contained within the midden deposit which dated from the mid second century AD. This material overlies, and is therefore stratigraphically later than the silting material in the ditch, which suggests a late third century date for the decline of the enclosure.
- 15.4.10 The square enclosure was considered to be stratigraphically earlier than a linear feature, interpreted as a large enclosure, which produced a radiocarbon date of Cal AD 390-630. The precise date of the ditch is problematic due to the reliance upon a single radiocarbon date (two other samples from the same feature gave dates of 780-180 Cal BC and 390 Cal BC to Cal AD 50). In addition, there were very few finds recovered from the ditch and those that were, were identified as of Romano-British origin. However, using the dating and other evidence, the ditch has been interpreted as an early post Roman enclosure (potentially the latest date of eleventh century has been suggested based on the lack of pottery associated with sites of a more recent origin). Whether the enclosure was domestic or agricultural could not be established.

Historical development of the study area and its setting

- 15.4.11 The parish and manor of Clyst Honiton, within which the study area lies, first appears in the documentary record as *Hine Tune* in a charter of c.1100. It appears to have been the site of an ecclesiastical outpost for the Bishop and Canons of Exeter since the late eleventh century and indeed remained in the possession of the Dean and Chapter of Exeter Cathedral until the mid-nineteenth century. There are no significant documentary references to the study area pertaining to the post-medieval period, but artefacts found in the vicinity suggest a typical rural landscape comprising of estates and farms.
- 15.4.12 The earliest map of the area consulted was Benjamin Donn's Map of the County of Devon of 1765. Hayes Farm does not feature on this map, though the road now called Station Road and the old A30 are both marked. This would seem to confirm that the Hayes Manor (also known as *Powerhays* and *Dukes Hayes*) mentioned in land ownership documents in 1618 and 1786 is in fact located in the parish of St. Thomas the Apostle, Exeter, as the wording of these deeds suggests.
- 15.4.13 By 1801 a farm had been established within the study area. *Hays Farm* is marked on the Surveyor's Drawing of 1801, and is located towards the centre of the site, roughly at the end of the track. The vicinity of the study area is shown to have a rural character composed of small, irregular fields with scattered farms and wooded patches.
- 15.4.14 The field boundaries depicted on the Tithe Map of 1839 for Clyst Honiton differ from those of the 1801 drawing, with removal and redefinition of hedge borders. The map was in poor condition and parts of the site were missing or obscured. No field names of cultural heritage significance were noted.
- 15.4.15 It is shown on the First Edition Ordnance Survey map of 1889 that by this time the buildings of Hayes Farm had been relocated to the present site, with some alterations of field boundaries to accommodate this change. The Exeter to Waterloo railway is marked, with the road to the east of the site being annotated accordingly as *Station Road*. The old A30 is noted as *Roman Road*, since it follows the line of the Roman route between Exeter and Dorchester. With the exception of the closed landfill, the present field boundaries had been established.
- 15.4.16 Subsequent maps indicate little change. The course of the river Clyst had been artificially altered in the north-west of the site by 1963 as part of the installation of a series of drains. Also sections of the hedge boundaries, which formerly subdivided the present fields were gradually removed to form the current landscape. The closed landfill, granted consent in 1983, reclaimed a small area for agricultural purposes and a number of field drains have been excavated to maintain the agricultural land.

15.5 Site inspection

- 15.5.1 The site inspection comprised a walk around the perimeter of the separate fields of the study area and more detailed inspection of the long ploughed field running alongside the C832. No archaeological features were visible on the ground, although several scatters of pottery fragments were noted. Post-medieval and modern pottery was sparsely distributed in the fields along the eastern boundary of the site, being more frequent in the ploughed field (it should be remembered that the degree of vegetation cover may have influenced these observations). A smaller quantity of scattered plain glazed post-medieval pottery, modern tile and undated unglazed pottery was also noted in the north-easternmost field of the study area.
- 15.5.2 Examination of the hedgerows found that most are of moderate age, as suggested from cartographic study. The condition of the borders of the arable field adjacent to the railway is particularly good, the western edge of which blends with the strip of well-established woodland noted from the 1801 map. The truncated remains of a hedgerow marked on the 1889 map survive in the southernmost field of the study area.

15.6 Design of the scheme

- 15.6.1 In order to assess the potential development impacts upon the cultural heritage, an outline of the proposed development is identified in the following sections.

Phase 1

- 15.6.2 The Phase 1 development landform, extending to approximately 21.5ha, will be engineered to provide a shallow gradient towards the central rail line, working from a datum fixed at the mainline (see Figure 3.1). The rail sidings will be constructed at track bed level of 13.5m AOD, where the track joins the main line. The track bed will be level, or on a gentle incline away from the mainline, along the central section of the sidings so that a proposed future track connection to Exeter Airport can be constructed at approximately 8 - 10m below road level (C832). The development platform has been designed to a minimum gradient of 1 in 200 to aid surface water runoff.
- 15.6.3 In order to achieve this platform a large volume of cut will be required, although a significant volume of fill will also be required to achieve final levels within and adjacent to the flood plain. The excess material will consist primarily of sand and gravel, some of which can be utilised for commercial extraction.

Phase 2

- 15.6.4 The proposed development of Phase 2, extending to approximately 21.8ha, is shown on Figures 3.2 and 3.3. Construction during this phase would require that the void, left as a result of the current mineral permission, be backfilled in order to achieve a suitable pre-development level.
- 15.6.5 Phase 1 of the development will contain the rail head components of the freight terminal. This area will also contain a number of depot sheds and marshalling yards. Phase 2 of the development will contain the majority of the storage facilities on the site.

15.7 Identified impacts and archaeological issues

- 15.7.1 There will be a number of impacts upon the identified cultural heritage features. Due to the requirement for a complete modification of the existing landform to enable rail linkage, there will be a large, adverse impact upon the identified archaeological remains. The remains to be impacted upon comprise the multi-period site to the immediate north of Hayes Farm. These are mostly located within Phase 2 of the development area, with some cropmarks extending within the envelope of the Phase 1 development.
- 15.7.2 The complete remodelling of the ground surface will also have an unknown impact upon potential archaeological sites, which have yet to be discovered. The scale of the impacts can not be assessed at present, however should archaeological remains be located within Phase 1 of the proposed development these would also be adversely impacted upon.
- 15.7.3 Discussions have been held with the Devon County Council Archaeological Officer. He considered that due to the perceived importance and quality of the archaeological remains within Phase 2 of the study area, guidance laid down in Planning Policy Guidance 16 (Archaeology and Planning) should apply, i.e.:

PPG16 para 8:

Where nationally important archaeological remains, whether scheduled or not, and their settings, are affected by proposed development there should be a presumption in favour of their physical preservation.

- 15.7.4 If it were possible, it is the view of the Devon County Archaeological Section that a design solution should be proposed which would seek to preserve the archaeological remains *in situ* and to prevent any adverse impact from development.
- 15.7.5 In addition, it has been considered by English Heritage that the group of archaeological sites at Hayes Farm may be of sufficient archaeological importance

and potentially of national significance to possibly merit inclusion for assessment as part of the Monuments Protection Programme. This places the most archaeologically sensitive area within Phase 2 of the development with a small element located in Phase 1, to the immediate north of Hayes Farm (See Figure 15.1). Should the site be considered to be of national importance a recommendation would be forwarded to the Department of Culture, Media and Sport for inclusion on the Schedule of Ancient Monuments and the defined area will be subject to statutory protection under the Ancient Monuments and Archaeological Areas Act 1979.

- 15.7.6 It is considered by English Heritage that the diversity of archaeological features, representing a variety of archaeological periods, constitutes the remains of an important archaeological landscape. Furthermore, English Heritage also consider that the quality of the survival of environmental evidence within the features on the site is regionally scarce and offers the rare opportunity of studying and understanding former archaeological environments.

15.8 Discussion with English Heritage

- 15.8.1 In light of the discussions with English Heritage further assessment of the archaeological value of the cultural heritage features has been undertaken following the submission of the original Environmental Statement in 2000. This assessment specifically assessed the significance of the cropmark features, particularly the ring ditches, within a regional and national context and reviewed them against other similar sites in the region. Consultations were also undertaken with Neil Holbrook of Cotswold Archaeology with regard to the perceived importance of the Romano-British and later features and as to the general state of preservation of the features at the site.
- 15.8.2 The ring ditches which have been dated by excavation as being of at least late Bronze Age date are considered to be not specifically outstanding or unusual. This conclusion is based on comparison with numerous ring ditches and extant barrows throughout east Devon with particular examples at Upton Pyne.
- 15.8.3 The Romano-British enclosure has also been reconsidered in light of subsequent investigations in the east Devon area. This type of site, when initially identified, was considered as being regionally rare. Aerial mapping and PPG 16 led investigations undertaken in recent years have demonstrated that these particular features are more commonplace than was originally thought.
- 15.8.4 Furthermore the lack of internal structures also detracts from its importance, as there is very little evidence remaining to indicate that it was an inhabited enclosure (the ploughing of the site will have removed the ephemeral internal structures).

- 15.8.5 The later early medieval enclosure has been dated by a single C14 sample placing it in the immediate post Roman period. Two other erroneous samples were discounted on the basis that the feature was stratigraphically later than the square enclosure, which has been dated to the late third century AD. The post Roman date was supported by the lack of any later pottery (primarily post eleventh century) within the ditch. The absence of later pottery within the fill may relate to usage rather than date, indicating a stock enclosure or larger landscape feature rather than a settlement enclosure where cultural material would be expected.
- 15.8.6 This lack of cultural material from enclosure ditches was also noted at a number of other sites in Devon. At Sourton Down, a medieval ditch which enclosed a twelfth-thirteenth century longhouse produced very little dating evidence despite enclosing a settlement site. Similarly at Dunkerswell, Honiton, a curvi-linear earthwork enclosure at first thought to be prehistoric was proved to be late medieval on excavation despite a lack of medieval pottery. These examples would suggest that an absence of pottery may not indicate a definite early medieval date, particularly when considered against the erroneous dating evidence from the radiocarbon samples taken in 1986.
- 15.8.7 The group value of these features also needs to be considered. The site represents a focus of settlement from the Mesolithic period, however it has been shown that the features on the site are regionally unremarkable and it is suggested that the ubiquity of some features within the group may lessen the value of the group as a whole.
- 15.8.8 The contention that the site merits preservation in situ due to the quality of the palaeo-environmental evidence appears to be at variance with the results of the sampling exercise undertaken in 1986. This programme revealed some information regarding the economy of the site during various periods (although the prehistoric was notably poorly represented). However the palaeo-environmental specialist of the 1996 evaluation, considered that
- 15.8.9 *'the lack of palaeo-environmental remains from samples of the present evaluation combined with Pearson's analysis of the adjacent site demonstrate that material suitable for analysis only exists in isolated contexts (such as discussed by Pearson). Therefore any future sampling strategy should be focussed towards intensive opportunistic sampling of such contexts rather than random sampling of all fills of negative features' (Wilkinson in Enright 1996).*
- 15.8.10 This would indicate that palaeo-environmental evidence at the site is dependent upon the presence of specific features, such as the Romano-British midden, rather than being uniformly present in all features of all periods. The assumption therefore that the site holds important palaeo-environmental evidence is not unequivocal and would not merit inclusion as a primary factor in the scheduling of the site.

15.8.11 Where palaeo-environmental remains have been preserved and have been shown to contain evidence, Pearson stated that '*the Romano-British evidence is similar to those found on other Romano-British sites in southern England*' (Pearson in Simpson et al, 1986, 23). This would support the frequency of the material where it survives.

Other Archaeological Issues

15.8.12 Two other cultural heritage issues were identified as a result of the desk-based assessment. These were the identification of a number of historic hedgerows and the setting issue relating to the eighteenth century Carrow Mill, which although unlisted contributes to local historic character.

15.8.13 It has been noted that several of the hedgerows are over one hundred years old, and that the wooded strip by the River Clyst exceeds two hundred years. In order to be classified as historically important, at least one of the criteria outlined in Part 1, Schedule 2 of the Hedgerow Regulations 1997 must be satisfied. Criterion 5a is appropriate to the study area:

5a) [the hedgerow] is recorded in a document held at the relevant date at a Record Office as an integral part of a field system pre-dating the Inclosure Acts

15.8.14 Few of the hedges meet this condition and in view of the considerable alteration to the context of these hedgerows since the Tithe Award, in the form of changes and removal of boundaries, they are considered to be of low archaeological significance.

15.8.15 The setting of Carrow Mill is screened from the proposed development site. The scale of the development and resultant loss of hedgerows proposed on the masterplan will detract from the overall historic landscape character of the area, which form the physical context for the mill. This impact is, however, considered to be of low local importance.

15.8.16 The current Environmental Statement and previous archaeological investigations both in the study area and in the near vicinity of the proposed IFFDC have revealed a number of cultural heritage features. These features are of cultural heritage significance and have been identified by both English Heritage and Devon County Council as of potential national importance. This significance is based on the multi-period nature of the site which includes an early medieval settlement and associated environmental evidence. It is the consideration of this report that a number of the sites are poorly understood and as a result cannot necessarily be defined as of national significance. However, since these features will be affected by the proposed development they would require full mitigation recording in advance of construction of the IFFDC.

15.8.17 It has been demonstrated that the archaeological features at Hayes Farm whilst having been subjected to archaeological investigation in the past still remain uncertain and there are aspects relating to the settlement of the site which remain unresolved. It is therefore considered appropriate that any evaluation fieldwork undertaken as part of the proposed development should be used to further the understanding of the prehistoric and Romano-British settlement of Hayes Farm, prior to a decision being taken on the significance of the site as whole.

15.9 Design options

15.9.1 In light of post application discussions and the notification by English Heritage that the site is to be considered for scheduling, a review of the proposed design and the various other design options was undertaken. The regional importance of the multi-period archaeological site was identified in the Environmental Statement. As a result a series of mitigation measures were identified including further archaeological evaluation of land within the Phase 1 and Phase 2 areas. However, in order to facilitate the development of the IFFDC, the negative impacts on the archaeological sites, both known and as yet unknown, were acknowledged and a mitigation scheme which comprised preservation by record was recommended.

15.9.2 Various design options have been considered in order to remove, reduce or minimise the impacts upon the identified archaeological resource. These include the following:

- Construction of Phase 1 and a reduced footprint within Phase 2;
- Construction of Phase 1 alone;
- Rafting of the archaeologically sensitive area;
- Development to the south.

Construction of Phase 1 and a reduction of development in Phase 2

15.9.3 Construction of Phase 1 and a reduced footprint has been considered. This scheme would effectively retain the archaeologically sensitive areas *in situ*, whether as a scheduled monument or otherwise, and construct the rail freight terminal to the north and south of the archaeological exclusion zone. As the development requires the lowering of the ground surface across the whole of the development area (both Phase 1 and Phase 2) this would effectively entail the retention of the archaeological features on a plinth above the surrounding development site.

15.9.4 This option would be prove to be unfeasible as it would restrict intrasite access between the land parcels separated by the archaeological exclusion zone. Access would not be possible to the isolated northern eastern land parcel (Phase 2) from the

C832 to the proposed Clyst Honiton bypass and would effectively rule out this area for development. The remaining land available for development within Phase 2 would render the development marginal and would drastically reduce the opportunity for expansion.

- 15.9.5 In archaeological terms, should the retention of the archaeological exclusion zone be possible, the land severance created would be unacceptable. The preservation of archaeological features on a plinth above a development area would not be an acceptable setting for a scheduled ancient monument and would divorce the preserved archaeological features from the surrounding landscape which would be detrimental to any amenity value or interpretative role the site may subsequently acquire.

Phase 1 only

- 15.9.6 This option would consist of the development of Phase 1 of the proposed scheme, either with construction proceeding in the small area of archaeological sensitivity or omitting this area completely. Phase 2 of the development would be relinquished in order to permit preservation *in situ* of the archaeologically important remains.
- 15.9.7 This option would be unacceptable due to the reduction of land available for development. By preserving archaeological features *in situ*, this option would halve the development scheme and make expansion outside the Phase 1 development envelope impossible. The construction of the rail head and the associated marshalling yards within Phase 1 takes up the majority of the Phase 1 area. The removal of Phase 2, comprising warehousing HGV facilities and an access road from the Skypark development, from the final design scheme would render the whole development non-sustainable on economic grounds. The storage space which would be lost if Phase 2 were removed from the scheme would place an unachievable pressure on the remainder of the site which would reduce the throughput of the freight terminal and as a result the viability of the whole scheme.

Rafting

- 15.9.8 The option of providing preservation *in situ* by rafting over the archaeological sensitive area was considered. This option is not possible from an engineering perspective, due to the need to reduce the whole of the landform in order to gain access to the main rail line in the north. The intermodal facility requires that all buildings are constructed on a gently sloping development plateau to allow the movement of containers and facilitate the use of interconnecting rail facilities and container handling facilities.

Development footprint

15.9.9 The development area is constrained by the Exeter to Waterloo rail line to the north, and the C832 to the south. It is the confluence of these two transport facilities combined with the potential to provide a relief road link to the new A30(T) and the Skypark/Exeter Airport developments that define the study area as a potential site for an IFFDC. The design of the IFFDC is dictated by the rail link to the main line, which in the case of Exeter Gateway, dictates a two phased development to the west and then east of the rail head. Although there is land available to the west of the Phase 1 development area (i.e. the planning application area), this land lies within the floodplain of the River Clyst and is much closer to residential properties in the village of Clyst Honiton. The western edge of Phase 1 therefore coincides with the boundary of the floodplain, as this also provides sufficient distance to avoid impact on the residential properties.

15.9.10 The potential to encroach on the floodplain has been discussed with the Environment Agency, by substituting land not currently within the floodplain. However, this model for development is not favoured by the EA in this location because there is a control and gauging station on the River Clyst adjacent to the point where the river crosses the C832. Upstream the floodplain for the river is extensive to both the east and west of the river channel. Within the confines of the rail line and the C832, the development footprint for Exeter Gateway, identified in the Environmental Statement, therefore defines land not affected by the 100 year flood plain.

15.10 Discussion (See Table 15.2)

15.10.1 The design of the IFFDC depends upon a sufficient storage space being made available to support the infrastructure required. With respect to Exeter Gateway, the IFFDC will comprise a single spur from the Exeter – Waterloo rail line and two road access junctions, which will feed on to a relief road to the A30(T). This infrastructure will support up to approximately 158,000m² warehousing and storage facilities. Although the final level of B8 usage available at the site may be subject to minor alteration as the development proceeds, the sterilisation of a large area of land would seriously inhibit the potential of the site as an IFFDC.

15.10.2 The preservation *in situ* of the core area of the multi-period site would constrain the development of Phase 2 and to a lesser extent Phase 1 of the IFFDC, leading to the loss of at least 50,000m² of B8 floor space (or a third of the developable area). In addition, because the quarry is located to the south of the core area, the site would be retained on raised ground, not easily accessible.

15.10.3 Other options for maintaining the gross floor area for B8 usage, whilst preserving the core area of the archaeological site, are not practical due to the engineering

requirements of the site and the potential loss of flood plain, within the River Clyst corridor.

15.10.4 Throughout the EIA and planning application process, the potential negative impact on archaeology has been acknowledged and a mitigation design based on preservation by record advanced. This review has demonstrated that it is not possible to redesign the IFFDC to accommodate the core area of archaeological interest *in situ*. The potential for an accurate record of the features of the site, building on data already obtained at Hayes Quarry, is the only practical mitigation approach which would enable the IFFDC be developed at the Exeter Gateway location. The developer is prepared to fund further archaeological evaluation work, as part of a Section 106 Agreement, in the knowledge that these additional studies could identify further areas of archaeological interest and increase our understanding of the core area.

15.11 Conclusion

15.11.1 The manner of the impact upon the identified archaeological resource will be adverse. No design solution can be forwarded which would preserve the archaeological features *in situ* and offer an economically viable or sustainable rail freight terminal. The original design scheme comprising both Phases 1 and 2 of the development and the levelling of the ground surface remains the only viable option.

15.11.2 During the extended consultations as part of the original ES both English Heritage and Devon County Council acknowledged that the preservation *in situ* of archaeological remains within the proposed development area was not possible. Further consultations were made in 2005 to confirm that this position was still correct. The Devon County Council Development Control Officer confirmed that the Council acknowledged that the remains could not be preserved *in situ* without compromising the economic viability or the sustainability of the proposed IFFDC.

15.11.3 In order to mitigate the adverse impacts upon the archaeological resource by the proposed development a comprehensive programme of archaeological evaluation works will be required to be undertaken within the development area, as part of a Section 106 Legal Agreement. Discussions with the Devon County Council Archaeological Development Control Officer have established that the scope of these works will comprise staged investigations comprising geophysical surveys followed by targeted trial trenching of identified archaeological anomalies and in certain cases areas which are topographically favourable for past human settlement. This will establish the presence or absence of further archaeological remains within the development site and will assess the significance, extent and quality of survival of the identified archaeological resource.

15.11.4 In mitigation for the proposed development of the site, a full programme of preservation by record is proposed. This would entail the excavation of all features of archaeological interest, which are subject to development. This will also comprise the full analysis and assessment of all data and the full publication of the results in an appropriate volume or journal.

15.11.5 The benefits of this programme of mitigation excavation would be to considerably enhance the understanding of the prehistoric, Romano-British and medieval settlement of the area.

15.12 Bibliography

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Table 15.2 Cultural heritage - summary assessment matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation measures
		I	N	R	D	L				
Loss of a part of a multi period site on the edge of the Phase 1 development boundary, remainder in Phase 2 development area.	Construction phase: the multi period site is located largely within the Phase 2 development area, however the earthworks required for the construction of the rail terminal would result in excavation close to the western boundary of the feature.		*				Adverse	Lt, Ir	Moderate/ Major	Prior to earthworks and construction in the Phase 1 development area a detailed scheme for the excavation and record of the site will be agreed with the planning authority. The scheme and reporting methods will also be submitted to English Heritage for consultation and approval. English Heritage have agreed this approach to mitigation.
	Operational phase: no impacts predicted						Neutral	Lt, Ir	n/a	The work undertaken prior to the Phase 1 development will provide a detailed archaeological record of the site in its entirety thus negating any further work on this site prior to development of Phase 2.
Loss of as yet unknown archaeological features associated with crop marks within the Phase 1 and Phase 2 development area	Construction phase: Development of Phase 1 will result in the partial loss of features associated with crop marks					*	Adverse	Lt, Ir	Minor / Moderate	A detailed scheme for the excavation and record of crop marks in both Phases 1 & 2 will be agreed with the planning authority prior to earthworks and construction.
	Operational phase: no impacts predicted					*	Neutral	Lt, Ir	n/a	The detailed work undertaken prior to the Phase 1 development will provide a detailed archaeological record of the site in its entirety thus negating any further work on this site prior to development of Phase 2.
Loss of as yet unidentified archaeological features within the Phase 2 boundary.	Construction phase: within the Phase 1 development area but outside the closed landfill, as yet unidentified features of archaeological interest may be lost during earthworks.					*	Adverse	Lt, Ir	Minor	A watching brief during the removal of surface top and sub soils will be agreed with the planning authority prior to commencement of earthworks in the Phase 1 Development area.
	Operational phase: no impacts predicted					*	Neutral	St, Ir	n/a	No mitigation measures required.
Setting of Carrow Mill	Construction and operational phase: The scale of the development and resultant loss of hedgerows proposed on the masterplan will detract from the overall historic landscape character of the area. This setting of Carrow Mill is however, considered to be of low local importance.					*	Adverse	Lt, Ir	Negligible	No mitigation measures required.
Loss of historic hedgerows	Construction phase: Loss of historic hedgerows and woodland. There are several hedgerows that are in excess of 100 years old and the wet alder/ willow woodland in the north west of the site has been identified as woodland on maps dating back 200 years.					*	Adverse	Lt, Ir	Minor	Few of the hedges within the study area meet the criteria of adjacent hedgerow, and in view of the considerable alteration to the context of these hedgerows since the Tithe Award, in the form of changes and removal of boundaries, they are considered to be of low archaeological significance. Wet alder/ willow woodland to be conserved in its entirety.
	Operational phase: no impacts predicted					*	Neutral	St, Ir	n/a	No mitigation measures required.
Key I = International N = National R = Regional D = District L = Local St = Short term Lt = Long term , R = Reversible. Ir = Irreversible										

16. WASTE

16.1 Baseline conditions

16.1.1 In order to allow the proposed development and operation of the Intermodal Facility and Freight Distribution Centre (IFFDC), a number of waste handling and disposal issues require assessment, as follows:

- Closed landfill, treatment during the earthworks phase of the development;
- Waste material generated during the construction phase;
- Waste arising as part of the operation of the IFFDC; and
- Closure and decommissioning of the facility.

16.1.2 Baseline conditions described in this section only relate to the closed landfill, which has also been considered, in part, in other sections of this assessment.

Closed landfill

16.1.3 The site was originally granted consent in 1982/83 to fill a small hollow and restore to agricultural use. The waste disposal licence (No L/6/48/83) was granted to Terry Adams Ltd and allowed 60,000 tonnes of generally inert demolition and construction wastes (including asbestos wastes) to be deposited. The site was restored in 1988 and the licence returned to the County Council.

16.1.4 No monitoring information was readily available from the Waste Regulation Authority when it came to reviewing the closed landfill in 1995. As part of this review, the site was spike tested for landfill gases (June 1995, see Appendix 16.1). The air pressure during the gas survey was 1008 millibars and the air temperature was in the order of 17°C. A total of twenty positions were probed to a depth of 1 metre over the capped surface of the landfill. Levels of CO₂ were generally negligible and no methane was encountered. At one location a carbon dioxide level of 0.6% was measured, in conjunction with low oxygen concentrations. Elsewhere oxygen concentrations exceeded 20% by volume.

16.1.5 It is considered that the closed landfill is in a stable condition and has a low risk with respect to pollution of watercourses, groundwater and atmosphere.

16.2 Potential impacts

Closed landfill

16.2.1 There are four options available for development with respect to the closed landfill. These are as follows:

- Retain landfill in situ. This is not considered as a viable option because of the constraint that the landfill would present to the proposed development in terms of land take and effect on the proposed development plateau.
- Remove the landfill and dispose at an appropriately licensed facility. This would place additional demands upon the regions landfill sites, assuming in the first instance that a suitable facility could be found, and would also cause a temporary increase in road traffic to and from the site.
- Relocate the landfill material to a designed receptor area within the site. This would reduce offsite transport during construction. However, the potential environmental impacts associated with moving waste would require further detailed study.
- Excavate wastes and recycle those materials suitable for use as a secondary aggregate and relocate non-recyclable material to a designed receptor within the site.

16.2.2 Of the options available, recycling of secondary aggregate and internal relocation of the landfill material (commonly termed landfill mining) is considered to be the most viable option.

16.2.3 The process of landfill mining requires the use of a backacting excavator or front loading shovel depositing material onto a rotating drum screen which separates fine particulates (soil) from concrete, bricks and hardcore. The heavy fraction can be crushed to form secondary aggregates, which can be used on site as general fill to produce the development plateau.

16.2.4 There are a number of potential negative impacts that are associated with landfill mining, as follows:

- Variable quality of secondary aggregates as the materials in the closed landfill are not currently known.
- Occupational hazards associated with operations, location of processing area, handling and disposal of wastes.
- Environmental impacts associated with excavating and handling waste, in particular:
 - Emission to air, including noise and dust,
 - Discharge of leachate to either surface or groundwater
 - Influence of activities on surrounding landuse, i.e. agricultural land.

16.2.5 As the current landfill area and proposed development platforms are generally located outwith the 100-year flood plain area, the impact on the flood plain is considered minimal providing appropriate procedures are implemented should the landfill material be relocated.

Waste generated during the construction phase

16.2.6 The construction of the development platform and associated terminal buildings would generate inert construction waste (inert building materials, services, cabling, steelwork, packaging etc) and wastes arising from site personnel. Sewage from the temporary staff canteen/rest room/site office compound would also require a disposal plan.

Waste arising as part of the IFFDC operation

16.2.7 Wastes arising as part of the operational IFFDC would generally consist of inert materials (packaging, paper) and other industrial wastes. Sewage would also require disposal during the operational lifetime of the IFFDC.

Closure and decommissioning of the facility

16.2.8 Potential impacts associated with the future closure and decommissioning of the IFFDC include problems arising should the site be returned to agriculture (shortfall of soils) and the remediation of areas within the site affected by potentially contaminative industrial uses (for example the rail sidings) during the IFFDC operational lifetime.

16.3 Mitigation measures

Movement of landfill materials

16.3.1 Prior to undertaking any works associated with the closed landfill, further more detailed study should be conducted as follows:

- Characterise the nature of waste material.
- Monitor ground and surface water quality with respect to the closed landfill.
- Identify suitable location for processing wastes and final disposal. If final disposal is on site a separate repository will have to be designed.
- These specific and detailed assessments should be undertaken prior to a detailed application for Phase 1. It could be combined with the detailed applications that would include additional mineral extraction as identified in Section 8.

16.3.2 The excavation and relocation of the existing landfill material would also require a separate Pollution Prevention and Control (PPC) permit issued by the Environment Agency. The permit would cover screening, sorting and stockpiling processes, which may be utilised as part of the landfill mining, as well as the design and operational strategy for the landfill cell if located within the site.

Construction wastes

16.3.3 All wastes arising, as part of the construction process will be disposed of by certified waste handling contractors. It is anticipated that this waste material will consist mainly of inert packaging materials, rubble and metal. Sewage produced from the temporary site office compound would be dealt with either by direct connection to the sewer or by being collected from a temporary cesspool by a specialist waste contractor.

Wastes produced during IFFDC operations

16.3.4 Waste produced during the operational lifetime of the IFFDC is anticipated to consist mainly of inert packaging and industrial wastes (plastics, metals). This waste would be collected as part of the municipal waste collection process for either landfill, recycling or waste-to-energy (depending upon waste category and municipal disposal options). Special industrial wastes, if produced on site, would need to be dealt with by specialist contractor by agreement with the individual companies that produce the waste.

16.3.5 If potentially contaminative industrial processes were carried out within the development area, the potential liability of contamination would be regulated in accordance with the relevant environment, health and safety legislation in agreement with the local planning authority and the Environment Agency. Should contamination occur, the individual operator of the contaminative process would be held responsible for clean up or costs under the 'polluter pays principle'.

Decommissioning of IFFDC

16.3.6 The primary end-use of the site, should it be decommissioned or closed, is anticipated as being light industrial or service provision, using the existing infrastructure as a framework for continued employment. It is unlikely that the site would be returned to agriculture, as the technical aspects of doing so would not warrant either the loss of an established industrial/employment zone or the importation of sufficient soil or soil forming materials. Although highly unlikely, if the site were completely decommissioned it would be possible to recycle the development platform as a secondary aggregate.

16.4 Residual impacts

On site landfill cell

16.4.1 The presence of a landfill cell within the site would have residual impact upon the operation and ownership of the land. As part the PPC permit, the landfill operations will require regular monitoring for gas emissions (methane, carbon dioxide etc) and leachate production for a period of time after closure until the Environment Agency accepts the surrender of the permit.

- 16.4.2 There is thus a requirement for financial measures to be set aside to permit the regular monitoring of the relocated landfill until completion can be proven and accepted.
- 16.4.3 The Environment Agency have identified in correspondence to EDDC, the requirement for investigations associated with the remediation of the closed landfill in advance of development in Phase 1. The conditions should include undertaking ‘a *targeted-source-pathway-receptor investigation*’. This will provide information on the current status of the landfill and assist in the determination of the potential impacts on the environment and human health receptors during and post development. The results of this investigation should enable the identification of the most suitable remediation techniques for the landfill.
- 16.4.4 Due to changes in waste management legislation it is possible that certain of the landfilled materials may no longer be classified as inert (e.g. asbestos, plasterboard, wood) therefore further investigative works will need to be undertaken on the landfill to determine the exact composition of the waste. The Environment Agency have identified that if ‘*asbestos was deposited at the site, depending on the presence/distribution within the landfill, the entire landfill contents may constitute Special Waste*’. If the landfill contains asbestos then any excavation/relocation works will require a Waste Management Licence and may be ‘*subject to controls under the Special Waste Regulations 1996*’.
- 16.4.5 The targeted source-pathway-receptor site investigation and assessment would direct the detailed designs required for the remediation of the landfill site.

16.5 Summary

- 16.5.1 A number of waste handling and disposal issues have been considered, including the treatment of the closed landfill during the earthworks phase of the development, the generation of waste material during the construction and operation of the IFFDC, and methods of dealing with issues associated with the closure and decommissioning of the facility.
- 16.5.2 The current landfill area located on site was restored in 1988 and the licence returned to the County Council. The landfill is now considered to be in a stable condition and has a low risk with respect to pollution of watercourses, groundwater and atmosphere. The landfill does, however, present a limitation to the proposed development platform, and as such requires removal to a nearby licenced facility or relocation within the proposed development area.

- 16.5.3 The preferred option at this stage would be to extract and screen material suitable for secondary aggregates. The aggregates produced may be suitable for use in the construction of the development platform.
- 16.5.4 Waste generated during the construction and operation of the facility includes general construction rubble, inert packaging and foul sewerage. A licensed contractor would dispose of these wastes for landfill or recycling, depending upon the disposal options available. The existing sewer network would have to be extended to serve the development.
- 16.5.5 The potential for future decommissioning and closure of the site would be most likely to result in the continued use of the site as an industrial/employment zone, re-using the site infrastructure. It is unlikely that the site would be returned to agriculture.

17. MATERIAL ASSETS

17.1 Background and potential impacts

17.1.1 This section considers the implications of the development on property and other commercial operations in the locality. The masterplan for phases 1 and 2 would potentially affect the following material assets:

17.1.2 Property within the site:

- Hayes Farm sand & gravel quarry (note this is currently out of lease and mothballed). The issues associated with minerals have been discussed in other sections (3, 4 & 8), which includes consideration of mineral resources and value.
- Hayes House (a private dwelling located on the southern boundary of the site. The Church Commissioners for England acquired the freehold of the property in 2000 and own the out buildings, some of which are used for agricultural purposes.

Residential property in the local area:

There are a number of properties within potential influencing distance of the proposed IFFDC, these include:

- Clyst Honiton village (nearest property in village approximately 600m from the development boundary in Phase 1).
- Broadclyst village - The boundary of the village identified on the development plan is in excess of 3km and therefore very unlikely to have any significant impact upon residential properties in the village. The settlement to south of Exeter St Davids to Waterloo rail line is approximately 1km from the development boundary in Phase 1 and 400m from the development boundary of Phase 2. The settlement extends as a ribbon along Station Road including Cotterell Road and Shercroft Close and there as a number of properties / cul-de-sac estates that are located to the west of Station Road and in closer proximity to the Phase 2 development than Broadclyst village itself. Potential impacts with respect to noise, air quality, and visual amenity have been considered from a number of these receptors.
- Single properties and farmhouses - There are a number of properties at the junction of the C832 and Station Road, Water Hayes / Stone Hayes located on Waterslade Lane and Mosshayne House and Farm located to the north west of Phase 1. The potential impacts on these properties have been considered in Sections 9, 11, 12 and 14, no additional impacts are considered material to this application.

Agricultural property:

17.1.3 The application and the study area is entirely within the ownership of The Church Commissioners for England and is currently in an farm business tenancy (see Section 7). The potential impacts on farm business have been considered and the potential impacts identified as minor adverse. It is recommended that, because of the need for a unified landscape management strategy for the land within the study area, the principles of the landscape and nature conservation management strategy are adopted prior to development in Phase 1. Therefore, it is intended that all land will be taken out of productive agricultural use and managed for landscape enhancement, compensatory habitat (floodplain and proposed area of woodland) and temporary habitat (Phase 2 area).

Industrial property:

17.1.4 There is an engineering works located on the eastern boundary of the Phase 2 area (adjacent to Hayes Quarry). There is also a small industrial estate in Broadclyst. The development of Exeter Gateway is not predicted to have any negative effects on these properties and may have a beneficial effect with respect to both the construction and operation of the IFFDC.

17.1.5 Proposed development, subject to existing planning applications:

- Development with the preferred area for mineral extraction (adopted minerals local plan).
- Skypark is proposed as a *high quality business park appealing to a full range of potential employment uses* and is integral to the development of the airport. The proposals for Skypark are currently under review and an updated Environmental Statement will be submitted at some point in the future.
- Exeter & Devon Airport development - the development of the Airport will provide improvement to air traffic provision in the south west. The proposed development time scale was originally similar to that promoted for the IFFDC. However, development proposals for each scheme have been subject to delay and therefore it remains likely that elements of the development at the Airport and Exeter Gateway will remain coincident.
- Cranbrook - New Community, comprising up to 2900 residential dwellings, a town centre and a local centre comprising retail, employment, community and leisure uses, two primary schools and one secondary school, sports and recreation facilities, a country park, a railway station, a cemetery/burial ground, allotments, landscaping, engineering works, associated infrastructure, public transport infrastructure and car parking for all uses. The western edge of the New Community is located approximately 1.5km east of the Phase 2 development of Exeter Gateway. The development proposals for Cranbrook have been

resubmitted in conjunction with an updated Environmental Statement. Due to the separation distance between the two developments, it is very unlikely that the proposed development at Exeter Gateway will have a significant impact on residential properties within the New Community. The New Community proposals include a passenger rail station and for this reason reference to the potential for a passenger interchange linked to Exeter Gateway have been removed from this Environmental Statement.

- The Clyst Honiton bypass has been identified as an area of strategic importance for the developments identified above. The junction from Phase 1 of Exeter Gateway will be directly onto the Clyst Honiton bypass and the operation of the IFFDC will be dependent on the construction of the road, which is currently subject to a detailed application. The development of Exeter Gateway is not anticipated to have an impact on the bypass, because of its strategic importance to all the schemes identified above.

17.1.6 Potential development identified in Development Plans: Exeter Science Park located on the eastern edge of Exeter, to the east of the M5 corridor. It is very unlikely that the proposed development at Exeter Gateway will affect the proposals identified for the future development of a science park, in the location identified.

17.1.7 *Services* - known existing services within and adjacent to the application area are shown on Figure 17.1. South West Water have stated that foul drainage provision in the area may not be capable of serving the development. However, it is understood that is currently under review with respect to development as whole within the Exeter Area of Economic Development. The detailed application for Phase 1 of Exeter Gateway will include the results from detailed discussions with respect to foul drainage provision, as the construction and operation period remains some distance in the future. The requirements for foul drainage connection from Exeter Gateway have been identified with respect to the longer term planning for utilities in the Exeter Area of Economic Development.

17.1.8 Other potential material assets include:

- Groundwater abstraction for domestic and agricultural use; licensed abstractions have been identified on Figure 9.1. It has been identified that there may be other unlicensed abstractions in the area, however, due to the distance from the Phase 1 development area, potential impacts are considered to be neutral to minor adverse.
- The National Trust own Killerton Estate land to the north of the rail line, which includes Killerton House, which is open to the public during the period April – October. The area of the Estate, which is open to the public, is located approximately 5km north of Exeter Gateway and no significant impacts have been identified.

17.2 Residual impacts

- 17.2.1 The impact of the IFFDC on the mineral resource at Hayes Farm has been evaluated in Section 8. It is estimated that approximately 1.62M tonnes of building sand would be sterilised as a result of the development. The quarry is currently mothballed therefore the residual impact has been rated as of minor significance.
- 17.2.2 Hayes house and its out buildings would be demolished as part of the Phase 1 development. The loss of this property is a significant material asset, but is owned by The Church Commissioners for England and can be considered integral to the project in terms of the economic benefits as a whole.
- 17.2.3 It is considered that there is likely to be a positive synergy between the development of Exeter Gateway and Skypark, as the proposed transport distribution centre may generate the requirement for business and office space at Skypark.
- 17.2.4 The boundary of Cranbrook, New Community, is at a greater distance from the proposed IFFDC than existing residential properties identified as sensitive receptors in this EIA. Therefore, the impacts on amenity would be less than those predicted for existing properties of closer proximity to development.

Services

- 17.2.5 There will be a requirement to relocate several services, most notably the fresh and foul water sewer that crosses the northern part of the site and the overhead electricity supply in the southern part of the site.

17.3 Mitigation

- 17.3.1 It is intended that the future areas of mineral extraction at Exeter Gateway would be the subject of a separate submission, prepared at the time of detailed application for Phase 1 development. The detailed submission requires that more information is obtained on the depth and quality of the mineral deposit within the consultation area and that appropriate phasing and development proposals are submitted. The use of minerals within the site for development purposes has benefits with respect to the requirement for the offsite transportation of aggregate. There may also be the potential to use the rail link to enable the bulk haulage of aggregate by train to the IFFDC for construction of this and other developments within the Exeter Area of Economic Development.
- 17.3.2 A strategy for recording any features of cultural interest associated with Hayes House and associated outbuildings would be agreed with Devon County Archaeological Service and incorporated into the mitigation strategy outlined for cultural heritage (Section 15).

17.3.3 Detailed assessment of groundwater within the Phase 1 area has been identified in several sections of the ES. The assessment should be designed to enable the impact on any unlicensed groundwater abstraction to be evaluated and, where appropriate mitigated in terms of water supply.

17.3.4 No specific mitigation measures have been considered with respect to Skypark and Exeter & Devon Airport developments. Where appropriate the cumulative effects of the combined development has been identified within the respective sections of the ES and Section 18.

17.3.5 Details of the requirements for services, including the relocation of existing services and the provision of new services will be submitted with detailed applications at a later stage.

17.4 Summary

17.4.1 The development of the IFFDC will affect a number of existing and proposed material assets on and adjacent to the site. Where these impacts are negative a mitigation strategy has been identified. However, it is also likely that the impacts associated with development at Skypark and Exeter & Devon Airport will be generally positive, with a certain degree of synergy between the individual proposals. No specific impacts are anticipated with respect to the proposals for the Cranbrook New Community.

18 CUMULATIVE EFFECTS

18.1 Introduction

18.1.1 This section addresses the potential for cumulative effects arising as a result of the proposed development at Exeter Gateway, on various aspects of the local area. The 'do-nothing' option and alternatives to the development are also discussed.

18.1.2 Cumulative effects can be *additive* (the sum of all impacts affecting a particular component of the environment); *synergistic* (where the interaction of impacts creates a greater effect than do additive impacts); or *neutralising / antagonistic* (where impacts counteract each other, thereby reducing the overall level of impact).

18.1.3 At Exeter Gateway the proposed development can generate cumulative effects as a result of:

- interaction between individual potential impacts associated with the development itself; and
- interaction of potential impacts associated with other schemes within the Exeter Area of Economic Activity. These include the following:
 - Skypark (data from the Environmental Statement);
 - Cranbrook New Community (data from Environmental Statement);
 - Exeter Airport (data from Committee Report for this development);
 - Clyst Honiton bypass (data from draft Environmental Statement); and
 - Exeter Science Park (Policies in Development Plan).

18.1.4 The cumulative impact assessment has therefore considered both **the Development** (Exeter Gateway) and the **Exeter Area of Economic Activity** (the group of developments identified above).

18.2 Baseline conditions

The Development

18.2.1 The baseline conditions for addressing cumulative effects are as set out in the individual sections of this Environmental Statement, for each relevant aspect.

Exeter Area of Economic Activity

18.2.2 The principle of development has been identified in the Inspector's report issued in March 2005, the Inspector's accompanying letter to the report endorsed the Local Plan's proposals for major development, subject to the Proposed Changes and subject to recommendations identified in the report.

18.2.3 On this basis it is anticipated that all the proposed developments will be considered during the local plan period and that they form part of the baseline conditions when assessing the potential for cumulative impacts. The relevant baseline environmental conditions for individual developments can be viewed in the relevant application documentation.

18.3 Potential impacts – the Development

Cumulative (additive) impacts on people

Programme for construction and frequency of use

18.3.1 Subject to the granting of consent, construction related activities will take place over a period of approximately 24 - 36 months. It is likely that building and infrastructure development will take place concurrently for at least a part of this development. In addition, once the rail and road access has been formed, the site will come into operational use. Predicted use of the site has been considered in Section 4 and confirmed in the SWARMMS report, taking into account the regional potential for modal shift of freight transport, would indicate that no more than 2 trains per day would be sufficient to supply the market.

Local residents

18.3.2 Local residents will experience cumulative impacts mainly as a result of construction effects of noise and dust, together with adverse visual effects as the development is constructed and the existing views are subject to change. The degree of adverse effect will vary according to the location of individual receptors, but will be greatest for occupants of:

- properties to the east of Clyst Honiton;
- properties in Shercroft Close and Cotterell Road;
- Water/ Stone Hayes); and
- Clystlands (plus other dwellings in the immediate locality).

Cumulative effects from construction will be medium-term (i.e. lasting for longer than a 12 month period) and due to the nature of operations will show small variance in terms of magnitude. Taking account of the nature of earthworks and construction activities the magnitude will be moderate to substantial, adverse, during the initial phases of the construction period, when the development platform is constructed. This will reduce to minor, adverse, when the development progresses to construction and buildings and the developed landform take shape.

Recreational amenity

18.3.3 Potential impacts are generally associated with persons using the local footpath network and the more informal use of the River Clyst corridor/ fields to the west of Station Road for dog walkers etc. Potential impacts during construction include:

- the construction effects of noise and dust, together with
- adverse visual effects as the development is constructed and the existing views are subject to change.

The National Trust own land to the north of the main rail line. Although it is understood that this is not open to the public, the magnitude of cumulative impacts will be similar during the construction phase as that within the Clyst floodplain, particularly during work to the track, which is considered a short-term impact.

18.3.4 The magnitude of the impact will be moderate adverse for recreational type receptors in the Clyst floodplain and minor adverse for recreation type receptors to the east of the site (i.e. fields to the west of Station Road).

18.3.5 During operations the magnitude of the impacts will reduce to minor/moderate adverse for recreational type receptors within the Clyst floodplain as the external landscape planting matures and acts as a visual and (to a lesser extent) acoustic screen. From the National Trust land to the north the cumulative impact will also be minor/moderate adverse, depending upon the angle of view and screen afforded by the rail embankment. For footpaths elsewhere the magnitude of impact will be neutral due to existing screening and the distance from the Phase 1 development area.

Cumulative (additive) effects on nature conservation – the Development

18.3.6 Cumulative impacts on the nature conservation interest of the area relate primarily to those that effect habitats adjacent to the Phase 1 development area and the landscaping adjacent to Phase 1 designed to mitigate the loss of habitat resulting from the development itself.

18.3.7 In addition there are the potential impacts associated with disturbance, both during the construction phase and operation of Exeter Gateway. These impacts have been considered in detail in Section 13, which concluded that the impacts were moderate to substantial due to the loss of existing habitat.

18.3.8 Providing that the mitigation measures defined within each section of the ES are fully taken into account in the detailed masterplanning of the development, potential cumulative impacts on adjacent habitats have been identified as minor adverse. This level of magnitude results from displacement into adjacent habitats with a consequent pressure for food and nesting sites etc. Compensatory habitat can also be maintained in the Phase 2 development area for a temporary period. Therefore the detailed application for Phase 1 should provide a management plan for the Phase 2 area to enhance the use of remaining hedgerows and fields as a temporary habitat prior to development. The management plan should also provide longer-term methods for increasing the nature conservation value of landscaped areas adjacent to the development footprint such that this provides suitable compensatory habitat prior to construction in Phase 2.

18.3.9 During the operational phase of the development cumulative impacts have been assessed as neutral. The potential for habitat creation within the site itself is minimal and would provide a poor and fragmented habitat in any case. The impacts associated with loss of the habitat has been assessed in detail in Section 13. Off site impacts on adjacent habitats have also been considered in Section 13, including a scoping report for an Appropriate Assessment of the potential impacts on the Exe Estuary (Appendix 13.11).

Synergistic effects – the Development

18.3.10 These are defined as combined impacts that act to produce a positive effect on the development as a whole. There are a number of synergistic effects that result from the development of a regional Intermodal Facility for the Transfer of Freight and a Freight Distribution Centre (the economic and commercial drivers are considered in detail in the SWARMMS report). The synergistic effects include the following:

- Potential reduction in the environmental impacts of goods traffic in more sensitive urban environments. The SWARMMS report identifies that *'If the proposed road/rail transshipment centre is progressed in the vicinity of the airport this would provide many of the facilities needed for an Urban Distribution Centre and the economies of scale would benefit both activities. This might tip the balance in favour of a rail for the trunk road movements of some commodities to the Exeter urban area itself.* In achieving this modal shift Exeter Gateway may

have an influence on local air quality and issues such as road noise within the urban area, whilst reducing the volume of HGVs on the trunk road network.

- The terminal may act as a nodal point for importation of materials to later phases of development in the Exeter Area of Economic Activity, in particular aggregates and other raw materials that can be transported by train. The synergistic effects would be similar to those described above.

Neutralising effects – the Development

18.3.11 These are mitigation measures that act either singly or cumulatively to neutralise a potential negative impact. Mitigation measures have been identified in individual sections of the ES, their purpose being to reduce, neutralise or create positive effects for identified potential impacts. No further cumulative effects have been identified.

18.4 Potential impacts – Exeter Area of Economic Activity

Cumulative (additive) impacts on people

18.4.1 The impacts associated with the operational phase of each development have been considered because there are no definite timetables associated with the detailed schemes being brought forward. Therefore, the impacts associated with the development are to be experienced as identified in the development specific Environmental Statements. It is likely that the predicted cumulative impacts will be felt several years in the future.

18.4.2 Cumulative impacts have been considered as a reduction in amenity (noise, air quality and visual impacts) combined with an increase in road traffic. In combination the impacts will result in the urbanisation of the general area as each development progresses through its construction phase to being fully operational.

Road traffic

18.4.3 No cumulative impacts apply as the Exeter Gateway traffic will use the Clyst Honiton bypass, with the exception of local traffic, which is predicted to be minimal. The potential impacts associated with the Clyst Honiton bypass have been considered in detail in the ES for that development.

Noise, air quality and visual impacts

18.4.4 The cumulative impacts associated with noise, air quality and visual impact have been summarised in Table 18.1

Table 18.1			
Cumulative impacts associated with noise, air quality and visual impact			
	Receptors	Magnitude of impact	Mitigation / comments
Properties on the C832 (between Exeter Gateway and Skypark / expansion of Exeter Airport)	Water/Stone Hayes Coachfield House	Minor to moderate adverse impact	<p>Skypark is located to the east and there will be no cumulative impacts. Exeter Airport increase in air transport (quiet operations policy has been recommended) and engine testing to be relocated to the south side of the airport.</p> <p>Operational activity in Phase 1 will be visible from receptors at Water/Stone Hayes and at this location activities will be audible and combined with other traffic using the bypass will result in a moderate adverse impact.</p> <p>At Coachfield House and other properties at this location Phase 1 will not be visible and the properties are located at a distance from site activity in Phase 1, therefore cumulative impacts are primarily influenced by activity at the airport.</p>
Properties on Station Road (between Exeter Gateway and Cranbrook New Community)	Clystlands Properties on Shercroft Close and on Cotterell Road	Neutral to minor adverse impact	<p>The edge of the phase 1 development is located at a distance from the properties on Station Road, and will be visually screened. Noise will be attenuated by the embankment formed by the change in level between Phase 1 and undeveloped Phase 2 area.</p> <p>Following development of Phase 2, buildings will be partly screened but visible. Buildings on the eastern boundary of the site will screen activity (including HGVs) within the Exeter Gateway site. Cranbrook will not be inter-visible for receptors on Station Road, primary impact acknowledged to be traffic noise hence minor adverse impact.</p>

Cumulative (additive) impacts on nature conservation

18.4.5 The individual developments will have an impact on habitats used by a range of species within the local area. A review of the individual environmental statements indicates the following:

- a number of protected species will be affected notably badger setts and bats;
- a reduction in available breeding habitat for a number of red and amber list birds;
- loss of hedgerow and woodland habitat;
- loss of small wetland habitats, generally fragmented but of local ecological interest; and
- loss of open agricultural land (limited ecological interest).

18.4.6 However, mitigation measures included in each of the masterplans have identified scope for retaining or improving habitats to compensate for potential impacts identified. The development footprint for Exeter Gateway, Skypark and Cranbrook

New Community is largely agricultural in context, therefore of limited ecological value. Mitigation measures that include landscape planting of new woodland, retention/replacement of hedgerows and managing land that is not within the development footprint to increase its value, in terms of nature conservation, will result in a neutral to a minor beneficial impact in the longer term.

18.4.7 Development of Exeter & Devon Airport would result in the loss of areas of marshy and semi-improved grassland, hedgerows and a watercourse. These areas are of moderate significant ecological value. Mitigation measures include retention of hedgerows, where possible and the creation of similar habitats and wild flower meadows. Therefore, the residual impact is considered to be moderate adverse.

18.4.8 The development of the Clyst Honiton bypass will primarily result in the loss of agricultural land, hedgerows and recently planted broadleaved woodland. Mitigation measures will result in residual impacts considered to be slight adverse to slight beneficial.

18.4.9 There will be no cumulative impact on the Exe Estuary SPA, RAMSAR and SSSI, based on the finding that for each of the developments the predicted impact is neutral.

Cumulative (additive) impacts on water resources

18.4.10 The developments are adjacent to and have the potential to impact upon the River Clyst floodplain and flow. However, studies submitted with each of the outline applications demonstrate the following:

- no net loss of floodplain capacity; and
- drainage of surface water from each development will not exceed the equivalent greenfield run-off, through use of SuDs designs, as appropriate.

18.4.11 On this basis the cumulative impacts have been assessed as neutral.

18.4.12 No specific impacts on groundwater have been identified and the cumulative impact has been assessed as neutral.

Cumulative (additive) impacts on soils and agriculture

18.4.13 The loss of best and most versatile agricultural land was considered by the inspector at the local plan inquiry. Taking the comments into account the overall impact associated with the loss of agricultural land has been assessed as minor to moderate adverse. The cumulative impacts associated with the operational phase of the development is neutral.

Cumulative (additive) impacts on cultural heritage

18.4.14 The environmental statements for each development have identified a range of features that are of interest with respect to Cultural Heritage. Detailed schemes for programmes to evaluate, record and preserve, either in situ or by record, have been identified as mitigation measures relevant to each development. Cumulative impacts during construction have been identified as moderate to substantial adverse but with appropriate mitigation, through schemes to be agreed, a significant body of archaeological evidence and record will be published. Operational cumulative impacts have been assessed as neutral.

18.5 Mitigation – the development

18.5.1 The potential adverse effects associated with the proposed development of Exeter Gateway have been assessed in the relevant sections of this ES. Mitigation measures are proposed in each section in order to avoid, reduce and compensate for these effects. These measures are considered sufficient to adequately address the cumulative effects of the development, without the requirement for any additional measures.

18.6 The ‘do-nothing’ option and alternatives

18.6.1 The ‘do-nothing’ option for Exeter Gateway would be to retain the status quo, i.e. to maintain reliance on trunk road transport of goods in and out of the region. This option was considered both in the Structure Plan (EIP) and the East Devon District Development Plan public inquiry. In both forums, the panel and Inspector took the view that there is a need for the development at Exeter Gateway and that its location within the Exeter Area of Economic Activity is appropriate.

18.6.2 Alternative locations have also considered in the EIA (see the independent rail report submitted with the ES in 2000). The SWARMMS report published in 2002 by GOSW, endorsed the findings of the independent rail report and recommended *that one intermodal freight terminal be proposed – near Exeter Airport. This would compliment other facilities already in construction in Avonmouth and Swindon.* It was also noted that there was some potential for an urban freight distribution centre to be combined with intermodal freight terminal. This observation was taken into account in the Inspector’s report on Exeter Gateway (with the term Intermodal Facility for the Transfer of Freight and a Freight Distribution Centre).

18.7 Summary

18.7.1 The potential cumulative effects of the proposed development of Exeter Gateway have been considered, with reference to the wider environment. Exeter Gateway,

when considered cumulatively with the other developments within the Exeter Area of Economic Activity, will result in a significant increase the urbanisation of this mixed agricultural, residential and light industrial area. Exeter Airport and the trunk road network are currently dominant urban features within the local landscape.

18.7.2 This section has considered the cumulative impacts between individual components of the Exeter Gateway development and the combined impact of all schemes currently under consideration

18.7.3 The assessment has identified that cumulative adverse impacts will result. However, the provision of extensive mitigation measures has the effect of neutralising and providing certain positive benefits for many of the adverse effects identified in the ES.

19. SUMMARY OF EFFECTS

19.1 Introduction

19.1.1 This section summarises the significant effects arising as a result of the proposed development of Exeter Gateway, on various aspects of the local area. Significant effects are those that are identified as having moderate, substantial or severe adverse effects. Beneficial effects of these levels are also identified and can be on the same scale. Non significant effects are where it is anticipated that any change will not be measurable based on the baseline data obtained as part of the EIA process. As stated in the ES, effects may be direct or indirect, permanent or temporary, short, medium and long-term, and may also be either adverse (negative) or beneficial (positive). It is probable that certain significant effects can become non-measurable as a result of proposed mitigation measures. However, a precautionary approach has been adopted in the assessment, which identifies the presence of a measurable effect even in cases where appropriate mitigation can be designed into the scheme. The assessment therefore assumes that mitigation, in the majority of cases, will lessen the degree of the impact as opposed to negating it entirely. The reason for adopting this approach is associated with the nature and variability of assessing potential impacts relating to the development of Exeter Gateway. For example the development of infrastructure (rail link and roads), terminal buildings lighting etc have been assessed as potential negative impacts in landscape and visual terms. Through the adoption of specific design standards for external works, including landscape planting the degree of the impact can be reduced but not neutralised.

19.2 Baseline conditions

19.2.1 The baseline conditions for addressing cumulative effects are as set out in the individual sections of this Environmental Statement, for each relevant aspect.

19.3 Summary of effects

19.3.1 Residual effects are summarised in the form of a table (Table 19.1), for the various aspects of the environment and for the receptors as identified in the Town and Country Planning (Environmental Impact Assessment) Regulations 1999. Receptors have been discussed in each section of the ES and under Scoping (See Section 5).

Significant adverse effects on disturbance related to geology are:

- Reduction in the potential mineral resource area at Hayes Farm, identified in the Minerals Local Plan. The adverse impact is temporary in nature as the resource could be exploited at a later stage following decommissioning of the IFFDC.

Significant beneficial effects related to geology are:

- Certain primary, and potentially secondary, aggregates can be extracted from sand and gravel resources on site, reducing the demand of primary aggregates from elsewhere in the county.

- A proportion of the terminal could be developed for the importation of aggregate to the other projects within Exeter Area of Economic Development, by rail, thus reducing the road haulage of aggregates to the schemes.

Significant adverse effects on disturbance related to soils and agriculture are:

- Permanent loss of best and most versatile agricultural land, however this will have a minimal impact on farm holdings and viability because the land is within a relatively large farm holding and field have been retained in set aside.

Significant beneficial effects related to soils and agriculture are:

- No specific benefits identified.

Significant adverse effects on disturbance related to water resources are:

- Loss of surface water and ditch structure within the existing farmland that provides a locally sensitive habitat and water attenuation. Note the potential impact on the floodplain and surface water attenuation have been subject to mitigation measures to maintain/increase floodplain capacity and incorporate SuDs design to keep offsite drainage to within that calculated for green field flow.

Significant beneficial effects related to water resources are:

- No specific benefits identified.

Significant adverse effects on disturbance related to transport are:

- Minor contribution to traffic flow and consequent impact on local air quality, noise and disturbance for traffic on the proposed Clyst Honiton bypass.

Significant beneficial effects related to transport are:

- Modal shift from road haulage to rail, consequential benefits in terms of reduced emissions of greenhouse gases and trunk road transportation.

Significant adverse effects on disturbance related to noise are:

- Increase in noise associated with construction activity on site (temporary). Note traffic noise has been assessed as part of the Clyst Honiton bypass ES.

Significant beneficial effects related to noise are:

- No specific benefits identified.

Significant adverse effects on disturbance related to air quality are:

- Increase in dust emissions associated with construction activity on site (temporary). Note air quality has been assessed as part of the Clyst Honiton bypass ES.

Significant beneficial effects related to air quality are:

- Modal shift from road haulage to rail, consequential benefits in terms of reduced emissions of greenhouse gases and trunk road transportation

Significant adverse effects on disturbance related to flora and fauna are:

- Loss of habitat including hedgerow, wetland and small areas of woodland.
- Disturbance of protected species including badger and bats.

Significant beneficial effects related to flora and fauna are:

- Landscape planting to include new woodland within the structure planting and the retention / management of hedgerows outwith the development footprint.
- Habitat creation and long term management of, new habitats in the floodplain, to include wet alder willow woodland, reedbeds and species rich wet meadow.

Significant adverse effects on landscape and visual aspects are:

- Construction related activities including mobile and static plant required for earthworks / buildings in Phase 1.
- New access into the site including from the Clyst Honiton bypass road and rail spur from main line.
- Construction of four large terminal building (steel framed portal structure with profiled steel cladding).
- Mobile plant activity, including HGVs (regular), trains (1 or 2 per day) and mobile plant movements within the site.
- Lighting on the access road, terminal and buildings.
- Increase sense of urbanisation.

These elements of the proposed development will influence:

- Visual effects on residents of properties facing towards the site, from properties on in Clyst Honiton and farmhouses to the west, for example Mosshayne. These effects are temporary, short-term and direct during construction and permanent, direct effects following the construction phase. The period when impact has been identified as moderate – substantial will be during construction, this impact is of short duration. The visual effects will be less significant as perimeter landscape planting matures with a residual moderate visual impact.
- Visual effects on the C832, footpaths/tracks in the vicinity of the site will be temporary, short-term during construction and long term permanent thereafter producing a direct but transient effect, most noticeable on the C832.

Significant beneficial effects on landscape and visual aspects are:

- Benefits will be realised as the proposed landscape planting matures, reducing the initial substantial adverse impact to a moderate impact in the longer term. Attention to building design and materials can also reduce the degree of visual impact, these will be submitted with the detailed application for Phase 1.

Significant adverse effects on disturbance related to cultural heritage are:

- Permanent loss of known features of cultural heritage interest during earthworks in Phase 1 and Phase 2.

Significant beneficial effects related to cultural heritage are:

- Certain features have been excavated and a permanent record of findings maintained during the development of Hayes Quarry. These records will be

extended with future field evaluation and record, the programme to be agreed as part of the detailed application for Phase 1.

Significant adverse effects on disturbance related to waste are:

- Remediation of closed landfill site to achieve development footprint required for construction of Phase 1 and consequential effects on noise, air quality and disposal of non recyclable material within the closed landfill.

Significant beneficial effects related to waste are:

- Material suitable for recycling as a secondary aggregate will be used on site for construction purposes.
- Potential for supplying secondary aggregates to the other projects with the Exeter Area of Economic Development, possibly in association with a primary aggregate transfer facility.

19.4 Mitigation

19.4.1 The potential adverse effects associated with the proposed development at Exeter Gateway have been assessed in the relevant sections of this ES. Mitigation measures are proposed in each section in order to avoid, reduce and compensate for these effects.

19.5 Summary

19.5.1 Significant adverse effects (those that are assessed as either moderate, substantial or severe), which are also permanent effects, are identified for the following aspects of the proposed development:

- loss of best and most versatile agricultural land;
- loss of habitats including hedgerows, wetland and woodland, only partially offset by proposed mitigation measures;
- visual impacts associated with earthworks and construction, which reduce in significance as external landscape mitigation measures mature;
- landscape impact resulting from loss of countryside and increase in sense of urbanisation (the significance of this impact is offset by the policy provisions for the Exeter Area of Economic development)

19.5.2 Significant beneficial effects, which are also permanent effects, are identified for the following aspects of the development:

- modal shift of heavy goods vehicles from road to rail (contribution to reduced greenhouse gas emission, air quality and trunk road capacity);
- urban distribution centre (reduction in HGV transport in Exeter City centre with consequential reduction in noise and improvement in air quality / congestion).

Table 19.1
Summary of significant environmental effects

ES chapters ES Aspects	Geology		Soils and Agriculture		Water Resources		Transport		Noise		Air quality		Flora and fauna		Landscape and Visual impact		Cultural heritage		Waste		
	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	
Population	tc		tc		tc		tc	✓	tc ✓		tc	✓			tc ✓					tc	+
Fauna	tc				tc				tc				tc ✓								
Flora	tc				tc								tc ✓								
Soil	tc		tc										tc				tc				
Water	tc				tc							tc	✓								
Air	tc										tc	✓									
Climate		tc ✓						✓				✓									
Landscape	tc		tc		tc								tc	✓	tc ✓						
Interaction of the above	*		*		*			*	*	*		*	*		*						
Material assets		tc ✓			tc			✓	tc	✓		✓					tc				tc ✓
Cultural heritage	tc														✓		tc				

KEY TO SYMBOLS

- = negative effect

+ = positive effect

tc = temporary effect during construction

✓ = effect anticipated

* = interaction of effects anticipated

no effect anticipated if box has been left empty.

20 MANAGEMENT, MONITORING AND SCHEMES OF WORK TO BE AGREED

20.1 Summary of additional studies required

Soils and agriculture -	No further studies required.
Geology and minerals -	Site investigation within the preferred area (deposit draft minerals local plan) to provide further information on the quantity and quality of sand and gravel deposit.
Water resources -	Establish piezometers in the Phase 1 and 2 development areas as long term groundwater monitoring points. Establish piezometers for short term water monitoring adjacent to the closed landfill.
Traffic -	No further studies required.
Air Quality -	No further studies required.
Noise and vibration -	No further studies required.
Flora and fauna -	Protected species survey required at appropriate time of year for invertebrates, small mammals (including bats) and nesting birds should a period of greater than 2 years have elapsed since the 2005 baseline survey work.
Landscape -	No further studies required.
Cultural heritage -	Programme for geophysical survey and trial trenching to be agreed with County Archaeologist to establish extent of archaeological features within the site.
Waste -	Site investigation to determine characteristics of waste in closed landfill. Using this data prepare a programme of remediation based on source-pathway-receptor risk assessment.
Material Assets -	Accurate record of Hayes House and grounds prior to demolition.
Utilities -	Analysis of the upgrading of existing facilities to enable development of Exeter Gateway and Skypark.

20.2 Requirements for additional licenses and authorisations

- Extension of existing mineral permission to allow exploitation of sand and gravel reserves.
- Variation of restoration conditions within the existing mineral consent to a non-agricultural afteruse.
- Landfill mining possibly under a separate detailed planning consent and waste management licence. Note: the details of the works will be dependent upon the risk assessment approach identified in Section 20.1.
- Rail connections and associated works to main line. This will form part of detailed discussions with Network Rail and others that will define the engineering works required for the rail terminal.
- Discharge licence controlling rate and quality of drainage to River Clyst.
- Licence from English Nature for disturbance of protected species and their habitats.
- Applications will be required for the relocation of a badger sett and relocation of bat colonies in buildings at Hayes House, prior to demolition.

20.3 Schemes to be agreed and conditions

Soils and agriculture

- 1 Soil handling strategy.
- 2 Conservation of soils for use on and off site.

Geology and minerals

- 3 Discharge of conditions attached to current planning consent.
- 4 Variation of restoration conditions attached to current planning consent.
- 5 Investigation of mineral resources within the Phase 1 and 2 areas.
- 6 Extraction of remaining mineral reserves, where this is practical, phasing and use of minerals extracted.

Water resources

- 7 Protection of surface and groundwater during earthworks and construction.
- 8 Sustainable urban drainage system design and specification.
- 9 Protection of surface water from contaminants – use of bunded tanks, interceptors and gullies, designs to be incorporated into SuDs above.
- 10 Recharge of groundwater, design of soakaways etc within the development footprint.
- 11 Design and construction of reedbeds to attenuate surface water flow from the development to the River Clyst.

Traffic

- 12 Design of site access road and internal road network.
- 13 Vehicle routing for construction traffic in advance of the Clyst Honiton bypass.

Air quality

- 14 Prior notification for dust control during earthworks and construction phase.
- 15 Dust action plan for earthworks and construction activities that coincide with development of the Clyst Honiton bypass.
- 16 Dust action plan for future phases of mineral extraction.

Noise

- 17 Prior notification for noise control during earthworks and construction phase.
- 18 Noise limits for daytime, evening and night time periods.
- 19 Noise monitoring programme during construction.
- 20 Audit of noise emissions during operational phase.

Flora and fauna

- 21 Additional baseline surveys, if required (dependent on timing of construction phase).
- 22 Licence applications for identified protected species.

- 23 Nature conservation management plan for woodland, new and retained hedgerows, reedbeds and non-agricultural land
- 24 Conservation management plan for temporary habitats within the phase 2-development area combined with mitigation strategies required in advance of phase 2 development.
- 25 Long term maintenance of habitats required as result of mitigation strategies.

Landscape and visual impact

- 26 Detailed scheme for landscape works identified on outline specification (Figure 3.3).
- 27 Long term management and maintenance of all planting.

Cultural heritage

- 28 A detailed scheme of evaluation assessment and record for all archaeological features identified.
- 29 Watching brief of soils removal on areas outwith the detailed schemes (identified above).
- 30 Publication of all findings.

Waste

- 31 Detailed scheme for extraction of wastes (inert), recovery and recycling of secondary aggregate and disposal of non recyclable wastes
- 32 Risk assessment of the potential impacts on ground and surface water from techniques used for landfill mining.
- 33 Environmental control attached to conditions on the Permit with the Environment Agency.

20.4 Conclusions

The following conclusions can be drawn from the EIA:

- The employment prospects at Exeter Gateway are beneficial and there may be a synergistic effect regarding employment with the Skypark development.

- There will be a loss of best and most versatile agricultural land, however the agricultural value of the land would be reduced in any case should mineral working be extended as identified in the adopted Minerals Local Plan.
- There will be the opportunity to extract minerals as part of the earthworks for the IFFDC. However, minerals would be sterilised as a result of the proposals shown on the masterplan.
- The potential impact on groundwater resources is considered to be slight to moderate adverse. An approach to groundwater monitoring should be agreed in order to protect existing abstractions and provide further information prior to detailed design of the IFFDC (and remediation strategy for the closed landfill, see below).
- The potential impact on surface water resources is considered to be moderate adverse. Mitigation design based on a sustainable urban drainage will be required as part of the detailed design of the site. The development lies outwith the agreed 1 in 100 year floodplain and an agreed area of compensatory floodplain has been designed to address an identified low area adjacent to the agreed floodplain. The development of reedbeds and wet meadow on agricultural land within the floodplain provides an approach to mitigation for both surface water control and ecological enhancement.
- The impacts associated with traffic noise and emission to air are considered to be slight as the scheme relies on the Clyst Honiton bypass to the A30(T). On a regional scale the development of an intermodal facility for the transfer of freight and a freight distribution centre is considered to be beneficial.
- The impact on flora and fauna is considered to be moderate adverse, there will also be negative cumulative effects on flora and fauna considering this development with other proposals within the Exeter Area of Economic Development. In mitigation the value of the nature conservation management plan and the long term maintenance of landscape proposals for Exeter Gateway are of significance and should be prepared alongside the detailed design of the IFFDC.
- Change to the landscape is considered to be moderate adverse on a local scale, however the visual impact from identified receptors has been assessed as slight. Detailed landscape specification and management proposals are required and should be prepared in conjunction with the nature conservation management plan.

- The impact on known features of cultural heritage is considered to be moderate to severe adverse. Further study is required to evaluate the potential archaeological remains identified in the walkover study and subsequent agreement reached with English Heritage regarding the importance of archaeological features within the Phase 2, development area. This more detailed assessment would provide a procedure for recording features of archaeological interest prior development.
- Further detailed studies are required on the closed landfill to evaluate the potential impacts associated with landfill mining and the possibility to use secondary aggregates extracted from the waste. This study should be based on the source-pathway-receptor risk assessment of the landfill and will direct the remediation strategy to be adopted.
- The impact on proposals at Skypark, Exeter & Devon Airport and the Cranbrook New Community are considered slight and potentially beneficial.

21 NON TECHNICAL SUMMARY

21.1 Introduction

21.1.1 An Environmental Statement has been prepared on behalf of The Church Commissioners for England to assess the development of an Intermodal Facility and Freight Distribution Centre (IFFDC) on land at Hayes Farm, on the outskirts of Exeter, Devon. The development is known as Exeter Gateway and the general location of the site is shown on Figure 1.1. This Environmental Statement is provided in accordance with the requirements of the Town & Country Planning (Assessment of Environmental Effects) Regulations (1999).

21.1.2 The study covers both phase 1 and the total development area (phase 2), although for certain aspects of the detailed prediction of impacts, the assessment has concentrated on the Phase 1 area, which forms this outline application. The boundary to the outline application and the study area of the environmental impact assessment (EIA) are shown on Figure 2.1.

21.2 Description of the site and surroundings

21.2.1 The land at Hayes Farm extends to approximately 66.4ha and is used primarily for agriculture (approximately 50 ha). The River Clyst, which flows south to the River Exe, is on the western boundary of the site. The route of the C832 defines the southern boundary of the study area. Adjacent the northern boundary of the site is the main Exeter St David's to London Waterloo railway line. Along the eastern site boundary is an established hedgerow, with agricultural land on the far side. A small engineering works abuts the south east corner of the study area.

21.2.2 Hayes sand and gravel quarry (Planning Reference 07/06/0395/96) occupies approximately 9.8ha to the east of the outline planning application boundary but is located within the study area for the EIA. The quarry is currently non-operational. There is also a closed landfill located within the outline application area, this has been restored to pasture. The western section of the study area, located on the floodplain of the adjacent River Clyst, comprises wet pasture and mature woodland, this area will not be developed.

21.2.3 The C832 road links to the A30(T) via the B3184, through the village of Clyst Honiton. The proposed Clyst Honiton bypass will link the C832 directly to the A30(T) which will reduce the level of vehicle movements through Clyst Honiton village. The Clyst Honiton bypass is a separate application, currently submitted on behalf of Devon County Council. Exeter & Devon Airport is located to the south of the study area.

21.2.4 There are a number of settlements near the study area including:

- Clyst Honiton village located to the south west;
- hamlet of Shermoor to the south of the Exeter St David's to Waterloo rail line, which includes a number of small estates to the west of Station Road;
- Dog Village and Broadclyst to the north. Both are residential villages with limited light industrial facilities;
- a number of isolated dwellings adjacent to and in the immediate locality of the application boundary.

21.3 Description of Exeter Gateway development

21.3.1 The proposed development would take place in two phases, Phase 1 being the subject of the outline application. The development will consist of a rail siding connecting to the main Exeter St Davids to Waterloo rail line. The sidings and rail link would consist of two reception sidings approximately 400m long plus a third escape siding, connected by an engine head shunt. Phase 2 of the development would involve the construction of a second siding connection to the mainline effectively doubling the volume of freight trains to the site.

21.3.2 The purpose of Exeter Gateway is to encourage the bulk transport of containers by train as the terminal provides a facility to interchange bulk cargos from rail to road and vice versa. At Exeter Gateway there may also be scope for integrated air, rail and road transport.

21.3.3 Buildings at Exeter Gateway will comprise warehousing suitable for the handling and storage of containers. Take up of floor space is likely to be for transport logistic centres or single user distribution centres, for example food retailing.

21.3.4 Prior to the development of Phase 1 there are a number of earthmoving operations required, including:

- the existing closed landfill site would require removal to a licensed landfill site or relocation in an engineered cell within the study area. Prior to any works commencing on the landfill a source-pathway-receptor investigation needs to be undertaken to determine the current stability of the landfill. Further investigative works would need to be undertaken to determine the constituents of the waste landfilled at the site. Residual wastes would be landfilled within the study area boundary or sent to an appropriately licensed landfill site.
- Sand and gravel resources are known to be present within the development area, it is anticipated that these will be extracted as appropriate to obtain a level development area at the height of main line to the north. This approach is

identified in the Mineral Local Plan. However, the mineral resource could not be extracted to its full depth and therefore some of the resource will be sterilised as a result of the development.

- General earthworks required to obtain formation levels on which the freight terminal, roads and buildings will be constructed.

Exeter Area of Economic Development

21.3.5 Exeter & Devon Airport is located to the south of the study area. The land to the south of the C832 (former A30(T)) is also the subject of proposed development, with respect to applications submitted by Devon County Council for:

- a business park, known as Skypark; and
- extension of airport facilities including the relocation of the terminal.

The extent of these proposed developments are shown on Figure 2.2.

21.3.6 The Clyst Honiton bypass required for the development of Exeter Gateway is also identified within the Skypark proposals. The development of the Clyst Honiton bypass has been assessed in a separate Environmental Statement for the bypass and, therefore, is not considered specifically in this application. The bypass will however, provide an alternative route to the A30(T), to the south of the Airport. Currently traffic has to pass through the village of Clyst Honiton, via the B3184 to join the A30(T).

21.3.7 To the east of Exeter Gateway in the New Community at Cranbrook, this is considered to be at too great a distance, to be directly affected by the proposed development of Exeter Gateway. Certain positive, beneficial effects maybe associated with the importation of materials required for the development of Cranbrook, through Exeter Gateway.

21.4 Soils and agriculture

21.4.1 The site consists of arable land, wet pasture, restored landfill and non-agricultural land (woodland, ditches, sand and gravel quarry, residential property). No formal soil underdrainage was identified during the site investigation, water is allowed to drain freely through the underlying sands, or passes to nearby ditches and watercourses.

21.4.2 The detailed soil survey for the site shows that Agricultural Land Classification grades of the site are limited either by droughtiness over sandy subsoils or by wetness caused by slowly permeable silty clay and clay subsoils. The study area contains approximately 7.5ha of ALC Grade 2 land, 25.4ha of ALC Grade 3a land and 18.2ha of ALC grade 3b land. The remainder of the site (12.4ha) is classified as non-agricultural.

21.4.3 The proposed Phase 1 development would result in the permanent loss of approximately 17.8ha of ‘best and most versatile’ agricultural land, approximately 4.3ha of below ‘best and most versatile’ land and 4.3ha of non-agricultural land. The proposed Phase 2 development would result in the permanent loss of approximately 13ha of ‘best and most versatile’ agricultural land and 10.5ha of non-agricultural land. The non agricultural land includes Hayes Quarry which would otherwise be restored to agriculture.

21.4.4 There are no proposals to reinstate any agricultural land in relation to the proposed development.

Summary Environmental Impacts SOILS AND AGRICULTURE					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Loss of agricultural land	National - Local	Adverse	Moderate	Permanent, Irreversible	<ul style="list-style-type: none"> No mitigation measures – as this will result in the permanent loss of agricultural land
Damage to soil structure, texture, biotic activity and fertility	Local	Adverse	Minor - moderate	Temporary, Irreversible	<ul style="list-style-type: none"> Soils handled and stored using correct soil handling techniques Top soils kept for landscaping within the development Surplus soil can be utilised in other developments nearby for landscaping

21.5 Geology and minerals

21.5.1 The study area contains sand and gravel, which overlies the Lower Permian Sandstone, within the Dawlish Sandstone series. In 1996, an application for mineral working in an area of approximately 9.8ha to the south east of the study area was granted consent (Planning Ref: 07/06/0395/96). The permission was for the winning and working of 1.125M tonnes of sand and gravel over a period of approximately 9 years. A large part of the study area is also identified in the Devon County Minerals Local Plan as a sand and gravel resource area (Inset Plan 24 - June 2004). The study area has also been included in the Exeter Main Area of Economic Activity (Devon Structure plan).

21.5.2 The development of Phase 1 of the IFFDC will generate a demand for aggregate during the earthworks and construction phase. These can, in part, be generated from the minerals available on site and this would have the benefit of reducing off site transportation of mineral. It will not be possible to extract minerals to the full depth of that which could be achieved by extending operations at Hayes Quarry. It is estimated that approximately 1.6 to 1.8M tonnes of building sand within the mineral consultation area would be sterilised.

Summary Environmental Impacts GEOLOGY AND MINERALS					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Sterilisation of mineral resources	Local	Adverse	Moderate	Temporary, Reversible	<ul style="list-style-type: none"> Minerals on site will be used for construction of Exeter Gateway. The minerals could be extracted following decommissioning of the site Residual impact minor (beneficial – if reduction in importation of primary aggregate)
Importation of primary and secondary aggregates for development within the Exeter Area of Economic Development	Local	Beneficial	Moderate	Temporary, Reversible	<ul style="list-style-type: none"> Exeter Gateway could act as a node for importation of materials required for the individual developments

21.6 Water resources

21.6.1 The study area is drained by a number of ditches that discharge to the River Clyst. Two zones within the study area are located within the boundary of the indicative floodplain of the River Clyst. However, the development footprint has been designed largely outwith the floodplain boundary, therefore the majority of the floodplain will be unaffected by the development in terms of its footprint.

21.6.2 The site overlies the Lower Permian Sandstone Formation, which is recognised as a major aquifer and there are a number of licensed and unlicensed water abstractions in the locality.

21.6.3 Construction works and site operations subsequent to the development have the potential to increase pollution risk to groundwater and surface water within and adjacent to the site area. The proposed development would increase the amount of impermeable area at the site, which could impact upon aquifer recharge and the response of receiving watercourses to rainfall.

21.6.4 The risk of water pollution can be minimised by adopting an active approach to pollution control and the associated management techniques during both construction and operation. Where possible the drainage scheme should adopt principles that are in accord with a sustainable urban development strategy.

Summary Environmental Impacts WATER RESOURCES					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Loss of areas of existing floodplain	Local	Adverse	Moderate	Permanent, Irreversible	<ul style="list-style-type: none"> Compensatory floodplain areas have been identified to the west and north of the site. Residual impact is minor.
Increased surface run-off	Local	Adverse	Moderate	Permanent, Irreversible	<ul style="list-style-type: none"> Sustainable urban drainage techniques utilised to determine potential run-off (includes use of swales, oversize pipes and underground storage) Planting of reedbeds Residual impact is minor
Impacts on aquifer	Regional	Adverse	Moderate	Temporary, Reversible	<ul style="list-style-type: none"> Detailed drainage system for development (soakaways or filter/french drains) Long term monitoring on impact on groundwater recharge Residual impact is minor
Pollution of surface/ground water during construction and operations	Regional	Adverse	Moderate	Temporary, Reversible	<ul style="list-style-type: none"> Adoption of active pollution control Management to include environmental protection procedures and techniques Residual impact is minor

21.7 Traffic

21.7.1 Transport to the site would consist of up to 2 trains per day and approximately 134 HGVs accessing the site in a peak hour (average flows are considered to be substantially less than this). Savell, Bird & Axon have undertaken a detailed traffic assessment, this was submitted with the original ES in 2000. An addendum to the traffic assessment undertaken in 2005 has been appended to this report.

21.7.2 The assessment considered a range of traffic generation models combined with those identified for the development of Skypark and Exeter & Devon Airport.

21.7.3 It can be concluded from this assessment that the development of Phase 1 would not have a significant impact on highway or junction capacity in this locality. On a regional basis the IFFDC should reduce long distance trip generation by HGV.

Summary Environmental Impacts Transportation					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Increased traffic including HGVs	Local	Adverse	Moderate	Permanent, but Reversible	<ul style="list-style-type: none"> Clyst Honiton bypass would take all HGV traffic, other than local deliveries. Residual impact is minor
Intermodal node road to rail	Regional	Beneficial	Moderate	Permanent, but Reversible	<ul style="list-style-type: none"> Importance of hub identified in several regional and sub regional studies.

21.8 Air quality

21.8.1 An assessment has been made of the likely impacts upon air quality resulting from the development of Exeter Gateway. The assessment has identified that air quality, can be affected in two ways:

- as a result of particulates (or dust) dispersed into the local area and causing a visible nuisance when deposited on a clean surface.
- the change in air quality as a result of traffic flows associated with the development during the operational phase.

21.8.2 The changes in air quality from transport relate primarily to the predicted traffic flows on the Clyst Honiton bypass. This is subject to a separate Environmental Statement, which has been considered and reported in this assessment.

21.8.3 The results of this assessment demonstrate that dust from earthworks and construction related operations should not cause a nuisance due to the separation distance between site activities and residential receptors in the locality. The assessment also demonstrates that these operations are highly amenable to mitigation and these can be implemented through a dust action plan to be agreed prior to site operations commencing.

21.8.4 With respect to site related traffic flows the assessment, drawn from the Clyst Honiton bypass ES, identifies that there would not be a significant change to air quality levels in comparison with the predicted air quality levels in the absence of the development but with the traffic routing. When compared with a background of a projected improvement in ambient air quality, emissions directly associated with the development should not lead to a deterioration of air quality. The increased traffic flow to the development should not cause air quality standards set for the area to be exceeded.

21.8.5 On a regional basis, the development of the Exeter Gateway should lead to a long term improvement in air quality by shift transport from HGV to rail. This is an important objective of Government policy to reduce CO₂ and other gaseous emissions.

Summary Environmental Impacts Air Quality					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Modal shift road to rail	Regional	Beneficial	Moderate	Permanent but reversible	<ul style="list-style-type: none"> Importance of hub identified in regional studies as a method of reducing road transport of heavy goods and therefore indicator of improving air quality.
Increase traffic movement	Local	Adverse	Minor	Permanent, irreversible	<ul style="list-style-type: none"> the development of the Clyst Honiton bypass will reduce the use of local road networks by HGVs
Increase dust levels	Local	Adverse	Minor	Temporary	<ul style="list-style-type: none"> Implementation of good management practices (cleaning road surfaces, covering dusty materials)

21.9 Noise and vibration

21.9.1 The development will not be a significant source of noise and vibration when it is completed, but may have an impact during its construction phase. Construction noise would be controlled by a Prior Consent Notice under Section 61 of the Control of Pollution Act 1974 and would be limited using best practicable site operation methods.

21.9.2 Specific mitigation measures will be agreed to ensure that noise and vibration from construction activities remain within the specified levels contained in the Prior Consent Notice. Screening measures will be implemented along the eastern boundary to reduce noise levels at properties on Station Road.

21.9.3 The noise assessment is based on the majority of HGV traffic entering and leaving the site during the day time with a reduction in frequency during the evening and night time period. Increased traffic flow generated by the development will have a marginally significant impact upon ambient levels generated by traffic on the C832, A30(T) and the proposed Clyst Honiton bypass.

Summary Environmental Impacts Noise And Vibration					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Increase in noise levels due to earthworks and construction	Local	Adverse	Moderate	Temporary and Reversible	<ul style="list-style-type: none"> Distance separation is such that predicted noise levels are generally low. Screening measures including temporary noise bunds. Agreed site noise limits through a prior consent notice Residual impact is minor
Increased noise levels due to increased traffic movements and site operations	Local	Adverse	Moderate	Permanent but reversible	<ul style="list-style-type: none"> Two properties are within the influencing distance of the main access road into Phase 1 of Exeter Gateway. Prediction for day and night time noise levels are generally low and can be managed to avoid disturbance Residual impact is minor

21.10 Flora and fauna

- 21.10.1 The study area is gently undulating and comprises mainly arable land, improved grassland and semi-improved land used primarily for pastoral farming. Hedgerows with mature trees encapsulate much of the fields. The majority of these hedgerows are double planted, on soil banks and some have associated scrubby bases and ditches. The other types of habitat present are the River Clyst corridor, which marks the western boundary of the site, and associated wet meadow areas, including an alder/willow woodland in the north western corner of the site.
- 21.10.2 There are no Sites of Special Scientific Interest, Local Nature Reserves or other nature conservation sites subject to statutory or other designations within the study area. The River Clyst is a tributary of the River Exe and therefore provides a potential pathway to an internationally designated Special Protection Area (SPA) on the Exe Estuary. The potential impacts on the Exe Estuary SPA have been considered by way of a scoping report for an Appropriate Assessment, this has been submitted to English Nature and the second review is currently under consideration.
- 21.10.3 The majority of the habitats on the site are of low to medium ecological significance being comprised mainly of arable land and poor semi-improved grassland, used primarily for pastoral farming.
- 21.10.4 Hedgerows with mature trees encapsulate many of the fields. Some of the hedgerows, particularly along the north eastern boundary, are of considerable age and species-rich. A proportion of the species-rich hedgerows will be retained and new hedgerow planted to the west of Exeter Gateway. The alder-willow woodland in the top north-west of the site is over 200 years old and is to be retained in its entirety. Together, the hedgerows and the alder-willow woodland provide the most important habitats for fauna, with the areas of tall ruderals, short ephemeral and perennial vegetation and arable field margins being the most important botanically. The floodplain grasslands along the River Clyst will also be retained.
- 21.10.5 A badger social group and their main sett is contained within the site. The area where the sett is located will be incorporated into the proposed development and there will be a substantial loss of foraging ground. Further studies will be required to identify appropriate areas to relocate the sett and to determine whether this is the preferred option.
- 21.10.6 Hayes Farm and associated outhouses have evidence of roost sites in use by long eared and common pipistrelle bats. These buildings will be demolished as part of the proposed development. Measures are outlined in the main text to mitigate against the loss of habitat for these legally protected species. The alder/willow woodland has also been identified as potential roost site for a number of bat species and therefore the

conservation and enhancement of this area will form an important part of the detailed application for site development.

21.10.7 Otters using the River Clyst will not be directly affected by the proposed development. There will be a permanent loss of habitat for invertebrate and bird species, which will in part be mitigated by the provision of new habitat and the retention and management of retained habitat.

21.10.8 Overall the impact of the proposed development on the site is considered to be a moderate adverse impact, due to the large area of the proposed development and the resultant loss in habitat. However, the proposed mitigation measures will maintain and enhance the most valuable habitats present and specific mitigation measures for badgers and bats will be incorporated.

21.10.9 The mitigation measures include increasing the wildlife value of the flood plain adjacent to the River Clyst (See Figure 3.3).

Summary Environmental Impacts Flora and Fauna					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Flora					
Loss of woodland	Local	Adverse	Minor	Temporary reversible	<ul style="list-style-type: none"> Additional planting of woodland as been identified on the landscape masterplan Residual impact minor beneficial
Loss of hedgerows	Local	Adverse	Moderate	Permanent but reversible	<ul style="list-style-type: none"> Retained hedgerows in the floodplain fields adjacent to the River Clyst will be thickened and gaps will be planted up. Additional hedgerow trees will be considered. Hedgerows / woodland on the western boundary of Phase 1 will be retained and strengthened with additional planting Hedgerows will be used within the terminal as landscaping around individual plots. Residual impact minor (beneficial with good long term management)
Ditch vegetation	Local	Adverse	Minor	Permanent but reversible	<ul style="list-style-type: none"> Species rich ditch on western boundary of Phase 1 retained. Ditches within the floodplain designed to increase biodiversity through construction of reedbeds within the ditch channel Residual impact moderate beneficial
Loss of Agricultural land	Local	Adverse	Negligible	Permanent irreversible	<ul style="list-style-type: none"> Low / no importance for flora and fauna

Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Fauna					
Badger habitat and sett	Local	Adverse	Major	Permanent but, reversible with mitigation	<ul style="list-style-type: none"> An area in the masterplan has been identified as replacement habitat for the badger colony within the Phase 1 development area Residual impact minor – subject to English Nature agreement on licence application
Bat roost sites, demolition of- Hayes House and outbuildings	Local	Adverse	Major	Permanent but reversible with mitigation	<ul style="list-style-type: none"> Prior to demolition of Hayes House, a licence will be required from English Nature to disturb the roosts – mitigation is likely to be a combination of appropriate tree roosts and if necessary receptor buildings (there is sufficient space within Phase 2, albeit temporary) Residual impact minor – subject to English Nature agreement on licence application).
Disturbance of protected species (bats, otters and breeding birds)	Local	Adverse	Minor - Moderate	Permanent but reversible with mitigation	<ul style="list-style-type: none"> Habitat for otters and bats within wet alder willow woodland will be buffered from development by habitat creation in floodplain and on the western boundary of the Phase 1 development. Habitat will be lost for nesting birds – timing for removal of vegetation out of nesting season and habitat creation in floodplain to provide additional nest sites for birds. Residual impact in minor.

21.11 Landscape and visual impact

21.11.1 The study area is not within an area of high landscape value, but as it is in agricultural use, on the urban fringe, it contributes to the wider landscape of gently undulating fields characteristic of this area, especially in terms of the landscape quality of the Clyst Valley.

21.11.2 The construction phase of Exeter Gateway will impact on the local landscape by changing landform and as a visible component, particularly from receptors to the east and west. The potential impact on the landscape amenity of the area and the visual impacts from identified viewpoints would be minimised by adopting a well designed, high quality built development (industrial in context), combined with external landscaping, in particular on the western boundary of the site.

21.11.3 In general the potential visual impact of the development has been identified as low from the majority of viewpoints around the site boundary and within the local landscape. From all these viewpoints the rooftops and facades of the proposed buildings will be visible, depending on their scale. The greatest potential visual impact will be the section of the C832 from Clyst Honiton and adjacent to the southern boundary of the outline application area. This route will overlook the southern part of the development, from which the proposed warehousing will be visible. The access

from the Clyst Honiton bypass into the site will also change the character of the road, but will be integral to the bypass development itself. Traffic and train movements will be visible from certain locations. In the long term, boundary and internal landscaping measures to the site have been proposed to mitigate the landscape and visual impacts in the locality and adjacent to the road.

Summary Environmental Impacts Landscape And Visual					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Landscape	Local	Adverse	Minor	Permanent, irreversible	<ul style="list-style-type: none"> Perimeter landscape works have been designed to strengthen the natural boundary of the development and provide a visual screen for the change in landform.
Visual intrusion	Local	Adverse	Moderate	Temporary, reversible	<ul style="list-style-type: none"> Advance landscape planting will be designed and agreed prior to the commencement of development in Phase 1 Long term management and maintenance of the landscaping in a detailed scheme to be agreed. Residual impact minor.

21.12 Cultural heritage

21.12.1 The site has been found to be rich in features of cultural significance. Certain of these features have been excavated and a full record made, in advance of mineral extraction at Hayes Quarry. The initial evaluation of the remaining known archaeology, primarily located in the Phase 2 development area, identified that one area was of at least county level significance for its multi-period occupation up to a Romano-British farmstead enclosure. English Heritage have identified that the site maybe of national significance, but agreed that, due to strategic importance of Exeter Gateway and its justification in terms of lack of alternative sites, that full record by excavation would be an acceptable approach to mitigation.

21.12.2 The development of the rail terminal and associated roads and buildings requires a significant change in landform, the potential impact upon the identified archaeological resource (in the Phase 2 area) will be adverse. There are no design solutions that can be forwarded which would preserve the archaeological features *in situ* and offer an economically viable or sustainable rail freight terminal. The original design scheme comprising both Phases 1 and 2 of the development and the levelling of the ground surface remains the only viable option, if the principle of the Exeter Gateway development is accepted.

21.12.3 During the extended consultations as part of the original ES both English Heritage and Devon County Council acknowledged that the preservation *in situ* of archaeological remains within the proposed development area was not possible. Further

consultations were made in 2005 to confirm that this position was still correct. Devon County Council Development Control Officer confirmed that the Council acknowledged that the remains could not be preserved *in situ* without compromising the economic viability or the sustainability of the proposed development of Exeter Gateway.

21.12.4 In mitigation for the proposed development of the site, a full programme of preservation by record has been identified. This would entail the excavation of all features of archaeological interest, which are subject to development. This will also comprise the full analysis and assessment of all data and the full publication of the results in an appropriate volume or journal.

21.12.5 The benefits of this programme of mitigation excavation would be to considerably enhance the understanding of the prehistoric, Romano-British and medieval settlement of the area. This would add to the body of knowledge already collected from previous areas of mineral extraction.

Summary Environmental Impacts Cultural Heritage					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Loss of archaeological features	Regional	Adverse	Major	Permanent, irreversible	<ul style="list-style-type: none"> Development of a comprehensive programme of archaeological evaluation works This will establish the presence or absence of further archaeological remains within the development site and will assess the significance, extent and quality of survival of the identified archaeological resource. Residual impact minor, subject to agreeing the scope and scale of the archaeological investigations.

21.13 Waste

21.13.1 A number of waste handling and disposal issues have been considered, including the treatment of the closed landfill during the earthworks phase of the development, the generation of waste material during the construction of Exeter Gateway, waste from operational activity and the closure and decommissioning of the facility.

21.13.2 The current landfill area located on site was restored in 1988 and the licence returned to the County Council. The landfill is now considered to be in a stable condition and has a low risk with respect to pollution of watercourses, groundwater and atmosphere. However, prior to the commencement of any works on the landfill a source-pathway-receptor investigation would be undertaken. This will provide information on the current status of the landfill and assist in the determination of the potential impacts on the environment and human health receptors during and post development. Investigation works will also need to be undertaken to determine the exact composition

of the waste, to determine licenses, or permits that will be required to remediate the landfill.

21.13.3 The landfill presents a significant limitation to the development of Phase 1, and as such requires either removal to a nearby licensed facility or relocation within the study area. The preferred option at this stage would be to extract and screen material suitable for secondary aggregates. The aggregates produced may be suitable for use in the construction of the development platform.

21.13.4 Waste generated during the construction and operation of the facility includes general construction rubble, inert packaging and foul sewerage. A licensed contractor would dispose of these wastes for landfill or recycling, depending upon the disposal options available. The existing sewer network would have to be extended to serve the development.

21.13.5 The potential for future decommissioning and closure of the site would be most likely to result in the continued use of the site as an industrial/employment zone, re-using the site infrastructure. It is unlikely that the site would be returned to agriculture.

Summary Environmental Impacts Waste					
Description of impact	Geographical significance	Impact magnitude	Significance	Reversibility	Mitigation measures
Potential exposure to contaminative materials within the restored landfill area	Local	Adverse	Moderate	Permanent, irreversible	<ul style="list-style-type: none"> A source-pathway-receptor investigation and assessment would direct the detailed designs required for the remediation of the landfill site. Residual impact minor, subject to the risk assessment and EA agreement on the design / approach to remediation

21.14 Material assets

21.14.1 The development of the IFFDC will affect a number of existing and proposed material assets on and adjacent to the site including:

- Hayes Farm sand and gravel quarry;
- Hayes House;
- Minerals resources (within the preferred area identified in the minerals local plan);
- Groundwater resources and local licensed and unlicensed abstractions;
- Skypark;
- Exeter & Devon Airport (and development proposals); and
- Cranbrook New Community (identified in the structure plan).

- 21.14.2 The development of the IFFDC would provide a local demand for aggregate which can be supplied from the quarry, which is considered a short term benefit. However, in the longer term the sterilisation of potential mineral reserves within the preferred area for sand and gravel extraction is an adverse impact.
- 21.14.3 Hayes House is a private dwelling of no regional architectural or historical importance. The house and adjacent out buildings are owned by The Church Commissioners for England. The house and buildings would be demolished as part of the Phase 1 development.
- 21.14.4 It is considered likely that the potential impacts associated with development at Skypark and Exeter & Devon Airport will be generally positive, with a certain degree of synergy between the individual proposals with respect to both commercial opportunities and integration of transport. No specific impacts are anticipated with respect to the proposals for the Cranbrook New Community. However, the economic impact is considered to be beneficial, as Exeter Gateway will provide a focus for employment and other related services.

21.15 Further studies and summary

- 21.15.1 The Environmental Statement has identified that further studies are required before a detailed application is submitted. These detailed studies encompass a range of environmental issues, schemes to be agreed and requirement for licenses and/or permits. These have been identified in outline and it is anticipated that they would form the basis of conditions attached to an outline planning consent.
- 21.15.2 In summary, Exeter Gateway is a component of the Exeter Area of Economic Development and will form a regional important multi-modal hub for the interchange of heavy goods from road to rail. The development will be in two phases and whilst the EIA (and this non technical summary) considered both phases, the outline application is for Phase 1 only.