

1 Introduction

2 Method and Approach

3 Site and Surrounding Area

4 Proposed Development

5 Planning Policy Context

6 Socio Economic Issues

7 Transport

8 Noise

9 Ecology

10 Land and Soils

11 Hydrology and Drainage

12 Air Quality

13 Light

14 Landscape
and Visual Impact

15 Archaeology

16 Summary

15 ARCHAEOLOGY

15.1 Introduction

15.1.1 This chapter provides an assessment of the likely effects on surviving archaeological remains associated with the Proposed Remodelling Works and Development and identifies appropriate mitigation measures. This assessment incorporates the results of a desk-based assessment of the Site, carried out by Exeter Archaeology (EA) in September 2003 (Appendix 15.1) and subsequent archaeological field evaluation of two greenfield areas within the Site (Appendix 15.2).

15.1.2 All of the sites of archaeological significance identified in this Environmental Statement (ES) for the Proposed Remodelling Works and Development have been identified and assessed in the ES that accompanied the application for the Consented Remodelling Works. The baseline conditions present at the development phase are largely dependant on the implementation of mitigation measures proposed during the Consented Remodelling Works. Therefore, in order to maintain a consistent approach, the archaeological impact assessment and mitigation measures proposed in this ES remain largely unchanged from those presented in the ES for the Consented Remodelling Works, and as a result, the likely effects on surviving archaeological remains associated with these consented works are also considered.

Site Description

15.1.3 The Site, centred on SX 5137 5435, is located on the east side of the River Plym, north-east of Laira Bridge. It is bounded to the north by Chelson Meadow Landfill and Recycling Centre. Farmland and a bus depot lie to the north east. The Site is bounded by residential properties to the south, and industrial land to the west.

15.1.4 The underlying geology is Middle Devonian Limestone, with a band of Upper Devonian Slate running along the north and north-eastern side of the Site. The soils are brown earths of the Nordrach Association.

15.2 Assessment Approach

15.2.1 Standard procedures have been followed for archaeological assessment, which has been undertaken in accordance with the guidelines set out in Planning Policy Guidance Note 16 (PPG16) *Archaeology and Planning*. Guidance set out in the Plymouth City Council Local Plan (adopted 1996), chapter 3, AEV 11 has also been followed. Until the adoption of the Plymouth City Council (PPC) Local Development Framework (LDF), currently being developed by PCC, the principal guidance for planning issues is the current Local Plan (adopted 1996). The now suspended First Deposit Local Plan (1995-2011) is still a material planning consideration, although secondary in consideration to the adopted Local Plan. Guidance presented in the North Plymstock Area Action Plan, produced for the as yet unadopted LDF, has also been followed.

Assessment Methodology

15.2.2 The desk-based assessment (Appendix 15.1) consisted of a study using primary and secondary sources (eg. historic maps and documents, published material) and consultation of the Historic Environment Record for information on all known archaeological sites in the area. The following record holding bodies were utilised: the Westcountry Studies Library (WCSL), Exeter; Devon Record Office (DRO), Exeter; Plymouth and West Devon Record Office, Plymouth; Plymouth City Council Historic Environment Record (HER), Plymouth.

15.2.3 An inspection of the Site and adjacent areas was also undertaken.

Terminology

15.2.4 The archaeological significance of individual deposits, features, or assemblages, is discussed in Section 15.4 and these are defined as:

- Local – significant at local level;

- Regional – significant at regional level;
- National – significant at national level; and
- International – significant at international level.

15.2.5 Impacts on archaeological remains associated with the Proposed Development and Proposed Remodelling Works would occur at the time of construction, when surviving deposits (deposits that have not been removed during the Consented Remodelling Works) may be removed. These impacts are discussed in Section 15.5. The scales of impact significance used in this chapter are as follows:

- Minor (or slight) – hardly noteworthy or material;
- Moderate – noteworthy, material;
- Major (or substantial) – extremely noteworthy, material

15.2.6 It should be noted that an archaeological resource is finite and cannot be replaced or re-located. Therefore, any impact would be adverse and permanent.

15.3 Planning Policy

15.3.1 PPG16 (1990) sets out the Government's policy on archaeological remains. Among its recommendations are that archaeological remains should be seen as a non-renewable resource and that care must be taken to ensure that they are not needlessly destroyed (paragraph 6); that the key to informed planning decisions is for early consideration to be given to the question of archaeological remains on a site where development is planned (paragraph 12); and that if preservation *in situ* is not feasible, an archaeological excavation may be an acceptable alternative but should be regarded as a second best option (paragraph 13).

15.3.2 The City of Plymouth First Deposit Local Plan, 1995-2011 (Historic Environment: Policy 73, Ancient Monuments and Archaeology) states the following:

“The city’s archaeological heritage will be preserved as far as possible by:

- 1. Not permitting proposals for development that would unacceptably affect the most important archaeological remains, or their character or setting, whether these remains are scheduled or not.***
- 2. Not permitting proposals for development that would unacceptably affect sites of lesser archaeological importance, unless it can be demonstrated that the importance of the development outweighs the importance of the archaeological resource. In these cases development will only be allowed subject to appropriate mitigation.***
- 3. Where appropriate, requiring an archaeological appraisal or evaluation of a site to accompany applications for development, or before an application will be determined. This particularly applies to sites within the historic core of the city; within other known historic foci in the city limits; on previously developed sites, and on large Greenfield sites.***
- 4. Where appropriate requiring provision of interpretation order to raise public awareness of the heritage asset.***

Reasons for the policy: The archaeological resource is a finite and diminishing resource. It is therefore of the greatest importance to ensure that it is preserved as far as possible. The policy addresses this requirement.”

15.3.3 The City of Plymouth Local Plan, 1996 (Built Heritage: AEV11, The Preservation of Archaeological/Historical Heritage) states the following:

“The city’s archaeological and historic heritage will be preserved, as far as practicable, in particular:

1. ***An archaeological assessment and/or filed evaluation report should, when appropriate, be submitted as part of a planning application for the development proposals that are likely to affect a site of archaeological interest or importance.***
2. ***Planning permission for developments which would destroy, or seriously damage nationally important remains, whether scheduled or un-scheduled, or their character or setting, will be refused, special regard will be had to the preservation of sites of local archaeological and historical importance where such remains would be unacceptably affected by proposals.***
3. ***Development schemes should preserve archaeological remains on site where appropriate and feasible.***
4. ***Conditions on planning permissions will be imposed and/or agreements will be sought with developers to ensure that, where appropriate, sites of archaeological interest including standing structures are excavated and/or recorded to the council's satisfaction, before alteration, demolition, site clearance or development commences; or are subject to a limited recording action project during development, and that the results of any recording project or excavation are made available to the public."***

15.3.4 Section 3.4.8 states:

"Archaeological remains are a finite source and one which is non-renewable. They represent vital evidence, sometimes the only evidence of the development of our civilisation. It is the role of the Local Planning Authority to ensure that nationally important remains are, wherever possible preserved in place or, where this is not possible, to ensure that the archaeological evidence for the history of these and other site of archaeological interest are not lost or destroyed when development takes place."

15.4 Baseline Conditions

15.4.1 This section identifies the features of archaeological significance located within the Site. All of the sites of archaeological significance identified in this ES for the Proposed Development and Proposed Remodelling Works have been previously identified and assessed in the ES that accompanied the application for the Consented Remodelling Works. The baseline conditions present at the Proposed Remodelling Works and Development are partly dependent on the implementation of mitigation measures proposed during the Consented Remodelling Works.

Results of the Desk-Based Assessment

15.4.2 An archaeological desk-based assessment of the Site (including the Consented Remodelling area) was prepared in September 2003 (Appendix 15.1). This study highlighted the existence of a number of sites of archaeological significance located within, and in the vicinity, of the Proposed Remodelling Works and Development. In brief, those sites (Appendix 15.1, Figure 3) wholly or partly within the Site included:

- A limekiln, of post-medieval date, considered to be of local significance (see Section 15.5.2);
- Caves and fissures in the limestone (with the potential for preserving fossilised prehistoric remains), considered to have the potential to be of regional, or even national, significance (see Section 15.5.3);
- A cropmark possibly representing an enclosure to the north-west of Area B. The significance cannot be determined in advance of further investigation, but could be of regional or even national, significance if a prehistoric enclosure. Doubts over the status of the feature should be noted, and are presented below in Section 15.4.7;
- Historic quarry workings, of post-medieval date, considered to be of local significance (see Section 15.5.5);

- A railway, which survives as an embankment/cutting, considered of local significance (see Section 15.5.6);
- A hollow way, of possible medieval date, considered of local significance (see Section 15.5.7); and
- Field boundaries, some of potential medieval date, and considered of local significance (see Section 15.5.9).

Results of the Archaeological Significance

15.4.3 Evaluative excavations were undertaken in two greenfield areas (Areas A and B in Appendix 15.2, Figures 1, 2 and 3). These lay within the Site, and resulted in the identification of significant archaeological remains in the vicinity (Appendix 15.2).

15.4.4 No archaeological features were exposed within the evaluation trenches in Area A (Appendix 15.2, Figures 1 and 2), although residential prehistoric and medieval pottery was retrieved from the topsoil.

15.4.5 Within Area B (Appendix 15.2, Figures 1 and 3), which lies within the Site, a number of features of prehistoric date were exposed in trench 4. These include a buried soil, which sealed what appeared to be two rows of postholes, a pit, a second pit or ditch terminus, and a ditch with associated bank. The buried soil and three of the features contained pottery sherds dating from middle Bronze Age (c.1600-1000BC). Samples from the buried soil, one of the postholes and a pit were subjected to radiocarbon dating yielding a date of 1520BC-1410BC (at 95.4% probability) (Appendix 15.3). These remains are considered to be of a regional, and potentially of a national, significance.

15.4.6 Within Area B (Appendix 15.2, Figures 1 and 3), parts of ditches of a Romano-British enclosure were exposed in trenches 7, 20 and 21. The feature dates to the 1st/2nd Century AD. The presence of roof slates and limestone blocks within the ditch fill suggests a substantial structure, perhaps a villa or farmstead. Evidence of occupation and activity included mollusk shells, animal bones and iron smithing debris. Ditches and pits found to the south-west, and a single ditch to the north-east may be associated with the settlement; it is possible that such ditches could represent part of the field system. These remains are considered to be of a regional, and potentially of a national, significance.

15.4.7 To the north-west of Area B, a cropmark site is recorded on the Plymouth SMR as 'two areas of double ditching' visible on an aerial photograph (Appendix 15.1, site 19; Appendix 15.2, Conclusions, page 9). This site was not investigated as part of the evaluation excavation due to dense vegetation. The aerial photograph from which this site was apparently identified (given as Ref AP843) could not be located at the Plymouth Museum or Plymouth and West Devon Record Office. No such features are visible on the 1940 Luftwaffe aerial photographs. An OS aerial photograph (not dated, c.1980s/1990s), however, shows areas of vehicle tracks, which may represent the reported 'double ditching'. It seems possible, therefore, that the vehicle tracks have been misinterpreted as an archaeological feature. As stated in Section 15.4.2 above, the significance of these features cannot be determined in advance of further investigation, but could be of regional or even national, significance if a prehistoric enclosure.

15.5 Key Impacts and Likely Significant Effects

15.5.1 A middle Bronze Age settlement site and medieval ditches (15.4.5) have been identified within the field above the east end of the quarry (Appendix 15.2, Figure 3). Part of this area is to be reduced in level during the Consented Remodelling Works, resulting in a major and permanent impact on this prehistoric site. The impact of the Proposed Development on the archaeological remains would be dependent on the extent of the prior remodelling activity and the level of the associated archaeological work undertaken in mitigation. Areas or pockets of archaeological deposits or remains may survive the Remodelling Works and remain at threat from the impact of the Proposed Development.

15.5.2 The limekiln to the west of Billacombe Green will be removed as part of the Consented Remodelling Works. The impact on the structure is major and permanent and would occur during the Consented Remodelling Works, when appropriate mitigation measures would be undertaken.

15.5.3 There is a potential for fissures and caves to occur within the Site. However the specific location of these features will only be identified during the Proposed Remodelling Works. The potential for an impact on caves and fissures within the limestone of the Site is dependent on the location of such features, and of the nature of the associated groundworks. Fissures and caves are most likely to be identified in the following areas and therefore the greatest potential for adverse impacts from the Proposed Remodelling Works and Development, which would be major in scale and permanent, exists at these locations:

- The north cliff face;
- The field above the east end of the quarry;
- The rock face around Pomphlett Industrial Estate;
- The proposed school site;
- The south face of the quarry;
- The southern face of the quarry, immediately to the west of the clay pocket (during work detailed in the Consented Remodelling Works to remove a ridge between Billacombe Road and the main quarry);
- The south-west area (particularly the cliff face on the east side of the cutting); and
- The access road from the east.

15.5.4 The potential for fissures and caves to occur within the base of the quarry should also be considered. These would be removed from future investigation by the infilling during the Proposed Remodelling Works.

15.5.5 The impact on the cropmark is likely to be major and permanent as it lies beneath an area of proposed reductions in levels of advance of construction, through the Remodelling Works. The extent of the impact of the Proposed Development on the archaeological remains would be dependent on the extent of the prior Remodelling Works and the level of the associated archaeological work undertaken in mitigation. Areas, or pockets, of archaeological deposits or remains may survive the Remodelling and remain at threat from the impact of the Proposed Development. The extent of this potential survival cannot be determined at this stage.

15.5.6 Little of the historic workings of the quarries is likely to have survived later expansion, and where extant is unlikely to date to before the nineteenth-century, and any impact is therefore considered to be minor.

15.5.7 Any impact on the line of Billacombe railway is restricted to the access crossing to the west of Billacombe Green, although this impact is likely to be slight.

15.5.8 The potential exists for an impact on the physical remains (the track itself and any flanking banks) of the north-eastern corner of the hollow way (Appendix 15.1: Fig. 3, no. 22) from the construction of the proposed access road. This feature represents a possible medieval thoroughfare. Any impact would be restricted to this small part of this locally significant feature, but would be permanent and major within this restricted area.

15.5.9 The potential exists for an impact from the proposed access road on remains associated with the Romano-British enclosure identified during the evaluation of Area B (Appendix 15.2: Fig. 3). The impact of the Proposed Development and Proposed Remodelling Works on the archaeological remains would be dependent on the extent of the Consented Remodelling Works and the level of the associated archaeological work undertaken in mitigation, but has the potential to be major and permanent. Areas, or pockets, of archaeological deposits or remains may survive the Remodelling Works and remain at threat from the impact of the Proposed Development.

15.5.10 The impact on field boundaries (15.4.2) would be dependent on the character of the ground works associated with the Proposed Remodelling Works and Development and may be major and permanent.

15.5.11 The impact on any unidentified archaeological features would also depend upon the character of the ground works associated with the Proposed Remodelling Works and Development, and cannot be

quantified. An area of unknown potential exists within the field intended for the proposed school and a groundwater route adjacent to the building.

15.5.12 No listed buildings or Scheduled Monuments lie within the Site itself. Saltram House and Gardens is considered within Chapter 14 Landscape and Visual Impact.

15.5.13 No temporary effects related to the construction stage have been identified.

15.5.14 All of the identified potential impacts are associated with the Proposed Remodelling Works and construction stage of the Proposed Development. There are no foreseeable impacts on archaeological features of significance associated with the operational stage of the Proposed Development, other than a potential impact on the setting of Saltram House, addressed in the accompanying assessment of the landscape and visual impacts (see Chapter 14).

15.6 Mitigation and Enhancement

15.6.1 Final details of the mitigation will be agreed with the Local Planning Authority (Plymouth City Council) in accordance with PPG 16 *Archaeology and Planning* (November 1990). The mitigation would result in the establishment of a series of measures, including preservation of sites *by record* or, in some cases, *in situ*, where required.

15.6.2 Extensive development is proposed in Area B where prehistoric and medieval features have been shown to exist directly to the east of the quarry and across land between the proposed access road and existing residential areas. This area would be subject to general reductions in ground levels during the Remodelling Works and the excavation of trenches for building foundations and services, resulting in a major and permanent impact on this site with potential for a regional if not national significance. Mitigation is likely to require an archaeological open-area excavation to ensure preservation by record. Such an excavation, will be undertaken in accordance with strategies to be agreed with the Plymouth City Archaeologist, would be carried out in advance of any groundworks in this area, which may, at least in part, take place in advance of the Consented Remodelling Works. In the remaining parts of Area B a watching brief on groundworks is likely to be required.

15.6.3 The limekiln to the west of Billacombe Green would be the subject of high level archaeological recording before its demolition. This exercise would be undertaken as part of the Consented Remodelling Works.

15.6.4 Mitigation for the area affected by the proposed new school (Area A7) would involve an archaeological watching brief to be undertaken during any groundworks, if not completed in full during the Consented 05/00473/FUL Remodelling Works (for this area only). This would necessitate an archaeologist being present during all ground disturbance, including topsoil stripping, the excavation or construction of temporary features such as access roads, drainage ditches etc, as well as permanent foundation trenches, service trenches and the proposed groundwater route. Any archaeological features exposed during these works would be recorded by the archaeologist. This may necessitate a temporary cessation of construction works in the immediate area until recording is completed.

15.6.5 During the implementation of a watching brief for works involving the disturbance of *in situ* geological deposits, any fissures or caves identified would be recorded. As discussed in Section 15.5.3, fissures are most likely to be identified in the following areas and would be a key consideration of a watching brief implemented during groundworks in these areas:

- The North Cliff face;
- The field above the east end of the quarry;
- The rockface around Pomphlett Industrial Estate; The south face of the quarry;
- The southern face of the quarry, immediately to the west of the clay pocket (during work detailed in the Consented Remodelling Works to remove a ridge between Billacombe Road and the main quarry);

- The proposed school site; and
- The south-west area (particularly the cliff face on the east side of the cutting).

15.6.6 The watching brief should also the base of the quarry prior to infilling during the Proposed Remodelling Works.

15.6.7 The field above the east end of the main quarry contains the putative enclosure identified by aerial photography (Appendix 15.1, site 19). Archaeological investigation of this feature would be required as part of investigations associated with the Consented Remodelling Works, in areas of the putative enclosure affected by these works. This would initially take the form of an evaluation excavation informed by prior geophysical survey if practicable. If required, these works may be followed by a watching brief during topsoil stripping, or further formal excavation, dependent on findings. Any areas within the development footprint that are not investigated during the Consented Remodelling Works would require investigation in advance of the Proposed Remodelling Work and Proposed Development.

15.6.8 Any groundwork in the vicinity of Billacombe railway would be subject to a watching brief to record any disturbance to this feature.

15.6.9 Any groundwork work in the vicinity of the north-eastern corner of the hollow way would be subject to a watching brief to record any disturbance to this potentially medieval feature.

15.6.10 Any work for the construction of the access road to the east of the quarry would be subject to a watching brief to record any potential disturbance to the Romano-British enclosure or other potential archaeological features on the route.

15.6.11 Archaeological monitoring and recording would be undertaken in the event that hedgebanks are to be breached or removed during the Proposed Development. This may involve cutting a section through the bank with any associated ditches being examined and recorded. Where necessary, samples may be taken for palaeoenvironmental or dating analysis.

15.6.12 The above mitigation measures have been produced following informal consultation between Exeter Archaeology and the Plymouth City Archaeologist, based on existing proposals. Any variation in the detailed development design may result in changes to the archaeological mitigation required. A Written Scheme of Investigation would be produced, based on the detailed design, identifying the scope of the archaeological mitigation, and would be submitted for formal approval by the Plymouth City Archaeologist, prior to commencement of development on the Site.

15.7 Summary

15.7.1 Sites of archaeological significance are located within areas subject to impact from the Proposed Development. Elements of these sites lie within areas subject to disturbance from the Remodelling Works, and will be investigated and recorded archaeologically before or during the remodelling work stage.

15.7.2 Impacts on any surviving archaeological remains would also occur at the time of construction associated with the Proposed Development, when deposits may be removed by related groundworks. It is noted that any archaeological resource is finite and cannot be replaced or re-located.

15.7.3 The identified potential impacts on the archaeological resource would be mitigated by prior archaeological fieldwork (identification, investigation and recording of all archaeological deposits or remains). This fieldwork, part of which will be undertaken during the Remodelling Works stage, would be undertaken by a recognised archaeological contractor, acting in accordance with standards and specifications produced by the Institute of Field Archaeologists and English Heritage, and following agreement of appropriate strategies with the Plymouth City Archaeologist. Preservation by record through excavation is likely to be required in at least one area.

1 Introduction

2 Method and Approach

3 Site and Surrounding Area

4 Proposed Development

5 Planning Policy Context

6 Socio Economic Issues

7 Transport

8 Noise

9 Ecology

10 Land and Soils

11 Hydrology and Drainage

12 Air Quality

13 Light

14 Landscape
and Visual Impact

15 Archaeology

16 Summary

16 SUMMARY

16.1 Introduction

16.1.1 An Environmental Statement (ES) has been prepared to accompany an outline planning application submitted by Pegasus Planning Group LLP on behalf of Persimmon Homes Ltd (led by Persimmon Special Projects Western) to Plymouth City Council for the comprehensive redevelopment of the former quarry at Plymstock, Plymouth.

16.1.2 All major remodelling works necessary to facilitate the redevelopment are included as part of this application. The application is made following the recent Consented Remodelling Works for the Site (ref 06/02048/FUL) which covered the processing, temporary stockpiling and spreading of excavated on-site materials and previously consented imported fill material. This consent enables the remodelling of the disused quarry so that the necessary engineering works can be carried out in advance of the development of a new urban neighbourhood as proposed in the emerging Area Action Plan (AAP). The remodelling which was the subject of planning permission 06/02048/FUL and 05/0473/FUL forms the 'baseline' for consideration of the remodelling proposals now incorporated in this application.

16.2 Site and Surrounding Area

16.2.1 The Site is located immediately east of the Plymouth City Centre, on the east side of the River Plym. To the north of the Site, the Quarry is bounded by Chelson Meadow landfill and waste recycling facility and beyond this to the north and east is an area of open countryside forming part of the listed Saltram Estate and Saltram House (Grade 1 Listed). To the south lies Billacombe Road (A379).

16.2.2 The Site comprises the former quarry, cement works, scrub covered waste dumps, former railway land and Pomphlett Plantation and the eastern fields, and the access points to the Site. It forms a major part of the Plymstock Quarry and former Blue Circle Cement works complex. The application area extends to approximately 72 ha, however a cumulative area of 73ha has been assessed to include Pomphlett Industrial Estate. The Site includes the former Blue Circle Cement Works, redundant quarries (Saltram Quarry, Pomphlett Limestone Quarry and the Tarmac/Hanson area known collectively as Plymstock Quarry), and extends to Billacombe Road where necessary for subsequent highway improvements and access. The Site also includes the eastern fields, northern pastures and Pomphlett Plantation.

16.3 Proposed Development

16.3.1 In summary, the Proposed Development includes:

- a residential component comprising a maximum of 1,650 dwellings of varying type and tenure.
- the provision of approximately 21,000m² Gross Floor Area (GFA) for employment purposes and associated parking on 3.5 ha of land. In addition to this, an area of employment would be developed to specifically cater for the relocation of businesses based at the Pomphlett Industrial Estate (PIE) in an area of 0.4 ha;
- a mixed-use local centre which would consist of a central Main Square with mixed use units, public space, parking and a public transport 'Mobi-hub'. A 2,000m² GFA supermarket would also be developed in this area together with complementary uses within A1, A2, A3, A4, A5, B1, C2, C3, D1 and D2 (400m²)GFA;
- a range of community facilities have been incorporated into the Proposed Development including an extended primary school. Community facilities would also include a children's centre, library, place of worship and community space and a school/community hall (incorporating a badminton court and changing facilities), a Multi-Use Games Area (MUGA)

and an all weather pitch for community use. A General Practitioners' surgery and health centre would also be accommodated in this area; and

- Recreational open spaces have also been provided for in the Proposed Development. A major area of informal open space would be provided within the northern pastures of the Site. Formal children's play space would include two Neighbourhood Equipped Areas for Play (NEAP) within the Main Square and the Eastern Fields area. Four informal Meeting Spaces for older children and teenagers would also be provided.

16.3.2 All major remodelling works necessary to facilitate the redevelopment are included as part of this application. Reference is also made however to the planning permissions which already exist for this purpose to establish the principles. The Proposed Remodelling Work referenced within this application refers to the Consented Remodelling Works provided by the above planning permissions together with some additional comparatively limited remodelling required to facilitate the Proposed Development stage.

16.3.3 In addition to the application area, the ES Study Area has also included the existing Pomphlett Industrial Estate area by way of cumulative impacts and has considered an additional 100 units to the application for 1,650 dwellings to give an overall assessment of 1,750 units as a worst case scenario.

16.4 Planning Policy Context

16.4.1 The Site has been identified as a location which offers particular opportunity for redevelopment and regeneration. It was previously identified for redevelopment in the replacement Local Plan and is now covered by the Plymouth Core Strategy and the North Plymstock Area Action Plan (AAP) which set out the detailed policy framework within which development proposals should be considered.

16.4.2 Policy NP01 of the AAP identifies Plymstock Quarry as a major brownfield redevelopment opportunity which can facilitate a new sustainable mixed-use neighbourhood. The planning application has been prepared in parallel with the adopted Core Strategy and the AAP and the proposals therefore broadly accord with the quantum and distribution envisaged in the allocation.

16.4.3 It can also be demonstrated that the remodelling proposals accord with the policies contained within the Development Plan, as well as national planning policy guidance. In addition, it can be demonstrated that the remodelling proposals are complementary to the longer term aspirations to create a new sustainable community at Plymstock Quarry. Indeed, the proposals are an essential component of the preliminary works that will be required to facilitate the future redevelopment of the site.

16.5 Socio Economic Issues

16.5.1 The Proposed Development would affect the local population principally in terms of housing, employment, recreation/community facilities, education, health and social services. Up to 1,750 dwellings would be provided on the Site (including PIE) incorporating affordable housing delivery which is to be provided by an affordable housing provider, with dwellings to be managed by a registered social landlord. The scale of affordable housing will be negotiated as part of the planning obligations package for the site, having regard to the requirements of the AAP and Core Strategy Policy CS15, the delivery will be secured through an appropriate Section 106 agreement. The Proposed Development would create a net increase in employment opportunities both in the short term during the construction period, and following the completion of this mixed-use scheme.

16.5.2 The Proposed Development incorporates the capacity for the 'extended' two tier primary school and contributions to a programme of improvements to local secondary schools. Community facilities would also include a children's centre, library, place of worship and community space and a school/community hall (incorporating a badminton court and changing facilities), a Multi-Use Games Area (MUGA) and an all weather pitch for community use. A General Practitioners' surgery and health centre would also be accommodated in this area in accordance with the AAP requirements. Further community facilities delivered

within the Proposed Development will include a new local centre which will service the retail needs of the new residents.

16.5.3 Recreational open spaces have also been provided for in the Proposed Development. A major area of informal open space would be provided within the northern pastures of the Site. Formal children's play space would include two Neighbourhood Equipped Areas for Play (NEAP) within the Main Square and the Eastern Fields area. Four informal Meeting Spaces for older children and teenagers would also be provided.

16.6 Transport

16.6.1 A Transport Assessment (TA) and Travel Plans for each of the major land uses have been prepared to accompany the planning application and the approach of these documents has been to promote the use of sustainable modes of transport.

16.6.2 Access to the Site is principally via Billacombe Road, with secondary access from The Ride and Colesdown Hill. There are no public rights of way within the Site. Bus stops are located close to the site on both sides of Billacombe Road.

16.6.3 The Proposed Development is for mixed use development and its associated access and off-site highway and bus priority works will have transport impacts. These can be identified in terms of construction traffic and construction works impacts, and impacts which result when the Proposed Development is complete and all facilities are in operation. The Proposed Development comprises new homes and will attract a population of economically active people in excess of the planned new work places within the Site. One consequence of this will be in-commuting movements to and from the Site, as well as movements associated with education, shopping, leisure and personal business activities. The provision of a primary school, employment and retail uses will contain a number of these movements within the Site.

16.6.4 The likely significant effects identified relate to development traffic impacts on the principal distributor road, Billacombe Road, between Colesdown Hill and Laira Bridge and construction phase impacts at The Ride and in Billacombe Road.

16.6.5 This Proposed Development has the inevitable consequence of increasing congestion delays to private transport. However, this is also a democratic and necessary measure applied in the search for sustainable and equitable solutions for travel. Whilst increased congestion delay is regarded in evaluation guidance as an adverse impact, it may also be viewed as an essential component of policy implementation. Off-site works in connection with bus priority measures and public transport provisions within the Proposed Development, will make the selection of buses for journeys a practical and attractive option. On-site and off-site works in connection with the provision of facilities for pedestrians and cyclists will similarly make these safe, practical and attractive options for some trips.

16.7 Noise

16.7.1 A series of environmental noise measurements have been undertaken and a noise model constructed to investigate the effects of existing and future noise levels on the suitability of the Site for development, and to identify any noise impacts that are likely as a result of the topographical remodelling, construction and operation of the Proposed Development.

16.7.2 Comparison of the noise survey results with the criteria contained within Government guidance indicates that an appropriate level of protection against noise can be provided for the future occupants of the proposed dwellings using standard construction techniques and materials.

16.7.3 Noise levels from road traffic generated by the development have been predicted at noise sensitive properties in the vicinity of the site and the impact of changes in noise level assessed. The change in road traffic noise levels as a result of the Proposed Development is assessed to be imperceptible.

16.7.4 Noise levels from the topographical remodelling and construction of the Proposed Development have been predicted at noise-sensitive properties in the vicinity of the site and the impact of the noise assessed. Mitigation measures have been recommended to control noise from construction activities so far as is reasonably practicable.

16.7.5 An assessment has been undertaken to determine the localised effects of both existing and proposed (landfill capping/restoration and refuse transfer station) industrial noise on the suitability of the Site for the Proposed Development. The assessment identified that noise from activities at the Chelson Meadow civic amenity site present a constraint to residential dwellings proposed close to its boundary; in particular, noise from bottle drops at the bottle recycling facility and noise from a mobile metal crusher. Mitigation measures to control the impact of this noise have been formally agreed and will be implemented through the Section 106 agreement so that an appropriate and acceptable residential environment and amenity can be provided.

16.8 Ecology

16.8.1 Field surveys and a desk-based assessment revealed that most of the Site comprised a former limestone quarry of limited value to wildlife. The grassland fields within the Site are also of limited value to wildlife. However, there are several sites of nature conservation value within or adjacent to the Site and mitigation measures have been devised to protect and enhance these sites.

16.8.2 The sites of nature conservation value included Billacombe Site of Special Scientific Interest (SSSI); Billacombe Green potential County Wildlife Site (pCWS); Billacombe Railway CWS, Pomphlett Plantation CWS; the Plym Estuary pCWS and Wixenford Quarry Marsh CWS. Measures would be put in place, as required, to prevent damage to these areas during construction. Similarly, measures would be put in place to restrict, and in the case of Billacombe Railway prevent, public access into these areas when construction is complete.

16.8.3 New tree and shrub planting would be provided to compensate for the loss of woodland on the edge of Pomphlett Plantation. Gaps in the retained hedgerows would also be planted and new links created to compensate for the loss of short sections of hedgerow. All of the ancient trees would be retained. New areas of calcareous grassland would also be created within and on the edge of the main quarry area to compensate for the loss of small areas of grassland. Lime-loving plants and ground flora plants associated with woodlands that would be lost would also be moved to areas of retained habitat.

16.8.4 Areas of value to invertebrates and amphibians would be retained within the Proposed Development. Reptiles would be removed from the built-development area into specially-prepared areas of grassland and scrub. These habitats would be managed to enhance and maintain their value for reptiles. Site clearance would be timed to avoid disturbance to nesting birds. The new tree and shrub planting would provide additional habitat for nesting and foraging birds.

16.8.5 A number of measures would be put in place to avoid adverse effects on bats. These include: the provision of a purpose-built bat roost (as part of consented remodelling works); green corridors to maintain links between areas of bat foraging habitat; a bat structure to maintain the canopy links in one of the green corridors; sensitive lighting to avoid disruption to foraging areas and commuting routes; additional tree and shrub planting to fill in gaps within existing vegetation belts that are used by foraging/commuting bats; and a new waterbody to replace areas of open water that were of some, limited, value to bats. In addition, bat boxes would also be provided on some of the mature trees to replace potential tree roost sites that would be lost. Pre-construction surveys would also be undertaken to confirm the presence/absence of bat roosts within mature trees before they are felled. Similarly, surveys would be undertaken to confirm that there are no badger setts within areas of dense scrub before they are cleared. The Proposed Development would not have any adverse effects on badgers and the new tree and shrub planting and improved management of the grassland may be of some benefit to badgers.

16.8.6 Overall, the habitat loss associated with the Proposed Development would have a short-term effect on wildlife. However, the habitat creation and enhancement measures that form part of the proposals (and

consented remodelling works) would ensure that the Proposed Development would not have any long-term effects on wildlife.

16.9 Land and Soils

16.9.1 The environmental impact of the Proposed Development on the land and soils is, on the whole, minimal. The principal use of the Site has been as a quarry, with adjoining land and has previously been used extensively for industry and as such the impact of the Proposed Development is predominantly positive.

16.9.2 The Proposed Development remodels the existing topography and geology through the Remodelling Works as part of this application; changing the use of the site from industrial to business and domestic, removing or mitigating against potential hazards to the land and soils in the process.

16.9.3 Any major risk to the land and soils on the Site is predominantly created during the construction phase; generally in the form of noise, vibration, dust, temporary earth works, contamination and blasting. A good earthworks design, with suitable planning and risk assessment, will mitigate the potential hazards of the construction phase to make them manageable and avoidable.

16.9.4 Risks arising during the operational phase are generally differential settlement, groundwater flow and cliff face stabilisation. Mitigation measures have been included to negate the impact of any risk to the land and soils arising during the operational phase.

16.9.5 Detailed investigative studies are being undertaken in accordance with the Planning Conditions associated with the Consented Remodelling Works to identified areas of potential contamination to provide specific remediation requirements as part of the Proposed Remodelling Works. Review of the works to ensure suitability for residential end-users will be undertaken, as part of the Proposed Development, however all works will be carried out for remodelling works as consented, therefore no additional mitigation is required.

16.10 Hydrology and Drainage

16.10.1 The remodelling of the quarry to provide a topography appropriate for development will result in changes in the surface and groundwater hydrology of the area. The development of a more natural groundwater regime through the main part of the quarry will impact on the quantity and quality of discharges within the local water environment and to adjacent receiving water bodies. This regime will be further impacted subsequently by the construction of the Proposed Development. The Site does not lie in a flood plain and does not appear on Environment Agency (EA) indicative flood mapping as lying in either a Flood Zone 2 (Low to Medium Risk) or Flood Zone 3 (High Risk).

16.10.2 The Proposed Development includes sustainable drainage techniques such as soakaways, filter drains, permeable surfaces and attenuation features where appropriate, feasible and viable. These will be an integral part of the measures to limit environmental impacts arising from the changed surface and groundwater regime, and to provide mitigation for both the possible quantities of runoff that may be generated by the Proposed Development, thereby minimising any impact of flood risk, and the quality of that runoff.

16.10.3 A combination of use of spare capacity within the existing foul sewers in the vicinity of the site and off-site reinforcement works in agreement with Plymouth City Council and the statutory undertakers for the works will address the potential impact of foul water in respect of the Proposed Development.

16.11 Air Quality

16.11.1 The air quality assessment for the Proposed Development has examined both operational and construction related air quality impacts and in terms of odour and bio-aerosols from existing sources in the area.

16.11.2 Concentrations of nitrogen dioxide (NO₂) and particulate matter (PM₁₀) have been assessed at existing sensitive receptors adjacent to the road links where traffic flows may be influenced by the Proposed Development. The maximum increases in NO₂ and PM₁₀ concentrations as a result of the Proposed Development are considered to be insignificant.

16.11.3 Dust impacts associated with the construction phase and ground remodelling works have been considered as temporary and minor adverse. Air quality monitoring is recommended during the construction programme in order to ensure dust impacts are effectively managed and mitigated against.

16.11.4 The results from the bioaerosol monitoring show that there are no significant differences in the levels between the Site and the downwind (background) monitoring location. This is despite the land-filling of municipal waste within close proximity of the Site, which will also cease to exist once the Site is developed. Bioaerosol impacts are therefore not considered to present a constraint to the Proposed Development.

16.11.5 The landfill would currently represent a potential constraint to development of the northern part of the Site due to potential odour perception and complaint by residents. However, from the assessments carried out, it is demonstrated that odour sources in the area do not pose a constraint to development of any part of the Site once the Chelson Meadow landfill site has been capped. The phasing of the proposed development will also assist in reducing any potential odour impacts should the capping and restoration of the landfill be delayed beyond 2008.

16.12 Light

16.12.1 Sunlight and daylight characteristics of the site have been analysed to assess the impact of the revised contoured quarry topography on the Proposed Development. This has been carried out using graphical and numerical methods to provide a suitable indication of baseline conditions from which to base the assessment of the likely significant effects.

16.12.2 The quarry face has a bearing on the potential of the Proposed Development to receive good sunlight and daylight penetration to the building facades, particularly on the south side of the site. By determining the usage of particular areas it is possible to limit the impact of the shading within the quarry. Sunlight is more critical for the residential dwellings that are to be located to the north of the Site. The Commercial/Office buildings to the south of the development benefit by not being located in direct sunlight through minimising impacts of internal heat gains.

16.12.3 The Proposed Development will have some impact on the overall light pollution of the surrounding area, however lighting design shall be in accordance with the parameters defined by the Institute of Lighting Engineers Environmental Zones. The mitigation measures will help to minimise over design of external lighting thus reducing light pollution.

16.13 Landscape and Visual Impact

16.13.1 The Site comprises the following key elements: a large limestone quarry known as Plymstock Quarry, now worked out and closed; part of a smaller shale quarry, known as Wixenford Quarry located within the north-eastern sector of the Site; an area of former cement works, now demolished except for a few remaining structures, located at the western end of the Plymstock Quarry; areas of woodland to the north and south of the quarry, the largest being Pomphlett Plantation located on the northern side of the Site; areas of pasture fields divided by hedgerows, to the east and north of the Site, some managed as hay

meadows; areas of scrub, secondary woodland and unmanaged pasture located throughout the Site; an area of industrial land set within a small quarry currently used as cement batching plant located within the south-western sector of the Site; and part of the A379 and northern verges in the vicinity of the Pomphlett Industrial Estate on the southern boundary of the Site.

16.13.2 Landscape impacts will result from the Consented and Proposed Remodelling Works and Construction and also from the operational use of the Site in terms of use of open space areas and lighting of the Proposed Development.

16.13.3 Mitigation proposals have formed an iterative and integral part of the masterplanning process for the scheme. Building heights at the south eastern and north eastern edges of the Site are low to reduce adverse landscape character or visual impact to the sensitive neighbouring existing development of Billacombe, and in relation to potential visual impact in views from Saltram House and Park. Landscape mitigation treatments are proposed along the boundaries of the Site and planting proposals have formed part of the Management Plan for the Consented Remodelling Works which will be revised and prepared to include mitigation requirements for the Proposed Development.

16.13.4 The design of street lighting within the Proposed Development will be selected to minimise the night time impact of glare and upward light pollution. In sensitive areas, lighting may be located on houses to reduce the height that would be required for lanterns on columns, thus reducing the potential adverse visual impact in views to the Site from the north.

16.13.5 To the north of Chelson Meadow on the northern boundary of the Site lies Saltram House and Parkland, owned by the National Trust, a historic house of high quality architecture and designed historic landscape. The parkland is typified by belts of mature trees on its edge with individual or clumps of mature trees set within grazed pastures. The house is set within the parkland facing southwards towards the landfill site and beyond to the northern edge of the Site. The proposals which occur within the areas immediately adjacent to the Essential Setting of Saltram House as part of the Proposed Development and Proposed Remodelling Works are: the proposed buildings, structures, roads and landscape mitigation measures within the western, central and eastern parts of the redevelopment. Careful consideration has been given in the design of the scheme to ensure the quality of areas adjacent to the Essential Setting are not adversely affected.

16.14 Archaeology

16.14.1 Sites of archaeological significance are located within areas subject to impact from the Proposed Development. Elements of these sites lie within areas subject to disturbance from the Remodelling Works, and will be investigated and recorded archaeologically before or during the remodelling work stage.

16.14.2 Impacts on any surviving archaeological remains would also occur at the time of construction associated with the Proposed Development, when deposits may be removed by related groundworks. It is noted that any archaeological resource is finite and cannot be replaced or re-located.

16.14.3 The identified potential impacts on the archaeological resource would be mitigated by prior archaeological fieldwork (identification, investigation and recording of all archaeological deposits or remains). This fieldwork, part of which will be undertaken during the Remodelling Works stage, would be undertaken by a recognised archaeological contractor, acting in accordance with standards and specifications produced by the Institute of Field Archaeologists and English Heritage, and following agreement of appropriate strategies with the Plymouth City Archaeologist. Preservation by record through excavation is likely to be required in at least one area.

16.15 Conclusion

16.15.1 The ES has demonstrated that there are no overriding environmental constraints or planning policies which would preclude the Proposed Development. All aspects of the proposals have taken full

account of the pertinent environmental issues: where necessary, mitigation measures form an integral part of the scheme and will ensure that the environment is properly protected and any impacts from the development are minimised.