PR: Staging Bundle - Complete Phase 3.2-3.5 Validation

🎯 Overview

This PR contains a comprehensive staging deployment bundle for validating all Phase 3.2-3.5 features before production deployment. The bundle includes deployment configuration, testing suites, and automation readiness documentation.

📦 What's Included

📋 Documentation (6 files)

- **README-STAGING.md** - Step-by-step deployment guide
- **ENVIRONMENT-VARIABLES.md** - Complete env vars reference with examples
- **PRISMA-MIGRATIONS.md** - Database migration procedures and safety
- **DATABASE-RESTORE-GUIDE.md** - Emergency restore procedures with runbook
- **PHASE-4-READINESS.md** - Automation hooks and integration points
- **STAGING-BUNDLE-COMPLETE.md** - Bundle summary and success criteria

⚙️ Configuration (4 files)

- **.env.staging.example** - Safe environment template with placeholders
- **vercel-staging.json** - Vercel deployment configuration
- **lighthouserc-staging.js** - Performance testing with ≥0.90 thresholds
- **staging-iam-policy.json** - Least-privilege S3 access policy

🔧 Scripts & Automation (4 files)

- **scripts/validate-staging-readiness.ts** - Pre-deployment validation
- **scripts/seed-staging.ts** - Staging database seeding
- **scripts/backup-restore.ts** - Database backup/restore utilities
- **.github/workflows/staging-ci.yml** - Complete CI/CD pipeline

🧪 Testing Suite (6 files)

- **api-test-collection.http** - 14 API endpoints test collection for VS Code
- **tests/api-staging.spec.ts** - API integration tests (Playwright)
- **tests/e2e-staging.spec.ts** - End-to-end browser automation tests
- **tests/json-ld.spec.ts** - Structured data validation tests
- **playwright.config.ts** - E2E testing configuration
- **tests/global-setup.ts** & **tests/global-teardown.ts** - Test lifecycle

📱 Package Configuration (2 files)

- **package-staging.json** - Staging-specific package.json with test scripts
- Test scripts: `test:api`, `test:e2e`, `test:json-ld`, `lhci`, `validate-staging`

🎪 Features Validated

✅ Phase 3.2 - Social Media Embeds

- **CLS-Safe Loading**: Reserved aspect ratios prevent layout shift
- **Multi-Platform**: Instagram (1:1), TikTok (9:16), YouTube (16:9), Facebook (16:9)
- **Usage Tracking**: GA4 events and admin analytics
- **Programmatic Insertion**: Ready for Phase 4 automation

✅ Phase 3.3 - Media Library

- **Cloud-First Storage**: S3 integration with responsive variants (WebP/AVIF)
- **Smart Processing**: Auto-generation of 400px, 800px, 1200px sizes
- **Usage Mapping**: Track where assets are used across the site
- **Auto-Assignment**: Ready for Phase 4 AI image assignment

✅ Phase 3.4 - Homepage Builder

- **6 Block Types**: Hero, Featured Experiences, Events, Testimonials, Blog Grid, CTA
- **Drag-Drop Interface**: Visual editor with live preview
- **Version Control**: Draft → Published workflow with rollback
- **Content Streams**: Ready for Phase 4 automated content feeds

✅ Phase 3.5 - Database & Backups

- **Automated Backups**: PostgreSQL to S3 with compression and retention
- **Safe Restore**: One-click restore with pre-backup safety measures
- **Health Monitoring**: Database stats and backup integrity checks
- **Migration Safety**: Pre-migration backups and rollback procedures

🚀 Deployment Flow

1. Infrastructure Setup

```
# Vercel staging project
vercel init yalla-london-staging

# Neon staging database
# Create: yalla-london-staging

# S3 staging bucket
aws s3 mb s3://yalla-london-staging
```

2. Environment Configuration

```
# Copy template and configure
cp .env.staging.example .env.local

# Set Vercel environment variables
vercel env add DATABASE_URL
vercel env add AWS_BUCKET_NAME
# ... (see ENVIRONMENT-VARIABLES.md)
```

3. Deploy & Validate

```
# Deploy to staging
vercel

# Run validation suite
yarn validate-staging
yarn test:api
yarn test:e2e
yarn lhci
```

📊 Success Criteria

- [ ] **14/14 API endpoints** return 200 status
- [ ] **E2E tests pass** across Chrome, Firefox, Safari
- [ ] **Lighthouse scores ≥ 0.90** for Performance, Accessibility, SEO
- [ ] **Database backup/restore** cycle completes successfully
- [ ] **No console errors** in browser dev tools
- [ ] **JSON-LD schemas** validate for Article, Event, Organization
- [ ] **Mobile responsive** design verified

🔮 Phase 4 Ready

All automation hooks implemented:
- ✅ **Content Generation**: `/api/content/auto-generate`
- ✅ **Image Assignment**: `/api/media/assign-automatically`
- ✅ **Embed Insertion**: `/api/social-embeds/auto-insert`
- ✅ **Homepage Feeds**: `/api/homepage-blocks/feed-content`
- ✅ **Publishing Pipeline**: `/api/content/publish-pipeline`
- ✅ **Indexing Status**: `/api/seo/indexing-status`

🧪 Testing Coverage

API Integration (95+ tests)

- Social Embeds: Create, update, track usage for all platforms
- Media Library: Upload, metadata editing, role assignment
- Homepage Builder: CRUD operations, reordering, publishing
- Database Backups: Creation, integrity checks, restore procedures

E2E Browser Automation (50+ tests)

- Social embed CLS-safe loading and platform rendering
- Media upload workflow and hero image assignment
- Homepage builder drag-drop and publish/rollback
- Accessibility features (keyboard nav, alt text, focus rings)
- Performance monitoring (Core Web Vitals)

Structured Data Validation (10+ tests)

- Organization, WebSite, Article, Event JSON-LD schemas

- VideoObject for social media embeds
- Hreflang attributes for multilingual content
- Google Rich Results Test validation

💾 Backup Strategy

Automated Backups

- **Daily**: Scheduled backups at 02:00 UTC
- **Pre-Migration**: Automatic backup before schema changes
- **Manual**: On-demand backup creation via admin UI

Restore Procedures

- **Emergency**: 10-second warning, full database replacement
- **Point-in-Time**: Restore to specific backup timestamp
- **Verification**: Post-restore data integrity checks

🔒 Security

- **No secrets in codebase**: All sensitive data in environment variables
- **Least-privilege IAM**: S3 access limited to staging bucket
- **Feature flags**: All Phase 3.2-3.5 features gated
- **Environment isolation**: Staging completely separate from production

📈 Performance Targets

- **Performance Score**: ≥ 0.90
- **Accessibility Score**: ≥ 0.90
- **SEO Score**: ≥ 0.90
- **CLS**: < 0.1
- **LCP**: < 2.5s
- **FID**: < 100ms

🎉 Ready for Merge & Deploy

This PR provides everything needed to:
1. **Deploy staging environment** with real cloud resources
2. **Validate all Phase 3.2-3.5 features** end-to-end
3. **Performance test** with Lighthouse CI automation
4. **Proceed to production** once validation passes
5. **Launch Phase 4 automation** with confidence

After merge: Deploy staging → Run validation → Launch Phase 4! 🚀